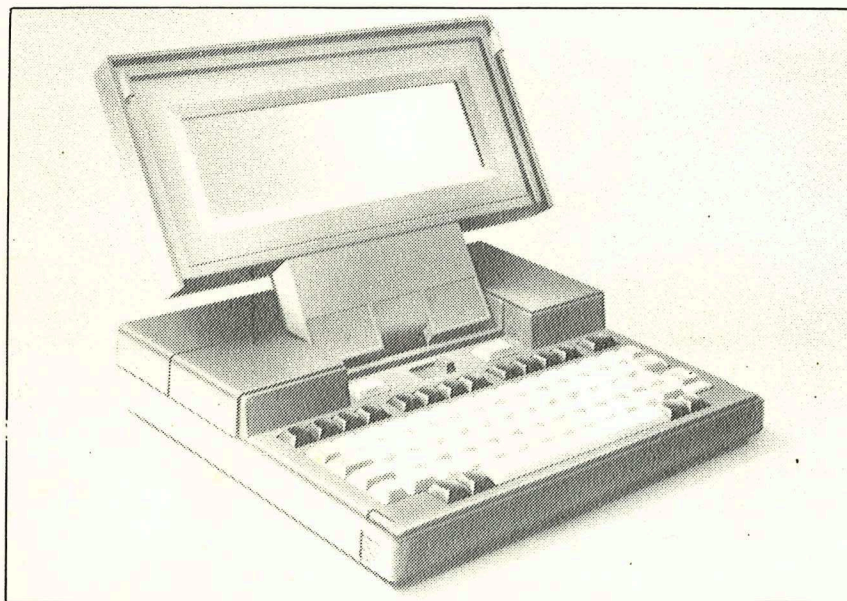


TIME KOOKABURRA

User Guide



TIME Office Computers Pty. Ltd.

WARNING: This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

WARNING

THERE ARE NO USER SERVICEABLE PARTS INSIDE
THE TIME KOOKABURRA. REMOVING THE BASE OR
LCD SURROUND WILL VOID YOUR WARRANTY !!!

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PART NUMBER 4650-001 REV 4.

26/03/85

PREFACE

If this is the first time you have used the Kookaburra, we suggest you read this manual in the following order for a greater understanding of the Kookaburra and its programs.

1. Chapter 1 - a general introduction to the Kookaburra and peripherals,
2. Chapter 8 - an explanation of the Kookaburra's Operating System, files, directories and commands,
3. Chapter 4 - an explanation of the word processing program, TIMEwriter.

The remaining chapters may be read in any order. Separate quick reference cards are provided for Chapters 2 to 6 and Chapter 8.

You can expand the capability of the Kookaburra by using one or more of the following options:

- * floppy disks
- * additional memory
- * portable printers
- * full sized monitors
- * modems
- * programming languages

Contact a Kookaburra Dealer for more information on these options.

Included with this manual is the Warranty Card. Make sure it is completed and returned to TIME OFFICE COMPUTERS.

NOTE:

Throughout this manual, characters, words and sentences in angled brackets are to be entered by the user. For example <RETURN> means press the Return key, <DIR> means enter DIR.

CHAPTER 1

INTRODUCTION

TABLE OF CONTENTS

UNPACKING AND SETUP.....	1-2
BATTERY AND MAINS POWER.....	1-2
THE KEYBOARD.....	1-5
THE LIQUID CRYSTAL DISPLAY.....	1-8
CONNECTING PERIPHERALS.....	1-90
INTERNAL MEMORY AND DISK CONFIGURATION.....	1-11
THE SYSTEM MENU.....	1-13
POWERING OFF YOUR KOOKABURRA.....	1-14

NOTE:

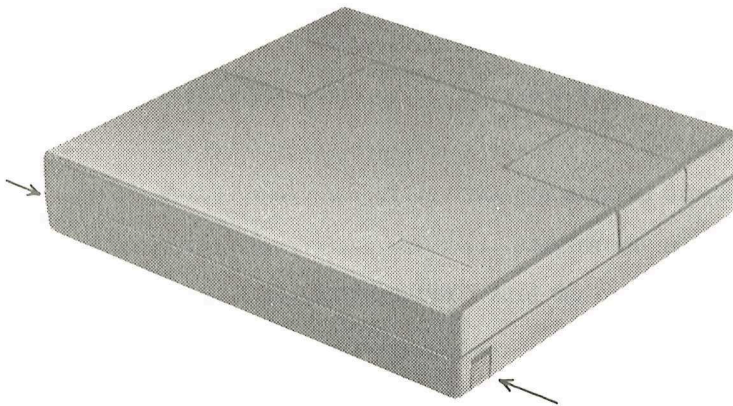
This Chapter gives a general introduction to the Kookaburra. Reading this chapter before operating the Kookaburra is recommended.

UNPACKING AND SETUP

When unpacking, three items will be found, they are: 1. the Kookaburra 2. the power adapter 3. the Kookaburra user guide. Ensure that the Power Adapter is labelled with the correct mains Voltage for your country.

Set the computer in front of you, so the name Kookaburra faces toward you as shown below.

THE TIME KOOKABURRA



To open, press the two catches as indicated by the arrows on the above picture. You can now open the lid, by swinging it up and away from you. To close the lid, simply swing it shut and press down until you hear the catches snap shut.

BATTERY AND MAINS POWER

The Kookaburra may be operated from internal batteries (Ni-Cad) or from mains power. During mains operation the batteries are automatically recharged. The service life of the internal batteries between charges depends on both the nature of use to which the Kookaburra is put and the treatment of the batteries.

Low battery power is indicated by flashing of the red light next to the ON/OFF key or the inability to switch the machine on. Three minutes after commencement of flashing of the warning light the Kookaburra will switch off automatically and cannot be switched on again until mains power is connected. While switched off information

in memory is maintained by the main battery.

To keep the batteries in good order, they must be charged regularly. It is recommended that every period of 24 hours of charging be followed by a period of battery operation which should continue until the battery warning light flashes.

Sustained operation from mains power for periods in excess of 48 hours should be avoided as temporary reduced battery capacity will result.

CONNECTING THE KOOKABURRA TO A MAINS POWER SOURCE

To connect the Kookaburra to mains power, you must use the Power Adapter supplied with it. Check that the Voltage indicated on the adapter (110V or 240v) corresponds to the voltage Supplied at the wall outlet. Then:

1. Make sure the Kookaburra is turned off.
2. Connect the Adapter to the 6v AC input connector (P6) located at the back of the Kookaburra Computer.

WARNING

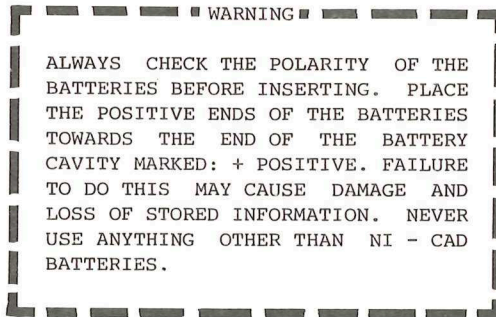
USE ONLY THE ADAPTER SUPPLIED WITH
YOUR KOOKABURRA. USE OF ANY OTHER
DEVICE COULD CAUSE SERIOUS DAMAGE
AND WILL VOID YOUR WARRANTY.

INTRODUCTION

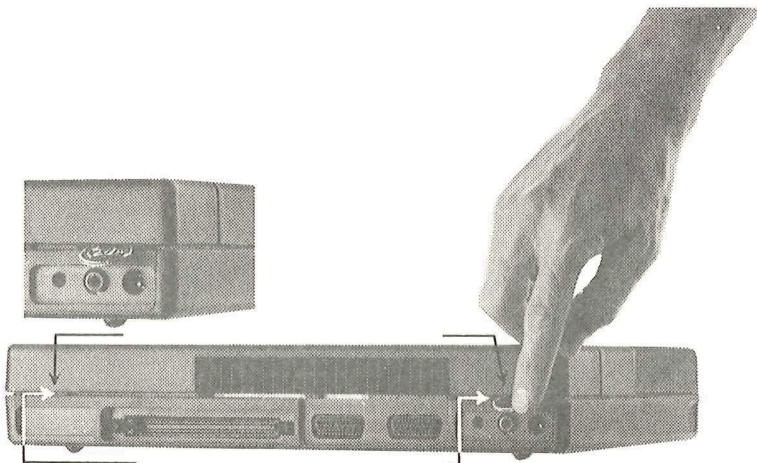
INSTALLING THE NI-CAD BATTERIES:

Your rechargeable Ni-Cad batteries are already installed. You only need to use these instructions if you need to change to another battery set:

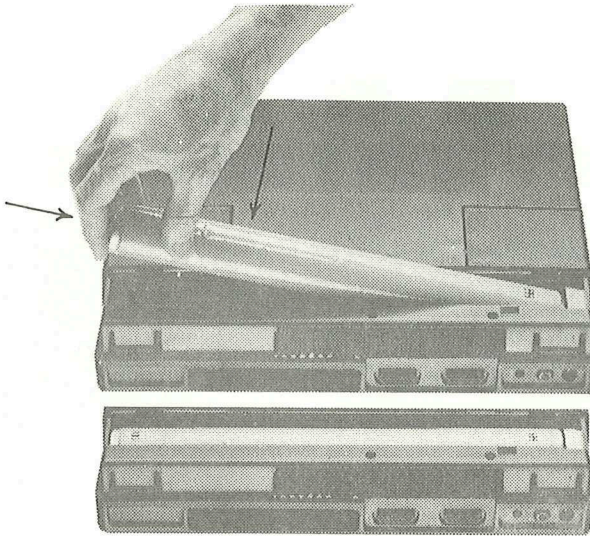
1. Make sure your Kookaburra is switched OFF.
2. Remove the battery cover located at the back of your computer. To do this, press a coin into the two slots as shown. The cover will pop up when sufficient force has been applied.
3. Carefully install the battery as shown.



REMOVING THE BATTERY COVER



INSERTING THE BATTERY



ONCE INSTALLED, DO NOT REMOVE THE BATTERY UNLESS ABSOLUTELY NECESSARY

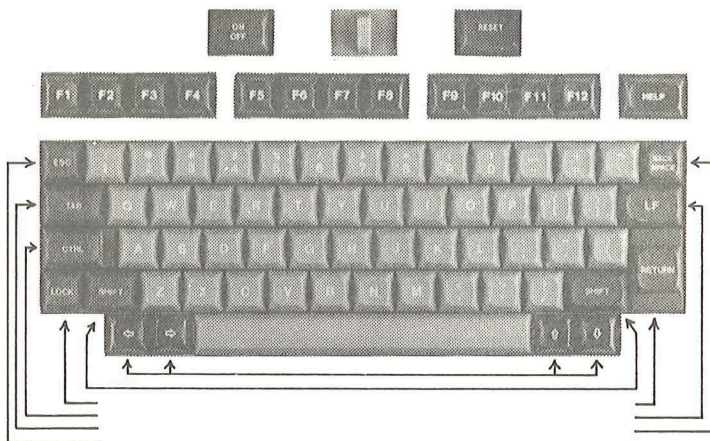
Apart from powering the Kookaburra when it is not running on mains power, the batteries are used to run the real time clock and to keep information stored in memory. If you remove the Ni-Cad Batteries, a small Lithium battery will ensure the information in your Kookaburra is not lost and will keep the clock running. Avoid using this battery because it has a limited operational life of a few weeks. This secondary battery does not allow operation of the computer.

THE KEYBOARD

The top row of keys labelled F1 through F12 are called the Function keys. Most keys have an automatic repeat feature, so if you press the key for more than half a second it will repeat the character at ten characters a second. The keyboard has a 'key click' option, which when active makes a clicking sound every time a key is pressed. Pressing the key labeled CTRL (Control) and the key labeled / (slash) together will switch this function off, pressing these keys again will switch it on.

INTRODUCTION

THE KOOKABURRA KEYBOARD



KEYBOARD WITH SPECIAL KEYS POINTED OUT

Function of the Kookaburra keys:

- SHIFT** : Shift works like the shift key on a typewriter. Hold it down while you hit another character key and you will get upper - case, or the top character on the numeric and punctuation key.
- ON/OFF** : You can start and stop your Kookaburra computer by using the <ON/OFF> key. Press this key by itself to switch your Kookaburra ON or press this key with the shift key to switch your Kookaburra off. NOTE: if the computer is off, pressing <SHIFT OFF> will switch it on.
- RESET** : If you press this key, while holding down the <SHIFT> key, you will reset your Kookaburra. Resetting has the same effect as turning your Kookaburra off and on again. Normally this key works immediately, but in some circumstances you must hold both keys down for 10 seconds, then release shift first.

WARNING

Avoid use of RESET and OFF keys while a program is running as loss of information may occur.

- CURSOR KEYS : You may have noticed that whenever you type a character it appears on the display at the point marked by a flashing block this block is called the "Cursor" and it shows you where you are on the screen. Most programs let you move the cursor around the screen by using the four Cursor keys. The Cursor moves in the direction indicated by the arrow on the key pressed. See Chapter 9 page 9 for cursor types available. The block cursor is the default.
- CAPS LOCK : After you have pressed the CAPS LOCK key, the upper and lower case state will be reversed. In other words, you will get an upper case letter unless you press the shift key at the same time. Note that this is different from the SHIFT LOCK available on typewriters since with CAPS LOCK, only the alphabetic keys are in upper case mode, not the special character keys or the numbers.
- TAB : TAB when pressed, causes the Cursor to move to the next multiple-of-eight position across the screen.
- BACK SPACE : The backspace key backspaces over and erases one character.
- RETURN : The Return key, also known as the Enter key, is very important in operating your computer. Most of the time, it acts like a carriage return on a typewriter. But each time you type a command you must press the Return key to tell the Kookaburra to obey your command.
- LINEFEED: This moves your cursor to the next line down on the screen.
- ESCAPE : The uses of this key may vary with the program being used, so refer to the instructions for each program for a description of what ESCAPE does.
- CONTROL : This key provides special functions in some programs when you hold it down while pressing another key. This key is described in more detail in other chapters.

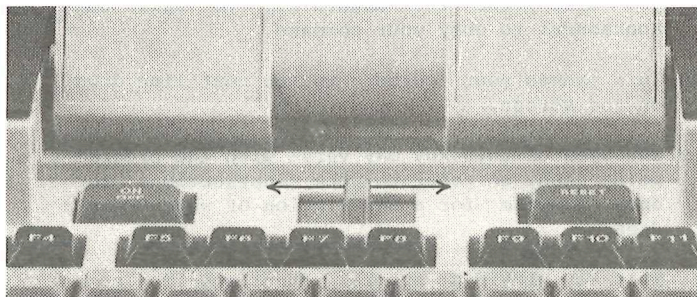
F1...F12: The Function keys help you perform special operations, or make a selection from a menu simply by pressing the appropriate key. The effect of each key will vary depending on which program you are currently using. The prompts appearing at the bottom of the screen indicate the function performed by each key depending on the program you are in, the symbol "---" representing the divisions between function keys F4 and F5 as well as F8 and F9.

HELP : Most programs provided with your Kookaburra have a built-in HELP function. When the Help key is pressed, available options are displayed.

THE LIQUID CRYSTAL DISPLAY

The lid of your Kookaburra contains a flat display called a Dot Matrix Liquid Crystal Display, or LCD. The name refers to the type of technology used in this display. The best visibility is achieved in bright surroundings. In fact, the brighter the environment the better, since the LCD only reflects light, it does not generate it. To increase visibility, you can modify both the viewing angle and the contrast. To change the viewing angle, simply adjust the lid by moving the lid forward slightly, slide the lid adjustment control (located between the <ON/OFF> key and the <RESET> key) to the left or right (left lets the lid go back, right positions the lid closer to you) and then let the lid settle back onto the slide stop. See Chapter 9 for additional information on the LCD. Take care to avoid scratching the screen, when cleaning it.

ADJUSTING THE KOOKABURRA LID



To adjust the contrast, press the Control key with either the "." key to increase the screen contrast or the "," to decrease the screen contrast. Practice modifying the viewing angle and the contrast until you achieve the best results.

```
+-----+ +---+
! CTRL ! + ! < !
+-----+ +---+
```

Decreasing Screen
Contrast.

```
+-----+ +---+
! CTRL ! + ! > !
+-----+ +---+
```

Increasing Screen
Contrast.

CONNECTING PERIPHERALS

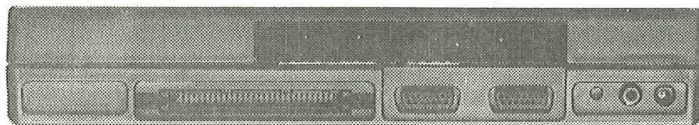
A range of external devices or peripherals can be connected to your Kookaburra. All devices must be connected via interface cables to the appropriate connector at the back of the computer. The diagram below shows the various connectors on the back of your Kookaburra.

When connecting peripherals, fully shielded interconnecting cables MUST be used. Fully shielded cables imply cables that have conductive backshells connected to the braided cable shield and to the ground plane of the Kookaburra computer.

WARNING

Only connect authorised devices to your Kookaburra. This applies particularly to the Expansion Bus, where substantial damage may be caused by connecting a non approved device. Connection of such devices will void your WARRANTY.

THE KOOKABURRA CONNECTORS



INTRODUCTION

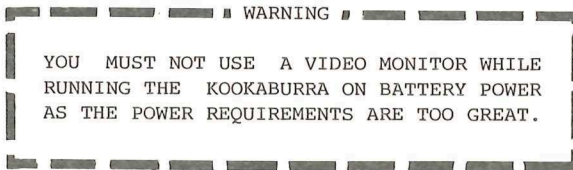
CONNECTING AN EXTERNAL VIDEO

If you would like to use a larger display with your Kookaburra, simply plug the monitors video cable into the Kookaburra's video socket (P5). It is recommended that you purchase the monitor from a Kookaburra dealer to ensure compatibility. The adjustment (P4) is used to center the video image.

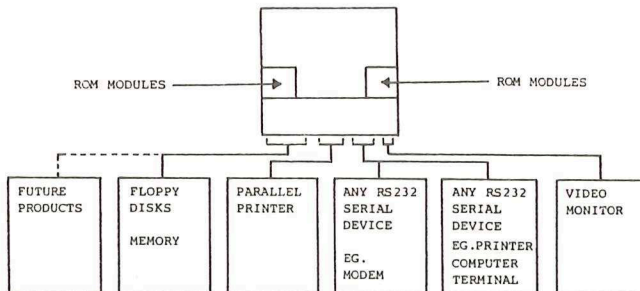
NOTE:

When you have plugged in an external Monitor, you must "tell" the Kookaburra that further output is to be displayed on this Monitor instead of the LCD. To do this you must select <F5> from the system menu, this will cause all further console output to be displayed on the monitor. To return console output to the LCD, select <F6> from the system menu.

See Chapter 9 for more information on this.



KOOKABURRA PERIPHERALS



CONNECTING A PRINTER

The Kookaburra provides three input/output interfaces suitable for use with printers. These are:

A Centronics or parallel interface which is accessed by the 15 pin D connector P2 on the rear of the Kookaburra. This interface is known to MS-DOS (the Kookaburras operating system) by the name PRN.

Two serial (RS232) interfaces which are combined into a single 15 pin D connector P3 on the rear of the Kookaburra. These two interfaces are known to MS-DOS by the device names AUX (port A) and AUX2 (port B).

The cabling details for these interfaces are given in Chapter 9.

TIME supplied software packages and cables use the following connections:

Serial port A (AUX or SER0) is for serial printer use and other non-modem usage;

Serial port B (AUX2 or SER1) is for Modem communications.

CONNECTING A DISK EXPANSION UNIT

The large connector (P1) is the Expansion Bus Port and can be used to connect your Kookaburra to certain other devices, such as a disk expansion unit housing dual floppy disk drives and additional memory. For more details on this connector, see Chapter 9.

If a disk expansion unit is connected, the Kookaburra will automatically boot from the MS-DOS system disk in drive E.

INTERNAL MEMORY AND DISK CONFIGURATION

The Kookaburra has as standard, 96K Bytes of STATIC CMOS RAM. This internal memory can be expanded to a maximum of 256k Bytes. The Kookaburra also has 128K Bytes of internal ROM, which is used to store the software provided. The Kookaburra's memory can also be expanded externally, by connecting a Disk Expansion unit. Up to 256K of RAM can be added in the Disk Expansion unit, along with two 5.25 inch Floppy Disk Drives.

The Kookaburra has four internal storage areas that act like disk drives; they are called virtual disk drives. They provide the following facilities:

INTRODUCTION

FUNCTIONS OF THE KOOKABURRA DISK DRIVES

DRIVE A: This drive is the internal 128K of ROM, which contains some of the software provided with the Kookaburra.

DRIVE B: This drive uses plug-in memory modules, it is located on the left-hand side of the Kookaburra.

DRIVE C: This drive uses plug-in memory modules, it is located on the right-hand side of the Kookaburra.

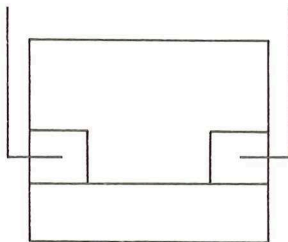
DRIVE D: This drive is in part of your internal CMOS memory. See Chapter 7 page 7 for details on how to format this drive.

EXTERNAL DRIVES: External Disk Drives (in Disk Expansion Unit) are labelled E and F.

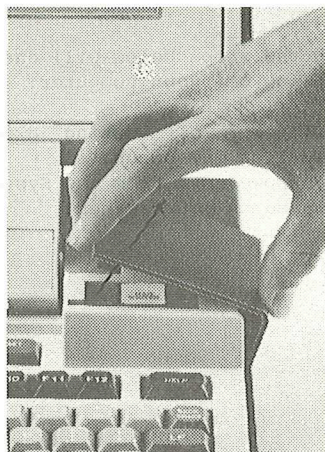
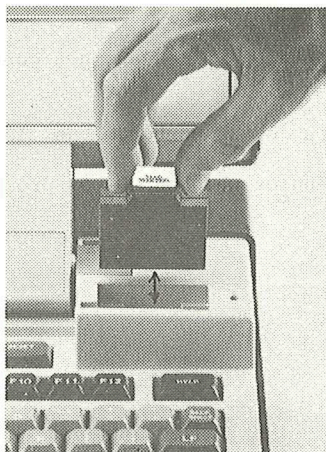
PLUG-IN PERSONALITY MODULES

The Personality module ports, drives B and C, accept memory and input/output devices. The maximum memory capacity of these modules is 128K Bytes. Note that these modules must be removed ONLY while the Kookaburra is switched OFF, and that the covers for the module ports can only be removed while the Kookaburra is open.

LOCATION OF DRIVES B AND C



LOCATION OF MODULES



THE SYSTEM MENU

When you switch on the Kookaburra, the System menu will be displayed. From this menu you can select the particular program you wish to use. The diagram below depicts what you will see. To select a particular program, press the function key associated with that program.

THE KOOKABURRA'S SYSTEM MENU

SYSTEM MENU	TIME KOOKABURRA V1.78	(C) TIME 1984
F1 = PLANNER	F5 = VIDEO DISPLAY ON	F9 = BASIC
F2 = PHONE BOOK	F6 = LCD DISPLAY ON	F10 = TERMINAL
F3 = WRITER	F7 = CHANGE TO DISK SYSTEM	F11 =
F4 = CALC	F8 = USR1.EXE PROGRAM	F12 = MS-DOS

To Select a Program press the corresponding F KEY

INTRODUCTION

Function Key <F8> has been allocated for a program of your own to be accessed through the System Menu. To invoke your program from the System menu, rename it USER1.EXE, this file will be searched for on drive "D". Note that only one program can have this filename at any one time.

POWERING OFF YOUR KOOKABURRA

Following the steps below will ensure data and files are not corrupted when powering off your computer:

1. Never power off during execution of a program as loss of information may occur.
2. Always power off from the System Menu or when an MS-DOS prompt is displayed on your screen.

CHAPTER 2

THE CLOCK, PLANNER AND DIARY (V2.0)

TABLE OF CONTENTS

OVERVIEW.....	2-2
FACILITIES.....	2-2
THE CLOCK PLANNER SYSTEM.....	2-2
HOW THE CLOCK AND TIME ZONE SYSTEM WORKS...	2-5
HOW TO CHANGE TIME ZONES.....	2-6
HOW TO VIEW AND CREATE A DIARY ENTRY.....	2-8

OVERVIEW

This chapter describes the Clock Planner and Diary program supplied with the Kookaburra. The Calendar and Diary system is designed to conveniently facilitate time management through the use of a current clock and planner clock. The current clock displays the actual time and date, and is synchronised with the internal Kookaburra clock. The planner clock is displayed as the first time zone, and can be changed:-

- a) to determine the time in other time zones.
- b) to select date of diary entry.

To invoke this program from the system menu, press Function key <F1>, or when in MS-DOS, use the file name <MP>.

FACILITIES

This program has the following facilities:

1. The Current (C) clock, which displays the current time and date.
2. The Planner (P) clock, which displays the planning time and date.
3. The Greenwich (GMT) clock, which displays Greenwich Mean Time corresponding to the P clock.
4. Up to 40 Zone clocks, which display the time in 40 world time zones corresponding to the P clock.
5. A calendar for the month set in the P clock.
6. A diary with unlimited page size for each day, with arbitrary text entries.

THE CLOCK PLANNER SYSTEM

When you first enter the Clock, Planner and Diary, the clock planner screen (below) is displayed.

CLOCK PLANNER MAIN SCREEN

CURRENT	12:43 pm, FRI 13 APR, 1984	APRIL, 1984						
SYDNEY	12:43 pm, FRI 13 APR, 1984	SUN	MON	TUE	WED	THU	FRI	SAT
GMT	02:43 am, FRI	01	02	03	04	05	06	07
PERTH	10:43 am, FRI	08	09	10	11	12	<13>	14
HONG KONG	10:43 am, FRI	15	16	17	18	19	20	21
NEW YORK	09:43 pm, THU	22	23	24	25	26	27	28
ADELAIDE	12:13 pm, FRI	29	30					
HOURS MINS DAYS MONTHS -- YEARS SET DIARY ... -- EXIT								

The display consists of:

1. The title and version number of the Planner. This document describes version 2.11.
2. The C clock, which displays the current time and date as follows:

CURRENT 12:43 pm, FRI 13 APR, 1984

and is updated automatically every minute. It may be set by first setting the P clock to the current time, then pressing <SHIFT F6>.

3. The P clock which displays the planning time and date as follows:

SYDNEY 12:43 pm, FRI 13 APR, 1984

and is changed by pressing the keys <F1> through <F5> to increment the hours, minutes, day, month or year, <SHIFT F1> through <SHIFT F5> to decrement the hours, minutes, day, month or year, or <F6> to set the P clock to the C clock (current time and date). <SHIFT F6> set the C clock to the P clock.

Initially, the P clock is set to the C clock, and are then both synchronised. Setting the P clock to the C clock with <F6> will also synchronise the C and P clocks. When the C and P clocks are synchronised, the P clock and the zones displayed will be updated every minute. When the C and P clocks are not synchronised, then only the C clock will be updated every minute.

4. The GMT clock shows Greenwich Mean Time as calculated from the P clock, and is displayed as follows:

GMT 02:43 am, FRI

5. Up to 40 zone clocks hold the times of different time zones corresponding to the P and GMT clocks. As many time zones as can fit on one screen will be displayed, eg.

L.A 06:43 pm, THU
TOKYO 11:13 pm, FRI
NEW YORK 09:43 pm, THU
ADELAIDE 12:13 pm, FRI

CLOCK, PLANNER and DIARY

If there are more time zones, use the <up/down arrow> keys to scroll one line; <SHIFT up/down arrow> keys to scroll one screen; <CTRL up/down arrow> keys to display the first and last page of zones.

The zones to be displayed can be changed by using the word processor (see "How to Change Time Zones").

6. The calendar corresponding to the Planning month is displayed as follows:

```
      APRIL, 1984
SUN MON TUE WED THU FRI SAT
 01  02  03  04  05  06  07
 08  09  10  11  12 <13> 14
 15  16  17  18  19  20  21
 22  23  24  25  26  27  28
 29  30
```

The planning day is displayed in brackets < >.

7. The bottom line displays function keys which can be used. Remember, the functions performed by these keys changes depending on the program you are in.

HOUR MIN DAY MONTH - YEAR DIARY DEL . - . . . EXIT

8. Two help screens can be selected to display a description of the functions available. Pressing the HELP key, when in view mode, will display the information below.

VIEW MODE HELP SCREEN 1

Time Calendar & Diary System : HELP page 1 (ESC to exit, other for next page)
Use F1-F5 to increment and shift F1-F5 to decrement, F12 or ESC to exit planner

F1 : Hours	F6 : set Planning to Current time
F2 : Minutes	Shift F6 : set current to Planning time
F3 : Days	F7 : view diary entry
F4 : Months	Shift F7 : edit diary entry
F5 : Years	F8 : delete diary entry

From the first HELP screen, the second help screen can be selected by pressing any key, except <ESC> which exits to the main screen.

VIEW MODE HELP SCREEN 2

Time Calendar & Diary System : HELP page 2 (press 1 for page 1, other to exit)
Use the up and down arrows to scroll up and down the zone information

	----- UP ARROW-----	-----DOWN ARROW-----
	move up one line	move down one line
SHIFT	move up one screen	move down one screen
CTRL	move to top of zones	move to botton of zones
*** Kookaburra Diary/Planner written by CYBERNETICS RESEARCH		

Pressing any key, except <1> exits from this help screen. <1> will take you to the first help screen.

HOW THE CLOCK AND TIME ZONE SYSTEM WORKS

The clocks (C, P, GMT and Zone) are not all independent. They are linked together under the control of a file called MAGZONE.DOC which is stored on drive D. When the planner is started, this file is read; if the file does not exist on drive D it is copied from drive A first.

MAGZONE.DOC contains a list of up to 40 entries of the form:

```
+1000SYDNEY
+0900TOKYO
-0600NEW YORK
**** end of zones ****
```

The first character (+ or -) indicates whether the time is ahead or behind Greenwich Mean Time, the next two digits indicate how many hours ahead or behind, and the last two digits indicate the number of minutes ahead or behind. These entries should always be 12' hours or less. The name of the time zone then follows, and up to 10 characters will be recognized and displayed.

Inside the Kookaburra is a clock which records the time and date. This is assumed to be the time and date at the location specified first in the list in MAGZONE.DOC. It is initially set to SYDNEY, AUSTRALIA time, which is 10 hours ahead of GMT. The C clock is set and updated with the Kookaburra's internal clock.

Initially, the P clock is also set to the current time and date, however it may be changed for planning purposes and for access to the diary. The P clock is displayed with the name of the first time zone in the list in MAGZONE.DOC, as this is assumed to be the local time zone.

The GMT clock (Greenwich Mean Time) is calculated from the P clock using the time offset. For example, GMT is initially set to 10 hours behind the current time, which is assumed to be in the SYDNEY time zone.

Finally, all the other world times are set by adding their time differences as stored in the MAGZONE.DOC file to GMT. Thus, the time zones are always synchronised with each other. Whenever the P clock is changed, the GMT and Zone clocks are changed too.

When you receive your Kookaburra, it is set with the C clock displaying SYDNEY time. If, for example, you are in NEW YORK, you must make two adjustments:

1. Reset the planning time to correct NEW YORK time using <F1> to <F5> and <SHIFT F1> to <SHIFT F5>. Then press <SHIFT F6> to set C time from P time.
2. Change the local time zone to NEW YORK in the MAGZONE.DOC file so the correct name is displayed for the planning time, and more importantly, so the correct GMT can be calculated. Use TIME Writer to move the entry in MAGZONE.DOC describing the NEW YORK time zone to the top of the file.

HOW TO CHANGE TIME ZONES

The word processing system, TIME WRITER, can be used to alter the time zones. The following procedure will explain how to alter these zones, however it is recommended that you read Chapter 4 for a detailed description of the word processing system.

First, if you are in the DIARY PLANNER, you must leave it (by pressing ESC or F12) and select TIME Writer by pressing the <F3> function key while in the System menu. To load the document into the work area press the <F2> function key. The following message will be displayed:

'Please enter a file name:'

Enter 'MAGZONE.DOC' <RETURN>. The message 'File loaded' will then be displayed. To select EDIT mode press <SHIFT F3>. The following or similar will be displayed on the screen:

```
+1000SYDNEY
+0800PERTH
+0100PARIS
-0600NEW YORK
-1100HAWAII
*****
end of zone information
```

The first zone stored is the local time zone. Greenwich Mean Time is calculated from this figure. The +1000 means that Sydney is 10 hours ahead of GMT, -0600 means that New York is 6 hours behind GMT.

The zone details must always be in the above format, ie. '+' or '-' followed by four digits and then the name of the time zone. If you want to change a time zone, enter the details over an existing entry. New time zones (a total of 40) can be added.

NOTE:

The first line not starting with a + or - sign terminates the time zone list.

When EDIT mode is first selected you will be in INSERT mode, (ie. any characters entered will be inserted in the text and any existing text will be moved to the right).

We want to overwrite the existing information so the first thing to do is select OVERWRITE mode by pressing <F6>.

The HELP key can be used to display the functions of the various keys on the keyboard during EDIT:

<HELP>	Use of arrow keys
<SHIFT HELP>	Use of function keys
<CONTROL HELP>	Use of Shift function keys

NOTE:

The HELP functions above are for TIME Writer.

To change a zone entry, move the cursor to the characters you wish to change and overtype them.

To add new entries, position the cursor at the beginning of the line below where your new entry is to be inserted. Press <CTRL N> to create a blank line and type in the new entry.

To move an entry to a new position press <F4>. Now position the cursor at the start of the line you wish to move and press <RETURN>. Position the cursor at the beginning of the next line and press <RETURN>. Now move the cursor to the start of the line where you want the entry to be moved and press <RETURN> again. The line is now moved to the new position.

When you have altered the zone information press the <ESC> key or <F12> key to return to the TIME Writer main menu. At this point the information has been altered in the work space and the original zone document has not been altered. If you are sure that the alterations you have made are correct, press <F4> which will then update (save) the zone document. If the <F12> function key is depressed without the document being saved the following message will be displayed:

'Work space not saved! Save it?'

Pressing <Y> will have the same effect as if <F4> had been pressed, pressing <N> will leave the zone document unaltered. Press <F12> to return to the system menu.

CLOCK, PLANNER and DIARY

The word processor can also be used to create and modify diary entries, but in particular can be used to delete old diary entries which are no longer needed.

The information for a particular day is stored following an entry of the form:

!ymmdd

which is the date backwards (e.g. 800213 for 13/02/80), followed by a return.

It is essential that you are proficient in the use of the word processor before attempting to edit the diary file. Take care to use the correct format, and to keep the entries in date order. The name of the diary document is MAGDIARY.DOC

HOW TO VIEW AND CREATE A DIARY ENTRY

The first procedure in viewing a diary entry is to select the day, month and year that you wish to view. This is achieved by use of the function keys <F3> - <F5> to increment day, month and year, and <SHIFT F3> - <SHIFT F5> to decrement day, month and year.

When the days are incremented/decremented, you will notice that the day selected is highlighted on the calendar by being enclosed in angle brackets (< >). The month and year are displayed at the top of the calendar.

Example:

SUN	MON	TUE	WED	THU	FRI	SAT
01	02	03	04	05	06	07
08	09	10	11	12	<13>	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

In the above example, the planner and diary date is the 13th April, 1984. To view the diary entry for that date press <F7>.

If there is a diary entry for that day, it will be displayed. The planner date is displayed in the top left hand corner of the screen. If there is no diary entry, the following message will be displayed:

'No Diary Entry Has Been Made For Today'

To record a diary entry or to edit an existing entry, press <SHIFT F7>. Again the planner date will be displayed in the top left hand corner of the screen and the following message displayed on the bottom line:

'Please edit the diary entry, Press ESC or F12 to exit'

You can now enter text into the diary or edit existing text using a subset of the word processor keys.

While in edit mode, the function keys <F3> to <F5>, <F7> and <F8> can be used as they can from the main clock display to switch to a new diary entry. <F1> and <F2>, which update hours and minutes, and <F6> which sets the clocks, cannot be used in edit mode. <F8> can be used to delete the current entry.

In VIEW mode, you can move around the diary using the arrow keys, but you cannot edit the entry.

Press the HELP key to display the function of the arrow keys in EDIT mode.

EDIT MODE HELP SCREEN

DIARY EDITOR by Cybernetics Research		HOW TO MOVE IN THE TEXT	
KEY	--NORMAL---	--SHIFT----	---CONTROL-----
<-	char left	word left	start of paragraph
->	char right	word right	end of paragraph
up arrow	line up	screen up	top of file
down arrow	line down	screen down	end of file

ARROW AND FUNCTION KEYS

The editing functions available in the diary are a subset of those available in the word processor. They are:

< ⬅ >	move left one character
< ➡ >	move right one character
< ⬆ >	move up one line
< ⬇ >	move down one line
<SHIFT ⬅ >	move left one word
<SHIFT ➡ >	move right one word
<SHIFT ⬆ >	move up half a screen
<SHIFT ⬇ >	move down half a screen
<CTRL ⬅ >	move to start of paragraph
<CTRL ➡ >	move to end of paragraph
<CTRL ⬆ >	top of diary entry
<CTRL ⬇ >	end of diary entry
<RETURN>	start new line
<TAB>	insert tab
<BACKSPACE>	delete character left
<SHIFT BACKSPACE>	delete word left
<CTRL BACKSPACE>	delete paragraph left
<CTRL G>	delete one character right
<CTRL Y>	delete whole paragraph
<CTRL V>	switch insert/overwrite mode

CHAPTER 3

ADDRESS AND PHONE BOOK (V2.0)

TABLE OF CONTENTS

OVERVIEW.....	3-2
FILE USAGE.....	3-2
SCREEN LAYOUT.....	3-2
MAXIMUM LINE LENGTHS.....	3-3
FUNCTION KEYS.....	3-3
ENTERING PROGRAM FOR THE FIRST TIME.....	3-4
ENTERING A NEW RECORD.....	3-4
EDITING AN EXISTING RECORD.....	3-4
DELETING A RECORD.....	3-6
SEARCHING FOR A PARTICULAR RECORD.....	3-6
PRINTING THE ADDRESS AND PHONE BOOK.....	3-7
MAIL MERGE.....	3-7

OVERVIEW

This chapter describes the electronic telephone and address book that has been supplied with the Kookaburra and specially designed for business applications. It records personal name, company name, address and telephone number information. To run this program from the System Menu, press the Function key <F2>. When in MS-DOS, use the filename <AT>. This program enables you to do the following:

1. Create, alter and delete entries in the telephone book.
2. Search for particular entries on any recorded item.
3. Retrieve the NEXT, PREVIOUS, FIRST and LAST recorded entries.

FILE USAGE

This program will use the text file TBOOK.DOC if it exists, otherwise it will create such a file. TBOOK.DOC is a standard ASCII text file, where each entry is five lines followed by a blank line. Each line can vary in length provided the specified maximum for each line is not reached. This file can then be used by other utilities such as the word processor, and can be printed to obtain an up to date version of the business telephone book.

WARNING:

If the file is altered from this format, the alteration will not be detected. Do not alter the format of the file other than with the ADDRESS AND PHONE BOOK program.

SCREEN LAYOUT

NAME :	Address x out of y V 2.0
COMPANY :	
ADDRESS :	
PHONE :	
(message line)	
FIRST NEXT PREV LAST --	FIND ... NEW EDiT -- DEL UNDO ... EXIT

The version number of the program is displayed in the top left hand corner of the screen. In the right hand corner is the address-number field; 'x' is the number of the displayed address and 'y' is the total number of entries in the Telephone Book.

The second last line is used for error diagnostics and general messages, and the last line displays the allocated function keys.

MAXIMUM LINE LENGTHS

NAME	:	40 characters
COMPANY	:	40 characters
ADDRESS	:	60 characters
	:	60 characters
PHONE	:	25 characters

FUNCTION KEYS

The user has at his disposal the following function keys:

F1	FIRST	retrieves the first entry in the Telephone Book.
F2	NEXT	retrieves the next entry in the Telephone Book.
F3	PREV	retrieves the previous entry in the Telephone Book.
F4	LAST	retrieves the last entry in the Telephone Book.
F5	FIND	searches for the next entry with the specified string.
F6	SAVE	saves the current address when in edit mode.
F7	NEW	creates a new entry and leaves the screen ready for editing.
F8	EDIT	enables editing of the currently displayed entry.
F9	DEL	deletes the currently displayed address book entry.
F11	UNDO	undoes any changes made to the screen during the edit of the current entry.
F12	EXIT	exit back to the system.
ESC	EXIT	exit back to the system.
HELP		displays appropriate help diagnostic screen.

If an inappropriate key is pressed, the message:

'INVALID KEY - please continue'

will be displayed on the error line.

For HELP with the FUNCTION keys press <HELP> and the following screen will be displayed.

TELEPHONE & ADDRESS BOOK		MAIN MENU HELP	Press any key to return
F1 - First Address	F5 - Find Address	F9 - Delete Address	
F2 - Next Address	F6 -	F10 -	
F3 - Previous Address	F7 - New Address	F11 -	
F4 - Last Address	F8 - Edit Address	F12 - Exit	

ENTERING PROGRAM FOR THE FIRST TIME

When using this product for the first time or with no telephone book entries, you will notice that in the top right hand side of the screen the message:

'NO ADDRESSES IN FILE'

is displayed. To use the facilities available in this program, you must create telephone book records.

ENTERING A NEW RECORD

To create a NEW entry, press <F7>. The screen fields will be blanked, the cursor will be positioned at the start of the name field and the address-number field will state that a 'NEW ADDRESS' is being created. You are now in EDIT mode, (see the following section on editing). When finished the entry will be added to the end of the list of telephone book records and the address-number will be changed accordingly. To save the entry and exit edit mode, press <F6>. Pressing any of the other function keys except <F12> will save the entry and perform the selected function.

The message:

'ADDRESS ADDED'

will be displayed after the address has been saved.

EDITING AN EXISTING RECORD

To EDIT the currently displayed entry, press <F8>. The cursor will be positioned at the start of the name field and you are now in the edit mode. Once in this mode, simply type over the screen contents. If you enter more characters on a line than the maximum allowed, the message:

'LINE LIMIT REACHED - please continue'

will be displayed.

To move around the screen in edit mode, use any of the following:

KEY	FUNCTION
<Backspace>	Deletes character left of cursor.
<Return>	Clears to the end of the current line and moves cursor to start of next field. If the cursor was in the telephone number field, the cursor will move to the 'name' field. If the cursor is on the first character of a field, then the line will not be cleared, instead the cursor will just move to the next field.
< ⤴ >	Moves to the next field.
< ⤵ >	Moves cursor to start of previous field. If the cursor was in the 'name' field, the cursor will move to the telephone number field.
< ⬅ >	Moves one character left.
< ➡ >	Moves one character right.
<Tab>	Insert a space after the cursor.

To UNDO any changes made to the screen press <F10>.

The message:

'ADDRESS REPLACED'

will be displayed briefly after the address has been replaced.
For HELP with the FUNCTION keys in the EDIT mode, press <HELP> and the following screen will be displayed.

PHONE BOOK Help Screen - EDIT facility		Press any key to return
KEY	FUNCTION	
Backspace	Deletes the last character typed	
Down Arrow	Moves cursor to start of next line	
Up Arrow	Moves cursor to start of previous line	
Return	Clear line from cursor to end of line & move to next line	
F10	Will undo any changes made in the current EDIT	

To EXIT edit mode and save the changes, press <F6> or any of the other function keys except <F12>.

DELETING A RECORD

To DELETE the currently displayed entry, press the <F9> key. The message:

'ADDRESS DELETED'

will be displayed.

SEARCHING FOR A PARTICULAR RECORD

You can retrieve and display the FIRST, NEXT, PREVIOUS or LAST entry in the list of telephone book records by pressing the <F1>, <F2>, <F3> or <F4> keys respectively. If the message:

'NO MORE ADDRESSES IN FILE'

is displayed on the error line, then you have come to either the end or the beginning of the list, depending on which way you were searching.

To FIND a particular entry in the list, press <F5>. The following message will be displayed:

'Find What? -'

Enter the string of data you wish to find and press <RETURN>. If a matching address is found, it will be displayed and the search will be repeated by pressing <RETURN> until the message:

'NO MORE ADDRESSES ON FILE'

is displayed.

If no address is found, the message:

'NO MATCHING ADDRESS FOUND'

is displayed.

NOTE:

If you search for a new string, the search commences at the start of the file. If you search for the same string again, then the search commences from the current position. The system remains in search mode until it fails to find a string. The string being searched is matched on any part of the file, with the case being ignored.

For HELP whilst in the FIND mode, press <HELP> and the following screen will be displayed.

PHONE BOOK Help Screen - FIND facility Press any key to return
When prompted enter the data that you wish to find and press return.
Or press return to find the data already specified.
The first address found containing the nominated data will be displayed.
To find successive addresses containing the same data press <RETURN>.
To alter the FIND data, simply type in some new data.

PRINTING THE ADDRESS AND PHONE BOOK

Your Address and Phone Book can be printed out using TIME Writer. To select the word processing system press <F3> from the System Menu. The TIME Writer Main Menu is then displayed on the screen. Press <F6> to select the PRINT (document from disk) option. The system will display the following message:

'Please enter a file name :'

Enter <TBOOK.DOC> and then press <RETURN>. The print options will then be displayed. Use function keys <F1> to <F4> to select the print options. These options allow you to print to the screen, parallel or serial printer or to a disk file. If you are not sure if your printer is a parallel or serial printer, check with your dealer.

When <F11> is pressed, the printing operation will commence. The output is formatted according to the standard format set up for the word processor. To change this format press <F5> from the word processor main menu. For additional information on the word processor refer to Chapter 4.

When the print operation is completed, the following message is displayed:

'End of document - press any key'

To PAUSE the print process press any key. To CONTINUE the printout press any key. To ABORT the print completely, press <CTRL C>. This will stop the print and display the end of document message.

It is recommended that you only use the word processing system to print your address and phone book, as the program expects the file to be in a set format. Use the address and phone book program to enter new entries and to edit existing entries; do not use TIME Writer for these functions.

MAIL MERGE

The Address and Phone Book can also be used for mail merge with the word processor, ie. you can insert addresses into your letter when printing. This facility can save you time and effort, especially when mailing standard letters to different addresses by following these

steps:

1. Press <F8> from the TIME Writer Main Menu to select the mail merge screen.
2. Press <F1> to select mail merge on, and type the filename TBOOK.DOC in response to the prompt.
3. Press <SHIFT F3> to select all addresses to be printed or <F2> for a selective merge.
4. Press <F3> to determine the number of lines in the address - variable or constant.
5. Press <F12> or <ESC> to exit back to the main menu.
6. Press <F1> to create your letter, or <F2> and <SHIFT F3> to load and edit an existing letter.
7. To determine the location and contents of the address you need to reference each address line in the letter. Enter ^1 for the name line, ^2 for the company line, ^3 for first line of address, etc.

For a more detailed explanation of Mail Merge, see Chapter 4.

CHAPTER 4

TIME WRITER (WORD PROCESSING)

TABLE OF CONTENTS

OVERVIEW	4-5
TUTORIAL	4-6
Saving Your First Paragraph.....	4-7
USING BASIC EDITING FUNCTIONS TO CORRECT YOUR TEXT	4-9
Deleting the Character Marked by the Cursor.....	4-9
Inserting and Deleting Words.....	4-9
Typing-over.....	4-9
Inserting a Character.....	4-9
Deleting Left-Character.....	4-9
Deleting Left-Word.....	4-10
Deleting Back to Start of Paragraph.....	4-10
Deleting to End of Paragraph.....	4-10
Erasing a Block (ERASE function).....	4-10
Deleting Up to a Nominated Character in Paragraph.....	4-10
Splitting a Paragraph Using the LF Key.....	4-11
Joining Paragraphs.....	4-11
Recovering Deleted Text (UNDO function).....	4-11
Discarding Changes Made to a Document.....	4-13
TAB-STOP FACILITIES	4-14
Altering the Standard Tab-Stop Interval.....	4-14
Clearing Tab-Stops.....	4-15
Setting Tab-Stops.....	4-15

TIME WRITER

ADVANCED EDITING FUNCTIONS	4-16
Creating and Using Standard Blocks of Text.....	4-16
Extracting and Saving Blocks of Text.....	4-18
Moving Blocks of Text within a Document.....	4-19
Copying Blocks of Text within a Document.....	4-20
Duplicating Paragraphs.....	4-21
Finding Character Strings.....	4-21
Finding and Replacing Character Strings.....	4-22
SPECIAL FACILITIES	4-24
Printing Blocks of Text.....	4-24
Using the Autokey 'Learn' Feature.....	4-25
Changing the Cursor Screen-Line.....	4-26
Viewing a Document.....	4-26
Checking File Names (Directory Display).....	4-27
Deleting Files.....	4-27
FORMATTING YOUR DOCUMENT FOR PRINTING	4-29
Format Options.....	4-30
Setting Form Length (F1-Lines/Page).....	4-30
Setting First Text Line (F2).....	4-31
Setting Last Text Line (F3).....	4-31
Setting Line Spacing (F4).....	4-32
Setting Left Margin (F5).....	4-33
Setting Line Width (F6).....	4-33
Justifying Text (F7).....	4-34
Setting Single Sheet Feed (F8).....	4-35
Setting Tab Column Width (F9).....	4-35
Resetting Tabs (F10).....	4-35
Resetting Format Options (F11).....	4-35
Exiting to Timewriter Menu (F12).....	4-36

THE @ COMMANDS	4-37
Inserting Non-Printing Remarks (@REM).....	4-37
Resetting Parameters (@ RESET).....	4-38
Pause During Print (@PAUSE).....	4-38
Vertical Formatting.....	4-38
Inserting Page Breaks (@NEWPAGE).....	4-39
Setting the Bottom Margin (@BOTMn).....	4-39
Setting the Top Margin (TOPMn).....	4-40
Adding Headers to Document (@HEADn).....	4-40
Adding Footers to Document (@FOOTn).....	4-42
Adding Page Number to Document (# and @PGNOn)....	4-43
Skipping Lines (@LSKIPn).....	4-44
Leaving Space for Illustrations (@PICTUREn).....	4-44
Skipping to a Specified Line (@LINEn).....	4-45
Skipping Pages (PSKIPn).....	4-45
Changing the Page Length (@PLENGTHn).....	4-45
Conditional Page Breaking (@GROUPn @WIDOWn).....	4-45
Horizontal Formatting.....	4-48
Altering the Line Width (@WIDTHn)	4-48
Changing the Line Spacing (@SPACINGn).....	4-48
Centering Text Automatically (@CENTRE).....	4-50
Indenting First Line of a Paragraph (@INDENTFn)...	4-51
Indenting All Lines Except the First (@INDENTSn)...	4-53
Using the Hanging Indent Command ' '.....	4-54
Indenting Headings (@INDENTHn).....	4-55
Ranging Your Text Right (@RIGHTJ).....	4-56
Ranging Your Text Left (@LEFTJ).....	4-57
Justifying Selected Portions of Text (@JUSTIFY)...	4-57

TIME WRITER	
PRINTING YOUR DOCUMENT	4-59
Printing to Screen (F1 - CONSOLE).....	4-60
Printing to Parallel Printer (F2 - PRN).....	4-60
Printing to Serial Printer (F3 - AUX).....	4-61
Printing to Disk File (F4).....	4-61
REFERENCE	4-62
Calling Sequence.....	4-63
Function Keys.....	4-63
Workspace.....	4-64
Files.....	4-66
Critical Errors.....	4-67
Main Menu Functions.....	4-69
EDIT	4-79
The Display.....	4-81
Help Screens.....	4-83
Messages.....	4-85
Markers.....	4-85
Phantom Spaces.....	4-86
MAIL MERGE	4-87
Fixed Length Entries.....	4-87
Variable Length Entries.....	4-87
Mail Merge Control.....	4-90
COMMAND SUMMARY	4-91
Notation.....	4-91
MS-DOS Line Editing.....	4-91
Main Menu Functions.....	4-91
Editing Functions.....	4-95
Control Keys.....	4-97
Format Commands.....	4-98
Underline.....	4-100
Macro Replacement Facility.....	4-101
Formatting Control Characters.....	4-101

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OVERVIEW

This chapter is divided into two sections, "Tutorial" and "Reference". Since there is probably no substitute for 'hands-on' experience in learning word processing, the "Tutorial" section is based on a practical example, which starts with you typing a simple letter. It then leads you through TIME Writer's range of editing facilities and finally covers the system's powerful block manipulation and string search facilities. Following this, you are shown how to format your document to produce exactly the desired appearance when it is ultimately printed out on a printer.

You are therefore strongly advised to follow this example from start to finish on your own Kookaburra so as to experience, first hand, the full range of functions placed at your disposal by TIME Writer. Once you have done this, and then experimented with a few ideas of your own, you'll be surprised how quickly you have acquired the valuable new skills of word processing. (A detailed summary of TIME Writer's commands is provided in the "Reference" section of this chapter).

It is assumed you have already read the first chapter of this manual 'Introduction' and you are therefore familiar with such basic operations as switching your Kookaburra on and off, adjusting screen contrast and brightness, use of the keyboard, etc. If you have not read Chapter 1, you are strongly recommended to do so before proceeding.

TUTORIAL

Our procedure starts with the System Menu. Press the <F3> key to select TIME Writer's main menu, or when in MS-DOS use the filename <MW>.

TIME WRITERS MAIN MENU

Document : no file to use	WRITER 2.0 WORKSPACE	0/60146=EMPTY
F1 : CREATE a new document	F6 : PRINT document from disk	
F2 : LOAD document / sF2 : DIRECTORY	F7 : PRINT document from workspace	
F3 : VIEW / sF3 : EDIT document	F8 : MAIL MERGE options	
F4 : SAVE document / sF4 : CLEAR workspace	F11: DELETE file	
F5 : FORMAT options/ sF5 : MISC options	F12: EXIT to main menu	
NEW LOAD/DIR VIEW/EDIT SAVE/CLR - FORMAT/MISC PRDTSK PRTWS MAIL - . . DEL EXIT		

The letter we have chosen for our example is a simple 2-paragraph document written to the local electricity supply authority about a recent bill. We will name the letter ELECTRIC.BIL to distinguish it from any other documents we might write in the future.

Press the <F1> key and note that the caption

'Please enter a file name :'

appears in the second last line of the display.

Type in the name <ELECTRIC.BIL> and press <RETURN>. If you make an error while typing the name, simply use the <BACKSPACE> key to erase the incorrect characters, and then re-type. This clears the display ready for typing, and places the cursor at the top left-hand corner of the screen. The bottom screen line now contains a summary of editing functions, which you will be using throughout this example.

NOTE:

The purpose of a file name is to identify a document so that you can store it in the Kookaburra's memory and re-call it at will without any danger of confusion with other documents. The file name you choose for each document you write must, therefore, be unique. It may contain up to eight alphabetic or numeric characters in the first part and up to three in the second part (or extension) with a fullstop separating the two parts. You need not specify an extension and, if you do not, the computer automatically appends .DOC. Note also that the fullstop belongs to the extension. Therefore, if you do not want to specify your own extension, do not include the fullstop as part of the name.

SCREEN - EDIT

Dear Sir,

Your records probably show that we have not yet paid our account for the September quarter. This is because we are unable to reconcile your charges with our estimated usage for the period in question.

READ ERASE COPY MOVE -- DELETE INSERT FIND REPLACE -- PRINT ... UNDO EXIT

Type the first paragraph of the letter as indicated above. Note that some deliberate errors have been included, because the next step in our example will be to show how the Kookaburra's editing facilities are used to modify text. When typing, use the keyboard in the same way as a typewriter, but use the <RETURN> key ONLY when a blank line is required, e.g., at the end of a paragraph, DO NOT press <RETURN> at the end of each line - the computer will automatically 'wrap around' the text to the next line. Also, do not worry about any errors you make as they can be corrected using the editing facilities we will demonstrate below.

After typing a number of lines, you will notice that the text begins to 'scroll' upwards, causing the upper lines of your letter to disappear one by one as each new line is typed. Don't panic! Nothing is being lost. In fact you may scroll your text upwards and downwards at will by using the up and down <ARROW> keys.

After completing the first paragraph of your letter, try using the up and down <ARROW> keys - first on their own and then with the <SHIFT> and <CTRL> keys - to get the feel of this function. For information on using the <ARROW> keys, press the <HELP> key.

SAVING YOUR FIRST PARAGRAPH

Let's say that you would now like to stop working on the letter for the time being and store it in the computer's memory until you have time to work on it again. Press <F12> and note that TIME Writer's main menu returns to the screen with the message;

'[EXISTING WORK SPACE NOT SAVED]'

on the second-last line. You will also notice that your file name has now appeared on the top line of the screen as, D:ELECTRIC.BIL. The 'D:' simply specifies the Disk drive that your document will be stored on.

Press <F4> to 'save' your letter in the computer's memory, and the following question will appear

'Do you want to SAVE the workspace as D:ELECTRIC.BIL ?'

TIME WRITER

You can press <N> to change the drive or filename but for this tutorial we will save the file as is. Press <Y> and the message

'Saving ELECTRIC.BIL'

appears briefly on the second-last line, followed by the caption

'FILE SAVED. Warning! No previous backup: new backup not created'

which means a backup copy of your file was not created. You can have a backup copy created automatically through the function <SHIFT F5>, which is described later in this chapter.

Your partially completed document is now safely stored in the Kookaburra's memory, and you may now perform any other functions on the Kookaburra or even switch it off without any danger of losing your letter.

To resume work on your letter, press <F3> to restore TIME Writer's main menu, and then press <F2> (LOAD document). The request

'Please enter a file name :'

now appears in the second-last screen line, inviting you to enter the name of a document you would like to work on. Type in the name of your unfinished letter <ELECTRIC.BIL> and press <RETURN>. The message

'Loading File'

now appears briefly in the second-last screen line, followed by the caption

'File Loaded'

Your file name re-appears in the top line of the display, indicating that your document has now been loaded from the Kookaburra's memory into the Workspace ready for you to work on.

NOTE:

The Workspace is a common work area into which any document can be 'loaded' from the Kookaburra's memory or in which any new document can be created. Once in the Workspace, the document can be called up on the screen for editing or simply for viewing.

Press <SHIFT F3> (i.e., while holding down the <SHIFT> key, press the <F3> key) and your letter re-appears on the screen.

USING BASIC EDITING FUNCTIONS TO CORRECT YOUR TEXT**DELETING THE CHARACTER MARKED BY THE CURSOR**

Use the <ARROW> keys to move the cursor to the first of the three misspelt words in the first line (shoew) and position it over the 'e'. Press <F5> and note that the 'e' disappears and that the text closes up to fill the gap.

INSERTING AND DELETING WORDS

Move the cursor to the first letter of the second misspelt word (pade), and retype the word as <paid>. Now, with the cursor still on the first letter of the original misspelt word, press <SHIFT F5>. Note that 'pade' disappears and that the text closes up to fill the gap. Press the <SPACE> bar to separate the words 'paid' and 'our'.

TYPING-OVER

Move the cursor to the first letter of the third misspelt word (acownte) and press <F6> to switch off the 'insert' function (note that the word 'INSERT' in the bottom screen line changes to 'TYPE'). Now type the correct word <account> and note that it is not inserted between the existing words as before, but actually overwrites the old word. (Switch the 'insert' function back on by pressing <F6> again, and note that 'TYPE' in the bottom screen line changes back to 'INSERT').

INSERTING A CHARACTER

Move the cursor to the word 'quater' in the second line of the paragraph, and position it where the missing 'r' should be, i.e., over the 't'. Now type <r> and note that it appears where it should in the word, and that the rest of the paragraph moves along one space to accommodate the insertion.

DELETING LEFT-CHARACTER

Move the cursor to any position in your letter and press the <BACKSPACE> key. The character to the left of the cursor will be deleted. Now retype in the deleted character to restore the text to its original condition.

DELETING LEFT-WORD

Move the cursor to any position in your letter and press <SHIFT-BACKSPACE>. The word (or part word) to the left of the cursor will be deleted. Now retype the deleted characters (or use the UNDO function - see page 4-14) to restore the original text.

DELETING BACK TO START OF PARAGRAPH

Move the cursor to about the centre of the second line of the paragraph and press <CTRL BACKSPACE>. Everything to the left of the cursor and back to the start of the paragraph will be deleted. Use the UNDO function (see page 4-14) to restore the original text.

DELETING TO END OF PARAGRAPH

Move the cursor to about the centre of the second line of the paragraph and press <SHIFT F2>. Everything from the cursor to the end of the paragraph will be deleted. Use the UNDO function (see page 4-14) to restore the original text.

ERASING A BLOCK (ERASE function)

Press <F2> and note the question

'ERASE from where ? (move cursor and press RETURN)'

appears in the bottom screen line. Move the cursor to any position (eg. to the space preceding the word 'unable' in the second line of the paragraph) and press <RETURN>. A square bracket now appears in this position and the request in the bottom screen line changes to

'ERASE to where ? (move cursor and press RETURN)'

Move the cursor to another position (eg. to the space following the word 'charges') and press <RETURN>. Everything between these two positions will now be erased. Use the UNDO function (see page 4-14) to restore the original text.

DELETING UP TO A NOMINATED CHARACTER IN PARAGRAPH

Position the cursor somewhere near the start of the paragraph (e.g., after the 's' of 'records') and press <CTRL F5>. Now, to delete all text between the cursor position and another character in the paragraph, you can simply press that character. Try pressing <q>, and

note that all text between the cursor and the word 'quarter' disappears. (Use the UNDO function to restore the text). This delete facility offers a powerful means of deleting large chunks of text within a paragraph. For instance, you could insert some distinctive symbol (eg. an asterisk) to mark the end of a piece of text you would like to delete, then move the cursor back to the start of the unwanted portion and perform the <CTRL F5> delete function.

SPLITTING A PARAGRAPH USING THE LF KEY

SCREEN - EDIT using LF key

Dear Sir,

Your records probably show that we have not yet paid our account for the September quarter.

This is because we are unable to reconcile your charges with our estimated usage for the period in question.

READ ERASE COPY MOVE -- DELETE INSERT FIND REPLACE -- PRINT ... UNDO EXIT

Move the cursor to the first letter of the second sentence in the original letter, i.e., position the cursor over the 'T' of the word 'This'. Press the <LF> key and note that the second sentence becomes a new paragraph starting on the line immediately below the cursor line. Press <LF> again and note that a blank line is now inserted between the two new paragraphs as shown above.

What you have done is to insert two 'return' characters into the text just as you would have done with the <RETURN> key if you had typed this text as two separate paragraphs in the first place. (To restore the text to its original state see 'Joining Paragraphs' 4-14).

JOINING PARAGRAPHS

In the example above, position the cursor where the second sentence of the original paragraph used to start (the cursor should still be in this position if you have not moved it since splitting the paragraph). Press the delete key <F5> and note that the blank line between the two paragraphs disappears, and then press <F5> again to merge the two paragraphs into one.

RECOVERING DELETED TEXT (UNDO function)

If, after performing any of the delete or erase functions described above, you change your mind and want to restore all or part of the deleted text, you can invoke the UNDO function using key <F11>. For example, repeat the 'Delete to End of Paragraph' exercise given above and, leaving the cursor where it is, press <SHIFT F11> a number of

times. You will notice that the deleted characters are progressively restored (one per operation of <SHIFT F11>); to quickly restore all characters, hold down the keys and allow the automatic repeat function to take over. Now try the 'Delete Back to Start of Paragraph' example and use <F11> (without SHIFT) to perform the restoration.

SCREEN - EDIT

er quarter. This is because we are unable to reconcile your charges with our estimated usage for the period in question.

Accordingly, we would be glad if you could arrange for our meter to be checked as a first step in verifying our bill.

Yours faithfully,

READ ERASE COPY MOVE -- DELETE INSERT FIND REPLACE -- PRINT ... UNDO EXIT

After correcting the first paragraph of your letter, type the second and final paragraph as shown above. (Press <RETURN> two or three times after 'Yours faithfully,'). Don't worry about the addresses or date at this stage, as we will be adding these later as part of our exercises in demonstrating how standard blocks of text can be created, stored away and used over and over again to avoid time-wasting re-typing and repetition. (See 'Using Standard Blocks of Text' later in this chapter).

Also, do not worry about the appearance of the letter on screen, e.g., words split between lines, etc., as we will later show you how to add print formatting characters to your letter to control the format it takes when being printed out on a printer. (See 'Formatting Your Document for Printing' later in this chapter). Now save your letter by pressing <F12> followed by <F4>.

You will notice that the name of your document (ELECTRIC.BIL) is still displayed at the top left of the screen, and that the 'Workspace' is showing as 0% Full at the top right of the screen. This means that your document, as well as being stored in the Kookaburra's memory, is still occupying the 'Workspace'. The '%' figure indicates the proportion your letter is taking up of the Workspace's total capacity - in this case less than 1%.

To demonstrate this function, press <F12> to restore the System Menu and then press <F3> to return to the TIME Writer. You will notice that your document has now been cleared from the Workspace - see

'No file to use'

at top left of screen and

'Workspace 0/60000=Empty'

top right. Now re-load your document into the Workspace by pressing <F2>, typing the file name and pressing <RETURN>; note that the name re-appears top left with

'Workspace 214/60000= 0 % Full'

top right.

DISCARDING CHANGES MADE TO A DOCUMENT

If you ever wish to discard changes you have made to a document, you can do this easily by not saving the Workspace after exiting from the editing mode. In fact, you can try it now on your example letter.

Press <SHIFT F3> to bring your letter back on screen in the editing mode. Now, place the cursor anywhere you like and type in anything you want. It need not make sense and, preferably, it should appear to ruin your document. Make some changes if you like, and generally destroy your efforts to date.

Now, press <F12> to restore the TIME Writer menu, and then press <F12> again. The question

'Workspace not saved! Save it?'

now appears in the second-last screen line. Answer no to this question by pressing <N>. This destroys the version of your letter that you have just made, leaving the earlier version still intact in the Kookaburra's memory.

To verify this, press <F3> to restore the TIME Writer menu, re-load your letter (<F2> and <filename>) and press <SHIFT F3> to bring it back on screen. As you can see, your letter is now as it was prior to your efforts to spoil it. Now press <F12> to exit from the editing mode and return to the TIME Writer menu.

TAB-STOP FACILITIES

The TIME Writer provides certain standard tab-stop settings, which automatically apply unless you alter them.

These are spaced at 8-character intervals across the screen, in columns 1, 9, 17, 25 . . . etc.

You can use the <TAB> key to step the cursor from one tab-stop to the next, in the direction left-to-right. Or you can use <SHIFT TAB> to move the cursor in the reverse direction.

You can also modify the tab-stop settings to suit yourself by means of the 'Modify FORMAT options' facility invoked by function key <F5> from the TIME Writer menu.

SCREEN - FORMAT

FORMAT Options		press F key to increment, shift F to decrement	
F1 : Lines/Page (1-99)	66	F5 : Left Margin (0-99)	10
F2 : First Text Line	6	F6 : Line Width (1-250)	65
F3 : Last Text Line	60	F7 : Justify Text	NO
F4 : Spacing (1-9)	1	F8 : Single Sheet Feed	NO
		F9 : Column Width	8
		Fx-Rst sFx-Load cFx-Save	
		x=10-TABS x=11-OPTIONS	
		F12: Exit	Col= 1
+-----+-----+-----+-----+-----+-----+			
LINES FIRST LAST SPACE -- LEFTM WIDTH JUST SINGLE -- COLUMN TABS RESET EXIT			

Select the TIME Writer menu and then press key <F5>. This causes a range of formatting options to appear on screen (see above), most of which are only relevant when you come to setting up your document for printing. However, option keys <F9> and <F10> are used in setting up tab-stop positions, as are the left and right <arrow> keys, the <TAB> key and the plus <+> and minus <-> keys.

You will notice that the cursor is positioned at the start of a horizontal line containing uniformly spaced marker pips. This line is known as the 'tab line' and the pips indicate the current tab-stop settings. If you now use the <TAB> key to step the cursor across this line, you will notice the indicator at the right of the line change from 'Col= 1' to 'Col= 9' to 'Col= 17', etc., as the cursor jumps from pip to pip. (To reverse the direction, use <SHIFT TAB>).

ALTERING THE STANDARD TAB-STOP INTERVAL

If you wish to change the tab-stop interval from the standard 'column width' of 8, press key <F9> to increase the width or <SHIFT F9> to decrease it until the associated indicator arrives at the value you want. Now press key <F10> and note that the pips on the tab-line change their positions to reflect the new spacings. (To return to the standard setting, press key <F11> and then <F10>). You should also note that any new settings you make will only last as long as your current session with TIME Writer; if you exit from TIME Writer and

then return, you will find that the standard column width of 8 has returned.

CLEARING TAB-STOP

To clear a tab-stop, move the cursor to the relevant pip on the tab-line, and press the minus <-> key. You will see the pip disappear, indicating that the tab-stop no longer exists.

SETTING TAB-STOP

To set a tab-stop, use the right and left <arrow> keys to move the cursor to the desired position on the tab-line, and press the plus <+> key. You will now see a pip appear, indicating that a tab-stop has been set.

ADVANCED EDITING FUNCTIONS**CREATING AND USING STANDARD BLOCKS OF TEXT**

Much time and effort can be saved by preparing and saving standard blocks of text which you know you will be needing to use many times over in, say, specifications, reports, letters, etc.

The Kookaburra allows such blocks to be stored away under their own individual file names, and then re-called as needed for incorporation into any document you might be preparing. For instance, if there are a number of organisations, companies, individuals, etc., to whom you frequently write letters, you can store an address block for each to save having to look up the address and re-type it every time you write. Each address block would have its own individual file name which, ideally, would include an extension indicating the file type, e.g., '.ADR' standing for address.

Thus, the address for our example letter might be stored under the file name ELECTRIC.ADR, while the addresses of friends might have file names such as PETER.ADR, KATE.ADR, etc.

To demonstrate this facility, we will prepare an address block file for our sample letter, and then add the address to the letter. Our procedure starts with the TIME Writer menu on screen. Press the <F1> key to create a new document. In response to the request

'Please enter a file name :'

(in the second last screen line), type in the name <ELECTRIC.ADR> and press <RETURN>.

SCREEN - EDIT ADDRESS

```
The Manager,
Accounts Department,
Dark Valley Electric Supply Authority,
SUNNY TOPS   N.S.W.   2999
```

```
READ  ERASE COPY MOVE  --  DELETE INSERT FIND REPLACE  --  PRINT ... UNDO EXIT
```

Now type in the address as shown above, using the <RETURN> key at the end of each line. (Before typing the last line of the address, press and release the <LOCK> key; you will find that this gives you capital letters as per the <SHIFT> key function, but leaves the numerals and the fullstops as per the lower case mode. After typing the line, press <LOCK> again to restore the normal mode). Now save the address block by pressing <F12> followed by <F4>.

We can now call up our letter and add the address as follows:

Press the <F2> key, type <ELECTRIC.BIL>, press <RETURN>, and then press <SHIFT F3>. Your letter will now be on screen with the cursor at the top left-hand corner over the 'D' of the word 'Dear'. (If the cursor is not in this position, use the <arrow> keys to put it there).

Now press the <LF> key twice. This moves your letter down and inserts a blank line between 'Dear Sir' and the new cursor position.

If this is where you would like the last line of the address to be positioned, leave the cursor where it is. Otherwise, use the <LF> key to insert more blank lines - if you insert too many, use the <F5> key to delete the unwanted ones.

With the cursor positioned where you want it (say one line space above 'Dear Sir'), press the <F1> key. You will now see

'Please enter a file name :'

appear at the bottom of the screen. Type in the name <ELECTRIC.ADR> and press the <RETURN> key.

SCREEN - EDIT READ FUNCTION

```
The Manager,
Accounts Department,
Dark Valley Electric Supply Authority,
SUNNY TOPS   N.S.W.      2999
```

```
Dear Sir,
File Loaded
```

```
READ  ERASE COPY MOVE  --  DELETE INSERT FIND REPLACE  --  PRINT ... UNDO EXIT
```

Magic! The address appears at the top of your letter as shown above. Note also, the message 'File Loaded' in the second last line.

Adding the address in this manner may not, at first, seem like much of a saving. But when you consider that the same method can be used to store and re-use large blocks of text (running into many pages if required), it's easy to see just what a time saver this facility can be.

All that remains now is to add the date to your letter. To do this, first use the <arrow> and <LF> keys to place the cursor a few lines above the address block, and then type in the date as shown below. (There is no need to type it at the right-hand side of the screen, as this can be achieved by adding the appropriate print formatting characters as we will later describe).

SCREEN - EDIT DATE

16 January, 1984

The Manager,
Accounts Department,
Dark Valley Electric Supply Authority,
SUNNY TOPS N.S.W. 2999
READ ERASE COPY MOVE -- DELETE INSERT FIND REPLACE -- PRINT ... UNDO EXIT

You may now save your letter, as before, by pressing <F12> followed by <F4>.

EXTRACTING AND SAVING BLOCKS OF TEXT

If while writing a document on the Kookaburra, you realise that a certain block of text may be useful in preparing future documents, e.g., certain clauses of a specification or contract document, etc., you can save these as you go by 'writing' them to other files.

To show how this is done, we will re-call our example letter and 'write' the second paragraph to another file.

Assuming that your letter is still in the Workspace, press <SHIFT F3> to bring it on screen in the editing mode.

Now, to select the 'write' function, press <SHIFT F1> and note that the question

'SAVE from where ? (move cursor and press RETURN)'

appears in the bottom screen line.

In response to this, use the <arrow> keys to move the cursor to the start of the block of text you want to save, i.e., to the first character of the second paragraph, and then press <RETURN>.

A square-bracket marker now appears in this position, and the question

'SAVE upto where ? (move cursor and press RETURN)'

appears in the bottom screen line.

Move the cursor to the end of the paragraph (first position past the full stop) and press <RETURN>. The request

'Please enter a file name :'

now appears in the bottom screen line.

In response to this, type in any file name you think suitable, e.g.,

<METER.CHK>, and press <RETURN>. This causes the Kookaburra to create a new file called METER.CHK and to store in that file the text block you selected. (The caption

'File saved'

appears in the second-last screen line to verify that the function has taken place).

To check for yourself, exit from the edit mode by pressing <F12>, and then press <F2>. If the question

'Workspace not saved! Save it?'

now appears, answer 'no' by pressing <N> as there is no need to save Workspace that you have not changed. Now type in the file name <METER.CHK> and press <RETURN> to load this file into the Workspace.

If you now view the document by pressing <F3>, you will see the second paragraph of your letter appear on screen.

NOTE:

If after marking the block of text you wish to save, you specify a file name that already exists, the Kookaburra responds with the warning

'File exists - overwrite it?'

in the bottom screen line. If you answer yes to this question (by typing <Y>), the original contents of the file will be lost and replaced by the block you have marked. (A no answer, i.e., <N> key, cancels the function).

MOVING BLOCKS OF TEXT WITHIN A DOCUMENT

When writing or editing a document, you may sometimes want to move a certain paragraph or block of text from one position to another.

To show how this is done on the Kookaburra, we will re-call our example letter and transpose the first and second paragraphs by moving the second paragraph to a new position above the first.

If you are still viewing METER.CHK, exit from this mode (by pressing <F12>) and then load your letter (ELECTRIC.BIL) using the <F2> function key as previously described. Now press <SHIFT F3> to bring the letter on screen in the editing mode. Select the 'block move' function by pressing <F4>, and note that the question

'MOVE from where ? (move cursor and press RETURN)'

appears in the bottom screen line.

TIME WRITER

In response to this, use the <arrow> keys to move the cursor to the start of the block of text you want to move, i.e., to the first character of the second paragraph, and then press <RETURN>. A square-bracket marker now appears in this position, and the question

'MOVE upto where ? (move cursor and press RETURN)'

appears in the bottom screen line.

Move the cursor to the end of the paragraph (first position past the full stop) and press <RETURN>.

The paragraph so marked now disappears, and the request

'MOVE to where ? (move cursor and press RETURN)'

appears in the bottom screen line.

Move the cursor to the start of the blank line above the first paragraph (i.e., below 'Dear Sir') and press <RETURN>. You will now see the marked paragraph appear above the first paragraph. (In fact, you could make as many copies of this marked paragraph as you wanted, simply by moving the cursor to the desired position and pressing <SHIFT F4>. Try this if you like, by positioning the cursor somewhere below 'Yours faithfully,' and pressing <SHIFT F4> (number of times).

If you wished, you could now use the <LF> key to insert blank lines above and below the originally moved paragraph. However, since the letter no longer makes any sense, it is probably preferable in this case simply to discard this new version. To do this, press <F12> twice and then answer <n> (for no) to the question

'Workspace not saved! Save it?'

This destroys the jumbled version of your letter and returns the screen to the System Menu.

You can now re-select the TIME Writer, re-load your letter and select the editing mode to verify that the latest version (prior to the block move) appears on screen.

COPYING BLOCKS OF TEXT WITHIN A DOCUMENT

This facility allows you to duplicate any block of text within a document. To demonstrate this, we will copy the second paragraph of our letter and place this copy in another position - say below 'Yours faithfully' - without moving the original paragraph. We start with the letter on screen in the editing mode.

Select the 'block copy' function by pressing <F3>, and note that the question

'COPY from where ? (move cursor and press RETURN)'

appears in the bottom screen line.

In response to this, use the <arrow> keys to move the cursor to the start of the block of text you want to move, i.e., to the first character of the second paragraph, and then press <RETURN>. A square-bracket marker now appears in this position, and the question

'COPY upto where ? (move cursor and press RETURN)'

appears in the bottom screen line.

Move the cursor to the end of the paragraph (first position past the full stop) and press <RETURN>. The request

'COPY to where ? (move cursor and press RETURN)'

appears in the bottom screen line.

Move the cursor to a position a few lines below 'Yours faithfully,' and press <RETURN>. You will now see a copy of the marked paragraph appear in this position. You can now make as many additional copies of this paragraph as you wish simply by moving the cursor to the desired position and pressing <SHIFT F4>. (This <SHIFT F4> function can be used after any block move or block copy operation to insert additional copies of the moved or copied block).

DUPLICATING PARAGRAPHS

This is another copy function you can try. If you place the cursor anywhere within a paragraph and then press <SHIFT F3>, a copy of that paragraph will appear immediately below the original. (This can be useful if you want to edit a paragraph, while keeping the original intact and in view. After the edit, the preferred version can then be kept and the other deleted).

FINDING CHARACTER STRINGS

Using this function you can quickly find every occurrence of a nominated string of characters within a document. The string may contain any combination of numerals, alphabetic characters, symbols or spaces, and may be of any length. Moreover, you may nominate whether the search should take place in a forward or backward direction from the cursor position.

To demonstrate this facility, we will again use our example letter starting, as usual, with the letter on screen in the editing mode. Position the cursor at the point from which you want the search to

TIME WRITER

start, e.g., at the beginning of the file.

Press <F7> to initiate the 'find' function, and note that the question

'FIND which string ? :'

appears in the bottom screen line.

Type in the string of characters you wish to find, e.g., type <our>, and then press <RETURN>. This produces the question

'FIND Forward or Backwards ?'

which allows you to select the direction of the search - type <f> (for forward) or (for backwards). In this case, since we put the cursor at the start of the document, type <f>.

The cursor will now move to the first occurrence of the nominated string and position itself on the first character of that string; in this example, you will therefore see the cursor move to the 'o' in 'Your' at the start of the first sentence in the first paragraph.

To find the next occurrence of the string, press <SHIFT F7>, and note that the cursor moves along the line to the word 'our'.

To find all subsequent occurrences, continue to use <SHIFT F7> after each find. When there are no more occurrences of the string in the document, the message

'Not Found'

appears in the second last screen line.

You will see from the above that the computer finds every occurrence of a nominated string, regardless of whether it is embedded in a word or on its own. To find only those occurrences of a whole word string, you must include leading and trailing 'space' characters when nominating the string to be found, i.e., you must type <<space>our<space>>, where <space> indicates use of the space-bar. If you now try this as an exercise, you will see that the computer ignores all occurrences of the string in the word 'your', and finds only the whole words.

Finally, you might now like to repeat one of the above exercises, starting with the cursor at the end of the document and trying the backwards search function.

FINDING AND REPLACING CHARACTER STRINGS

This is an extension of the 'find' function that allows you not only to find all occurrences of a nominated character string, but also to

replace the string with another nominated string.

Starting again with our letter on screen, in the editing mode, position the cursor at the point from which you want the search to start, e.g., at the beginning of the first paragraph.

Now press <F8> to select the 'find and replace' function, and note that the question

'REPLACE which string ? :'

appears in the bottom screen line. Type in the string of characters you wish to replace, e.g., type <we>, and then press <RETURN>. This produces the question

'REPLACE Forward or Backwards ?'

which allows you to select the direction of the search - type <f> (for forward) or (for backwards). In this case, since we put the cursor at the start of the document, type <f>.

The question

'REPLACE with which string ? :'

now appears in the bottom screen line. Respond by typing in your replacement string, e.g., <my partner and I>, and then press <RETURN>.

The cursor will now move to the first occurrence of 'we', replace it with 'my partner and I' and stop immediately after the replacement string.

To continue the operation, press <SHIFT F8>, and note that the cursor moves to the next line and performs the replacement once again.

To replace all subsequent occurrences of the nominated string, continue to use <SHIFT F8> after each operation until the message

'Not Found'

appears. This means that there are no more occurrences of the string in the document. (To discard the changes just made and restore your letter to its original form, press <F12> twice and then answer <n>).

UNDERLINING TEXT

TIME Writer allows you to underline headings, or any part of your text you wish to emphasise. Two control characters are used to perform this function - <CTRL N> to start underlining and <CTRL O> to stop underlining.

Place the cursor at the position you wish the underlining to begin and

TIME WRITER

press <SHIFT F6> the <CTRL N>. Notice that no adjustment has been made to your text, but if you now press <CTRL O> you will see a "N" where you requested the underlining to begin eg:

NheadingO<

which will result in

heading.

Now press <CTRL O> to return to normal editing mode and move the cursor to the position you wish the underlining to cease, press <SHIFT F6> then <CTRL O>. An "O" will be inserted at this position but again you will not see it unless you press <CTRL O> to display the control characters.

If you do not stop the underlining using <CTRL O> it will automatically stop at the end of the paragraph.

SPECIAL FACILITIES

PRINTING BLOCKS OF TEXT

This facility allows you to print selected parts of your document (or the whole document) while you are actually working on it.

To take advantage of this feature you must have a printer connected to your Kookaburra, and you should familiarise yourself with the later sections of this manual entitled 'Formatting Your Document for Printing' and 'Printing Your Document'.

Starting with your document on screen, in the editing mode, press <F9> to select the 'print' function, and note that the message

'PRINT from where ? (move cursor and press RETURN)'

appears in the bottom screen line.

In response to this, move the cursor on to the first character of the block of text you want to print, and then press <RETURN>. A square-bracket marker now appears in this position, and the question

'PRINT upto where ? (move cursor and press RETURN)'

appears in the bottom screen line.

Move the cursor to the end of the block you want to print, and press <RETURN>. This brings a new menu on screen, called the 'PRINT formatter', which you can use to select the print function you desire

(see 'Printing Your Document' later in this chapter).

At this time press <F11> (START print to screen) and observe the block of text which you have just defined, appear on the screen. When the print operation has finished ('End of Document - press any key' is displayed on the bottom line), press any key followed by press <F12> to exit from the PRINT formatter screen and your document automatically returns to the main menu.

NOTE:

If you use <SHIFT F9> (rather than just <F9>) to select the above print function, any '@' print formatting commands that might be included in the selected block, are also reproduced in the printout - see 'Formatting Your Document for Printing - The @ Commands'. These commands are not usually printed, but are used to control the format of the printed document.

USING THE AUTOKEY 'LEARN' FEATURE

This feature allows you to 'teach' the TIME Writer a series of keystrokes, which you can then re-call at any future time by means of a single keystroke. The learning procedure is started by <CTRL F1>, stopped by <CTRL F2> and re-called by <CTRL F3>.

Suppose there is a word or phrase you know you will be using frequently while writing a document. You can teach the appropriate keystrokes to your Kookaburra before starting the document, and thereafter insert the 'learnt' word or phrase into your document whenever you please simply by pressing <CTRL F3>.

You must perform the 'teaching' process while in the edit mode. But, once you have done this, the learnt keystrokes will be remembered by the system for as long as the TIME Writer function is in force. If you exit from TIME Writer (back to the System Menu, say), the learnt sequence will be lost.

To try this facility, start with your example letter on screen in the editing mode (or use any other document you may have created), and press <CTRL F1>. The message

'LEARNING of KEYS is ACTIVATED'

appears in the second-last screen line. Now type any word or phrase you desire and, when finished, press <CTRL F2>. This produces the message

'LEARNING of KEYS is TERMINATED'

in the second- last screen line. Now, move the cursor to any convenient position, press <CTRL F3> and note that the 'learned' word or phrase appears on screen at the cursor position. (This will occur

TIME WRITER

each time <CTRL F3> is pressed or until a new series of keystrokes is substituted).

CHANGING THE CURSOR SCREEN-LINE

When typing the first paragraph of your letter, you would have noticed that for the first few lines the cursor automatically moved down the screen, line-by-line, as each new line was completed. Then, upon reaching the fourth line, its downward movement stopped, and instead, the completed lines began scrolling upwards. The line in which the cursor became stationed is known as the 'cursor screen line' and, unless altered, is always fixed by the system as the fourth screen line.

To review this effect, press <SHIFT F3> to bring your letter back on screen in the editing mode.

Now, start pressing the <down arrow> key and note that the cursor only moves down as far as the fourth screen line before your letter begins scrolling upwards. Continue pressing the <down arrow> key until the last line of the letter reaches the cursor screen line, and then reverse the process by pressing the <up arrow> key. Your letter will now start scrolling downwards, still leaving the cursor stationed in the fourth screen line.

If you would prefer the cursor screen line to be different from that supplied by the system, you can change it using the 'scroll-lock' facility.

To engage the scroll-lock facility, press (and release) <F10> and note that you can now move the cursor up and down the screen into any desired screen line. Now, with the cursor located in the desired line, press <F10> again to release the scroll-lock mode. The line in which the cursor is now located becomes its new cursor screen line.

Regardless of what the cursor screen line is, you can set it to be the third screen line at any time you like simply by pressing <SHIFT F10>; this is known as 'centering the cursor'.

VIEWING A DOCUMENT

If you simply want to view a document (as distinct from working on it) you can use the 'VIEW' function given by the <F3> key. Try pressing this key now and you will see your letter return to the screen (if it does not, press the <up arrow> key a number of times to bring your text into view).

In this mode, you may use the <arrow> keys to scroll your text up and down as much as you wish, but you cannot perform any typing or editing

functions. If you try, the message

'File selected for viewing only'

will appear on screen to remind you that you cannot edit the document in this mode. Press <F12> to restore the TIME Writer's menu, and note that the message

'[EXISTING WORKSPACE NOT SAVED]'

does not occur. (Since we have not made any changes to the document, the copy already held in the Kookaburra's memory is still valid and we therefore do not need to update it by saving the Workspace).

CHECKING FILE NAMES (DIRECTORY DISPLAY)

This function allows you to display a listing of all files stored in Kookaburra's memory. This listing is called a 'directory', and applies to that part of the memory area being used to store the documents you create using the TIME Writer.

Therefore, should you forget the name of a document you want to work on, or if you simply want to check on the range of files you have created and stored, you can do this quickly and easily by calling up the directory display.

Starting at the TIME Writer main menu, just press <SHIFT F2> and a list of file names will appear on screen. Some you will not recognise (these are system files associated with the Kookaburra's operating programs), but others you will recognise as your own creations.

Certainly, you will see D:ELECTRIC.BIL and D:ELECTRIC.ADR as well as another one called D:ELECTRIC.BAK. This last one is a 'backup' file, which the system creates automatically each time you perform a 'save' operation. (For more information on backup files, refer to the section on 'Error Messages' at the end of this chapter).

When you have finished looking at the directory, press any key to return to the TIME Writer main menu.

DELETING FILES

If at some stage you decide you have no further use for certain files, you can delete them using the 'DELETE file' function. You can try this facility by deleting, say, the backup file mentioned above - ELECTRIC.BAK.

Starting at the TIME Writer main menu, press <F11> and, in response to the request

TIME WRITER

'Please enter a file name :',

type in <electric.bak> and press <RETURN>.

You will see that the system now gives you a last chance to change your mind with the message

'Do you want to delete D:ELECTRIC.BAK ?'

This allows you to make certain you have not inadvertently specified a file you want to keep; if you pressed <n> (for no) at this point, the operation would be aborted and no file would be deleted. However, press <y> (for yes) and note that the screen now returns to the TIME Writer main menu with the message 'File Deleted' in the second last screen line.

You can now check that the file has gone by selecting the directory display (<SHIFT F2>). Do this and note that D:ELECTRIC.BAK is no longer listed.

FORMATTING YOUR DOCUMENT FOR PRINTING

After you have typed and edited a document, the next step is to format it so that, when printed, the document looks just the way you want it to.

For instance, the text must be properly positioned on the page in both the vertical and horizontal directions, and the number of lines per page and line width must be set to suit the size of paper you intend using. This means specifying top, bottom and left margins and, perhaps, line spacing.

All the above parameters, and some others as well, are set using the formatting options given by the <F5> function key (Modify FORMAT options) on the TIME Writer's main menu.

In addition, there are print formatting commands that you can embed in your document during the writing and editing phases to control such things as page numbering, line indenting, headers, footers and so on. These are the @ commands - so called because they all begin with the @ symbol. And, although they can be seen on screen when you add them to your text, they are not themselves printed.

TIME WRITER

THE F5 - FORMAT OPTIONS

Select the TIME Writer menu and then press key <F5>. This causes a range of formatting options to appear on screen (see below) which, with the exception of the tab-stop functions <F9>/<F10> described earlier, are used to format your document for printing.

SCREEN - FORMAT OPTIONS

FORMAT Options		press F key to increment, shift F to decrement	
F1 : Lines/Page (1-99)	66	F5 : Left Margin (0-99)	10
F2 : First Text Line	6	F6 : Line Width (1-250)	65
F3 : Last Text Line	60	F7 : Justify Text	NO
F4 : Spacing (1-9)	1	F8 : Single Sheet Feed	NO
		F12: Exit	Col= 1
+-----+-----+-----+-----+-----+-----+-----+-----+			
LINES FIRST LAST SPACE -- LEFTM WIDTH JUST SINGLE -- COLUMN TABS RESET EXIT			

You will notice that each option has a value or status noted to its right, e.g., '66' for Lines/Page, or 'NO' for Justify Text, etc. These always indicate the current setting of the options and, at this stage, show the standard settings supplied by the system, i.e., the system 'defaults' to a standard page format in the absence of any other format you might set. Where applicable, the range of values available for the option is also quoted in brackets, e.g., (1-99) for Lines/Page, etc.

To change the options to your desired format, use the function key named to the left of each option. In the case of numerical options, use the key on its own to increase (increment) the value one step at a time, or use it with <SHIFT> to decrease (decrement) the value. For <F7> and <F8>, use the keys with <SHIFT> to change to the 'YES' status, and then without <SHIFT> to return to 'NO'.

If after setting up some values, you decide instead to return to the system 'default' settings, just press <F11> (Reset) and the standard values will return. The purpose and effect of each option is explained below.

SETTING FORM LENGTH (F1-LINES/PAGE)

This value must be set to suit the length of sheet you intend using in the printer. The value is expressed in numbers of lines, and is based on the standard typewriter spacing of 6 lines per inch.

Thus, if you intend using paper 11 inches long, leave the standard setting as it is at the default setting of 66 lines/page. Some other common settings would be 60 for 10-inch paper, or 70 for A4 (11.7-inch) paper.

The purpose of this setting is to ensure that, when printing multi-page documents, the printer starts each new page at the same relative point.

For example, if you set the first sheet of paper in your printer so that the first text line was printed, say, one inch from the top of the sheet then, provided the Lines/Page value was correctly set, the first text line on each subsequent page would also start one inch from the top.

SETTING FIRST TEXT LINE (F2)

Using this option, you can choose how far down the page you would like the first line of text to be printed.

Say, for instance, you fed the first sheet into the printer so that the print head came half an inch down from the top. If you then set 'First Text Line' to a value of 1, your first text line would be printed half an inch from the top of the page, i.e., at line 1, as defined by the initial position of the print head.

If, however, you set 'First Text Line' at 3, the printer would advance three lines (i.e., half an inch) before printing the first line of text - thus putting the first text line one inch from the top.

Similarly, the standard value of '6' would cause printing of the first text line at one and a half inches from the top.

SETTING LAST TEXT LINE (F3)

Using this option, you can choose where you would like the text to finish on each page, i.e., you can set the bottom margin.

Say, for instance, you are using A4 paper, and you have positioned the first sheet in the printer so that the print head is one inch from the top of the sheet, i.e., you have set Line No.1 one inch from the top of the sheet. Also, you have set 'Lines/Page' at 70 (for A4), and 'First Text Line' at 3. The situation is now as shown in Figure 4-1.

You can see that the bottom edge of the sheet is located at about Line No.64. Therefore, by counting back at the rate of six lines per inch from this point, you can determine the line number on which the bottom line of text must occur to produce the bottom margin you desire. For example, if you wanted a one and a half inch bottom margin, you would count back nine lines, giving a value of 55 for the 'Last Text Line' setting. (You may not, of course, set the 'Last Text Line' at a lower value than what you have set for 'First Text Line').

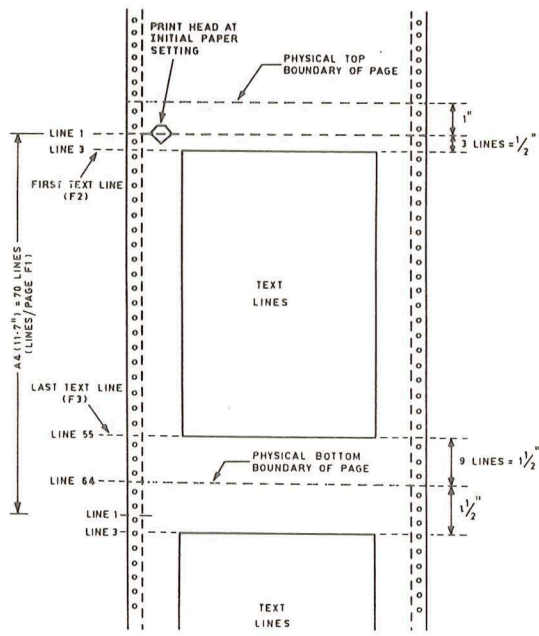


Figure 4-1 Setting Top and Bottom Margins

Note also that in setting the first and last text lines, you are also determining the number of lines to be printed per page. In this example, there would be a total of 53 lines printed (Lines 3 to 55) with top and bottom margins of one and a half inches each.

SETTING LINE SPACING (F4)

With this option, you can set the line spacing of your printout for single-space, double-space, triple-space, etc., up to a factor of nine. Line spacing, however, still remains fixed at the typewriter standard of six lines per inch.

For example, if you left the setting at the system 'default' value of '1', your printout would be single-spaced. However if you set it to 9, your text would be printed out on every ninth line, i.e., there would be a gap of one and a half inches between each line.

SETTING LEFT MARGIN (F5)

This option allows you to increase the width of the left margin by any desired amount over and above the basic physical set-up width.

For instance, you might decide to set up your printer so that the minimum left-hand margin is half an inch, i.e., you have positioned the paper in the printer in such a way that the left-most possible position for a character to be printed is half an inch from the left-hand edge of paper.

Now, using the 'Left Margin' setting, you can increase this margin, as required, to suit whatever document you may be printing.

For example, if you wanted a left margin of, say, one and a half inches, you would set 'Left Margin' for the number of character spaces (i.e., columns) required to make up the extra inch. Thus, if you were using a 12-pitch typeface (12 characters per inch), you would set 'Left Margin' to 12. Similarly, you would set it to 10 for a 10-pitch typeface, etc. Naturally, if you were satisfied with a half-inch margin for a given document, you would set the 'Left Margin' to zero.

SETTING LINE WIDTH (F6)

This option allows you to select the maximum number of characters you want to be printed per line. Therefore, you can use this setting in conjunction with the 'Left Margin' option, to lay down the minimum width of the right-hand margin. For example, if you wanted inch and a half margins both left and right, you would first set up the left-hand margin as above and then calculate the line width required to give the same size right-hand margin. In the case of A4 paper (width about 8.25 inches), the line width would need to be about 5.25 inches. Thus, if you were using a 12-pitch typeface, you would set 'Line Width' to 63 (5.25×12). Similarly, the setting you would need for a 10-pitch typeface would be about 52 (5.25×10).

Figure 4-2 shows what your example letter would look like when printed out with a 'Line Width' setting of 63.

PRINTOUT

16 January, 1984

The Manager,
Accounts Department,
Dark Valley Electric Supply Authority,
SUNNY TOPS N.S.W. 2999

Dear Sir,

Your records probably show that we have not yet paid our account for the September quarter. This is because we are unable to reconcile your charges with our estimated usage for the period in question.

Accordingly, we would be glad if you could arrange for our meter to be checked as a first step in verifying our bill.

Yours faithfully,

**Figure 4-2 Example Letter Printout with
Line Width 63 and NO Justify**

JUSTIFYING TEXT (F7)

With this option you can give your document a straight (i.e., justified) right-hand margin by selecting YES (<SHIFT F7>).

For example, Figure 4-3 shows how your example letter would be printed out with a 'Line Width' of 63 and 'Justify Text' set to YES. (Figure 4-2 shows how it looks with 'Justify Text' set to NO).

16 January, 1984

The Manager,
Accounts Department,
Dark Valley Electric Supply Authority,
SUNNY TOPS N.S.W. 2999

Dear Sir,

Your records probably show that we have not yet paid our account for the September quarter. This is because we are unable to reconcile your charges with our estimated usage for the period in question.

Accordingly, we would be glad if you could arrange for our meter to be checked as a first step in verifying our bill.

Yours faithfully,

Figure 4-3 Example Letter Printout with Right Margin Justified

SETTING SINGLE SHEET FEED (F8)

If you are using continuous stationery in your printer, or if you are printing your document on single sheets fed by an automatic sheet feeder, you would normally leave this option set to NO. Set it to YES (using <SHIFT F8>) only if you want the printer to stop at the end of each page to allow you, say, to insert each new sheet of paper manually.

SETTING TAB COLUMN WIDTH (F9)

See 'Tab-Stop Facilities' earlier.

RESETTING TABS (F10)

See 'Tab-Stop Facilities' earlier.

RESETTING FORMAT OPTIONS (F11)

TIME WRITER

Returns all settings to the system supplied
'default' values.

EXITING TO TIME WRITER MENU (F12)

Returns the screen to the TIME Writer menu.

THE @ COMMANDS

When inserting @ commands in your document, you must start them at the beginning of a paragraph (i.e., immediately following use of the <RETURN> key) and they must be terminated by use of the <RETURN> key. Otherwise, they will not be recognised or acted upon and, worse, they will appear in your printed document. (When typing the letters following the @, you may use upper or lower case freely).

INSERTING NON-PRINTING REMARKS - @REM

This command allows you to insert into your document remarks that will not appear when the document is printed. The remarks may be of any length, and you must terminate them by pressing <RETURN>.

Figure 4-4 demonstrates this function by showing how a remark inserted between the paragraphs of your example letter does not appear in the printout. The printout shown is for a line width of 63, and a justified right-hand edge.

SCREEN - USE OF @REM

er quarter. This is because we are unable to reconcile your charges with our estimated usage for the period in question.

@REM According to my calculations, we haven't used more than about 6000kWh (max) yet they've charged us for about 9000kWh

Accordingly, we would be glad if you could arrange for our meter to be checked as a first step in verifying our bill.

READ ERASE COPY MOVE -- DELETE INSERT FIND REPLACE -- PRINT ... UNDO EXIT

16 January, 1984

The Manager,
Accounts Department,
Dark Valley Electric Supply Authority,
SUNNY TOPS N.S.W. 2999

Dear Sir,

Your records probably show that we have not yet paid our account for the September quarter. This is because we are unable to reconcile your charges with our estimated usage for the period in question.

Accordingly, we would be glad if you could arrange for our meter to be checked as a first step in verifying our bill.

Yours faithfully,

Figure 4-4 The Non-Printing Remark

RESETTING PARAMETERS - @RESET

This command cancels (resets to the default) any parameters which may have been set by any of the following @ commands.

PAUSE DURING PRINT - @PAUSE

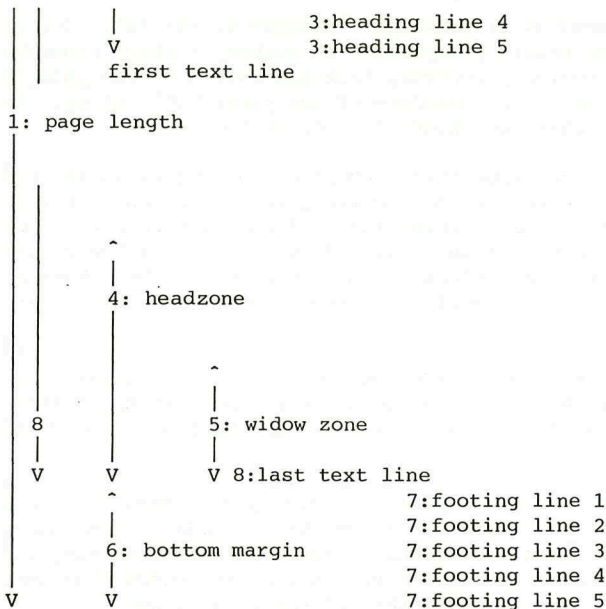
Should you want the printer to pause at various points while printing your document, e.g., to allow you to change typefaces, etc., you can insert the @PAUSE commands at the desired points. You may also place comments or prompts that will be displayed on your screen e.g

'@PAUSE.....Change font in printer.....'

The printer will then stop each time it encounters the command, display your prompt or comment, if any and will not restart printing until you press a key (any key) on the Kookaburra's keyboard.

VERTICAL FORMATTING

^	^	^	3:heading line 1
			3:heading line 2
		2:top margin	3:heading line 3



1: <F1/@PLENGTH>	Page length
2: <@TOPM 5>	Top margin
3: <@HEAD1>	Heading line 1 (heading lines)
4: <@HEADZONE 10>	Heading break zone
5: <@WIDOW 5>	Soft break or widow zone
6: <@BOTM 5>	Bottom margin
7: <@FOOT1>	Footing line 1 (footing lines)

INSERTING PAGE BREAKS - @NEWPAGE

When this command is inserted into a document, it causes the printer to start a new page at the point of insertion.

For example, if you inserted the command between the first and second paragraphs of your example letter, the printer would print everything up to the end of the first paragraph on one page, and then start a new page for the remainder of the letter.

SETTING THE BOTTOM MARGIN - @BOTMn

With this command you can set whatever bottom margin you want irrespective of the current setting of 'Last Text Line' in the 'F5-Format options'.

TIME WRITER

To do this, type the command as shown but, instead of the 'n', insert the depth of margin you require, expressed in number of lines from the bottom of the page. Remember, however, that the bottom of the page is not usually the actual physical boundary of the paper but, rather, the point on the next page where the Lines/Page count ends.

You can probably best appreciate this concept by looking back to the example of Figure 4-1. Here you can see that, as far as the printer is concerned, a page is measured from Line 1 of one page to Line 1 of the next - in this example a depth of 70 lines. So, although the bottom margin is about nine lines deep taken from the physical boundary of the paper, it is actually 15 lines deep measured back from Line No.70.

Thus, if you wanted to use the @BOTMn command to increase the size of this margin by, say, five lines, you would insert the command @BOTM20. Similarly, if you wanted to reduce the margin by five lines, you would insert the command @BOTM10.

The command is effective from the point at which you insert it, and remains in effect until cancelled by a @RESET command. In other words, you can insert @BOTMn and @RESET commands as needed to vary the format of selected parts of your document. After the @RESET command, the format returns to that set up by the 'F5-Format options'.

SETTING THE TOP MARGIN - @TOPMn

With this command you can set whatever top margin you want irrespective of the current setting of 'First Text Line' in the 'F5-Format options'.

To do this, type the command as shown but, instead of the 'n', insert the line number on which you want the first line of text to be printed. Remember, that Line No.1 is defined by the initial location of the print head on the paper as shown in the example of Figure 4-1. In that example, for instance, the command @TOPM6 would produce a top margin two inches deep - one inch given by the initial setting of the paper in the printer, and the other inch by the six lines specified in the command.

The command is effective from the point at which you insert it, and remains in effect until cancelled by a @RESET command. In other words, you can insert @TOPMn and @RESET commands as needed to vary the format of selected parts of your document. After the @RESET command, the format returns to that set up by the 'F5-Format options'.

ADDING HEADERS TO DOCUMENT - @HEADn

With this command you can specify lines of text you would like printed within the top margin area on every page of your document. These are called 'headers', and you need only type them once on the first page of your document to cause printing on the top of every page.

To do this, type the command as shown but, instead of the 'n', insert the line number on which you want the header to be printed. Then, on the same line, type the text exactly as you want it to appear. When positioning it, however, type it six character spaces to the right of where you want it to appear to allow for the six non-printing characters in the actual '@' command. (You would, of course, apply a 7-character displacement if the command had seven characters due to a 2-digit 'n' value).

You may specify as many headers as you like, but remember that your 'n' values must always be less than the line number you have specified for the first line of text, i.e., the headers must always occur within the top margin area.

If you want the text of a header to change at some point within a document, you can insert another command with the same 'n' value at the required point and specify the new text. The new text will then replace the old from that point on.

Figure 4-5 shows the effect of adding some header lines to our example letter. If the letter were a multi-page document, the headers shown would be printed out on every page.

SCREEN - USING @TOPMn AND @HEADn AND @BOTMn

```
@topm10
@head2THIS
@head3   is the
@head4           EXAMPLE
@head6           LETTER                               Ref: ABC123
16 January, 1984
.
READ  ERASE COPY MOVE  --  DELETE INSERT FIND REPLACE  --  PRINT ... UNDO EXIT
```


PRINTOUT

THIS
is the
EXAMPLE

LETTER

Ref: ABC123

16 January, 1984

The Manager,
Accounts Department,
Dark Valley Electric Supply Authority,
SUNNY TOPS N.S.W. 2999

Dear Sir,

Your records probably show that we have not yet paid our account for the September quarter. This is because we are unable to reconcile your charges with our estimated usage for the period in question.

Accordingly, we would be glad if you could arrange for our meter to be checked as a first step in verifying our bill.

Yours faithfully,

Figure 4-5 Headers

ADDING FOOTERS TO DOCUMENT - @FOOTn

With this command you can specify lines of text you would like printed within the bottom margin area on every page of your document. These are called 'footers', and you need only type them once on the first page of your document to cause printing at the foot of every page.

To do this, type the command as shown but, instead of the 'n', insert the position you require for the footer, expressed in number of lines from the bottom of the page. Remember, however, that the bottom of the page is not usually the actual physical boundary of the paper but, rather, the point on the next page where the Lines/Page count ends. (Refer back to the @BOTMn command for an explanation of this concept). Set the bottom margin to 15 by typing <@botm15> as shown in the screen below.

After typing the command, you can now add (on the same line) the text you require for the footer. Type it to the right of where you want it to appear by an amount equal to the number of characters in the '@' command, i.e., 6 or 7 characters.

You may specify as many footers as you like, but remember that your 'n' values must always be less than the difference between the 'Lines/Page' and 'Last Text Line' values held in the 'F5-Format options', i.e., the footers must always occur within the bottom margin area.

If you want the text of a footer to change at some point within a document, you can insert another command with the same 'n' value at the required point and specify the new text. The new text will then replace the old from that point on. Figure 4-6 shows the effect of adding the footer 'PAGE ONE' to our example letter.

SCREEN - USE OF @HEADn AND @FOOTn

@head4	EXAMPLE	
@head6	LETTER	Ref: ABC123
@botm15		
@foot8	PAGE ONE	
16 January, 1984		
The Manager,		
READ ERASE COPY MOVE -- DELETE INSERT FIND REPLACE -- PRINT ... UNDO EXIT		

ADDING PAGE NUMBER TO DOCUMENT - # & @PGNOn

You can invoke automatic page numbering of your document during printing by using the header or footer command in conjunction with the 'hash' symbol (#).

For example, if you changed the text of the '@foot8' command shown above to read 'PAGE #' (rather than 'PAGE ONE'), the footer printed out at the bottom of your example letter would then become 'PAGE 1' instead of 'PAGE ONE'. Moreover, if the document contained more than one page, the remaining pages would be numbered in sequence automatically PAGE 2, PAGE 3, PAGE 4, etc., to the end. If the page numbers are expected to run into more than one digit, then the number of hashes inserted must be increased to equal the expected number of digits, e.g., ## for numbers up to 99, or ### for numbers up to 999, etc.

You can position the hashes wherever you like (on the same line as the header or footer command), and surround them with other symbols or letters as desired, e.g., - ## -, etc.

THIS
is the
EXAMPLE

LETTER

Ref: ABC123

16 January, 1984

The Manager,
Accounts Department,
Dark Valley Electric Supply Authority,
SUNNY TOPS N.S.W. 2999

Dear Sir,

Your records probably show that we have not yet paid our account for the September quarter. This is because we are unable to reconcile your charges with our estimated usage for the period in question.

Accordingly, we would be glad if you could arrange for our meter to be checked as a first step in verifying our bill.

Yours faithfully,

PAGE ONE

Figure 4-6 Footers

Once you have instituted the above page numbering process in your document, you can initialise the page numbering (or change it) wherever you like, by inserting the @PGNO*n* command.

To do this, type the command on its own at the start of a line but, instead of the second 'n', insert the page number you want. Then terminate the command by pressing <RETURN>. The next time a page number is printed, it will have the value you specified, and the count will continue in sequence from that value.

For instance, if you inserted the command @PGNO6 below the footer 'hash' command in the above example, the footer printed at the bottom of your letter would become 'PAGE 6' instead of 'PAGE 1', and the count would continue 'PAGE 7', 'PAGE 8', 'PAGE 9', etc., if there were subsequent pages in the document.

NOTE:

If you have been doing the above samples, it is suggested that you now delete all of the previous @ commands from the document and return it to the original unformatted version. It is recommended that you perform each of the following samples, obtain printouts if required and delete the @ commands before continuing with next command.

SKIPPING LINES - @LSKIP*n*

You can insert this command anywhere in your document to cause the printer to skip a specified number of lines when printing the document. The number of lines skipped is determined by the value you insert in place of the 'n' when you are typing the command.

If the value you enter is greater than the number of lines left on the page, the printer will skip only to the first line of the next page.

LEAVING SPACE FOR ILLUSTRATIONS - @PICTURE*n*

This command is similar to the line skipping command above, in that you can use it to cause the printer to skip a specified number of lines when printing your document. The number of lines skipped is given by the value you insert in place of the 'n', and represents the blank space you need for an illustration.

In this case, however, if the value you enter is greater than the number of lines left on the page, the printer will immediately skip to the top of the next page, and then skip the number of lines specified in the command. This ensures that the space you need for the illustration is always made available.

SKIPPING TO A SPECIFIED LINE - @LINEn

You can insert this command anywhere in your document to cause the printer to skip to a specified line number when printing the document. The line number is given by the value you insert in place of the 'n' when you type the command.

If the value you enter is less than the line number just printed, the printer will skip to the specified line number on the next page.

SKIPPING PAGES - @PSKIPn

With this command you can cause the printer to skip a specified number of pages when printing the document.

For example, if you insert @PSKIP3 at some point in your document, the printer will skip three pages before printing the text that follows the command.

CHANGING THE PAGE LENGTH - @PLENGTHn

With this command you can set the page length you want irrespective of the current setting of 'Lines/Page' in the 'F5-Format options'.

To do this, type the command as shown but, instead of the 'n', insert the page length you want, expressed in number of lines. (For the meaning of 'page length', refer back to Lines/Page under 'The F5 Modify-FORMAT Options' heading).

The command is effective from the point at which you insert it, and remains in effect until cancelled by a @RESET command. In other words, you can insert @PLENGTHn and @RESET commands as needed to vary the format of selected parts of your document. (After the @RESET command, the format returns to that set up by the 'F5-Format options').

CONDITIONAL PAGE BREAKING - @GROUPn and WIDOWn

The purpose of conditional page breaking commands is to allow you to prevent 'widow' lines or headings occurring in your document during the printing process. That is, you can prevent the first line of a new paragraph or a heading being printed all on its own at the bottom of a page. Or you can prevent the last line of a paragraph being printed on its own at the top of a new page.

Without these commands (and in the absence of any unconditional page break commands such as @NEWPAGE) the printer would simply break to a new page each time it completed the number of text lines given by the ruling page formatting commands, e.g., with the standard format in force (66 lines/page; first text line 6; last text line 60) the printer would break to a new page after producing each 55 lines of text.

TIME Writer contains certain built-in protective measures against widow lines and, in addition, there are the conditional commands @GROUPn and @WIDOWN.

The built-in protection comprises a 3-line 'widow zone' at the bottom of each page. This means that if, during printing, TIME Writer finds the end of a paragraph or a heading positioned such that there are three or less lines remaining on the page, it immediately breaks to a new page. For example, with the standard format mentioned above, the printer would automatically start a new page upon coming to the end of a paragraph or a heading in lines 57, 58 or 59. (For the 'widow zone' feature to work with headings, they must be marked with a grave accent as previously described under 'Indenting Headings').

The @WIDOWN command can be used to change (or eliminate) the size of the built-in widow zone, while the @GROUPn command can be used to nominate a number of lines that you would not like to be split by a page break during printing. In both cases, replace the 'n' in the command by the appropriate number of lines. (If you want to eliminate the widow zone, insert zero as the number of lines). Upon encountering a @GROUPn command, the printer will skip to the top of the next page unless there are at least 'n' lines still available for printing on the current page.

HORIZONTAL FORMATTING

```
<--1--><--2--><-3-><  text of line 1 of a paragraph  >
<-----><-----><-4--><text of line 2 of a para      >
      <-----5----->          <-----6----->
      <-----7----->
      +-----+-----+-----+-----+-----+----- 8
```

- 1: <F5> hard left margin for aligning paper in printer.
- 2: <@MARGIN 7> soft margin for aligning text on the paper.
- 3: <@INDENT 5> indent for first line of a paragraph.
- 4: <@INDENTS 7> indent for second line of a paragraph.
- 5: <@NOWRAP 45> no wrap zone.
- 6: <@WRAP 6> wrap zone.
- 7: <F6/@WIDTH 65> width of paper to print on.
- 8: <TAB STOPS> tab positions as defined by the F5 menu, or defined
by control sequences within the word processor
editing system.

ALTERING THE LINE WIDTH - @WIDTHn

With this command you can set whatever line width you want irrespective of the current setting of 'Line Width' in the 'F5-Format options'.

To do this, type the command as shown but, instead of the 'n', insert the line width you require, expressed in characters.

The command is effective from the point at which you insert it, and remains in effect until cancelled by a @RESET command. In other words, you can insert @WIDTHn and @RESET commands as needed to vary the format of selected parts of your document. (After the @RESET command, the format returns to that set up by the 'F5-Format options').

Figure 4-7 shows the effect of enclosing the first paragraph of our example letter by @WIDTH40 and @RESET commands. You will see that the width of the first paragraph is reduced to 40 characters, and the @RESET command restores the second paragraph to the line width of 63 set up in the 'F5-Format options'. (This diagram also includes a demonstration of the Line Spacing command described below).

CHANGING THE LINE SPACING - @SPACINGn

With this command you can set whatever line spacing you want irrespective of the current 'Spacing' setting in the 'F5-Format options'. To do this, type the command as shown but, instead of the 'n', insert the line spacing you require.

The command is effective from the point at which you insert it, and remains in effect until cancelled by a @RESET command. In other words, you can insert @SPACINGn and @RESET commands as needed to vary the format of selected parts of your document. After the @RESET command, the format returns to that set up by the 'F5-Format options'. (An @SPACING1 command will always return the printout to single line spacing).

Figure 4-7 shows the effect of enclosing the first paragraph of our example letter by @SPACING2 and @RESET commands. You will see that the text of the first paragraph is printed on only every second line, but that the @RESET command restores the second paragraph to the normal single line spacing set up in the 'F5-Format options'. (The reduced line width in this diagram is due to the @width40 command described previously).

SCREEN - using @WIDTHn, @SPACINGn and @RESET

```
@width40
@spacing2
```

```
Your records probably show that we have not yet paid our account for the Septemb
er quarter. This is because we are unable to reconcile your charges with our est
imated usage for the period in question.
```

```
@reset
```

```
READ ERASE COPY MOVE -- DELETE INSERT FIND REPLACE -- PRINT ... UNDO EXIT
```

PRINTOUT - using @WIDTHn, @SPACINGn and @RESET

16 January, 1984

The Manager,
Accounts Department,
Dark Valley Electric Supply Authority,
SUNNY TOPS N.S.W. 2999

Dear Sir,

Your records probably show that we have
not yet paid our account for the
September quarter. This is because we
are unable to reconcile your charges
with our estimated usage for the period
in question.

Accordingly, we would be glad if you could arrange for our
meter to be checked as a first step in verifying our bill.

Yours faithfully,

Figure 4-7 Changing the Line Width and Spacing

CENTERING TEXT AUTOMATICALLY - @CENTRE

With this command you can cause text to be automatically centred during the printing process.

To do this, type the command at the start of the line immediately above the text you want centred and terminate the command (as usual) by pressing <RETURN>. (Any text on the same line as the command will not be printed).

All text following the command will be centred during printing until the effect is cancelled by a @RESET command. In other words, you can insert @CENTRE and @RESET commands as needed to centre selected parts of your documents, e.g., headings.

To demonstrate this effect, we have added a heading (ELECTRIC BILL) to our example letter and inserted the appropriate commands above and below it. The commands and the resulting printed effect are as shown in Figure 4-8 below.

SCREEN - using @CENTRE

Dear Sir,
@centre

ELECTRIC BILL
@reset

READ ERASE COPY MOVE -- DELETE INSERT FIND REPLACE -- PRINT ... UNDO EXIT

PRINTOUT - using @CENTRE

16 January, 1984

The Manager,
Accounts Department,
Dark Valley Electric Supply Authority,
SUNNY TOPS N.S.W. 2999

Dear Sir,

ELECTRIC BILL

Your records probably show that we have not yet paid our account for the September quarter. This is because we are unable to reconcile your charges with our estimated usage for the period in question.

Accordingly, we would be glad if you could arrange for our meter to be checked as a first step in verifying our bill.

Yours faithfully,

Figure 4-8 Centering

INDENTING THE FIRST LINE OF A PARAGRAPH - @INDENTFn

With the @INDENTFn command you can cause the first line of every paragraph in your document to be indented with respect to the left-hand margin during the printing process.

To do this, type the command as shown but, instead of the 'n', insert the indentation you require, expressed in characters.

The first line of every paragraph following the command will then be indented during printing until the effect is cancelled by a @RESET command. In other words, you can insert @INDENTFn and @RESET commands as needed to change the format of selected parts of your document.

To demonstrate this effect, insert <@INDENTF6> above the first paragraph of our example letter and <@RESET> (not shown) below the second (above 'Yours faithfully'). The effect on the two paragraphs of our letter is shown in Figure 4-9 below.

SCREEN - using @INDENTFn

Dear Sir,
@indentf6

Your records probably show that we have not yet paid our account for the September quarter. This is because we are unable to reconcile your charges with our estimated usage for the period in question.

READ ERASE COPY MOVE -- DELETE INSERT FIND REPLACE -- PRINT ... UNDO EXIT

PRINTOUT - using @INDENTFn

16 January, 1984

The Manager,
Accounts Department,
Dark Valley Electric Supply Authority,
SUNNY TOPS N.S.W. 2999

Dear Sir,

Your records probably show that we have not yet paid our account for the September quarter. This is because we are unable to reconcile your charges with our estimated usage for the period in question.

Accordingly, we would be glad if you could arrange for our meter to be checked as a first step in verifying our bill.

Yours faithfully,

Figure 4-9 First Line Indenting

INDENTING ALL LINES EXCEPT THE FIRST - @INDENTS_n

Using this command you can cause all lines of a paragraph, other than the first, to be indented by a selected amount with respect to the left-hand margin.

To do this, type in the command as shown but, instead of the 'n', insert the indentation you require, expressed in characters.

The effect of this command is shown in Figure 4-10 for an indentation of four characters. (A @RESET command has been inserted after the second paragraph - above 'Yours faithfully' - to cancel the effect).

If desired, the @INDENTF and @INDENTS commands can be combined in the same document to apply a selected indent to the (F)irst line of each paragraph, and a different indent to all (S)ubsequent lines.

SCREEN - using @INDENTS_n

Dear Sir,
@indents4

Your records probably show that we have not yet paid our account for the September quarter. This is because we are unable to reconcile your charges with our estimated usage for the period in question.

READ ERASE COPY MOVE -- DELETE INSERT FIND REPLACE -- PRINT ... UNDO EXIT

PRINTOUT - using @INDENTSn

16 January, 1984

The Manager,
Accounts Department,
Dark Valley Electric Supply Authority,
SUNNY TOPS N.S.W. 2999

Dear Sir,

Your records probably show that we have not yet paid our account for the September quarter. This is because we are unable to reconcile your charges with our estimated usage for the period in question.

Accordingly, we would be glad if you could arrange for our meter to be checked as a first step in verifying our bill.

Yours faithfully,

Figure 4-10 Indenting Subsequent Lines

USING THE HANGING INDENT COMMAND '|'

This command can be used to set a temporary margin for selected paragraphs of text. Its effect is demonstrated in Figure 4-11 on the following page. Note that it is inserted in the 8th character position of the first line of the first paragraph of your letter, and that its effect only lasts until the end of the paragraph.

SCREEN - using the Hanging Indent '|'

Dear Sir,

|Your records probably show that we have not yet paid our account for the September quarter. This is because we are unable to reconcile your charges with our estimated usage for the period in question.

READ ERASE COPY MOVE -- DELETE INSERT FIND REPLACE -- PRINT ... UNDO EXIT

PRINTOUT - using the Hanging Indent '|'

16 January, 1984

The Manager,
Accounts Department,
Dark Valley Electric Supply Authority,
SUNNY TOPS N.S.W. 2999

Dear Sir,

Your records probably show that we have not yet paid our account for the September quarter. This is because we are unable to reconcile your charges with our estimated usage for the period in question.

Accordingly, we would be glad if you could arrange for our meter to be checked as a first step in verifying our bill.

Yours faithfully,

Figure 4-11 The Hanging Indent

INDENTING HEADINGS - @INDENTHn

With this command, you can cause all nominated headings in your document to be indented by a selected amount with respect to the left-hand margin.

However, for the command to work, you must use the 'grave accent' symbol to nominate the headings you would like to be indented. (The key for this symbol is at the top right-hand corner of your keyboard next to the BACK SPACE key, and it must be the first character used on the line containing the heading, with no space between it and the heading).

With all desired headings so marked, insert the @INDENTHn command at any point in your document preceding the first of the marked headings; replace the 'n' symbol with the desired indentation expressed in characters. The @RESET command can be used to cancel the effect at any point in your document.

RANGING YOUR TEXT RIGHT - @RIGHTJ

With this command you can cause text to be ranged-right (i.e., aligned or justified on the right-hand margin) leaving the left-hand margin 'ragged'.

To do this, type the command at the start of the line immediately above the text you want to range-right, and then press <RETURN>.

All text following the command will then be ranged-right during printing until the effect is cancelled by a @RESET command. (The @RIGHTJ command overrides the effect of the 'Justify Text' setting held by the 'F5-Format options', while the @RESET command restores that effect).

In Figure 4-12 above, @RIGHTJ and @RESET commands have been placed above and below the date, respectively (not shown), with another @RIGHTJ command placed below 'Dear Sir'.

In the resultant printout you will see that the date has been pushed over to the right-hand margin, whereas the address and 'Dear Sir' has remained 'ranged-left'. Moreover, the remainder of the letter and 'Yours faithfully' have been ranged-right.

SCREEN - using @RIGHTJ

```
Dear Sir,  
@rightj
```

```
Your records probably show that we have not yet paid our account for the Septemb  
er quarter. This is because we are unable to reconcile your charges with our est  
imated usage for the period in question.
```

```
READ ERASE COPY MOVE -- DELETE INSERT FIND REPLACE -- PRINT ... UNDO EXIT
```


PRINTOUT - using @RIGHTJ

16 January, 1984

The Manager,
Accounts Department,
Dark Valley Electric Supply Authority,
SUNNY TOPS N.S.W. 2999

Dear Sir,

Your records probably show that we have not yet paid our account for the September quarter. This is because we are unable to reconcile your charges with our estimated usage for the period in question.

Accordingly, we would be glad if you could arrange for our meter to be checked as a first step in verifying our bill.

Yours faithfully,

Figure 4-12 Right Justifying

RANGING YOUR TEXT LEFT - @LEFTJ

With this command you can cause all text to be ranged-left, i.e., aligned on the left-hand margin, leaving the right-hand margin 'ragged'. Indeed, it has the same effect as simply leaving the 'Justify Text' selection of the 'F5-Format options' set to 'NO'.

However, it overrides any F5-Format option setting, allowing you to range-left selected portions of a document.

For example, if you have set 'Justify Text' to 'YES' in the F5-Format options, you could place a @LEFTJ command above and a @RESET command below selected paragraphs (or lines) to produce a ranged-left effect for just that portion of text.

JUSTIFYING SELECTED PORTIONS OF YOUR TEXT - @JUSTIFY

TIME WRITER

With this command you can cause your text to be aligned on both the left and right-hand margins. Indeed, it has the same effect as setting the 'Justify Text' selection of the 'F5-Format options' set to 'YES'.

However, it overrides any F5-Format option setting, allowing you to format selected portions of a document.

For example, if you have set 'Justify Text' to 'NO' in the F5-Format options, you could place a @JUSTIFY command above and a @RESET command below selected paragraphs (or lines) to produce a justified effect for just that portion of text.

PRINTING YOUR DOCUMENT

This section is not intended as a guide to connecting a printer to your Kookaburra, nor on setting up and operating the printer.

Accordingly, it is assumed you already have your printer connected and operational either by reference to the connection information given at the back of this manual under 'Technical Specifications' or with the help of your Kookaburra dealer.

If you do not yet have a printer, you can still see what your formatted document will look like when printed by using the Kookaburra's 'Print to Screen' facility.

For the purposes of the following descriptions, it is assumed that you have already set up the F5-Modify FORMAT options and/or embedded the appropriate print control commands in your document as described previously in this chapter. The document in question may be one that is still resident in the Workspace, (i.e., you might still be working on it) or it may be stored away on a disk file. The disk file can be on an external disk drive unit (if you have such a device connected to your Kookaburra) or it can be simply that part of the Kookaburra's internal memory known as 'Drive D' or RAM Disk. This is the part of the memory you have seen specified by the 'D:' prefix added by the TIME Writer to your file names.

Starting from the TIME Writer menu, press <F6> if you wish to print a document that is currently stored on a disk file, or press <F7> if you wish to print a document that is in the Workspace.

If you press <F6>, the TIME Writer will display

'Please enter a file name :'

in the second bottom screen line. In response to this, type the file name of the document you want to print and then press <RETURN>. The screen will now change to the 'PRINT formatter' shown below. (If you select <F7>, and there is a document in the Workspace' the screen immediately changes to the 'PRINT formatter'). For the purposes of this description we have assumed that the file you have chosen to print is your example letter 'ELECTRIC.BIL' - note that this name appears to the left of the top screen line. It is also assumed that any document you had in the workspace has been saved, otherwise the question

'Work space not saved! Save it?'

will appear. In other words printing from disk will overwrite and destroy any document in the workspace.

SCREEN - PRINT formatter

```

Document D:ELECTRIC.BIL          PRINT formatter 2.0
F: Select or +, shift-F: Deselect or -, F10: Reset, F11: START, F12: EXIT
F1 : print to screen              (CON) YES   F5 : Number of Copies : 1
F2 : print to parallel printer    (PRN) NO    F6 : print from page : 1
F3 : print to serial printer      (AUX) NO    F7 : skip ever       : 0 page/s
F4 : print to disk file           NO        F8 : print to page   : LAST

SCREEN PARALLEL SERIAL DISK -- COPIES FIRST EVERY LAST -- .. RESET START EXIT

```

You will see that you are now presented with a number of print options, which you may select or reject using the function keys. (Also, you may exit from the print function and return to the TIME Writer menu by pressing <F12>).

PRINTING TO SCREEN (F1-CONSOLE)

The initial state of this option is YES. (If you want to suppress this function, press <SHIFT F1> and the YES will change to NO). With YES on the screen, press <F11> and you will see your example letter scroll through the screen in accordance with the way you have formatted it to appear in printed form. You can cause this scroll to pause at any time by pressing any key, whereupon the message

'Printout paused - ctrl C: stop, other: continue'

will appear. (Re-start the scroll by pressing any key except <CTRL C>). When the process has finished or <CTRL C> is pressed, the message

'End of Document - press any key'

will appear in the last screen line. If you now press any key, the PRINT formatter screen will return.

PRINTING TO PARALLEL PRINTER (F2-PRN)

If you have a parallel printer connected to your Kookaburra, and you want it to print out your document, press <F2> to select this option and then <F11> to start the print. When the message

'End of Document - press any key'

appears in the last screen line, press any key to restore the PRINT formatter screen. (You can now turn off the function if you desire, by pressing <SHIFT F2>).

PRINTING TO SERIAL PRINTER (F3-AUX)

If you have a serial printer connected to your Kookaburra, and you want it to print out your document, press <F3> to select this option and then <F11> to start the print. When the message

'End of Document - press any key'

appears in the last screen line, press any key to restore the PRINT formatter screen. (You can now turn off the function if you desire, by pressing <SHIFT F3>).

PRINTING TO DISK FILE (F4)

If you want your document stored in memory in the form of a print formatted document, press <F4> to select this option. The message

'Please enter a file name :'

will then appear in the bottom screen line. In response to this, type in a file name under which you would like the formatted document to be stored, e.g., <ELECTRIC.PRT>, and press <RETURN>. You will now see this name appear at top right of the screen as the 'OUTPUT file'. Also, unless you have designated an external disk drive unit by prefixing your file name with either E: or F:, the system will have applied the prefix D:, so that your file will be stored in the Kookaburra's internal memory areas. To start the transfer process, press <F11>. When the message

'End of Document - press any key'

appears in the last screen line, press any key to restore the PRINT formatter screen. (You can now turn off the function if you desire, by pressing <SHIFT F4>).

NOTE:

Any of the above printing processes can be terminated early by pressing <CTRL C>; this produces the message

'End of Document - press any key'.

INTRODUCTION

This section is a reference manual for TIME WRITER version 2.00. TIME WRITER is a sophisticated software package with capabilities considerably beyond the average word processor. In the normal course of operation, only a subset of the facilities offered will be used by an operator.

The key concept in the design of the system is the method of formatting used. Most word processors format text in place, that is, the position of line and page breaks is determined while editing. TIME WRITER does not do this, rather the break points are determined at print time, allowing much more sophisticated document processing.

The disadvantage of this method is that the operator cannot see what will be printed. This problem is overcome in two ways. The first is by use of a concept called on screen formatting. In the context of TIME WRITER, this means that the text is formatted onto the screen every time it is changed, but that it remains unformatted in memory. The second method is to allow optional in place formatting for those users who need it.

Because the text held in memory is not formatted, but displayed formatted, there are a number of screen display functions which display the text in increasing levels of "format". The simplest display shows the text as it was typed in, including control characters. Another level of display omits the control characters for clarity, the next level provides word wrapping, and the next level full justification. The higher the formatting level, the more difficult it is to edit the text, because what is seen on the screen does not correspond directly with what is in the memory.

CALLING SEQUENCE

TIME WRITER is supplied in a 32k ROM PACK configured as a disk. This Rom pack is usually installed in the left hand memory module port, called drive B:. Two programs are in the module: MAGEDIT.ROM, the word processing program, and MW.EXE, the bootstrap which is called to start up the word processor.

TIME WRITER may be invoked by selecting the function key <F3> while in the System Menu or when in MS-DOS by typing:

1. <mw>, (loads and runs TIME WRITER).
2. <mw filename>, (calls up TIME WRITER and goes straight to edit of filename, if filename exists, otherwise TIME WRITER's main menu is displayed).
3. <mw f:>, (calls up the system and sets the default drive to f:).

FUNCTION KEYS

On selecting <F3> from the Main System Menu, TIME WRITER's main menu is displayed, offering options which are selected by pressing the appropriate function key.

A document is some text which may be a letter, notes, or any other such information. It may also include tables created by the spreadsheet program TIME CALC.

MAIN MENU

Initially, TIME WRITER's main menu looks like this:

Document : no file to use MAGNUM WRITER 2.0 WORKSPACE 0/60146=EMPTY		
F1 : CREATE a new document		F6 : PRINT document from disk
F2 : LOAD document / SF2 : DIRECTORY		F7 : PRINT document from workspace
F3 : VIEW / SF3 : EDIT document		F8 : MAIL MERGE options
F4 : SAVE document / SF4 : CLEAR workspace		F11: DELETE file
F5 : FORMAT options/ SF5 : MISC options		F12: EXIT to main menu
NEW LOAD/DIR VIEW/EDIT SAVE/CLR - FORMAT/MISC PRTRDSK PRTRWS MAIL - . . DEL EXIT		

After creating and editing a file, a typical main menu looks like this:

TIME WRITER

```
Document : D:MANUAL.DOC      MAGNUM WRITER 2.0 WORKSPACE 45123/60000= 45% full
F1 : CREATE a new document      F6 : PRINT document from disk
F2 : LOAD document / SF2 : DIRECTORY  F7 : PRINT document from workspace
F3 : VIEW      / SF3 : EDIT document  F8 : MAIL MERGE options
F4 : SAVE document / SF4 : CLEAR workspace  F11: DELETE file
F5 : FORMAT options/ SF5 : MISC options  F12: EXIT to main menu
[EXISTING WORK SPACE NOT SAVED]
NEW LOAD/DIR VIEW/EDIT SAVE/CLR - FORMAT/MISC PRTPSK PRTPWS MAIL - . . DEL EXIT
```

The Main menu displays the following information:

1. The current document name, in the top left corner.
2. The version number of TIME WRITER, in the middle of the top line.
3. The number of characters of text in the buffer.
4. The total buffers size, not including the copy buffer.
5. The percentage of the workspace used, in the top right corner.
6. Any message from the last operation, on the second line from the bottom, (the status line).
7. A summary of the F key options, on the bottom line.

The workspace is a part of memory, where a file is loaded to be worked on by the processor. If the workspace is entirely empty, the message 'Workspace Empty' is displayed in the top right corner.

If there is no current document, the message 'No file to use' is displayed instead of the document name.

The second last line is the status line. It contains the latest message, from the following list. The messages are either informative, or require a key to be pressed in response (usually <Y> or <N>).

One of the three messages below will be displayed whenever you are not executing a command:

```
[EXISTING WORK SPACE NOT SAVED]
[Work space Ready]
No file to use
```

These three messages reflect the status of the workspace, indicating whether you need to save it, or deliberately abandon it.

[EXISTING WORK SPACE NOT SAVED]

The workspace which you have edited has not been saved to disk. This message appears whenever you have changed the workspace by inserting or deleting characters, even if you insert one character and then delete it immediately.

If you attempt any operation which might destroy the changed workspace, the prompt 'Work Space not saved! Save it?' is given, and you must answer <Y> to save the workspace, or <N> to go ahead and risk destroying your changes.

Usually, you will press <F4> to save the workspace when this message appears.

[Work space Ready]

The workspace is exactly the same as a document on disk, there is no need to save it, and an operation which may destroy the workspace will proceed without prompting you. If you do destroy the workspace, you can just LOAD the appropriate file back in again.

In particular, this message appears after you have saved the workspace, or you have loaded a file, perhaps viewing it without making any changes.

You may press any key when this message appears, however you should not press <F4> to save the workspace unless you have changed the disk and wish to save another copy of the workspace.

No file to use

There is no document in the workspace at all. Either you have just entered the word processor, or performed an operation, eg. <F6> : PRINT document from disk, which has destroyed the workspace.

This message actually appears as the document name in the top left corner of the screen when there is no current file. 'Workspace Empty' will appear in the top right corner of the screen. If you attempt to operate on the workspace, for example with <SHIFT F3> to edit, or <F4> to save, the message will appear on the second last line as well.

There are a large number of other messages, which reflect the status of the last operation you performed. For example, when you select <F2> (load file), whilst the file is being loaded the message will be "Loading file".

TIME WRITER

FILES

Documents are held as files on storage devices called drives. There are upto three disk drives available to you for storing documents. The one normally used is "D:". The Random Access Memory storage area in the machine, E: and F: are the optional floppy disk drives. Note that the RAM disk is not really a disk, but a section of read/write memory which the computer thinks is a disk drive.

When you wish to CREATE <F1>, LOAD <F2>, PRINTDSK <F6> or DELETE <F11> a file, or if you change the name of the file you are SAVEing <F4>, the message:

'Please enter a file name:'

appears. You must now type in a file name.

The rules for a filename are explained below.

When you wish to start work on a document, you must give it a name. A name can be from 1 to 8 alphabetic or numeric characters; upper and lower case letters are considered to be the same, e.g. <LETTER1> <Slides> or <R2d2>.

You may also specify a drive where the document is to be kept, e.g. <E:LETTER1> or <F:>. If you do not specify the drive, TIME WRITER assumes D: (the RAM disk) because D: is always available for storing documents (unless it is full!).

The default drive (initially D:) can be changed (see below).

Finally, you may specify an extension to the filename, consisting of a full stop and up to three characters as for the name, which follow the file name, e.g. <PETER.LET> <F:joe.let> or <AA023.s90>. If no extension is specified, .DOC is assumed. If you wish to specify a blank extension, you must type the <.>, e.g. <FRED> will be taken as having the default extension, whereas <FRED.> will be taken as having a blank extension.

If you want to terminate entering a file name, just backspace over any entered characters and then type <RETURN>. No file operation will be done. You may also type a <CTRL-C> at this point to abort the operation.

<CTRL-C> can be typed anywhere in the line to abort the entry. Return anywhere except at the start of the line will terminate and accept the entry rather than aborting it. The file name is entered using the standard DOS line editing features; in particular you will find that pressing <F3> to retype the last file name that you entered is very convenient.

If you do not know what filename you want, use the <SHIFT F2> function to obtain a listing of all the files on the current drive. To select another drive as default, select <F2>, then enter the new drive letter, eg. <F:> <RETURN>.

If there are too many files to fit on the screen, then you will be asked if you want to look at more files.

'Partial display, do you want to see the rest of the directory?'

When the above message is displayed, press <Y> if you wish to view more of the directory, if you have seen enough, press <N>.

If there are no matching files on the disk, then the message 'File does not exist' is displayed and you do not get a chance to select the drive as the new default if it was different to the current default.

CRITICAL ERRORS

It is possible for another type of error to occur while using disks, a so called CRITICAL ERROR. A critical error may come about because you have a faulty disk, you have tried to write onto one of the ROM disks or there is a write protect tab on the disk you are trying to save to.

If you do get a critical error, a critical error menu will be displayed.

The menu tells you which drive the error occurred on, what part of the disk was affected by the error, and whether the error was an error in reading from the disk or writing onto the disk.

You have five choices when you get a critical error:

R RETRY.

Try the operation again (perhaps after removing the write protect tab). Have a think about what you have tried to do. MS-DOS automatically retries 3 times if there is a read or write fault.

TIME WRITER

A ABORT.

Abort the operation (perhaps after realising that you really meant the disk to be write protected) USE THIS OPTION IF EITHER RETRY DOES NOT WORK, OR YOU WERE AT FAULT.

E END.

Exit the word processor altogether, go to the main menu.

SHIFT RESET.

Holding down the <SHIFT> key, press the <RESET> key. This will restart the whole system from scratch, you will lose the file in the workspace.

SHIFT ON/OFF.

Similar to <RESET>, but the whole machine is turned off.

The error can be a read error (usually less of a problem, and more common) or a write error.

The error can be

- a) Write Protect error: attempt to write on a write protected disk or a ROM,
- b) Drive Not Ready: perhaps you have forgotten to close the door, or in the case of drive D:, you have not formatted the RAM disk,
- c) Data error: there is probably a bad area on the disk, the disk having been corrupted, but it could be a hardware fault,
- d) Seek error: the floppy disk drive cannot move the disk head to the right location,
- e) Sector not found: the disk was not formatted, not formatted correctly, or has been corrupted,
- f) Write Fault: the computer could not write information to the disk correctly,

We now move on to discuss each of the functions available to you in the TIME WRITER Main Menu.

Main Menu: <F1> - Create a document on disk

PURPOSE:

This function creates a new file. You specify the name of the file, and the system checks whether the file exists so that you do not create a file with the name of a different document, or try to create a file which you have already created.

When a new name has been entered, edit mode is entered so you can begin data entry immediately.

METHOD:

1. To create a document, press <F1>.
2. The computer asks 'Please enter a file name : '.
3. Type in a file name, e.g. <FIRSTTRY>. (defaults to D:FIRSTTRY.DOC).
4. If the file does not exist, edit mode is automatically entered.

Main Menu: <F2> - Load a document from disk

PURPOSE:

The LOAD function is designed to retrieve a document that you have already created, and continue work on it. You may wish to add more to the document, or print it. After you have specified the name, the file is loaded into memory.

METHOD:

1. To load an existing document from disk, press <F2>.
2. The computer asks 'Please enter a file name : '.
3. Type in a file name, e.g. <FIRSTTRY>. (defaults to D:FIRSTTRY.DOC). Then press <RETURN>.
4. The computer checks that the file does exist, if it does not exist on the specified drive the message 'File does not exist' is displayed.

TIME WRITER

5. If the file does exist, the message 'Loading File' is displayed.
6. The computer now copies the file from the disk to the workspace.
7. If there is not enough space to load the file, the message 'Not enough space for operation' is displayed.
8. If there is enough space to load the file into the workspace, the message 'File Loaded' is displayed, the document is now ready for use in the workspace.

Main Menu: <SHIFT F2> - View disk directory

PURPOSE:

This function displays the files on the default disk, so that you can check which disk is loaded and which files are available for editing or printing.

METHOD:

1. On pressing <SHIFT F2>, the directory of current .DOC files on the default disk are shown.
2. To exit from the display, press any key.

Main Menu: <F3> - View a document

PURPOSE:

The VIEW function allow you to look at a document without being able to change it. You can use all the movement functions of the editor, but you cannot make any changes to the text at all. If you try to make a change, the message 'File Selected For Viewing Only' is displayed.

If you do wish to change the document, you can get into EDIT mode by typing the sequence <ESC SHIFT F3>; the cursor will remain where you left it in view mode.

METHOD:

1. To view a document you have loaded by pressing <F2>, press <F3>.
2. The computer now enters the workspace and displays the file.

3. You may now look at, but not change the document (see below).
4. You may exit from viewing the document by pressing <F12> or <ESC>.
5. The message '[Work Space Ready]' is displayed.

Main Menu: <SHIFT F3> - Edit a document

PURPOSE:

EDIT is one of the main functions of the system - it allows you to enter data into a document, and change it. EDIT is deliberately assigned to a SHIFTed F key so that you must be conscious of the decision to edit a document.

You can leave EDIT mode by pressing either the <ESC> or <F12> keys.

There is a limit to how much text you can edit. When you are approaching this limit, the message 'Warning- not much space left' is displayed. You should exit immediately.

If you do not, and you fill up the buffer until there is almost no space left, you will be returned to the Main Menu. Usually you can reenter EDIT to make further changes, but you will be returned to the Main Menu again every keystroke until you have trimmed the file down to an acceptable size. The message 'Warning - NO SPACE LEFT' is displayed when you are in this state. If you add text instead of deleting it, you will suddenly find that you have really filled up the text buffer, and you cannot enter it at all. At this point there is no way of changing the file. SO HEED THE WARNING, AND STOP EDITING ON THE FIRST WARNING.

METHOD:

1. To edit a new document which you have created by pressing <F1>, or a document you have loaded by pressing <F2>, press shift <F3>.
2. The computer now enters the workspace and displays the file.
3. You may now edit the document (see below).
4. You may exit from editing the document by pressing <F12> or <ESC>.

TIME WRITER

5. The message '[WORK SPACE NOT SAVED]' is displayed if you have changed the text, reminding you to save the document.

Main Menu: <F4> - Save a document to disk

PURPOSE:

The SAVE function saves your work from the text buffer in memory to floppy disk, or RAMDISK. Any text in the text buffer will be lost when you perform an operation which clears the buffer, namely <F1>: Create a new file, <F2>: LOAD another file, <F6>:PRINT from disk or <ESCD> or <F12>: EXIT the word processor; also if you <RESET> the machine, or turn the power <OFF>, or if you are running in portable mode and you batteries go flat.

The save function, in simple terms, makes a copy of the text buffer on disk, giving the file the name you have nominated when you <F1>:CREATED or <F2>:LOADED the file. The save function can also, if you wish, maintain a backup copy of the file. If you have a file called 'D:LETTER.DOC', then you can create a backup called 'D:LETTER.BAK' with the save function. If you accidentally delete your original, or put in lots of mistakes, you can retrieve the file by using the backup copy.

The save function is designed to provide maximum security against any form of error, including running out of space on your disk, or having a bad area on the disk prevent the file being recorded properly. Because of the error prone nature of writing files, and to protect you from faults and your own mistakes, keeping backups is highly recommended.

There are several types of errors.

1. NO SPACE

You have run out of space on the disk to save the file.

- a) replace the disk with another which has more space in it. (floppy disks only).
- b) Trim down your file so that it fits on the disk.
- c) Delete some of the file on the disk to make room for your file.
- d) Abandon the file you were trying to save.

You may also have insufficient space in memory to insert a line feed character after every return character, as required by MS-DOS text file format conventions.

2. CRITICAL ERROR

A critical error is a mechanical or electrical fault with the system.

3. OPERATOR ERRORS

These are errors that you have made yourself, and usually they are errors that only you can detect.

In order to cope with errors, there are several things which can be done in the way of prevention.

a) OPERATOR CARE

Take care of your disks and your machine. Keep the batteries charged. Ensure that you have loaded the disks into the drive properly.

Always ensure that you have adequate free space before commencing data entry. Have plenty of FORMATTED disks on hand in case you do run out of room.

Make backup copies of your files and disks (using COPY and DISKCOPY). Take extra care when doing these operations, as doing them backwards is a terrible disaster!

b) SYSTEM PROTECTION

The system provides numerous safeguards against errors.

- i) VERIFY. The verify function performs a read after every write on the floppy disk to check if it can read back what was supposed to be written. If the verify fails, the write is done again, until it succeeds, or has tried enough times to be sure that there is a serious fault.
- ii) Backup files. The system can maintain backup copies of the files you edit. This facility is built in to the save function.
- iii) Safe save method. The save method used writes a temporary file, deletes the old file, and renames the temporary file to the old file name, rather than just writing the workspace directly over the top of the old file. F4: SAVE does this whenever it can, and asks for operator permission whenever this method cannot be followed because there is insufficient space.
- iv) Safe file write method. When a file is written, the directory entry is not updated until the file is closed.

TIME WRITER

Main Menu: <SHIFT F4> - Clear Workspace

PURPOSE:

This function destroys the file currently loaded in the workspace.

METHOD:

1. Press <SHIFT F4>.
2. If the file has not already been saved to disk, the message

'Work space not saved! Save it?'

will be displayed. Answer <Y> or <N>, depending on your requirements, and the message

'No file to use'

will be displayed on the status line and in document name.

Main Menu: <F5> - Modify Format Options

PURPOSE:

To modify the options which control a printout, such as the page length, margin, tab stops and page width. Print formatting is discussed in detail in a separate section further on.

METHOD:

1. Press <F5>.
2. The format options menu is displayed.
3. To exit from modifying the format options, press <F12> or <ESC>.

Main Menu: <SHIFT F5> - Miscellaneous Options

PURPOSE:

This function allows you to select options which can effect the file in workspace or on disk.

METHOD:

Press <SHIFT F5> for the following menu.

MISCELLANEOUS OPTIONS		press F key to change the required option	
	WORKSPACE	DISK	WORKSPACE
End of paragraph	F1:CR	sF1:CR/LF	Word size F7:SMALL
End of file	F2:Nothing	sF2:Nothing	
Hi-bit	F3:OFF	sF3:ON	
Backup file	F4:Manual		THIS MENU
Autospace ins/del	F5:Ins spaces	Reset	F11
Tab key	F6:Insert tab	Exit	F12 or ESC

F1 = Selects what the end of each paragraph can be terminated with in workspace. Options are: CR or CR/LF.

sF1 = Same as above, but implemented when file is saved to disk.

F2 = Selects what the end of the file can be terminated with in workspace. Options are: Nothing or 1 X ^Z.

sF2 = Same as above, but implemented when file is saved to disk. Options are: Nothing, 1 X ^Z, 128 X ^Z or 128 X NULL.

F3 = Sets the Hi-bit of each character in workspace. Options are OFF or ON.

sF3 = Same as above, but implemented when file is saved to disk.

F4 = Determines the type of file backup mechanism used. Options are: Manual, ON or OFF.

F5 = When "Ins spaces" selected, spaces will be inserted so cursor can move on blank space with up and down arrow. When "OFF" selected, cursor will move to carriage returns with up and down arrow; the cursor will not move to blank spaces.

F6 = Select use of TAB key. Options are: MOVE TO TAB, INS SPACES, INSERT TAB. "Insert Tab", causes Tabs to be inserted when the Tab key is pressed. "Insert spaces", causes spaces to be inserted to the next tab stop, when the Tab key is pressed. "Move to Tab", causes the cursor to move over text to the next Tabstop.

F7 = Word size, affects how cursor moves when in edit or view mode. Options are: SMALL, LONG, VISUAL, ENGLISH.

F11 = Pressing <F11> resets the menu to its default parameters.

F12 = Pressing <F12> or <ESC> returns you to TIME WRITER's main menu.

Main Menu: <F6> - Print a document from disk

TIME WRITER

PURPOSE:

To print a file from disk with the format options selected by <F5>.

METHOD:

1. Press <F6>.
2. The computer displays the message 'Please enter a file name : '.
3. Enter a file name, and press <RETURN>.
4. If the file exists, the print menu is displayed.
5. To exit from the print menu, press <F12> or <ESC>.

Main Menu: <F7> - Print a document from workspace

PURPOSE:

To print a file from the workspace with the format options selected by <F5>.

METHOD:

1. Press <F7>.
2. If a file is loaded in the workspace, the print menu is displayed.
3. To exit from the print menu, press <F12> or <ESC>.

Main Menu: <F8> - Mail Merge Options

PURPOSE:

To select mail merge options. Mail Merge is discussed in detail in a section further on.

METHOD:

1. Press <F8>.
2. Mail Merge Options Menu is displayed.
3. To exit from the mail merge menu, press <F12> or <ESC>.

Main Menu: <F11> - Delete a file

PURPOSE:

To delete a file from the drive specified.

METHOD:

1. Press <F11>.
2. The message

'Please enter a file name :'

is displayed. If you press <RETURN>, the message

'Operation ABANDONED'

is displayed. Otherwise, enter the drive, if the file is not on the default drive, and the filename. Then the message

'Do you want to delete d:filename ?'

is displayed. If you answer <Y>, the message

'File deleted'

is displayed. If you answer <N>, the message

'Operation ABANDONED'

is displayed and the file is not destroyed.

Main Menu: <F12> - Exit from Word Processor

To exit from the word processor, press <F12> or <ESC>.

WMain Menu: <HELP>

To get help with how to name documents, press the <HELP> key. A page of information on drives and file names will be displayed:

THE MAIN MENU HELP SCREEN

TIME WRITER

HELP with main menu

Specify filenames in the form: D:filename.XTN

where D: is the drive, filename is the document name & .XTN is the extension

if the drive D: is omitted, drive D: will be used

if the extension .XTN is omitted, .DOC will be used

the MAGNUM drives are:

A: system ROM B: left ROMPAK C: right ROMPAK [dont use these for documents]

D: RAMDISK E: left floppy F: right floppy [do use these for documents]

To exit from the help display, press any key.

EDIT

INTRODUCTION

When you have pressed <SHIFT F3> to EDIT a file, or <F1> to CREATE a file, you enter EDIT mode.

In EDIT mode you can enter and modify text.

If you press a alphanumeric key, the character you press will be put into the workspace at the cursor position. If you are in INSERT mode, the characters will be inserted, and subsequent characters in the paragraph will automatically move down one place to make room. If you are in TYPEover or OVERWRITE mode, then like a typewriter, characters will overwrite whatever was previously there.

<F6> or <CTRL V> can be used to switch between INSERT and TYPE mode. Initially you are in INSERT mode. In general, you should use INSERT mode for word processing; TYPE mode is provided mainly for updating tables.

In order to edit or change the document, there are a number of non-typing keys. These are known as editing keys. For example the arrow keys allow you to move around in the text, and the backspace key allows you to rubout a character.

For elementary editing, you need only to know the functions of a few keys. These keys are:

1. Typing or Alphanumeric keys
Used to insert text into the document.

2. <BACKSPACE>

The last character you typed, the one to the left of the cursor, is rubbed out. All the text to the right of the deleted character is moved left one space to close the gap.

3. < L >

The cursor moves left in the paragraph one character. If it was at the start of a paragraph, it moves to the end of the previous paragraph.

4. < R >

The cursor moves right one character in the paragraph. If the cursor is at the end of the paragraph, it moves to the start of the next paragraph.

5. <SHIFT L >

The cursor moves to the start of the current word, if it is at the start of the current word already, it moves to the start of the previous word.

TIME WRITER

6. <SHIFT R >

The cursor moves to the start of the next word.

7. <CTRL L >

The cursor move to the start of the current paragraph. If it is already at the start of the current paragraph, then it moves to the start of the previous paragraph.

8. <CTRL R >

The cursor move to the end of the current paragraph. If it is already at the end of the current paragraph, then it moves to the end of the next paragraph.

9. < U >

The cursor moves up to the previous line in the current paragraph or in the previous paragraph.

10.< D >

The cursor moves down to the next line in the current paragraph, or in the next paragraph.

11.<CTRL U >

The cursor goes to the start of the file.

12.<CTRL D >

The cursor goes to the end of the file.

13.<RETURN>

A new paragraph is started. If the cursor is in the middle of a paragraph, the paragraph is broken in two. It is recommended to use two <RETURNS> between paragraphs to separate them nicely: this leaves ONE blank line.

14.<ESC> or <F12>

Leave edit and go to the main menu (don't forget to SAVE (F4) the file!).

The paragraphs are displayed on the screen continuously; when the text you are typing reaches the end of the screen at the right hand side, it just continues on at the next line on the left hand side. This may display words broken in the middle. However, the paragraph will be printed properly. DO NOT press <RETURN> at the end of a screen line. Press <RETURN> ONLY at the end of a paragraph. When the document is printed, the paragraph is FORMATTED into lines to fit nicely on the paper, and words are wrapped onto the next line rather than being broken up.

So you must learn to use 9 editing keys, and to use the carriage return only at the end of a paragraph. You must also get used to seeing whole paragraphs, and not lines. LINES DO NOT EXIST in the editor. The reason for this is, when you insert or delete text, then the whole paragraph is adjusted to accommodate your changes.

TIME Writer has no method of reformatting paragraphs, and no automatic carriage return. Instead, paragraphs are left as whole units of information by themselves. This makes for a much cleaner word processor, and just a little mental adjustment on the part of the operator who is used to doing all the hard work on a typewriter.

If you really can't abide the sight of words broken in half when they wrap around at the end of a screen line, use the "QUICK WRAPPED" display mode. Press <CTRL F10>, words are now displayed unbroken at the ends of lines. In this mode you will notice that inserting a character may suddenly cause the word at the end of the current screen line to wrap around onto the next line.

Note that the quick wrapped display only DISPLAYS the text in screen lines with words wrapped around onto the next line for ease of viewing. There are no carriage returns at the end of each screen line. An unfortunate consequence of this display mode is that the up and down arrow don't move straight up and down any more.

NOTE:

The quick wrapping is for visual relief only, and has no bearing on the real position of line breaks when printing.

THE DISPLAY

While editing a file, your screen will appear as below:

Here is some sample text with the control character display switched of
f. You will note that words are broken at the end of lines, but this is no cau
se for alarm: you will soon get used to this method of displaying information.
X

The text on the screen roughly resembles the output to the printer. Na
turally, when the text is printed words will not be broken in the middle! Note
also that the second last line is normally used for text, but messages may occa
READ ERASE COPY MOVE -- DELETE INSERT FIND REPLACE -- PRINT LOCK UNDO EXIT

The X shown is used to represent the cursor. The cursor usually sits somewhere on the middle or fourth line of the display, except when it is near the top of the file. If you attempt to move the cursor down or up with the arrow keys, the text moves instead. This is called automatic scrolling and is a feature not found on most word processing systems.

The line the cursor is on can be changed by two methods: by scrolling the screen and cursor up or down with <CTRL Z> or <CTRL Q>, or by switching the automatic scrolling off with <F10>. <F10> is used to lock the display so that it does not scroll automatically: when the cursor is moved to a position which would be off the screen however, the screen is automatically scrolled so that the cursor is forced onto the middle line. This centering of the cursor can be done manually by shift F10.

TIME WRITER

This display screen is the default display method, with characters being displayed one at a time across the screen with no regard for words being broken in half by the right edge of the screen.

Except for tab and return characters, the control characters are not displayed.

A tab character is displayed as a space, and extra spaces are displayed so that the next character is displayed at the next tab stop.

A return character is also displayed as a space, and extra spaces are displayed after it up to the end of the screen line so that the next character is displayed at the beginning of the next screen line. Note that it is possible for the last printable character to be displayed in column 80 on the screen, and for the return to be displayed by itself on the next line. This gives the appearance of a blank line after the paragraph which is not really there.

For example in the screen below, the first two paragraphs are not separated by a blank line when printing is done, whereas the second and third paragraphs are.

f. You will note that the blank line on the screen following this paragraph is not really there, and the appearance is caused by an orphan return character.

There is no blank line preceding this one, but there is one afterwards.

There is one blank line before this line: NOT two!

READ ERASE COPY MOVE -- DELETE INSERT FIND REPLACE -- PRINT LOCK UNDO EXIT

In order to see exactly what is happening, it is possible to enter a display mode which shows all the embedded control characters. Press <CTRL O>.

The control characters are displayed as "^A" for "control A", etc. Note that while ^A appears to take up two character position on the screen, only one character is actually embedded in the text.

The tab character is displayed as a ">" characters, while the return character is displayed as a "<" character. Spaces are displayed as a "_" character.

The control character display is an exact image of the text in the workspace, in that every character in the workspace is displayed on the screen, although some characters appear as two characters (namely the control characters), some appear as three characters (namely the marker characters), some appear as other characters (namely tab, return and space), and there are phantom characters on the screen which appear as blanks to ensure that the screen format is correct.

In general, the control character display should be used for accurate character editing, as it is the only display that shows you exactly what is in the text buffer. In particular, the control character display is a good way to distinguish between real and phantom blank lines.

The third type of display available is called the "quick word wrapped" display. This mode is similar to the standard display, except that words are not broken in the middle, rather they are wrapped around to the next line. This is done by phantom spaces being displayed before any word which would otherwise be broken by the right edge of the screen.

The following screen has quick wrapped display switched on.

```
is not really there, and the appearance is caused by an orphan return
character.
```

```
There is no blank line preceding this one, but there is one
afterwards.
```

```
There is a blank line before this line: NOT two!
READ ERASE COPY MOVE -- DELETE INSERT FIND REPLACE -- PRINT LOCK UNDO EXIT
```

All the screen shown above consist of seven text lines and one prompt line. The prompt line displays the current functions of the twelve function keys. Sometimes the seventh line contains a message rather than text. This message is erased after any editing key is pressed. The prompt line may change so that INSERT reads TYPE, depending on the current mode of insert or typeover. Further, certain functions put messages on the bottom line in place of the function key prompts: this indicates that the function keys cannot be used, but that the instructions in the prompt should be used.

HELP SCREENS

TIME WRITER provides context sensitive help screens, that give you information pertinent to the mode you have selected. In EDIT mode, there are three screens, invoked by pressing <HELP>, <SHIFT HELP> and <CTRL HELP>. The screens are displayed on the following page.

<HELP>

MAGNUM WRITER		by Cybernetics Research	HOW TO MOVE IN THE TEXT
<-	char left	S word left	C start of paragraph
->	char right	H word right	O end of paragraph
up arrow	line up	I screen up	N top of file
down arrow	line down	F screen down	T end of file
backspace	rubout	T del word left	R del paragraph left
		E	O
TAB	insert tab	D back tab	L

<SHIFT HELP>

MAGNUM WRITER	HELP	FUNCTION KEYS
F1 READ file	F5 DELETE char	F9 PRINT block formatted
F2 ERASE block	F6 INSERT/OVERWRITE	F10 SCROLL lock
F3 COPY block	F7 FIND string	F11 UNDO (a rubout)
F4 MOVE block	F8 REPLACE string	F12 EXIT

*** press RETURN to exit HELP ***

<CTRL HELP>

MAGNUM WRITER	HELP	SHIFTED FUNCTION KEYS
s-F1 WRITE block	s-F5 DELETE word	s-F9 PRINT unformatted
s-F2 ERASE to end of para	s-F6 INSERT control	s-F10 CENTRE cursor
s-F3 DUPLICATE paragraph	s-F7 repeat FIND	s-F11 UNDO (a del)
s-F4 repeat MOVE	s-F8 repeat REPLACE	s-F12 EXIT

*** press RETURN to exit HELP ***

MESSAGES

While you are using the editing system, a variety of messages will appear. These messages form several classes. The messages can appear on either the second last or last line. Messages on the bottom line are directives instructing you to perform some function, for example to copy a block or find a string. These messages are used to instruct you to move the cursor and press the return key to mark a position in the text for a block operation. Usually you will mark the start of the block, then move down and mark the end of the block. Some functions require a third position to be marked.

The second position must be below the first. You cannot move the cursor before the first position. A "[" is displayed in the text at the first position so that you can see where it is.

While these prompts are displayed, you may move the cursor, but not do any editing. You may abandon the function by pressing <ESC>.

The prompts used by the find and replace function and the file functions, require the entry of a string. The string may be edited using the MS-DOS command line editing functions. <CTRL C> can be used to abort the operation.

Messages on the status line are diagnostic or error messages, and remain only until the next key is pressed.

Many of the file control messages used in the main menu are also used in the editing system.

MARKERS

Markers provide a convenient means of remembering one or more positions in the document and form moving the cursor back to any one of these positions later. The markers are not displayed until control character display <CTRL O> is utilised.

<CTRL K 0-9> is used to set the markers (0-9)

<CTRL Q 0-9> is used to find the markers (0-9)

A marker can be set to the current cursor position by pressing <CTRL K> followed by a number 0 through 9.

The cursor can be moved to any marker already set by pressing <CTRL Q> followed by the required number.

Beginning of block markers and end of block markers are used to specify a block of text you wish to move or copy. Place the cursor at the beginning of the block and press <CTRL K> . Place the cursor at the end of the block and press <CTRL K> <K>.

TIME WRITER

The block move command <CTRL K> <V> moves all the text in the marked block to the cursor position, deleting the original at its old position. The beginning and end of block markers move with the block.

The block copy command <CTRL K> <C> is identical to the block move command except the text is not deleted at the source; a copy of the block is made at the cursor position.

The block delete command <CTRL K> <Y> is a convenient way to remove large quantities of text from a file.

<CTRL K> <H> will remove all block markers. <CTRL K> <Z> will remove all markers.

PHANTOM SPACES

Any character position on the screen which appears as a blank does not exist in the text: these are phantom spaces. Phantom spaces occur after TAB and RETURN characters. The cursor cannot appear on a phantom space, because phantom spaces do not exist. If you try to move onto a phantom space with a left or right arrow, the cursor will jump left or right to the next real character.

However, you will notice that the up and down arrows do appear to move onto phantom spaces. When the control character display is switched on you can see what really happens: real spaces are inserted automatically into the text so that the cursor can sit on a real character.

MAIL MERGE

Mail merge allows you to insert names and addresses into a document. The concept is, if you have a letter that you wish to send to 20 different people, you use mail merge to insert each persons name into the same letter, as each copy is printed. When you type the letter you don't key in any name or address, you just mark the positions where you would like the names and addresses to be inserted.

To use mail merge, first create a file containing the names and addresses. This "name and address" file can be organised in two ways, you can either select a fixed number of lines for each entry or you can have entries occupying a variable number of lines.

FIXED LENGTH ENTRIES

In a "name and address" file that uses a FIXED number of lines for each name and address entry, simply enter the names and addresses one after the other, ensuring each entry occupies the same number of lines as shown below.

SAMPLE NAME & ADDRESS FILE

Tom	(NOTE: first line of file.)
Simpson.	
43 South St,	
Pymble N.S.W. 2073	
Sue	
White.	
673 Day St,	
Balmain N.S.W. 2102	
John	
Black.	
7 George St,	
Gosford N.S.W. 2894	(NOTE: last line of file.)

In the above example each name and address occupies four lines. Always ensure an entry starts on a new line and there are no blank lines at the beginning or end of the file. If you accidentally insert a blank line at the beginning of a file, the last line of the first entry will be typed as the first line of the second entry. The first line of the first entry will be blank.

The example below shows how you would use the above "name and address" file with a letter.

SAMPLE LETTER USING MAILMERGE FUNCTIONS

TIME WRITER

NEW SYSTEMS
454 BROWN St HORNSBY

^1 ^2
^3
^4

Dear ^1

This letter is just to remind you of our latest offer, details of which are also enclosed. If you wish to take advantage of this offer, please reply within 14 days.

Yours faithfully

In the above example, you can see that to print each line of the "name and address" file, a marker must be placed into the text. The markers are entered by typing <SHIFT 6> and then a number corresponding to the line of the address you want to print.

To print the above letter, you would first select the Mail merge options menu, by selecting <F8> on the main menu. This will display the mail merge menu as seen below.

MAIL MERGE MENU

Document : F:XXXXXXXX.XXX		MAIL MERGE OPTION	
F1 : MAIL MERGE FILE	:	MAIL MERGE OFF	
F2 : Selective merge?	:	NO	
F3 : Mailing address lines	:	VARIABLE	F12 : EXIT
MAIL SELECTIVE LINES .. -- -- EXIT			

Press <F1> and enter the filename you have given to the above "name and address" file. If you want to print letters to all the entries in this "name and address file", leave <F2> set to "NO". If you set <F2> to "YES", the following prompt is displayed when you are printing the above letter:

Do you want to mail to this address (Yes, No, All, Quit)?

Finally to use the above example you would set <F3> to "4", as each "name and address" entry has four lines. <F12> returns you to TIME Writers main menu and you then load and print the file containing the letter using the <F6> or <F7> print functions.

After printing the previous letter with the example "name and address" file, you will end up with three letters, each to a different person and each looking as seen below. Note how each first line of the "name and address" entry has been used twice, which is why the first name has been put on a separate line to the surname.

SAMPLE PRINTOUT USING FIXED LENGTH NAME FILE

NEW SYSTEMS
454 BROWN St HORNSBY

Tom Simpson.
43 South St,
Pymble N.S.W. 2073

Dear Tom

This letter is just to remind you of our latest offer, details of which are also enclosed. If you wish to take advantage of this offer, please reply within 14 days.

Yours faithfully

VARIABLE LENGTH ENTRIES

The second type of "name and address" file allows each entry to occupy a VARIABLE number of lines. To achieve this, each entry is simply terminated by <@> <RETURN>, as seen in the example below. Note that each entry uses a different number of lines.

Tom Simpson.
Future Tech Pty. Ltd.,
43 South St,
Pymble N.S.W. 2073

@
Sue White.
673 Day St,
Balmain N.S.W. 2102

@
John Black.
7 George St,
Gosford.
N.S.W. 2894
@

When using a VARIABLE length "name and address file", <F3> on the Mail Merge menu must be set to VARIABLE.

MAIL MERGE @ COMMANDS

The following six @ commands may also be embedded in a document to provide additional mail merge functions.

MAIL MERGE CONTROL

<@MZDEL> Delete paragraph with zero mailfield.
<@MNDEL> Delete paragraph with null mailfield.
<@MZPRT> Print paragraph with zero mailfield.
<@MNPRT> Print paragraph with null mailfield.
<@MZERR> Print error with zero mailfield.
<@MNERR> Print error with null mailfield.

The command <@MZDEL>, when inserted into a document will cause any paragraph with a marker that references a zero length "name and address" field, to be not printed. A zero length field is a blank line, eg, just a <RETURN>.

The command <@MNDEL>, when inserted into a document will cause any paragraph with a marker that references a non existent "name and address" field, to be not printed. A non existent field is for example <^7> of an entry that only has 4 fields or lines.

The command <@MZPRT>, when inserted into a document will cause any paragraph with a marker that references a zero length "name and address" field, to be printed.

The command <@MNPRT>, when inserted into a document will cause any paragraph with a marker that references a non existent "name and address" field, to be printed.

The command <@MZERR> and <@MNERR>, when inserted into a document will cause the <^X> marker to be printed if a zero or null mailfield is encountered.

NOTE:

The word "Field" is used as the name of any single line in the "name and address" file. Each "name and address" entry is called a "Record".

MAIL MERGE HELP MENU

Press <HELP> for an explanation of mail merge function keys.

HELP WITH MAIL MERGE press any key to continue

F1 selects mailmerge: enter the mail merge filename

Shift F1 switches mail merge off

F2 selects Selective mailing, Shift F2 switches it off

F3 increments number of lines in a mail record, Shift F3 decrements

Variable mail records are separated by @ lines

COMMAND SUMMARY

NOTATION

<F4>, <SF6>, <CF12> etc refer to the function keys used in conjunction with the shift and control keys. <F4> means pressing F4, <SF6> means shift F6, and <CF12> means control F12.

MS-DOS LINE EDITING

MS-DOS line editing is used in entering the filename in response to the prompt 'Please enter a file name :'. Apart from typing in the characters required in the filename, the function keys as listed below can be used. The template is the last entered filename.

<F1>	Copy one character from template.
<F2>	Copy upto specified character.
<F3>	Copy to end of template.
<F4>	Delete up to specified character.
<F5>	Makes current line new template.
<F8>	Enter insert mode.
<F9>	Delete a character forwards.
<F10>	Abandon current line and restart (do not use).
<CTRL X>	Abandon current line and restart (do not use).
<ESC>	Abandon current line and restart (do not use).
<BACKSPACE>	Delete a character backwards.
< <- ARROW>	Delete a character backwards.
<LF>	Start new line to continue line.
<RETURN>	Terminate line.
<CTRL C>	Abandon entry and abort function.

QUESTIONS

Several questions such as 'Create a new backup file ? ' may be asked by the word processor. In answer to these questions, you must press an appropriate key, such as <Y> or <N>.

HELP

If you are in need of some help, you may press the <HELP> key at almost any time, and an appropriate help screen will be displayed. The editing sub system currently has three separate help screens which can be called up by <HELP>, <SHIFT HELP> and <CTRL HELP>. The help screens can usually be exited by pressing any key.

MAIN MENU

The following functions can be selected from the Main Menu.

<F1>	CREATE file.
<F2>	LOAD file.

TIME WRITER

<SHIFT F2> DIRECTORY display.

<F3> VIEW workspace.

<SHIFT F3> EDIT workspace.

<F4> SAVE file.

<SHIFT F4> CLEAR workspace.

<F5> PRINT options.

<SHIFT F5> MISC options.

<F6> PRINT file.

<F7> PRINT workspace.

<F8> MERGE options.

<F11> DELETE file.

<F12> EXIT

<HELP> HELP

MISCELLANEOUS OPTIONS <SHIFT F5>

Press appropriate Function Key or <SHIFT> Function key until the option you require is displayed.

<F1> End of paragraph in workspace options:

1. CR, or
2. CR/LF

<SHIFT F1> End of paragraph in disk file options:

1. CR, or
2. CR/LF

<F2> End of buffer options:

1. The buffer length recorded in the word processor, or
2. The buffer length including a terminating single CTRL Z.

<SHIFT F2> End of disk file options:

1. The file length recorded in the directory, or
2. The file terminated by a single ctrl z, or
3. The file terminated by recording whole sectors and filling the last sector with CTRL Z's, or
4. The file terminated by recording whole sectors and filling the last sector with nulls.

<F3> Allow validity in buffer options:

1. Off, or
2. On

<SHIFT F3> Allow validity in disk file options:

1. Off, or
 2. On
- <F4> Backup control options:
1. Backup off, or
 2. Manually select backup, or
 3. Automatic backup.
- <F5> Automatic space insertion on up arrow options:
1. On, or
 2. Off.
- <F6> Effect of tab key options:
1. Insert tab, or
 2. Insert spaces to next tab stop, or
 3. Move to next tab stop.
- <F7> Word size options:
1. Short, or
 2. Long, or
 3. Visual, or
 4. English.
- <F12> Exit.
- <ESC> Exit.

PRINT OPTIONS <F5>

- <F1> Increment lines page. Must be ≤ 99 .
- <SHIFT F1> Decrement lines per page. Must be > 0 .
- <CTRL F1> Enter lines per page.
- <F2> Increment first line. Must be $\leq$ last line.
- <SHIFT F2> Decrement first line. Must be > 0 .
- <CTRL F2> Enter first line.
- <F3> Increment last line. Must be $\leq$ lines page.
- <SHIFT F3> Decrement last line. Must be $\geq$ first line.
- <CTRL F3> Enter last line.
- <F4> Increment spacing. Must be < 10 .
- <SHIFT F4> Decrement spacing. Must be > 0 .
- <CTRL F4> Enter spacing.
- <F5> Increment left margin.
- <SHIFT F5> Decrement left margin. Must be ≥ 0 .
- <CTRL F5> Enter left margin.
- <F6> Increment line width. Must be < 80 .
- <SHIFT F6> Decrement line width. Must be > 0 .

TIME WRITER

<CTRL F6> Enter line width.

<F7> Set left justify only.
<SHIFT F7> Set left and right justify.
<CTRL F7> Enter justification.

<F8> Set continuous printing.
<SHIFT F8> Set single sheet feeding.
<CTRL F8> Single sheet or continuous.

<F9> Increment column width. Must be < line width.
<SHIFT F9> Decrement column width. Must be > 0.
<CTRL F9> Enter column width.

<F10> Reset tabs to column width.
<SHIFT F10> Load tabs from D:TABS.TAB.
<CTRL F10> Save tabs to D:TABS.TAB.

<F11> Reset format to default.
<SHIFT F11> Load options from D:FORMAT.FMT.
<CTRL F11> Save options to D:FORMAT.FMT.

<F12> Exit.

<L arrow> Move cursor left in tab line.
<R arrow> Move cursor right in tab line.
<TAB> Tab right in tab line.
<BACK TAB> Tab left in tab line.
<+> Set tab.
<-> Clear tab.
<ESC> Exit.
<HELP> Help with format.

MAIL MERGE OPTIONS <F8>

<F1> Select mail merge file.
<SHIFT F1> Switch mail merge off.

<F2> Selective merge.
<SHIFT F2> Global merge.

<F3> Increment number of lines in a merge record.
<SHIFT F3> Decrement number of lines in a merge record.

<F12> Exit.
<ESC> Exit.
<HELP> Help.

If variable number of lines are specified, a line with a @ character is required to separate the records. Variable is the default, press SF3 repeatedly to select variable.

PRINT MENU <F6>, <F7>

<F1> Select screen output.
<SHIFT F1> Deselect screen output.

<F2> Select parallel printer output.
<SHIFT F2> Deselect parallel printer output.

<F3> Select serial printer output.
<SHIFT F3> Deselect serial printer output.

<F4> Select disk output.
<SHIFT F4> Deselect disk output.

<F5> Increment number of copies.
<SHIFT F5> Decrement number of copies.

<F6> Increment first page.
<SHIFT F6> Decrement first page.

<F7> Increment page skip.
<SHIFT F7> Decrement page skip, if < 0 ASK EACH PG.

<F8> Increment last page.
<SHIFT F8> Decrement last page, if 0 LAST PAGE.

<F10> Reset.

<F11> Start printout.

<F12> Exit.
<ESC> Exit.
<HELP> Display help.

PRINT CONTROL

<CTRL S> Operating system pause.

<Any key> During printout will pause printing until another key is pressed.

<CTRL C> While paused by any key, or waiting, will eject page and stop.

<CTRL C> During printout will stop printing and return to PRINT MENU.

EDITING FUNCTIONS <F1>, <F3>

ARROW GROUP

<  > Move left character.
<  > Move right character.

TIME WRITER

<  > Move up line.
<  > Move down one line.
<SHIFT  > Move word left.
<SHIFT  > Move word right.
<SHIFT  > Move up half screen.
<SHIFT  > Move down half screen.
<CTRL  > Move to start of paragraph, Thence start of previous paragraph.
<CTRL  > Move to end of this paragraph, Thence end of next paragraph.
<CTRL  > Move to end of previous paragraph.
<CTRL  > Move to start of next paragraph.

OTHER KEYS

<BACKSPACE> Delete char left.
<SHIFT BACKSPACE> Delete word left.
<CTRL BACKSPACE> Delete left to start of paragraph.
<TAB> Insert a tab character.
<SHIFT TAB> Move back to previous tab stop.
<RETURN> Insert return character (start new line).
<LF> Insert return after cursor.
<LOCK> Switch caps lock on/off.

EDIT FUNCTION KEYS

<F1> Read file.
<SHIFT F1> Write block to file.
<CTRL F1> Start autokey learning.

<F2> Erase block
<SHIFT F2> Delete to end of paragraph
<CTRL F2> Stop autokey learning

<F3> Copy block
<SHIFT F3> Duplicate current paragraph.
<CTRL F3> Do autokey sequence.

<F4> Move block.
<SHIFT F4> Insert another copy of last block moved or copied.
<CTRL F4> <char> Jump to nominated character in paragraph.

<F5> Delete character right.
<SHIFT F5> Delete word right.
<CTRL F5> <char> Delete upto nominated character in paragraph.

<F6> Switch insert/overwrite mode on/off.
<SHIFT F6> Insert next character literally to left.
<CTRL F6> Insert next character literally to right.

<F7>	Find nominated string.
<SHIFT F7>	Find string again.
<CTRL F7>	Covert to upper case.
<F8>	Replace nominated string with nominated string.
<SHIFT F8>	Replace string again.
<CTRL F8>	Convert to lower case.
<F9>	Print block as per print function.
<SHIFT F9>	Print block including @ commands.
<F10>	Scroll lock toggle on/off.
<SHIFT F10>	Centre cursor.
<CTRL F10>	Quick word wrap toggle.
<F11>	Undo delete left character.
<SHIFT F11>	Undo delete right character.
<F12>	Exit.
<ESC>	Exit.
<HELP>	Help with arrow keys.
<SHIFT HELP>	Help with PF keys.
<CTRL HELP>	Help with shifted PF keys.

CONTROL KEYS

<CTRL A>	Move word left
<CTRL B>	Move to bottom of file
<CTRL C>	Move half screen down
<CTRL D>	Move character right
<CTRL E>	Move line up
<CTRL F>	Move word right
<CTRL G>	Delete character right
<CTRL H>	Delete character left
<CTRL I>	Insert tab character
<CTRL J>	Insert return after cursor
<CTRL K>	Initiate CTRL K functions
<CTRL L>	Repeat find
<CTRL M>	Insert return
<CTRL N>	Insert return after cursor
<CTRL O>	Switch control character display on/off
<CTRL P>	DO NOT PRESS - MAY INITIATE ECHO TO PRINTER!
<CTRL Q>	Initiate CTRL Q menu
<CTRL R>	Move half screen up
<CTRL S>	Move character left
<CTRL T>	Top of file
<CTRL U>	Undo delete right
<CTRL V>	Switch insert/overwrite on/off
<CTRL W>	Change cursor line down one
<CTRL X>	Move down line

TIME WRITER

<CTRL Y> Delete whole paragraph
<CTRL Z> Change cursor up down one
<CTRL [> Escape - exit WP
<CTRL \> Decimal tab push
<CTRL]> Exchange previous two characters
<CTRL 7> Move to next tab stop
<CTRL -> Tab push
<CTRL /> Toggle key beeping
<CTRL <> Lighten background on lcd
<CTRL >> Darken background on lcd

<CTRL K> <0-9> Set place marker 0-9
<CTRL K> Mark block beginning
<CTRL K> <C> Copy marked block
<CTRL K> <D> Save file, return to menu
<CTRL K> <H> Remove block markers
<CTRL K> <J> Delete a disk file
<CTRL K> <K> Mark block end
<CTRL K> <Q> Return to menu
<CTRL K> <R> Read file
<CTRL K> <S> Save file, keep editing
<CTRL K> <V> Move marked block
<CTRL K> <W> Write block to file
<CTRL K> <X> Save file, return to menu
<CTRL K> <Y> Delete marked block
<CTRL K> <Z> Remove all markers
<CTRL K> <HELP> Display CTRL K help

<CTRL Q> <0-9> Move to place marker
<CTRL Q> <A> Replace
<CTRL Q> Move to start of block
<CTRL Q> <C> Move to end of file
<CTRL Q> <D> Move to end of paragraph
<CTRL Q> <E> Move up screen
<CTRL Q> <F> Find
<CTRL Q> <K> Move to end of block
<CTRL Q> <O> Call up misc options menu
<CTRL Q> <R> Move to start of file
<CTRL Q> <S> Move to start of paragraph
<CTRL Q> <W> Change word size
<CTRL Q> <X> Move screen down
<CTRL Q> <Y> Delete to end of paragraph
<CTRL Q> <H> (del) delete to beginning of paragraph
<CTRL Q> <HELP> Display CTRL Q help

FORMAT COMMANDS

VERTICAL & PAGE CONTROL

Page Number

<@PGNOn> Set page number to n (default 1 at start), also ejects.
 <@LHAND> Set odd pages as left hand.
 <@RHAND> Set odd pages as right hand (default).

Headings and Footings

<@TOPMn> Set top margin to n lines (default from menu).
 <@BOTMn> Set bottom margin to n lines (default from menu).
 <@PLENGTHn> Set page length to n lines, (default from menu). Including headings & footings.
 <@HEADn text> Heading line n for both pages.
 <@FOOTn text> Footing line n for both pages.
 <@LHEADn text> Heading line n for left page.
 <@RHEADn text> Heading line n for right page.
 <@LFOOTn text> Footing line n for left page.
 <@RFOOTn text> Footing line n for right hand page.

Skipping

<@LPAGE> Skip to left page.
 <@RPAGE> Skip to right page.
 <@NEWPAGE> Start a new page if not already there.
 <@PSKIPn> Leave n blank pages.
 <@WIDOWN> Widow zone for a new para of n lines (default 3).
 <@HEADZONEn> Widow zone for headings of n lines (default 5).
 <@LINEn> Goto line n.
 <@LSKIPn> Skip n lines, or to next page.
 <@PICTUREn> Make space for a picture of n lines.
 <@GROUPn> Ensure there are n lines on the page.

Line Spacing

<@SPACINGn> Set spacing to n lines (default from menu).

HORIZONTAL AND LINE CONTROL

Margins

<@MARGINn> Left margin both pages n characters (default 0).
 <@LMARGINn> Left margin left page n characters (default 0).
 <@RMARGINn> Left margin right page n characters (default 0).

Indentation

TIME WRITER

<@INDENTFn> Indent first line of para n characters (default 0).
<@INDENTSn> Indent subsequent lines n characters (default 0).
<@INDENTHn> Indent headings, which start with ` by n characters (default 0).

Line Width

<@WIDTHn> Set line width to n characters, including indents, but excluding margins (default from menu).

Text Alignment

<@LEFTJ> Left align subsequent text.
<@RIGHTJ> Right align subsequent text.
<@OUTJ> Left j on left page, rj on right page.
<@INJ> Rj on left page, lj on right page.
<@JUSTIFY> Left and right align subsequent text.
<@CENTRE> Centre subsequent text.

Horizontal Breakpoint

<@NOWRAPn> No word wrapping up to column n.
<@WRAPn> Wrapping after column n.

MAIL MERGE CONTROL

<@MZDEL> Delete para with zero mailfield.
<@MNDEL> Delete para with null mailfield.
<@MZPRT> Print para with zero mailfield.
<@MNPRT> Print para with null mailfield.
<@MZERR> Print err with zero mailfield.
<@MNERR> Print err with null mailfield.

UNDERLINE

<SHIFT F6> <CTRL N> Starts underlining.
<SHIFT F6> <CTRL O> Stops underlining.
<@UNDERLINESPACES> When underlining, underline all characters.
<@NOUNDERLINESPACES> When underlining, do not underline spaces.

MISCELLANEOUS

<@REM> Remark.
<@RESET> Reset parameters.
<@PAUSE> Pause and send message to screen.

<@MACROCHARS12345678> Set macro characters 1 to 8. (See below).

Change the formatting control characters

TO	FROM	FUNCTION
1	^	macro lead
2	@	command lead
3	~	supersoft space
4		automargin
5	`	heading
6	_	super hard space
7	ctrl N	underline on
8	ctrl O	underline off

The default is:

@MACROCHARS^@~|`\_`N^O

MACRO REPLACEMENT FACILITY

<^F> Replace by filename
<####> In heading or footing only, replace by page number
<^1><^2><^n> Replace by mailmerge field no 1 2 or n

FORMATTING CONTROL CHARACTERS

<RETURN> End of a paragraph.
<TAB> Put spaces to next tab stop if in first line, else replace by a single space.
<^>(caret) Macro replacement prefix.
<_>(underline) Superhard space: replace by space on printing, otherwise treat as an ordinary printable character.
<~>(tilde) Supersoft space: replace by as many spaces as needed to fill out a line to the right margin used for centring, right align, etc.
<|>(vertical bar) Automargin: set indent for subsequent lines in paragraph here.
<`>(accent) Position heading: indent by amount set by @INDENTH, go to next page if <= @HEADZONE lines from bottom.
<@>(at sign) Command prefix.
<CTRL N> Start underlining.
<CTRL O> Stop underlining.

CHAPTER 5

TIME CALC

(SPREADSHEET)

TABLE OF CONTENTS

OVERVIEW	5-3
What is a 'Spreadsheet'?.....	5-3
TUTORIAL	5-4
Entering Headings and Descriptions.....	5-6
Entering the Data.....	5-8
Entering the Formulae.....	5-9
Saving and Recalling Your Spreadsheet.....	5-12
REFERENCE	5-14
OVERVIEW	5-14
Moving Around the Spreadsheet.....	5-14
Entry of Numeric Data and Formulae.....	5-14
Entry of Text.....	5-14
Editing Commands.....	5-15
CELL REFERENCES	5-15
Names.....	5-15
Absolute references.....	5-16
Relative references.....	5-16
Indirect references.....	5-17
Ranges.....	5-17
FORMULA ELEMENTS	5-17
Constants.....	5-18
Operators.....	5-18
Precedence.....	5-20
SPREADSHEET PROTECTION	5-20

TIME CALC

MAIN TIME CALC FUNCTIONS	5-21
CREATE a new spreadsheet (F1).....	5-21
LOAD spreadsheet from disk (F2).....	5-21
DIRECTORY (shift F2).....	5-22
EDIT spreadsheet (F3).....	5-22
SAVE spreadsheet to disk (F4).....	5-23
CLEAR workspace (shift F4).....	5-24
Modify FORMAT options (F5).....	5-24
PRINT spreadsheet (F6).....	5-25
DELETE file from disk (F11).....	5-25
EXIT to Main Menu (F12).....	5-26

FUNCTIONS AVAILABLE IN EDIT MODE.....	5-27
Set CELL parameters (F1).....	5-27
Modify COLUMNS (F2).....	5-29
Modify ROWS (F3).....	5-31
Range (F4).....	5-31
Set DEFAULT global parameters (F5).....	5-33
Text (F6).....	5-34
GOTO cell (F7).....	5-34
ReCALCULATE spreadsheet (F8).....	5-34
CROSS split screen (F9).....	5-34
SPLIT screen (F10).....	5-34
EXIT to Main Menu (F12).....	5-35

OVERVIEW

This chapter introduces you to TIMECALC, the Kookaburra's powerful spreadsheet system, and describes the functions offered. The chapter is divided into two major sections - an introductory tutorial, where you are shown by example some of the functions of TIMECALC, and a reference section that explains all the functions provided. We urge you to work through the tutorial before reading the reference section.

WHAT IS A 'SPREADSHEET'?

A spreadsheet is best imagined as a very large sheet of paper which is divided into 250 vertical columns and 250 horizontal rows. This gives us a total of 62500 places where the columns and the rows intersect. These places are called 'Cells'.

Into each of these cells we can place one of three things:

1. A NUMERIC VALUE. This could represent an amount of money, the size or weight of something, or anything that is normally expressed in figures. These values are the raw material or 'data' for the spreadsheet to work on.
2. A MATHEMATICAL FORMULA which combines the values in other cells in some meaningful way; such as totalling the values in a column, or across a row, calculating percentages or averages, or square roots. A large range of formula elements can be used. These formulae provide the 'brains' of the spreadsheet by telling it what to do with the data.
3. TEXT (headings, comments, explanations, etc.). You can use these to set out formats and generally make your spreadsheet more presentable and understandable. Without text, a spreadsheet is just a jumble of figures.

The spreadsheet is displayed as a table of rows and columns. Along the top are the column descriptors, and along the left hand side are row descriptors. Initially, these descriptors are a simple numbering scheme for locating cells; the columns are numbered A, B, C, ..., up to IP; the rows are numbered 1, 2, ..., up to 250. Thus the top left cell is called 'A1', and the bottom right cell is called IP250. TIMECALC allows you to rename the rows and columns; you could call row 1 'NUTS', for example; column A could be 'PRICE', and column B 'QUANTITY'. Cell A1 can then be called 'A1', or 'NUTS.PRICE'.

The real power of a spreadsheet comes from the ability to have formulae in cells. These formulae, combined with the powerful computational facilities of the KOOKABURRA, allow you to perform sophisticated 'what-if' analysis. For example, if sales are up by 10% in the third quarter, what is the effect on company profitability? If inflation is only 5% in the first quarter, but rises to 10% by the end of the third quarter, what is the effect on project costs? If the prime interest rate goes up 1%, what is the effect on the company debt structure?

TUTORIAL

It is in your best interests to follow this example from start to finish on your own Kookaburra to get the 'feel' of TIMECALC. Then read the rest of the Chapter. You should then be ready to experiment with a few ideas of your own. You will be surprised just how quickly you can acquire the valuable new skills of using a spreadsheet program.

The spreadsheet we will use for our example is a simple quarterly sales budget comparison which looks like this:

SALES BUDGET	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Budgeted Sales	2000000	2200000	2500000	2300000
Actual Sales	1800000	2150000	2600000	2278000
Variation	-200000	-50000	100000	-22000
Percent of Budget	90.00	97.73	104.00	99.04

We will commence our procedure with the Kookaburra's System Menu on the display. To select the TIMECALC Menu (below) from the System Menu press <F4>, or when in MS-DOS select the filename <MC>.

Document : No file to use	TIME Calc 2.11	Workspace 0/58604=Empty
F1 : CREATE a new spreadsheet	F5 : Modify FORMAT options	
F2 : LOAD spreadsheet / sF2 : DIRECTORY	F6 : PRINT spreadsheet	
F3 : EDIT spreadsheet	F11: DELETE file	
F4 : SAVE spreadsheet / sF4 : CLEAR	F12: EXIT to Main Menu	
CREATE LOAD/DIR EDIT SAVE/CLEAR -- FORMAT PRINT -- DELETE EXIT		

Examine the screen above carefully, as we will be referring to it frequently. In the top left corner is a message:

'Document: no file to use'

This message will change to the name of the spreadsheet we are creating or modifying. Lines 2 to 6 contain an explanation of what the various function keys are used for. Line seven is the status or command line; messages about the current status of operations appear here. The bottom line shows a summary of the function keys.

We will call this spreadsheet SALESBUD to distinguish it from any other spreadsheets that we might create in the future. Press the <F1> key and you will see

'Please enter a file name:'

appear on the status line of the display. Type the file name <SALESBUD> and press <RETURN>. (If you make an error while typing the name or while typing anything on your Kookaburra, simply use the <BACKSPACE> key to erase the incorrect characters, and then retype).

NOTE: The file name identifies your spreadsheet so that you can store it in the Kookaburra's memory and re-call it at will without any danger of confusion with other documents. The file name you choose for each spreadsheet you create must, therefore, be unique. It may contain up to eight alphabetic or numeric characters in the first part and up to three in the second part (or extension) with a fullstop separating the two parts. You need not specify an extension and, if you do not, the computer automatically appends .CLC. (The computer does not distinguish between upper and lower case alphabetic characters, e.g., the name SALESBUD.CLC is the same as SaLeSbUd.cLc). Note also that the fullstop belongs to the extension. Therefore, if you do not want to specify your own extension, do not include the fullstop as part of the name. (If you have a disk expansion box, and would like to store files on floppy disks, see 'Notes on Storage Areas and Directories' at the end of this chapter).

TIMECALC automatically enters the 'editing' mode and you will see a blank spreadsheet appear on the display like this:

```

A1  -----A----- -----B----- -----C----- -----D-----
1:>          <
2:
3:
4:
5:
1:CELL 2:COL 3:ROW 4:RANGE 5:DFLT 6:TEXT 7:GOTO 8:CALC 9:CROSS 10:SPLIT 12:EXIT

```

The pair of symbols '>' '<' form the 'cursor' which indicates the cell of the spreadsheet which is currently being worked on. In the above example, the cursor is positioned at cell A1 (Row 1 of Column A). This cursor is a special cursor which will only appear on the spreadsheet itself. For all other types of entry, the small character-size block cursor is used. All references to cursor in this example are to the 'spreadsheet' cursor. The cursor can be moved around the spreadsheet using the 'arrow' keys on the keyboard on either side of the space bar. In the top left corner of the display is the 'cell descriptor'; currently it only shows 'A1'. This field displays all information about a cell; current value, formula entered, and display format to be used.

Obviously, the display cannot show all 250 columns and all 250 rows at once. Instead it acts as a 'window' which shows only a portion of the whole spreadsheet. Try moving the cursor around the spreadsheet using the four arrow keys; notice how the display follows you by shifting one column or row each time you try to move the cursor off the displayed section. Notice, too, how the cell descriptor field changes to show the current cell position.

You can also use the 'GOTO' function to move around the spreadsheet. Press the <F7> key and the display will respond with 'Goto which cell?'. Type in the cell position that you want (anywhere from A1 to IP250) and press <RETURN>. The requested cell will immediately move to the top left hand position of the display.

The bottom row of the display indicates the meanings of the function keys while in editing mode. You will see how these operate as we progress further with our example.

ENTERING HEADINGS AND DESCRIPTIONS

The next operation is to enter the row descriptions and column headings. These descriptions are used to make the spreadsheet understandable, and do not enter into the calculations.

We will begin with the title for the whole spreadsheet; 'SALES BUDGET'. This title will go near the top left-hand corner of the display. Using the arrow keys, place the cursor over the heading area of the 'A' column. If you wish, you can use the GOTO function; press <F7>, type in 'A0' (0 is the column heading row) and then press the left arrow key once. This will place the cursor in the 'row description' column above the row numbers. Notice that the cell descriptor field shows '0' without a letter. This indicates that the cursor is not in a normal cell position but in the row description column in row 0.

Notice also that the cursor is now narrower. This is because the row description column is initially narrower than the other columns, and before we can enter the title and the row descriptions, we must make it wider. To do this, press the <F2> key (labelled (COL)) to indicate that it is a whole column that we want to deal with. The bottom line of the display will show:

```
'Column: (I)nsert (D)elete (M)ove (C)opy (W)idth (U)n(L)ock?'
```

Press <W> to indicate that you wish to alter the width of the column. The meaning of the other functions will be covered later. The following message will appear on the bottom line of the display:

```
'Enter column width (0-70):'
```

Type in <20> followed by <RETURN>, to make the row description column 20 characters wide. This is an arbitrary figure chosen so as to accommodate the longest row description envisaged for the spreadsheet. You could, in fact, make it as wide as you like (up to a maximum of 70 characters), but 20 is wide enough for our purpose at the moment.

The display should now look like this:

```

0
>
      1:
      2:
      3:
      4:
      5:
1:CELL 2:COL 3:ROW 4:RANGE 5:DFLT 6:TEXT 7:GOTO 8:CALC 9:CROSS 10:SPLIT 12:EXIT

```

Notice that the whole row description column (and the cursor while it is there) are now 20 characters wide; and that column D has disappeared from the display because there is no longer any room for

it. It is, of course, still stored in the computer.

Now we will enter the title 'SALES BUDGET' into the cell where the cursor is. To do this press the <F1> key (CELL) to indicate that it is a cell that we want to deal with. The bottom line of the display will show:

'Cell: (N)ame (F)ormat (P)rotect (U)nprotect ?'

To enter a name into the cell, press <N> for name. The meaning of the other functions will be covered later. The bottom line of the display will show:

'NAME:'

Type <SALES BUDGET> followed by <RETURN>. The spreadsheet title will appear on the top line of the screen in parentheses next to the cell location display. This title will always appear there when the cursor is placed in the '0' position. If, after you have pressed <RETURN>, you realise you have made a mistake in entering a name, you can overwrite it by performing the <F1>, <N> sequence again.

Now, move the cursor down to row 1 using the down arrow key. The title will disappear and the cell location will show '1'. Press <F1> and then <N> again as you did for the Title, and enter the description for row 1 <Budgeted Sales>, followed by <RETURN>. The row description will appear at the cursor position as well as in parentheses in the cell descriptor field. This description will always appear there when the cursor is placed in the '1' position.

Now, move the cursor down and repeat the above procedure for each of the other row descriptions, 'Actual Sales', 'Variation', and 'Percent of Budget'. When the last description has been entered, the display should look like this:

```

4(Percent of Budget)  -----A-----  -----B-----  -----C-----
      Budgeted Sales:
      Actual Sales:
      Variation:
>  Percent of Budget:<
                        5:
1:CELL 2:COL 3:ROW 4:RANGE 5:DFLT 6:TEXT 7:GOTO 8:CALC 9:CROSS 10:SPLIT 12:EXIT
  
```

To enter the column headings, use the arrow keys to move the cursor to the column heading position for column 'A' (or GOTO A0, if you like). Then proceed as for the row descriptions, above. Press <F1> (Cell) and then <N> (Name). Type the the heading <1st Quarter>, followed by <RETURN>. The heading will appear in place of the 'A' and also in parentheses next to the cell position display.

Now, move the cursor to the right and repeat the above procedure for the other three column headings, 2nd Quarter, 3rd Quarter and 4th Quarter, in turn. As you move the cursor from column 'C' to column 'D', notice how the display moves over to display columns 'B', 'C' and 'D', leaving the descriptions where they were.

TIME CALC

The display should now look like this:

```
D0(4th Quarter)
--2nd Quarter--- --3rd Quarter--- >--4th Quarter---<
Budgeted Sales:
Actual Sales:
Variation:
Percent of Budget:
5:
1:CELL 2:COL 3:ROW 4:RANGE 5:DFLT 6:TEXT 7:GOTO 8:CALC 9:CROSS 10:SPLIT 12:EXIT
```

ENTERING THE DATA

Having described the columns and rows, we can now enter data into the cells of the spreadsheet. Place the cursor on cell A1 and press <RETURN>. The following will appear on the status line, and a character sized cursor will appear alongside:

'VALUE: '

Enter the data for 1st Quarter Budgeted Sales <2000000> and press <RETURN>. Notice that the number you typed appeared on the status line alongside 'VALUE:'. While the cursor is on this line, you can edit what you are entering with the arrow keys and backspace. When you press <ENTER>, the number is transferred from the status line into the currently selected cell. Move the cursor to cell B1, using the right arrow key. Press <RETURN> again and type in the data for 2nd Quarter Budgeted Sales (2200000) and press <RETURN>. Repeat this procedure for the 3rd and 4th Quarter columns entering the data (2500000 and 2300000, respectively).

Notice that the above was a repetitive sequence of:

<RETURN> <data> <RETURN> <right arrow>

TIMECALC offers two facilities that makes the process of data entry a little easier. The first is an assumption that if you start entering numbers or formulae, you wish them to go into the current cell. The first <RETURN> in the sequence above is unnecessary; if you just start entering the number, 'VALUE:' will appear on the status line, along with the number you are typing.

The second facility is called 'Autokey'. This allows us to specify a single keystroke to be executed automatically by TIMECALC whenever we press <RETURN> after entering a value. To set up the Autokey, press <F5>, then select option '<A>'. The following appears on the display:

'Enter keystroke (RETURN clears AUTOKEY):'

Press the right-hand <arrow> key to indicate the direction we want the cursor to move after each cell is entered.

Place the cursor on cell A2 and commence to enter the data for the Actual Sales row just as you did before (the Autokey is still active). The data is:

1800000 2150000 2600000 2278000

Notice that each time you press <RETURN>, the cursor moves right one column. To save future confusion, disable the Autokey when you have finished by pressing <F5>, selecting option <A>, and pressing <RETURN>.

ENTERING THE FORMULAE

Our spreadsheet is now ready for the formulae. These are the instructions which tell TIMECALC what to do with the data. In our example, there will be formulae in the 'Variation' and 'Percent of Budget' rows in all four columns.

The 'Variation' row in a particular column is simply a subtraction of the 'Budgeted Sales' (row 1) from the 'Actual Sales' (row 2) in that column. The subtraction is done this way so that if actual sales are less than budgeted sales, the result is negative, as we would expect.

The formula is simple; for the '1st Quarter' column it is A2-A1. This means subtract the value given in cell A1 (1st Quarter, Budgeted Sales) from the value given in cell A2 (1st Quarter, Actual Sales).

Before we proceed to enter this formula, we must consider one more thing; The formula we need in the Variation row of each of the other three columns is identical to this one, except that it will refer to a different column (B, C or D). This fact is significant because TIMECALC provides a feature that enables a formula to be copied from one cell into another while automatically changing the column references to suit the column into which it is copied.

To do this, we must make the column references in our formula 'relative', which means that they refer to the column in which the formula resides. To designate a reference (column or row) as 'relative' we must precede it with a '~' character, produced by holding <SHIFT> and pressing the key near the top right hand corner of the keyboard next to the BACKSPACE key.

NOTE: The '~' character will not be displayed in quite the same form as you see it on the keyboard. This is a result of the LCD screen and is of no concern.

To enter the formula, place the cursor in cell position A3 (1st Quarter, Variation) and press <RETURN>. The following will appear on the bottom line of the display:

'VALUE:'

Type <~a2-~a1>, and press <RETURN>. Notice that the top line of the display now shows:

'A3 = V{1st Quarter.Actual Sales-1st Quarter.Budgeted Sales}'

This is the formula that we entered, expressed in terms of row descriptions and column headings instead of cell references. You will notice that the value '-200000' is now displayed in the 1st Quarter Variation cell. This is the result of the calculation.

Now we can 'Replicate' this formula into the other three columns of the Variation row. Replicate is a 'Range' type command as you will see. Press <F4> (Range). The following appears on the command line:

'Range: (M)ove (C)opy (B)lank (A)bsolute R(e)lative
(R)eplicate (P)rint ?'

Press <R> for Replicate. The following appears on the command line:

'Place the cursor on the cell to be replicated and then press
RETURN'.

Make sure the cursor is still on cell A3 (the formula we entered) and press <RETURN>. The following appears on the display:

'Place the cursor on the top corner of range and then press
RETURN'.

TIMECALC allows you to replicate a single formula into more than one cell in a single operation. TIMECALC is asking you to set up a group or 'Range' of cells, this being a rectangular area of cells which you define by entering the cell at the top left hand corner of the rectangle, and then the cell at the bottom right hand corner of the rectangle. For example, if you enter <A3> and then <B6>, you would be defining the set of cells comprising A3, A4, A5, A6, B3, B4, B5 and B6. In our case we simply give two cell addresses in the same row to define the area we want.

In response to the above direction place the cursor on cell B3 and press <RETURN>. The following appears on the bottom line of the display:

'Place the cursor on bottom corner of range and then press
RETURN'

Place the cursor on cell D3 and press <RETURN>. In this range we have defined cells B3, C3 and D3. The formula will be replicated into these three cells. The display should now look like this:

D3 = V(".4th Quarter.Actual Sales-" .4th Quarter.Budgeted Sales)			
	--2nd Quarter---	--3rd Quarter---	--4th Quarter---
Budgeted Sales:	2200000	2500000	2300000
Actual Sales:	2150000	2600000	2278000
Variation:	-50000	100000 >	-22000<
Percent of Budget:	5:		
1:CELL 2:COL 3:ROW 4:RANGE 5:DFLT 6:TEXT 7:GOTO 8:CALC 9:CROSS 10:SPLIT 12:EXIT			

Notice that the cursor is in the 4th Quarter column and that the formula displayed on the top line correctly refers to the values for the 4th Quarter column. Move the cursor to the left and notice how the formulae for the 3rd Quarter and 2nd Quarter columns are also correct.

We can also replicate formulae down the cells of a column. In this case we would need to make ROW designations relative so that a formula would refer to the column and row of whatever cell is was replicated to.

Now we can enter the formulae for the cells in the Percent of Budget row. We want this formula to express Actual Sales as a percentage of Budgeted Sales, in other words; Actual Sales divided by Budgeted Sales, multiplied by 100.

Before we enter the formula, we should set the format of these cells so as to limit the number of decimal places to 2; this prevents us getting results which fill the cell with figures that are difficult to interpret. To do this, place the cursor on cell A4 (1st Quarter Percent of Budget), and press <F1> (Cell). This time reply to the resulting prompt by pressing <F> (format). You will see the following appear on the bottom line of the display:

```
'Display format: decimal (P)laces (N)ormal (E)xponential
(G)raph (D)efault?'
```

Press <P> to specify that you want to set the maximum number of decimal places in the result which will be placed in this cell.

You will then see the following on the display:

```
'Number of decimal places (0-15) ?'
```

Type <2> and press <RETURN>. You will notice that 'F{P2}' appears in the cell descriptor display to indicate that this cell has a format setting of 2 decimal places.

Now, make sure the cursor is still on cell A4 and press <RETURN>. In response to VALUE:, type <"a2/"a1*100>, and press <RETURN>.

The '/' is the TIMECALC symbol for 'divide by', and '*' is the symbol for 'multiply by'. You will notice that the column references are preceded by the '"' character to indicate relative addressing as for the other formula. This enables us to replicate this formula into the other cells of the row as we did for the previous formula. The procedure is the same as for the Variation formula except that we are now on row 4 instead of 3. Notice that the format 'F{P2}' has been replicated along with the formulae.

SAVING AND RECALLING YOUR SPREADSHEET

When you have finished with your spreadsheet, press the <F12> key (Exit). The TIMECALC menu appears, reporting (at top right):

'Workspace 652/58604 1% full'

indicating that your spreadsheet occupies 1% of the Kookaburra's workspace (the numbers may vary slightly, depending on the amount of memory you have installed). The following message also appears (on the status line):

'[EXISTING WORK SPACE NOT SAVED]'

This is to remind you that you haven't saved your spreadsheet yet. If you proceed without saving, your spreadsheet will be lost forever. To save, press the <F4> key. The message changes to:

'Do you want to save the workspace as D:SALESBUD.CLC ?'

Press <Y>. The message changes to:

'Create a new backup of D:SALESBUD.CLC ?'

Again press <Y>. Your spreadsheet has been saved on drive D: (the internal RAM drive) as a file called 'SALESBUD.CLC'. We have also created a backup copy of the file, called 'SALESBUD.BAK'. If the main file accidentally gets erased, we can rename this backup copy and proceed as before. Because it is a good idea to keep an up to date backup copy of your spreadsheet, TIMECALC will create one automatically each time that you use the 'SAVE' command.

If you attempt to proceed without first saving the spreadsheet, the message changes to:

'Work Space not saved! Save it?'

If you want the spreadsheet saved, simply press <Y> (for yes): if you don't want it saved, press <N> (for no).

Once your spreadsheet is saved, you may proceed to create a new spreadsheet, knowing that the one you just finished is still there when you want it.

If you save a spreadsheet that has previously been saved and already exists in the Kookaburra memory, you will be asked if you want to update the old backup. If you answer <Y>, the current version of the spreadsheet will be copied to the .BAK file. If you answer <N>, the .BAK file will not be changed. This means that if something goes wrong, the version prior to the last editing or additions still exists on the file. You only have to rename the file to change the extension back to .CLC (See Chapter 8) and you can then load it for editing.

To recall a spreadsheet for additions or for editing, press <F2> from the TIMECALC menu and enter the file name of the spreadsheet you want. When the message 'File Loaded' appears, press <F3> and the selected spreadsheet will appear on the display with the Kookaburra in editing mode.

When you first saved your spreadsheet, you would have noticed that the file name was displayed in the top left-hand corner of the display next to 'Document:'. If you now press <F3>, TIMECALC will immediately return to edit that spreadsheet. In this example we haven't covered all of the TIMECALC functions by any means. There are many more. These are described in summary form in the following sections of this Chapter. With the knowledge that you have gained following the example, you should have no trouble understanding and using all the functions of TIMECALC.

REFERENCE

This section is designed as a succinct reference manual for TIMECALC. It assumes that you have worked through the tutorial, and/or are familiar with spreadsheets generally. Throughout, the emphasis is on explaining how and why operations are performed, rather than listing the prompts that TIMECALC generates.

MOVING AROUND THE SPREADSHEET

The following functions are available for moving around the spreadsheet;

Left Arrow: Move cursor one column to the left

Right Arrow: Move cursor one column to the right

Up Arrow: Move cursor one row up

Down Arrow: Move cursor one row down

Each of the above keys, if operated with SHIFT, will cause the display to move one complete screen in the appropriate direction. The 'GOTO' function is also available for moving of the cursor on the spreadsheet. See section 'FUNCTIONS AVAILABLE IN EDIT MODE', below.

ENTRY OF NUMERIC DATA AND FORMULAE

To enter numeric data or a formula into a cell, place the cursor on the cell and type in the required data or formula followed by <RETURN>.

If <RETURN> is pressed prior to entry, the original contents of the cell will be cleared to enable new contents to be entered.

If the <SPACE> bar is pressed prior to entry, the current content of the cell is displayed in the entry area with the 'character-sized' cursor positioned over the first character. Editing of the original cell contents may then take place (refer to the section 'Editing Commands', below). If the <ESC> key is pressed at any time during editing of the data, all editing is abandoned and the original content of the cell is retained.

ENTRY OF TEXT

To enter text into a cell, place the cursor on the cell and press <F6>. Type in the required text followed by <RETURN>.

If the cell already contains text, pressing <F6> will display the current text with the 'character-sized' cursor positioned over the first character. Editing of the original cell contents may then take place (refer to the section 'Editing Commands', below). If the <ESC> key is pressed at any time during the editing of the text, all editing is abandoned and the original text is retained.

EDITING COMMANDS

During editing of data, formulae or text in the entry area on the command line, the following commands are available;

- Left Arrow: Move 'character-sized' cursor one character to the left.
- Right Arrow: Move 'character-sized' cursor one character to the right.
- BACKSPACE: Delete the character to the left of the cursor and close up.
- CTRL V: Enter insert mode.
Normally, editing is in 'overwrite' mode where each character entered replaces the character at the cursor position. In insert mode, each character entered will be placed at the cursor position and all characters at, and to the right of, the cursor position will move to the right to make room.
To exit from insert mode, press <CTRL V> again.
- CTRL E: Delete the character at, and all characters to the right of the cursor position
- LF: Delete the character at the cursor position and close up
- RETURN: Complete entry and return to editing mode
- ESC: Abandon editing and return to editing mode leaving cell contents unchanged

CELL REFERENCES

A key to the action of a spreadsheet is that a cell may contain a formula, and the formula may refer to values stored in other cells. For example, in the tutorial spreadsheet, the values in each column of row 3 were calculated by subtracting the contents of cells in row 2 from cells in row 1. We achieved this using a formula that referred to the cell location, and said "pick up contents of that cell and use them in the calculation". There are a number of ways that we can refer to a cell; references may be direct or indirect, absolute or relative, or may use the name assigned to that cell.

NAMES

Each cell in the spreadsheet can be assigned a name by means of the <F1> <N> function in editing mode (see section 'FUNCTIONS AVAILABLE IN EDIT MODE'). The cell may then be referred to by its name instead of its usual column and row address.

Names can also be given to columns and rows, by naming the column and row header cells. In this case, the name is used to refer to not the cell, but the column or row as a whole. For example, if we name row 1 'NUTS' and column A 'COST', then the following are all valid ways of referring to cell A1:

COST.NUTS, A.NUTS, COST.1.

Notice that the names must be separated by a period. There are two other rules to follow when making names:

- (1) Only use alphabetic characters (lower case)
- (2) Use at least three characters to avoid confusion with standard column labels.

ABSOLUTE REFERENCES

Absolute references are the simplest way of addressing a cell; it is simply the cells position on the spreadsheet. For example, the formula 'B2 + D5' says "add the contents of cells B2 and D5". This formula will have the same effect wherever it is placed on the spreadsheet. You may also use the cell name as an absolute reference. If a cell has been named 'BILL', then 'BILL + A5' is a legal formula.

RELATIVE REFERENCES

Because of the structured nature of a spreadsheet, a common problem is to combine two columns (or rows) in some way. Consider the following:

	A	B	C
1:	100	200	A1+B1
2:	230	435	A2+B2
3:	123	543	A3+B3

If we move the above block of cells (for example, by inserting a column before A) the formulae in column C will be incorrect. What we really want the formulae in column C to say is something like "in this row, add the column one left and the column two left". That is, we want the formulae to be relative to the cell the formula is in.

A relative reference is denoted by the "~" sign. We could write the formula in cell C1 as '~A1+~B1', which expresses the phrase above. This is a completely relative formula; we could relativise the column references: '~A1+~B1'. Note that if we use the same formula in cell C2, the result would be 300, because the cells would be from row 1. We may relativise the rows: 'A~1+B~1'. Note that if we use this formula in cell C2, it gives the correct result. Normally, for a column oriented operation like this, we would relativise the row address, for this reasons.

Some care is needed in deciding how to relativise a formula, if we are then going to use the (R)eplicate function to duplicate the formula in other cells. If we wanted to replicate C1 down the column, the row reference MUST be relative. This is because absolute references are not changed during a replicate or a move.

INDIRECT REFERENCES

Indirect references are a unique feature of TIMECALC. An indirect reference to a cell is the normal cell reference enclosed in square brackets; [A5]. This is a direction to evaluate the formula at A5, rather than use the current value stored at A5. There are two advantages with using indirect references; they can save significant amounts of space in the spreadsheet, and they can make the action of the spreadsheet clearer. Consider the following example:

	A	B	C	D
1:	nuts	100	200	B [~] 1+C [~] 1
2:	bolts	200	300	[D1]
3:	screws	150	230	[D1]
4:				
5:	Totals			sum(~D1:~D3)

The formula in cell D1 says 'D1 = C1 + B1'. The formula in D2 says 'use the same formula' as in cell D1. However, the relative references are evaluated with respect to cell D2, not cell D1. Thus the net effect is 'D2 = B2 + C2'.

We could have achieved the same effect by replicating D1 down the column. Using indirect references this way saves space, and means that there is only one place that needs to be changed if we decide to change the formula.

RANGES

In certain formula constructions, more than one cell reference may be specified as a 'range'. This takes the form 'A5:B7'. The range is treated as a rectangular 'window' with the first reference specifying the top left-hand corner and the second reference specifying the bottom right-hand corner. Thus, the reference 'A5:B7' specifies a range made up of cells A5, A6, A7, B5, B6, and B7.

FORMULA ELEMENTS

The key to the power of the spreadsheet lies in the fact that each cell may have its own formula. Each formula is a mathematical expression which combines and manipulates the contents of other cell positions to produce a desired result.

In general, formulae are composed of two basic elements; operands and operators. The operand is the raw material of the formula. In TIMECALC, the operands may be constant numbers, references to values in other cells, or references to the formulae in other cells. The operators can be the normal mathematical, add, subtract, multiply and divide (which are called 'infix' operators because they occur between the operands that they affect), or they can be functional operators such as, log, sum, sqrt or average (which are called 'prefix' operators because they precede the operands that they affect).

The following is a description of all available formula elements:

CONSTANTS

A constant is an ordinary number which may be one of three types:

Integer: An integer constant is a whole number (a sequence of 1 to 15 numeric digits) and does not contain a decimal point.

Fixed: A Fixed-point constant is a positive or negative real number, i.e., a number containing a decimal point.

Floating: A floating-point constant is a positive or negative number represented in exponential form (similar to scientific notation). A floating-point constant consists of an optionally signed integer or fixed-point number (the mantissa) followed by a letter 'E' and an optionally signed integer (the exponent). Such a number takes the form '123.456E+20'. The exponent may range in value from -120 to +120.

OPERATORS

An operator is a notation for combining the operands of a formula. Operators fall into five classes; mathematical, comparison, logical, conditional and list. These five types of operators are described below;

Mathematical:

+	Addition	'A1+A2' means A1 plus A2
-	Subtraction	'A1-A2' means A1 minus A2
*	Multiplication	'A1*A2' means A1 multiplied by A2
/	Division	'A1/A2' means A1 divided by A2
^	Exponentiation	'A1^2' means A1 squared 'a^b' is calculated by exp(ln(a)*b) If a<0 then -(-a)^b is calculated.
div	Integer divide	'x div y' is defined as int(int(x)/int(y))
ln(x)		Calculate logarithm of x to base E
log(x)		Calculate logarithm of x to base 10
sqrt(x)		Calculate square root of x

pi()

Returns value for pi (3.14159265358979)

Comparison:

The comparison operators are used to compare numbers or strings. The result is 1 if the comparison is true, 0 otherwise.

=	Equal
<>	Not equal
<	Less than
>	Greater than
<=	Less than or equal
>=	Greater than or equal

Logical:

and	True if both operands are zero
or	True if either operand is non-zero
not(exp)	Logical negation

Conditional:

TIMECALC provides a powerful conditional test facility. This allows you to create a test that then results in one of two expressions being evaluated. The operator is the 'IF':

if (condition, expression1, expression2)

If 'condition' is true, then the result is expression1; otherwise, the result is expression2.

In a logical operation, '0' represents false, and '1' represents true. 1 is the default. Any non-zero number is true. The comparison and logical operators may be used in forming the 'condition' expression.

List:

List operators have a variable number of parameters; each of the parameters may be a range of cells (eg A1:B3 would be the cells A1, A2, A3, B1, B2, B3), or it may be a single cell. The list operators are:

sum(range,range,...) - The sum of all the expressions and cells in the ranges given.

count(range,range,...) - The total number of expressions plus cells in the ranges given. A1:B2 normally contains 4 cells, but only those which have been defined are counted.

average(range,range,...) - The average of all the cells in the ranges given.

PRECEDENCE

Precedence in mathematics is the order in which the various operators in a formula are applied. This is important when forming formulae as it can affect the result. The precedence in TIMECALC is as follows;

1. Unary minus. Unary minus is defined as a '-' sign followed by any expression, e.g., -2, -20.87E-7, -(3+5), -A3
2. Exponentiation (^)
3. Multiply (*), divide(/), and integer divide (div)
4. Addition (+) and Subtraction (-)

If any doubt exists in the determination of precedence, parentheses can be used to control precedence and ensure correct interpretation.

PROTECTING YOUR SPREADSHEET

TIMECALC provides facilities to protect the whole spreadsheet, or portions thereof, from accidental modification or erasure. Normally you use this facility to protect cells that have formulae in them, leaving the cells with data open for modification.

To protect an individual cell, place the cursor over the cell, press <F1> (Cell), and select option <P> (Protect). This will prevent you modifying the contents of the cell, either directly or by copying other cells over the top of it. To allow modifications to be made to the cell again, press <F1> (Cell) and select option <U> (Unprotect). Protection is considered an attribute of the cell, the same as format options. If you replicate a protected cell, the new cells are also protected.

TIMECALC provides a hierarchy of protection. To protect a whole row, you merely need to protect the row descriptor cell for that row. Thus to protect the 'Variation' row in our spreadsheet, move the cursor to cell '3' (the cell with 'Variation' in it), then press <F1> and select option <P>. You now cannot modify any of the cells in that row. A similar technique applies to protect columns.

Finally, TIMECALC allows protection of the whole spreadsheet. You achieve this by protecting cell '0', which is the cell that we placed the spreadsheet name in at the beginning of this tutorial.

MAIN MENU FUNCTIONS

The following is a description of each of the functions available from the TIMECALC Main Menu. The TIMECALC Main Menu display is included below for reference.

Document : No file to use		TIME Calc 2.11	Workspace 0/58604=Empty
F1 : CREATE a new spreadsheet	F5 : Modify FORMAT options		
F2 : LOAD spreadsheet / sF2 : DIRECTORY	F6 : PRINT spreadsheet		
F3 : EDIT spreadsheet	F11: DELETE file		
F4 : SAVE spreadsheet / sF4 : CLEAR	F12: EXIT to Main Menu		
CREATE LOAD/DIR EDIT SAVE/CLEAR -- FORMAT PRINT -- DELETE EXIT			

F1 : CREATE

This function is used when a new spreadsheet is to be created. When the <F1> key is pressed, TIMECALC requests:

'Please enter a file name :'

Enter the file name to be applied to the new spreadsheet. The disk drive letter and file name extension need not be added at this point. TIMECALC will assume drive D:, and append the extension .CLC, if they are not given.

TIMECALC checks that the file name given does not already exist on the specified disk drive. If the file exists, TIMECALC reports:

'File already exists'

To recover from this condition, either press <F1> again and enter another file name, or press <F2> to load a file from disk (see below). If the file does not exist, the file name is accepted and TIMECALC enters edit mode automatically.

F2 : LOAD

This function is used to recall an existing spreadsheet for editing. When the <F2> key is pressed, the following is displayed:

'Please enter a file name :'

Enter the file name of the spreadsheet to be recalled. Defaults apply as in <F1>. TIMECALC checks that the file name given exists on the specified disk drive. If the file does not exist, the following is displayed:

TIME CALC

'File does not exist'

To recover from this condition, either press <F2> again and enter another file name, or press <F1> to create a new spreadsheet. If the file exists, it is loaded to the workspace, the file name is displayed, along with the following:

'File Loaded'

If there is insufficient workspace to load the file, the following is displayed:

'Not enough space for operation'

SHIFT-F2 : DIRECTORY

<SHIFT-F2> will provide a directory display of all files stored on the 'default' disk.

At this stage, the default disk will be the RAM disk, and the only file names displayed in response to the <SHIFT F2> directory request would be those stored in that location.

However, if you have files stored on the external floppy disk unit, you can obtain a directory display of these files as follows. Enter a command that produces the message 'Please enter a file name :' (e.g., press <F2> LOAD) and, instead of entering a full file name, enter the prefix of the disk for which you would like a directory display followed by '.*'.

For example, if you wanted to see a directory of the files on the right-hand floppy disk, you would enter 'F:.*'. This would produce a display of all file names on the right-hand disk, and would also ask 'Do you want to select this disk as the new default?'. If you answered yes to this question (by pressing 'y'), this disk would become the new default disk in place of the RAM disk. Thus, in future, the <SHIFT F2> request would produce a display of the 'F:' disk directory (rather than the RAM disk) and any file created without specifying a prefix would automatically be stored on the right-hand drive with the prefix F: (The * characters are known as 'Wild Cards').

If 'no' was answered to the above question, the current default disk would remain (i.e., the RAM disk in this case). Regardless of whether 'yes' or 'no' is answered to the question, the system then asks 'Please enter a file name :'. In response to this, you can simply press RETURN or enter the name of a file you would like to load into the Workspace.

Using the above method, the default disk can be changed as desired between the three available alternatives D: E: or F:.

F3 : EDIT

This function is used to place TIMECALC in the 'edit' mode, during which it accepts input from the Kookaburra keyboard for the creation of a new spreadsheet or the editing of an existing spreadsheet. Edit mode may be entered using the <F3> key, from either of the following conditions:

1. 'File Loaded' message displayed, after loading a file (F2)
2. '[Work space Ready]' message displayed, after saving a file (F4).

Edit mode is entered automatically from the <F1> entry. Refer to the section 'FUNCTIONS AVAILABLE IN EDIT MODE' for details of operations in edit mode.

F4 : SAVE

This function is used to copy a spreadsheet from the workspace to a disk file. The full save algorithm is fairly complicated; however, the questions asked are quite straight-forward. There are two main areas to be aware of.

TIMECALC will ask you if you want to save the file under the name specified when you CREATED or LOADED the spreadsheet. If you answer <N>, you will be asked to specify a file name. In common with CREATE and LOAD, the default disk drive is D:, and the default extension is .CLC. You may enter another drive and another extension if you wish.

At this stage, the only possible alternative location would be the MEB Disk Expansion Box containing two floppy disk drive units.

If you have an expansion box connected to your Kookaburra, and you would like to store your files on a floppy disk, you must specify this requirement when creating and naming your files. That is, you must prefix your file name with 'E:' or 'F:' to nominate the left-hand or right-hand drive unit, respectively.

For example, if you had wanted to store your spreadsheet on, say, a disk in the left-hand drive unit (rather than in the internal RAM disk), you would have needed to specify the name E:SALESBUD.CLC when first creating the file. Then, as soon as you performed your first save operation on this file, it would have been stored on the nominated disk rather than in the 'D:' RAM disk.

When the file has been saved, you will be asked if you wish to create a new backup (if none previously existed) or update the old backup (if one did previously exist). The backup will be on the same drive as the file was saved on, and will have extension .BAK.

When the save operation is complete the following is displayed:

'[Work space Ready]'

TIME CALC

To return to editing the same spreadsheet, press <F3> (Edit); otherwise <F1> (create), <F2> (Load) or <F12> (Exit) as required.

SHIFT-F4 : CLEAR

This function is used to clear the workspace so that you can create or load another spreadsheet. You should make sure you save the current spreadsheet before clearing the workspace.

F5 : FORMAT

This option is used to specify the format for printing the spreadsheet. The following menu is displayed.

FORMAT Options		press F key to increment, shift F to decrement	
F1-Lines/Page (1-99)	66	F6-Left Margin (1-99)	0
F2-Title Line	1	F7-Line Width (1-99)	80
F3-Page Number Line	3	F8-Column headers	TOP
F4-First Text Line	5	F9-Row headers	LEFT
F5-Last Text Line (1-99)	60		

Explanation of functions over page.

<F1> : specify the length (number of lines) of the paper being used.
 <F2> : select line number for printing of title, or disable.
 <F3> : select line number for printing of page number, or disable.
 <F4> : select line number for first text line (ie first line of the spreadsheet).
 <F5> : select line number for last text line (ie last line of spreadsheet).
 <F6> : select number of spaces in from the left margin to commence printing.
 <F7> : specify length of line that can be printed (excluding margins).
 <F8> : column headers can be printed continuously (for pasting), or on each page, or not at all
 <F9> : row headers can be printed continuously (for pasting), or on each page, or not at all
 <F11>: reset to default values
 <F12>: exit
 <ESC>: exit

Functions <F1>, <F4> - <F7> are the same as TIME Writer <F5> Format Menu and are explained in Chapter 4. See the following section for a more complete discussion of the layout for printing.

F6 : PRINT

This function is used to print the whole spreadsheet. The printout is divided into pages, according to the format specified by the <F5> command, above. Each page is printed with a 'page number' at top left; this page number is really a pair of coordinates in row, column form. This page numbering scheme is used to indicate how to 'glue' the pages together to form a single large spreadsheet.

Options <F1> to <F4> allow you to select the destination for the printout. You may select a destination by pressing the corresponding Function key, or de-select it by pressing shift-Function. If you select <F4> (Disk file), the printout will go to a file on disk; this file can then be edited using TIME WRITER.

TIMECALC also allows you to print selected portions of your spreadsheet using the print facility belonging to the Range mode. To do this, load the spreadsheet into the Workspace and select <F3> (Edit) mode. Then press <F4> (RANGE) followed by <P>. You will be asked to specify the block of cells to be printed, by placing the cursor on the top left and bottom right corners of the block. When you have done this, you will be shown the PRINT menu as for <F6>, and the procedure from there is the same as above.

F11 : DELETE

DELETE is used to delete a file from disk. This allows you to make room on the disk if you have created a spreadsheet that is too large to be saved.

TIME CALC

When you select <F11>, you will be asked for the file to delete. You must enter a filename including the extension. If the file is not on the default drive, you must include the drive letter. TIMECALC will ask for confirmation before deleting the file.

F12 : EXIT to Main Menu

This function terminates TIMECALC operation and returns control to the Kookaburra Main Menu. If <F12> is pressed when the '[EXISTING WORKSPACE NOT SAVED]' message is displayed (as it would be after exiting from Edit mode), the following is displayed:

'Work Space not saved! Save it?'

If you reply <Y>, TIMECALC will go through the file save routine, as described for <F4> (Save). If you reply <N>, TIMECALC will exit and the work in that session will be lost.

FUNCTIONS AVAILABLE IN EDIT MODE

While TIMECALC is in edit mode, the function keys take on a different meaning from their Menu meanings. Each of the functions, and the sub-functions will be discussed in turn. It is suggested that you 'play' with the spreadsheet developed during the tutorial, as an aid to understanding the operation of each function.

Note that TIMECALC does not support automatic recalculation of the spreadsheet. If you make changes, the display may not accurately reflect the current values of all cells. You should therefore use <F8> (Calc) to recalculate the spreadsheet after modification.

F1: CELL

This function is used to perform operations on single cells. When <F1> is pressed, the following is displayed:

'Cell: (B)lank (N)ame (F)ormat (P)rotect (U)nprotect '

Each of these operations are described below.

(B)lank - clear contents of a cell

This option will remove all formulae, numbers or text associated with a cell. If the cell has a name (see below), the name will remain.

(N)ame - give a cell a name

Used to assign a name to a cell. A cell may be assigned a name as well as containing data or a formula. This name will appear on the display next to the cell position indicator whenever the cursor is placed on that cell. If a cell already contains data or a formula, a name may still be assigned to it without affecting its original contents. When the <N> is pressed, TIMECALC displays:

'NAME:'

The required name may then be entered. If the cell already has a name it is displayed and may be edited. All editing functions mentioned above apply. A name must have at least 3 characters and must not contain numbers. This name may be used as a cell reference in formulae.

To delete the name from a cell, press <CTRL E>, <RETURN> after the 'NAME:' message.

(F)ormat - set cell display format

TIMECALC draws a distinction between the CONTENTS of a cell, and the DISPLAY of the contents. This option is used to control how the cell contents will be displayed on the screen. The currently selected format will be displayed in the cell descriptor field, at top left on

the display.

The following format options are available:

(F)ormula

Normally the value of the cell contents are displayed. This option forces the display of the formula contained in the cell, rather than the value calculated by the formula.

decimal (P)laces

Sets the number of digits to be displayed after the decimal point. If numeric data having a greater number of decimal places is entered into the cell, the value will be rounded off to the number of places specified. If the number has too many leading digits to be displayed, it is displayed in scientific notation with the overflow symbol '&' before the first digit.

When the <P> is pressed, the following is displayed:

'Number of decimal places (0-15) ?'

Enter the required number of decimal places followed by <RETURN>.

(M)oney

Sets the contents of the cell to a form suitable for money, eg. \$999.99. Rounding is performed to keep the display at 2 digits after the decimal point.

(N)ormal

Used to 'normalise' the format of the cell, i.e. the cell determines its own precision and will display as many decimal places as required within the limits of the cell width. When the cell width is exceeded, the format will revert to exponential to maintain precision.

(S)cientific

Used to force a cell to display its contents in exponential form regardless of the precision of the data. When the <E> is pressed, the following is displayed:

'Number of digits before decimal point (0-15) ?'

Enter the number of digits required to the left of the decimal point followed by <RETURN>.

The value 123.456 when displayed in exponential form would appear as 12.3456000e+01, where the digits to the right of the 'e' are the exponent representing the powers of ten to which the remaining value is raised. (This display assumes that 2 digits before the decimal point have been specified and that the cell is 15 characters wide)

(G)raph

Displays a simple horizontal bar graph, with the required number of symbols. '+' is used for positive numbers, '-' for negative numbers. The value is rounded out to the nearest integer. If the number of columns in the cell is too small, the field is filled with '&' symbols.

(B)lank

?????

(D)efault

Used to assign the cell to the format set for the column. The format for the column is set by placing the cursor on the heading for the column (row 0) and setting a format.

(P)rotect - Protect the contents of a cell

Used to assign 'protected' status to a cell. A protected cell cannot be blanked or changed. Any attempt to do so will result in the following message:

'ERROR: PROTECTED CELL: ACKNOWLEDGE BY PRESSING ESC'

Press <ESC> to escape from this condition. If it is necessary to alter or blank a protected cell, the cell must be 'unprotected' first.

(U)nprotect

Used to remove 'protect' status from a cell.

F2: COL

This function is used to perform operations on a whole column of cells. When <F2> is pressed, the following is displayed:

'Column: (I)nsert (D)elete (M)ove (C)opy (W)idth (U)n(L)ock?'

Each of these operations are described below.

(I)nsert

Inserts a blank column at the cursor position. The column at the cursor position and those to the right are moved one column to the right and renumbered. The cursor must be on a cell within the column and not on the heading (row 0). All references to columns that have been moved and renumbered will be updated.

(D)elete

Deletes the column at the cursor position, closes up and renumbers the columns to the right. The cursor must be on a cell within the column and not on the heading (row 0). The column will not be deleted if any formula elsewhere in the spreadsheet reference it, or if any cell in

the column is protected.

(M)ove

Move a column to another position on the spreadsheet. When the <M> is pressed, you will be asked to select the column to be moved, then the column position to be moved to. All columns at and to the right of the insert position will be moved over and renumbered.

(C)opy

Copies a column to another position on the spreadsheet without affecting the original column.

(W)idth

Enables the width of the column at the cursor position to be set in the range 1 to 70 characters. When you are prompted, enter the desired width and press <RETURN>. If the width of a column containing data is reduced to a value less than that of the data field, the data continues to have the same value and effect but the display will be truncated and will no longer correctly show the data value. Text will be similarly truncated. Formulae will continue to be effective. If the column width is subsequently increased, the display will again show the full data or text.

(U)n(L)ock

Locking a column will cause a copy of it to be placed on the left hand side of the spreadsheet display. This copy is NOT a new column for the spreadsheet - it is a display copy only. Modifications to the original column will be reflected in the lock column, and vice versa.

What this function provides is the ability to 'freeze' a column on the display; when the display is scrolled left or right, the locked column does not scroll, and so remains displayed. In our tutorial example, we could lock the "1st quarter" column, then scroll the display until the "4th quarter" column is adjacent. This allows easy comparison of columns that are not ordinarily visible at the same time.

Multiple columns may be locked; they will "stack" from the left across the display.

The (U)nlock option removes the last (L)ocked column.

F3: ROW

This function is used to perform operations on a row. When <F3> is pressed, the following is displayed:

'Row: (I)nsert (D)elete (U)n(L)ock ?'

Each of these operations are described below.

(I)nsert

Inserts a blank row at the cursor position. The row at the cursor position and those below it are moved one row down and renumbered. The cursor must be on a cell within the row and not on the description. The row description column is not affected by this operation.

(D)elete

Deletes the row at the cursor position. The rows below are moved up and renumbered. The cursor must be on a cell within the row and not on the description column. The row will not be deleted if any cell contains data which is referred to by a formula elsewhere in the spreadsheet (even if that formula would be deleted along with the data).

(U)n(L)ock

(L)ock will copy the row that the cursor is in to the top of the display. As for column locking, the new copy is for display purposes only. See column locking for a fuller explanation.

(U)nlock will remove the last locked column.

F4: RANGE

This function provides a selection of operations which, unlike the column and row functions (which apply to a single row or column), apply to a 'Range' of cells. A range is a rectangular 'window' of cells, defined by specifying the cell at the top left-hand corner of the window, and then the cell at the bottom right-hand corner of the window. The two specified cells can be on the same row (referring to

TIME CALC

a group of cells within a row), in the same column (referring to a group of cells within a column), or they can be the same cell.

All of the range commands ask you to specify the range by moving the cursor to the top left corner and pressing <RETURN>, then moving it to the bottom right corner and pressing <RETURN>. This will be assumed in the following discussion.

When <F4> is pressed, the following is displayed;

'Range: (M)ove (C)opy (B)lank (A)bs R(e)l (R)eplicate (P)rint
(L)ist?'

Each of these operations are described below.

(M)ove

Moves a range of cells into another position on the spreadsheet. Re-assignment of relative column and/or row addresses is performed. Column headings and row descriptions are unaffected by this operation.

CAUTION: THE DESTINATION AREA WILL BE UNCONDITIONALLY CLEARED TO MAKE ROOM FOR THE MOVE. NO INSERTING WILL TAKE PLACE.

After a move operation, the <F8> (CALC) function should be used to re-calculate any formulae moved.

(C)opy

Copies a range of cells into another position on the spreadsheet. Re-assignment of relative column and/or row addresses is performed. Column headings and row descriptions are unaffected by this operation.

CAUTION: THE DESTINATION AREA WILL BE UNCONDITIONALLY CLEARED TO MAKE ROOM FOR THE COPY. NO INSERTING WILL BE PERFORMED.

After a copy operation, the <F8> (CALC) function should be used to re-calculate any formulae copied.

(B)lank

Blanks a range of cells. Column headings and row descriptions are unaffected by this operation.

CAUTION: THE RANGE OF CELLS WILL THEN BE UNCONDITIONALLY BLANKED.

(A)bsolute

Changes all relative cell references in the specified range to absolute references. References to cells both inside and outside the range are affected. The function provides the option of affecting either column references only, row references only, or both.

R(e)lative - press (e)

Changes all absolute cell references in the specified range to relative references. References to cells both inside and outside the range are affected. The function provides the option of affecting either column references only, row references only, or both.

The primary use for this function is to allow you to move or copy a range of cells, and have the formulae updated to reflect their new position on the spreadsheet.

(R)eplicate

Replicate is used to create multiple copies of a single cell. It is primarily used when a cell contains a formula with relative or indirect references, and we wish to use the same formula elsewhere in the spreadsheet. An example of this occurred in the tutorial; cell A3 contained a formula (`"A2~A1"`) that was applicable to cells B3, C3 and D3.

After replication, the `<F8>` (CALC) function should be used to re-calculate the replicated formula(e).

(P)rint

Prints a specified range of the spreadsheet on the printer. Headings and descriptions may be included within the range. After the range has been specified, you are shown the same menu as is displayed from option `<F6>` of the main menu. See that section for a full explanation of printing.

F5 : DFLT

This function is used to set the default modes for a number of global parameters. The following options are available:

(N)ame

This gives the spreadsheet as a whole a name. This name will appear on printouts of the spreadsheet, but not otherwise.

(W)idth

Sets the default width for columns across the whole spreadsheet.

(P)recision

Sets the default number of places carried for internal calculations.

(D)is(E)nable

Provides a global mechanism for enabling (E) or disabling (D) the protection mechanism. If the protection mechanism is disabled, all protected cells can be modified. As soon as protection is re-enabled, they will be protected again.

(A)utokey

TIME CALC

You may enter a single keystroke that will be executed by TIME-CALC after the <RETURN> during entry of information into a cell. Normally used when entering data into a number of cells in a row or a column, as in our tutorial example.

F6: TEXT

The default mode for entering information into a cell is MATH; whatever is entered is treated as a number or as a formula. When TEXT mode is selected, entries into a blank cell are treated as text; i.e. you may type what you wish (generally a description). Maximum number of characters that you may enter is 70; you may not insert control characters.

<F6> is a toggle; if the current default mode is TEXT, then pressing <F6> will change it to MATH. If a cell is non-blank, then the entry mode will change to match the cell, then revert to the default.

F7: GOTO

This function enables the cursor to be positioned on any cell within the spreadsheet. When <F7> is pressed the following is displayed:

'Goto which cell?'

Type in the cell required (from A1 to IP250) and press <RETURN>. You may also use a cell name as the target.

F8: CALC

This function causes all formulae on the spreadsheet to be re-calculated and the results displayed. This should be performed after formulae have been replicated, copied or moved to ensure that all displayed results are current. TIMECALC does not support automatic recalculation of the spreadsheet as data is changed.

F9: CROSS

TIMECALC provides facilities for viewing multiple screens, explained in the next section. <F9> allows you to move the cursor between paired screens.

F10: SPLIT

TIMECALC enables you to view two or more sections of the spreadsheet at the same time, via 'split screens'. This facility in effect creates two 'windows' into the spreadsheet; these windows may be scrolled independently, allowing comparison of areas that are not normally seen together. A typical use for this facility would be to create a window

containing descriptions (eg a cost breakdown) and a second window containing the corresponding data spread across many columns. The second window can then be scrolled, moving the columns adjacent to the description. Using the tutorial example, we could split the screen vertically between columns A and B, then scroll the right hand screen until the data for column D came into view.

When we split a screen, the two screens created are a 'pair'. The <F9> (Cross) function moves the cursor from the 'parent' to the 'child' screen. It is possible to split a screen again; <F9> then moves the cursor from oldest to youngest screen, and then back to the oldest.

When <F10> is selected, the following options are available:
 [(H)orizontally (V)ertically]

The screen that the cursor is currently in may be split horizontally or vertically. If horizontal is selected, a new screen will be generated under the location of the cursor. The column headings will be duplicated, and the first row of the new screen will be a copy of the row the cursor is located in.

If vertical is selected, the split is between columns. A new screen is created to the right of the current cursor location, and the row descriptor column is inserted. With either split, the screens are independent; ie if one is scrolled, the other will remain fixed.

(S)ync

A split is normally used to enable comparison of two rows or columns. If both of the rows or columns extend off the edge of the screen, independent scrolling of the screens becomes a liability, because it forces you to scroll one screen, move the cursor, and scroll the other.

Sync mode causes the two screens to scroll together in the direction of the split. For example, if there has been a horizontal split, scrolling one screen left or right causes the paired screen to scroll also. However, scrolling in the non-split direction is independent; ie for the horizontal split, vertical scrolling is independent between the screens.

(C)lose

Close will remove a split between paired screens.

(E)rase

Erase will remove all splits, returning the display to a single screen.

F12: EXIT

Causes an exit from editing mode to the TIMECALC menu. When you return to the main menu, the following reminder is displayed:

TIME CALC

'[EXISTING WORK SPACE NOT SAVED]'

To save the workspace, press <F4> (SAVE). To return to editing the same workspace, press <F3>.

CHAPTER 6

TIME TERM

TABLE OF CONTENTS

OVERVIEW.....	6-2
GETTING STARTED.....	6-2
SMART TERMINAL OPERATION.....	6-3
DUMPING A FILE TO MODEM.....	6-4
CHAT COMMAND.....	6-5
FILE TRANSFER OPERATION.....	6-5
FILE TRANSFER STATUS INFORMATION.....	6-6
DISK FILE USAGE.....	6-7
TIME TERM COMMANDS.....	6-8
TIME TERM ERROR AND STATUS MESSAGES.....	6-14
TIME TERM WIRING DETAILS.....	6-15

OVERVIEW

This chapter describes the communications program supplied with your Kookaburra. To invoke this program from the system menu, press the function key F10, or when in MS-DOS use the file name A:MT or A:MT.EXE.

TIME Term may be used as a "smart terminal" program for communication with other computers and with data services such as "The Australian Beginning", "The Source" and remote bulletin board services. It may also be used to transfer files to or from other computers which use TIME Term, or a program with the Ward Christensen file transfer protocol (YAM or the MODEM series), or the simple XON/XOFF protocol. The computers can be connected by a direct cable link or over the telephone network using a modem or an acoustic coupler. The program is menu driven, so you should be able to use it without reference to these instructions for most situations.

GETTING STARTED

It is important that you note the drive letter displayed in the system prompt as this will remain the default drive while you are using TIME Term. For further information on this see the section "Disk File Usage".

You MUST set the communications parameters with the program MODE (supplied with your operating system) BEFORE starting up the program TIME Term. Whatever you set with MODE will be used during the session with TIME Term. For example, when using an acoustic modem, SER1 (AUX2) is used with the following parameters:

 baud rate = 300, parity = N,
 data length = 8, stop bits = 1.

NOTE:

For all file transfers using <F4>, <SHIFT F4> or <F7> data format is assumed as 8 data bits, 1 stop bit, no parity. This is automatically set by TIME Term before transfer begins. The transfer is possible at any of the following baud rates: 150, 300, 600, 1200, 2400, 4800, 9600, 19200.

The TIME Term Main Menu contains all the commands that you may execute from command mode. To enter a command simply press the appropriate Function Key.

TIME TERM MAIN MENU

TIME TERM

F1 = Buffer Load	[OFF]	F5 = Chat Mode	F8 = Dump Buffer Content
F2 = Echo	[OFF]	F6 = Files on Disk	F9 = Kill Disk File(s)
F3 = Line Printer	[OFF]	F7 = Multi-File Transfer	F10 = Parameter Set/Read
F4 = Receive File		SF4 = Send File	F11 = Terminal Mode
			F12 = EXIT to DOS
	[Buffer Size = 60K	Free Buffer Space = 60K]	
BUFF ECHO PRINT RX/TX -- CHAT FILES MULTI DUMP -- KILL PARM TERM EXIT			

You will notice the word [OFF] in brackets after the Buffer Load, Echo and Line Printer commands. This indicates the current status of each of these functions. These are the settings that will be operational when you use the terminal mode. For further information on these, see the detailed description under each of these commands and under the heading Smart Terminal Operation. The line underneath the table of commands shows you the size of the buffer and the amount of space left in it. These values are only approximate and are given in units of K (1024 bytes) truncated to the nearest K. Thus 50K means at least 50K but not 51K. The buffer is used by the Buffer Load and Dump Buffer commands. Under this is the prompt asking you to enter a command.

To return to the command menu from anywhere in the program, press <F12>.

SMART TERMINAL OPERATION

Use this mode of the program to communicate in a text mode with another computer. What you type on the keyboard is sent to the other computer and what the other computer sends to you appears on the VDU at your end. You may enter this mode by using the F11 command. The current status of the echo, buffer load and printer toggles shown in the main menu will be in effect. If using a buffer load, you should note the amount of space that you have left. To exit from this mode, press the <F12> key. The three terminal options which may be enabled are:

(a) ECHO

When this is enabled, what you type appears on your screen as well as being sent out to the modem. Use this option if you cannot see what you are typing (i.e. the other computer is not echoing back what you are sending). For communication with most bulletin boards etc., leave this set off.

(b) BUFFER LOAD

When this is enabled in terminal mode, anything which appears on the screen is stored in a memory buffer to be saved later using the F8 command. This is useful if you want to keep a record of your terminal communications. If the buffer should become full while you are still in terminal mode, the load will automatically be stopped and a message displayed to inform you. To use this feature, you enter the F1 command from the main menu and select the M (load from modem) option.

TIME TERM

(c) PRINTER

When this is enabled in terminal mode, anything which comes from the modem is also sent to the printer. The only character which is not sent is the backspace which is replaced by the character "#". You may turn the printer on/off by using <F12> to return to the main menu (see <F3> command).

For most terminal communication, you will find the parameters which are set up as default values will be suitable for your application. For special applications, you may change the various parameters by using the <F10> command.

You may set the terminal backspace and carriage return/linefeed behaviour by using option <7> of the <F10> command menu:

- Terminal Backspace - This is the character which is sent to the modem when you enter the delete key. Two characters are commonly used (08H and 7FH). Internally in the program, either of these is treated as a rub-out character when received.
- CR-LF Behaviour - You may specify how the terminal will treat carriage returns and linefeeds both on sending and receiving. This gives considerable flexibility. (see <F10> command).

When using TIME Term in Terminal mode, periodically the Kookaburra will send Xoff/Xon as its internal buffers fill up. This only happens if large text files are listed to the LCD or the listing is stopped by typing <CTRL S>.

To resume the listing type <CTRL Q> TWICE.

You type <CTRL Q> twice, once to reactivate output to the screen and again to reactivate the host computer.

DUMPING A FILE TO MODEM

The <F8> command, available from the main command menu allows you to dump the buffer contents to the other computer. This is part of the terminal operation of TIME Term. It is intended that this be used to upload files to a computer running an editor or BASIC interpreter. The optional use of a prompt character causes TIME Term to wait for the other computer to send this character before the next line of text is sent. You may specify whether line feeds in the file are to be sent or not by setting parameter 3. It is assumed that the text file is in standard format with a CTRL-Z (1AH) character as end of file marker. You may abort the dump at any time by pressing <F12>. The file to be dumped must first be loaded into the buffer using the <F1> command with the D (disk) option.

CHAT COMMAND

The <F5> command provides a special terminal mode for keyboard to keyboard communication with another computer. The sending and receiving parts of the screen are separated by a line so that it is easy to read both. What you type appears above the line and what is received from the modem appears below the line. See the 'C' command description for further details.

NOTE:

Use <F12> to return to the main menu at any time. Use <F11> or <F5> to return to terminal or chat mode.

FILE TRANSFER OPERATION

Use this mode of the program to send files to or receive files from another computer running TIME TERM or a compatible program. The files may consist text data or be actual machine code programs. You may choose whether to view the file transfers on the VDU or not. At baud rates greater than 1200 viewing the file transfer will slow it down as the screen has to 'catch up' at the end of each record. For non-text files, there is not much sense in viewing the transfer as only displayable characters will be shown. Two protocols are available for the transfer of files. A protocol is a method of sending data with error checking and 'hand shaking' built into it. The two protocols are:

- (a) C - the protocol developed by Ward Christensen for the CP/M Users Group and used by programs such as YAM, the MODEM series and more lately the XMODEM series available from CPMUG. Many remote systems use this protocol and it is quite common in the 8 bit computer area. You may use the <SHIFT F4> or <F4> commands with any of these programs. The <F7> command may only be used with the programs YAM by Chuck Forsberg and PERTERM by Bob Stafford, since there is no common agreement on the batch protocol.

NOTE:

For this protocol, the number of data bits is 8 and parity disabled. A baud rate up to 9600 may be used with computers directly linked by a cable. The linking of the two computer will be quicker if the computer which is sending is started before the computer which is receiving.

- (b) Xon/Xoff - This is not so much a protocol as a means of transferring files when the other computer does not have access to the Christensen Protocol. You are asked the following questions:

Is this a Text File (Y/N)? to allow for standard end of file marker
- CTRL-Z.

Use Xon/Xoff Facility (Y/N)? this can be used only if the other
computer will respond to or send these

TIME TERM

codes to pause transfer.

If the file is not a text file, then there is no way of knowing when the file has been received. If the program continually shows timeout errors, then you can assume that there is no more and press <F12> to abort the transfer. This will automatically close the file on the disk. You could use a record count to establish when the file is received. There is no error checking available with this protocol and it is included in the program to provide a means of sending files to a computer without a file transfer facility. The other computer could possibly be using COPY (MSDOS) or PIP (CP/M) or else have a simple program to store incoming data to memory and then later save it.

NOTE:

When Xon/Xoff facility is not being used TIME TERM pauses very briefly after sending blocks of 128 characters. This may be utilized in a situation where Xon/Xoff protocol is not understood but giving time for the machine on the receiving end time to prepare for more data.

FILE TRANSFER STATUS INFORMATION

The way in which status information is provided during file transfers depends on whether you are monitoring the transfer or not.

Monitoring:

All status messages appear at the top of the screen and a bell is sounded after each appears. The file being transferred is displayed as it is being sent/received. There is no record count displayed. If a record has to be repeated because of error, it will not be displayed a second time.

Not Monitoring:

Any general status messages will appear at the top of the screen as for the monitoring. However a line will show the file name, its current status and a record count which increases for each record sent/received, e.g.

```
File: FILE      .TXT - Open --0001
```

For both cases in receive mode, if a filename which is a duplicate of one already on the disk is about to be created, you will see the screen clear and the message:

```
File: FILE      .TXT - EXISTS - Erase it (Y/N) ?
```

This gives you the options of:

```
Y   - Write over that file
N   - Enter a new name for the file
```

F12 - Abort Operation

In Multi-file receives, this can be avoided (i.e. any duplicate names automatically overwritten) by setting parameter 3 to 'Y'.

DISK FILE USAGE

All file transfer functions as well as dump to disk and buffer load from disk use disk files. When TIME TERM is started, the default disk drive at that time (the drive showing in the operating system prompt) is saved and remains the default disk while using the program. If you want to access files on that drive, there is no need to enter a drive letter with a file name. However if you wish to access files on another drive, you must provide a drive letter with the filename (e.g. B:EX.BAT) when asked for the file name.

The rules governing the types of allowable file names may be found in the documentation for your disk operating system. Single file transfers and buffer load/save functions require a single unambiguous file name with optionally a drive letter, e.g.

B:TRANSMIT.TXT or ANYTHING.DOC etc.

Multiple file transfers (M command) require an ambiguous filename with optional drive letter, e.g.

B:TRANS???.* or *.BAS etc.

The unit of transfer for any disk operation is the 128 byte record. If you abort an operation (using <F12>) any disk file which is open for writing will automatically be closed. This is to save any data which may have been correctly placed on the disk. If you decide that you do not want the file, you can delete it using the <F9> command. The <F6> command may be used to get a list of the files\ on any disk and their sizes in records.

You may abort a function when asked for a filename by entering a blank filename i.e. just pressing <RETURN> or <F12>.

If you are running out of space on a disk, you may use the <F9> command (Kill disk file) to delete any file on the disk (with care!). The program TIME TERM uses the disk directory area that is in use when the program is started. If you wish to send files from or receive files to a sub-directory (in the hierarchical structure), then you should use the PATH command in MSDOS to establish the path to the program TIME TERM and locate yourself to the sub-directory area in which you want to work using the CHDIR command from MSDOS before you start up the program TIME TERM. It would be just as easy to work in the root directory and later transfer files to sub-directories using COPY.

<F1> - BUFFER LOAD ON/OFF

This command may be used in two ways:

1. Loading a text file from disk into the buffer.

You will be asked for a filename (with optional drive letter). The file will be loaded from the disk into the buffer until an end of file marker (Ctrl-Z) is found, the buffer is full or the end of the file is reached. You are then returned to the main menu.

2. Loading characters from the modem into the buffer.

Use this to save any communication in terminal mode. If the current status of B/Load is OFF, you will be given the option of clearing the buffer data or just adding to the end of what is there. Use <F11> to go to terminal mode to actually start saving data to the buffer. Any information appearing on your screen will then be saved in the buffer. You may use <F12> to return to the menu and go back to terminal mode using <F11> while the B/Load status is ON.

If the current status of B/Load is ON, the <F1> command will change B/Load to OFF and cease loading of the buffer next time you use the <F11> command to go to terminal mode. Use the <F8> command to save the buffer to disk or to view it on the screen.

<F2> - ECHO ON/OFF

Use this to toggle the echo status in terminal mode. When echo is ON, anything you type is sent to both the modem and the screen. When it is OFF, what you type is only sent to the modem. If you cannot see what you are typing, while in terminal mode, set Echo to ON. For communication with bulletin boards etc. leave it off, as these usually send back (echo) the characters that you have typed. After using this command, the setting shown will take effect next time you use the <F11> command.

<F3> - LINE PRINTER ON/OFF

This allows you to toggle the parallel printer status. If the printer status is ON, then any characters RECEIVED from the modem while in terminal mode will be sent out to the printer as well as the LCD screen. Note that many line printers require a carriage return to print out the last line of information. Usually, it is better to use the buffer load command (see <F1> command), save the buffer to disk (<F8> command) and then later print out the disk file. A backspace (rub-out) character is sent to the printer as '#' since many printers react badly to backspaces. Printer type (Serial or Parallel) may be selected by the <F10> command.

<F4> - RECEIVE FILE

Use this to receive a single file from the other computer using whichever protocol has been set. You will be asked to provide a filename and optionally a drive letter. If this is a duplicate of any existing filename on the disk, you will be asked whether to delete or not. Press <F12> at any time while the transfer is occurring to abort the process. Note that you may not use this command to receive a file from a computer using the <F7> command.

<SHIFT> <F4> - SEND FILE

Use this to send a single file to the other computer using the protocol which has been set. You will be asked to provide a filename as for <F4> and you may abort transmission by hitting <F12> at any time. Note that you may not use this command to send to a computer which is receiving using the <F7> command.

<F5> - CHAT MODE

This is used to establish a keyboard-keyboard communication link with another computer with this facility. What you type appears at the two line scrolling area above the dividing line and is also sent out to the modem. What is received from the other computer via the modem is displayed under the dividing line. You may type any ASCII character but the only control characters that will be recognised are:

<CTRL-G>	-	Sound bell and send bell character.
<Return>	-	Scroll the sending area by one line and send a carriage return to the other computer.
<F12>	-	Quit chat mode and return to main menu.

If you want to clear your sending area of any information, press Return twice to scroll two lines.

<F6> - FILE DIRECTORY OF DISK

Use this to see what files are on a given disk and the file sizes. You will be asked to provide a filespec or Return for default. Here, enter what you would normally type after DIR, the default is all the files on the default disk drive. The file names will be shown across the screen with their sizes to the right of each filename. The sizes are in units of 128 bytes (records).

sample entries:

```
*.COM
B:FILE.*
```

<F7> - MULTI-FILE TRANSFER

Use this to transfer file(s) which satisfy an ambiguous file name (e.g. *.BAT) between two computers. Only the C protocol may be used for this method of transfer - see general file transfer use. The data format is 8 bits, no parity, 1 stop bit; this is automatically set by

TIME TERM

TIME TERM before transfer begins. The only programs apart from TIME TERM which may be used on the other computer are Chuck Fosberg's YAM program and PERTERM (for the IBM-PC).

Receiving Files using <F7>

You will be asked for the disk drive to be used. Filenames are provided by the sending computer. Parameter 3, the auto delete on batch mode (see <F10> command) may be set to 'Y' to automatically delete any duplicate files on the disk, else you may rename the file. You may abort the transfer by pressing the <F12> key.

Sending Files using <F7>

You must provide an ambiguous filename (e.g. *.*) as well as optionally a drive letter. All files matching the file specification will be sent before the transfer halts. You may abort the transfer at any time by pressing <F12>.

<F8> - DUMP BUFFER CONTENTS

This command may be used in three ways:

1. Dumping Buffer Contents to Disk.

You will be asked for a filename for the disk file and the contents of the buffer will be saved to this file. This assumes that there is only text data in the buffer. Usually you would use this after loading the buffer from the modem (see <F1> command).

2. Dumping Buffer Contents to Modem.

Usually you would use this after loading the buffer from disk (see <F1> command). There are two possible ways of using this modem dump:

- (a) Dumping a text file without any pauses. You may choose to send line feeds or not by setting parameter 3 (see <F10> command). When asked for a prompt character, simply press Return.
- (b) Dumping a text file to a computer running an editor or other program which expects a line of input at a time. In this case when asked for a prompt character, enter the character that the other computer types as a prompt (e.g. '*'). The dump will wait for that character to be received from the other computer before sending a line of data, including the carriage return but not the line feed.

NOTE:

If no prompt character is selected then at the end of transmission of each line TIME Term flushes any characters that may be echoed to it,

to prevent it's receive buffer being filled.

3. Dumping Buffer Contents to Video Screen or LCD.

This provides a way of viewing the contents of the buffer on your VDU. Nothing is sent out to the modem. You may make the screen pause at the end of each page by entering a value of 1-9 when asked for the delay at screen end (9 is greatest delay). You may also pause the listing by using the standard MSDOS listing pause. This function ignores line-feeds in the file, replacing carriage returns by CR-LF.

<F9> - KILL FILE(S) ON DISK

Use this to delete any files on disk. You may enter an ambiguous filename to delete more than one file or a single filename as well as a drive letter. Be careful with this as the files deleted CANNOT be recovered. See general disk notes.

<F10> - PARAMETER SET/READ

Use this to set the value of any of 7 parameters which control options relating to terminal and file transfer behaviour.

1: Serial Channel (0-1) 1

Selection of the serial channel you wish TIME Term to use.

2: Send Scroll Delay (0-9) 0

This will insert a delay after sending a line feed when in terminal or file transfer mode (9 is the greatest delay).

3: Auto Delete Batch Mode (Y/N) N

This is used in conjunction with the <F7> command while receiving files. If this is set to 'Y', then any files with the same name as one which is being sent will be overwritten. If it is set to 'N', you will be given the option in this situation of deleting the file or renaming it before the transfer commences. Note that this only applies to the multiple file transfer <F7>.

4: Send LF on Modem Dump (Y/N) N

Normally the dump to modem (see <F8> command) will not send line feeds, only carriage returns. If you want to send both carriage returns and line feeds at the end of each line of text, then set this parameter to 'Y'.

5: File Protocol (C/X) C

TIME TERM

This sets the file transfer protocol to either the Christensen protocol (C) or Xon-Xoff raw data transfer (X). The C protocol may only be used while transferring files to a computer using the programs TIME TERM, PERTERM or to the CP/M Users Group protocol used by programs such as XMODEM or YAM. Note that the 'C' protocol may only be used in multi-file mode (<F7> command) with the programs TIME TERM, YAM and PERTERM. See discussion under file transfer heading. Note also that the protocol set by this parameter will be used in the <F4> and <SHIFT F4> commands, but only the C protocol may be used for the <F7> command.

6: Serial or Parallel Printer (S/P) P

Use this option to select whether a parallel, Centronix type printer or an RS232 serial printer is being used. If the Serial (S) option is selected TIME Term configures the serial port other than the communications channel for printer output.

NOTE:

If option 1: Serial Channel (0-1) is changed while Serial Printer option is active, then printer port is also changed.

7: Set Terminal CR-LF-BS Behaviour

Although called a single parameter, choosing this option allows you to set five different parameters related to the terminal mode behaviour of the program. The first four of these relate to the terminal's response to carriage returns (CR) and linefeeds (LF).

The possible numbers that can be typed for each prompt are:

- <0> - Ignore that character altogether.
- <1> - Treat as a single character (i.e. a CR or a LF)
- <2> - Treat as though 2 characters, a CR followed by a LF
- <Return> - Leave the current setting unchanged.

In general, the sum of the two numbers for the keyboard case should be two, and similarly for the modem case. This allows the terminal to output a CR and LF.

The final setting available in the parameter 7 list is that of the backspace character which is to be sent to the modem. You have the choice of B(backspace) = 08 or R(rub-out) = 7FH. Once again (Return) means leave the setting as it is. Normally there should be no need to change any of these, but the facility is provided to deal with unusual situations.

To change a parameter, enter its number 1-7 and then the new value(s). Any illegal values will be ignored. When you press <F12>, the actual changes will occur.

<F11> - TERMINAL MODE

Use this to go from the menu to terminal mode with the options enabled as shown in the brackets after the <F1>, <F2> and <F3> commands. To return to the menu again, use <F12>. For a fuller description of the terminal mode see the general discussion of smart terminal use.

<F12> - EXIT TO SYSTEM MENU

This provides the means of returning to the operating system. A warning message will be displayed if the buffer contains any data and you will be asked to confirm that you wish to exit the program.

Messages indicating the status of various operations and any errors which occur during them are displayed in two possible positions:

(a) TOP OF SCREEN MESSAGES: (BELL IS SOUNDED)

Buffer FULL	- There is no space left in memory buffer and the buffer load is turned off.
Load Completed	- A buffer load from disk has finished.
Prompt Error	- When dumping to the modem F8, a prompt character was not received in time allowed.
File Write Error	- When writing a record to disk, an error was noted - disk file is probably useless.
File Create Error	- When creating a disk file, there was an error - operation abandoned.
File Open Error	- Usually, the filename could not be found.
File Read Error	- Error in reading a disk file.
Transfers Complete	- After <F4>, <SHIFT F4> and <F1> - successful transfer(s)
Dump Complete	- <F8> command has been successfully finished.
Timeout Error #01	- A character was not received in the time allowed. The number is the count of the total timeouts for this record.
Waiting to Link	- In C protocol, the program is waiting to synchronize with the other computer
Errors - ABORTING	- There is no way the program can perform the file transmission - possibly the other computer is not operating or the phone line is too noisy.
Operator ABORT	- You have typed <F12> from the keyboard during a file transfer.
No File Name ABORT	- In F7 receive mode, the program did not receive a filename - possibly other end is in <SHIFT F4> mode or not operating.
C Protocol Only	- Warning that F7 mode is for C protocol only.
XOFF Received	- In X protocol transfers, an XOFF character has been received. If this stays there and nothing happens for any length of time then use F1 to abort.
NAK - 9 Tries Left	- An error has occurred in sending / receiving a record under C protocol, it will be tried up to 10 times before aborting.

In transferring files, it is quite normal to have a NAK or timeout at the start of transmission as the two computers are getting synchronized. If you find that there are a large number of NAKs while the file is actually being transmitted, then there is probably a problem with the communication link. A large number of timeouts probably indicates that the other machine is not operating or you are working at the wrong baud rate. To get best synchronization with 'C' protocol, start the sending routine before the receiving one.

(b) MESSAGES IN GENERAL SCREEN AREA

These occur as part of prompts and in status reports while file transfers are occurring and should be self explanatory.

PROMPTS

You may use upper or lower case for answers to all prompts. When entering a filename, you may rub out characters using the rub-out key and then retype them or abort altogether by pressing <F12>. Prompts which require only a single letter do not wait for you to type (Return). For entries which can be more than one character, you must press (Return) at the end of the entry.

During file transfers which are not being monitored, the currently used file name is shown and beside it the last action on that file:

Created - A file of that name has been created on disk
 Opened - That file name has been found and opened
 Closed - The contents of that file are safe on disk
 Sent - The file has completely been sent.

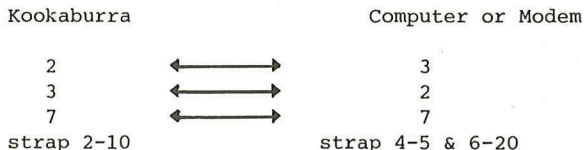
A record counter is also shown and this is updated as each record is sent/received.

TIME TERM WIRING DETAILS

TIME Term may be used to transfer files between two computers which are in close proximity. You may safely use baud rates of up to 9600 baud with the 'C' protocol whe the computers are directly wired together.

When using 'C' protocol, a format of 8 bit data with no parity character MUST be used. (See MODE Chapter 7)

To use TIME Term with SER0, connect as follows:

**NOTE:**

1. The reversal of the leads between pins 2 and 3. This provides the 'Null Modem' effect.

2. The numbers refer to the pin numbers on the RS-232C sockets on the respective serial ports. The strapping of the pins is done on the socket at each end to tie the CTS to RTS and DSR to DTR functions. This is necessary to enable the input/output drivers to function

TIME TERM

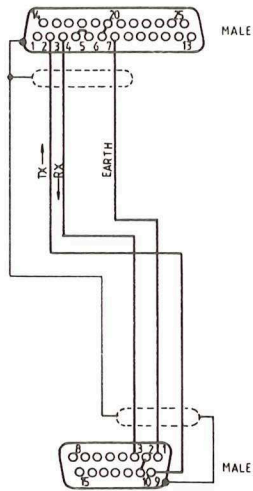
correctly. Note that the Kookaburra does not require DSR to DTR strapping.

Additional wiring examples on next page.

DIRECT CONNECT MODEM to MAGNUM CABLE

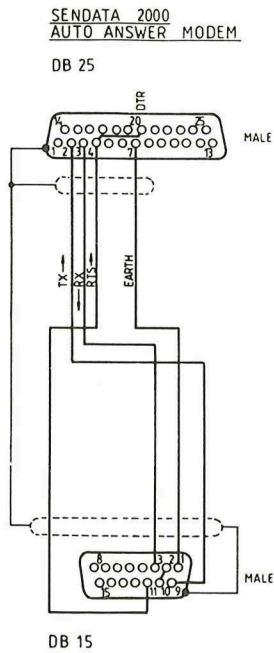
SENDATA 300 MODEM

DB 25



DB 15

AUTO ANSWER MODEM to MAGNUM CABLE



CHAPTER 7

SYSTEM UTILITIES

TABLE OF CONTENTS

OVERVIEW.....	7-2
THE MODE UTILITY.....	7-2
DISPLAY MODE FORMAT.....	7-2
SETTING SERIAL PORT PROTOCOL.....	7-3
EXAMPLES OF USING MODE SER.....	7-4
FORMATTING THE RAM DISK.....	7-4
SETTING VIDEO FREQUENCY.....	7-5
RAMDISK CONFIGURATION.....	7-5
MEMORY LAYOUT.....	7-6

OVERVIEW

This chapter describes the System Utilities, which are a set of programs used to provide system house keeping functions, for example, configuring the serial I/O ports, formatting the RAM disk and re-directing the console output.

NOTE:

Characters or words in angled brackets must be entered by the user. For example <RETURN> means press the return key, <Y> means press the Y key. This convention is used throughout the manual.

THE MODE UTILITY

NAME: MODE

PURPOSE:

Sets options for the Asynchronous Communications ports and formats the Ram Disk.

SYNTAX:

1. [A] <MODE> <RETURN>

or

2. [A] <MODE SERn:baud[,parity[,databits[,stopbits]]]> <RETURN>

or

3. [A] <MODE RF> <RETURN>

COMMENTS:

This program resides on drive A.

A missing or invalid parameter means that the setting for that parameter returns to it's default.

The above three MODE options are described in the next section.

DISPLAY MODE FORMAT

[A] MODE

MODE on its own will display the formats of options available for quick referencing, as shown below.

MODE HELP SCREEN

```
[A] mode
      MODE Version 2.2 Command Format -

      MODE SERn:baud,parity,databits,stopbits
      MODE RF   (Size N Kilobytes)

[A]
```

Where: n = 0 or 1.
 N = memory available for the RAM DISK.
 SER = serial I/O options.
 RF = reformat disk.
 VID = video frequency.

NOTE:

Kilobytes is equal to 1024 bytes, (1 byte as far as the user is concerned, is one character)

SETTING SERIAL PORT PROTOCOL

```
[A] MODE SERn:baud[,parity[,databits[,stopbits]]]
```

where:

n Is either 0 or 1 (The Serial Communications port number)

baud One of: 150, 300, 600, 1200, 2400, 4800, 9600 or 19200.

NOTE:

Only the first two characters are required; subsequent characters are ignored. (Default = 9600).

PARITY: Either N(none), O(odd), or E(even).
 (default = N)

DATABITS: 5, 6, 7 or 8 (default = 8).

STOPBITS: Either 1 or 2, (default = 2).

The above parameters can be changed to alter the protocol from the default. Parameters can be omitted, however if they are omitted, the default will be set.

EXAMPLES OF USING THE MODE SER COMMAND

NOTE:

The current setting for each example is the default setting.

Example 1:

To reset all the protocol parameters to their defaults enter:

[A] <MODE SER0> <RETURN> or <MODE SER1> <RETURN>

The above command will cause the specified serial port to be set with the following default protocol: Baud rate at 9600 bps, the Parity at NONE, the Databits at 8 and the Stopbits at 2.

Example 2:

To change all the protocols from their current settings enter:

[A] <MODE SER1:12,0,5,1> <RETURN>

This sets the Baud rate to 1200 bps, Parity to ODD, Databits to 5, and Stopbits to 1.

Example 3:

To alter only the number of Stopbits, you enter:

[A] <MODE SER1:,,,1> <RETURN>

All parameters are set to the default except for stopbits which is set to 1. If the other parameters were not set to the default, they must be re-entered.

Example 4:

To alter only the Baud rate you enter:

[A] <MODE SER1:12> <RETURN>

NOTE:

BAUD is a special case. By entering the Baud rate alone, the other parameters will not be changed to the default. Note, do not enter anything after the Baud rate or normal conditions will apply.

FORMATTING THE RAM DISK

[A] <MODE RF> <RETURN>

MODE RF formats the RAM disk to the maximum size currently available, eg. if a computer is configured with 256K Bytes of RAM, the maximum of 160K Bytes of RAM will be formatted for use as the RAM Disk.

```

      WARNING
  _____
 | WHEN MODE IS USED, ALL INFORMATION |
 | CURRENTLY IN THE RAM DISK IS LOST. |
 | CREATE A BACKUP IF YOU WANT TO KEEP IT. |
 |_____|
  
```

When used MODE RF will display the following message:

RF: All files on Drive D: will be destroyed. Are you sure?
(Y/N).

<Y> <RETURN> will continue
formatting.

<N> or any other key and <RETURN> will display this
message:

RF:aborted

and the system will return to the [A] prompt.

SETTING VIDEO FREQUENCY

[A] <MODE VIDn> <RETURN>

where n is:

- 0 for 50 Hz mains power frequency (eg. Australia)
- 1 for 60 Hz mains power frequency (eg. U.S.A)

Using this option adjusts the video frame frequency to prevent interference caused by different mains power frequency.

RAMDISK CONFIGURATION

The Kookaburra provides for the use of part of the RAM memory as a disk like device known as the RAMDISK (Drive 'D'). The allocation of RAM memory for use as RAMDISK is achieved as follows.

256Kb For those Kookaburras which have a full complement of Static Ram (ie 256Kb) the allocation is performed entirely by the Kookaburra BIOS. The size of the RAM disk in this case is 160Kb (refer "Note: 1" on the following page).

SYSTEM UTILITIES

Non-256Kb For Kookaburras with less than a full RAM complement the size of the RAMDISK is determined by the BIOS at boot time according to the following algorithm. System work space starts at address 0000H (refer "Note: 2" on the following page) and extends upwards until the first non-existent memory location is encountered.

RAMDISK starts at the top of memory (40000H) (refer "Note: 2") and extends downwards until the first non-existent memory location is encountered.

BOARD LAYOUT

The CMOS STATIC RAM chips on the main Kookaburra board are arranged as 16 pairs of 6264s with each pair representing 16Kb. These pairs are numbered 0-15 with pair 0 representing address range 0-4000H (refer "Note: 2" on the following page). The chip numbering can be seen on the circuit board under the chips or on the attached layout diagram.

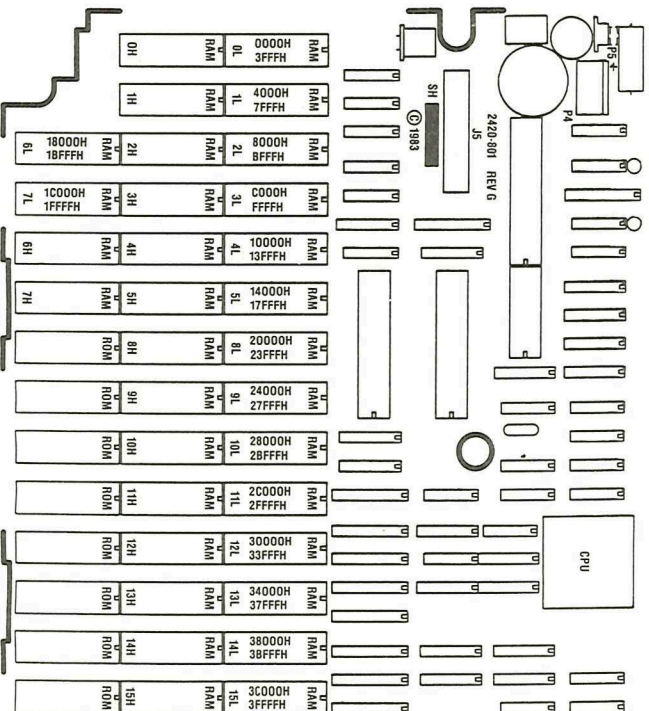
RAMDISK SIZING

To force a specific RAMDISK size remove a pair of 6264 chips from the board. The number of pairs of chips above the resulting gap will constitute the RAMDISK.

Note:

1. Software release Y1.67 configures a 190Kb RAMDISK while Y1.69 and later configure 160Kb. The release level of the software may be determined by reading the contents of the file VERSION.DOC on drive A: for ROM based systems and drive E: for disk based systems.
2. These addresses are for ROM based systems. For disk systems the CMOS STATIC RAM starts at 40000H and this value should be added to these addresses.

MEMORY LAYOUT



CHAPTER 8

THE KOOKABURRA'S OPERATING SYSTEM

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TABLE OF CONTENTS

INTRODUCTION

What Is MS-DOS?.....	8-4
What Is an Operating System?.....	8-4
Why Is MS-DOS so Important?.....	8-5
Syntax Notation.....	8-5
MS-DOS Files.....	8-5

GETTING STARTED

Invoking MS-DOS.....	8-6
How to Change the Default Drive.....	8-7
How to Format Your RAM Disk	8-7

FILES

What is a file?.....	8-8
How MS-DOS Keeps Track of Your Files.....	8-8
The DIR (Show Directory) Command.....	8-8
How to Name Your Files.....	8-9
Illegal Filenames.....	8-10
How to Copy Your Files.....	8-11
How to Protect Your Files.....	8-12
Wild Cards.....	8-12
Directories.....	8-13
Filenames and Paths.....	8-16
Displaying Your Working Directory.....	8-18
Creating a Directory.....	8-19
How to Change Your Working Directory.....	8-19
How to Remove a Directory.....	8-20

LEARNING ABOUT COMMANDS

Introduction.....	8-20
Types of MS-DOS Commands.....	8-21
Command Options.....	8-22
Information Common to All MS-DOS Commands.....	8-22
Batch Processing.....	8-24
Creating a .BAT file with Replaceable Parameters.....	8-26
Input and Output.....	8-27
Redirecting your output.....	8-28
Filters.....	8-28
Command Piping.....	8-29
Autoexec.bat.....	8-30

MS-DOS COMMANDS

Command Formats.....	8-31
----------------------	------

MS-DOS

BREAK.....	8-31
CHDIR.....	8-32
CHKDSK.....	8-32
CLS.....	8-35
COPY.....	8-35
CTTY.....	8-38
DATE.....	8-38
DEL.....	8-39
DIR.....	8-39
DISKCOPY.....	8-40
EXE2BIN.....	8-41
EXIT.....	8-43
FIND.....	8-43
FORMAT.....	8-45
MKDIR.....	8-45
MODE.....	8-46
MORE.....	8-46
PATH.....	8-46
PAUSE.....	8-47
PRINT.....	8-48
PROMPT.....	8-49
RECOVER.....	8-50
REM.....	8-51
REN.....	8-52
RMDIR.....	8-52
SET.....	8-53
SORT.....	8-53
SYS.....	8-54
TIME.....	8-55
TYPE.....	8-56
VER.....	8-56
VERIFY.....	8-56
VOL.....	8-57

Batch Commands

ECHO.....	8-57
FOR.....	8-58
GOTO.....	8-59
IF.....	8-60
SHIFT.....	8-60

MS-DOS EDITING AND FUNCTION KEY

Special MS-DOS Editing Keys.....	8-62
Control Character Functions.....	8-65

WHAT IS MS-DOS?

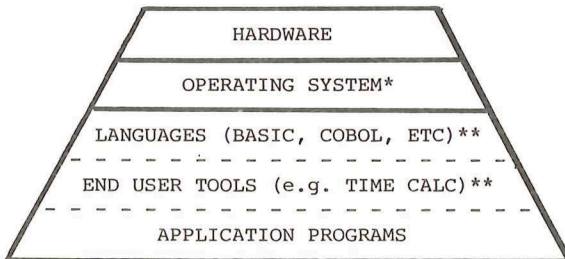
Microsoft (R) MS(tm)-DOS is a disk operating system for 8086/8088-based computers. Through MS-DOS, you communicate with the computer, disk drives, and printer, managing these resources to your advantage.

The following is a condensed description of MS-DOS and how to use it. If you wish to know more you can purchase the MS-DOS User's Guide and the MS-DOS Programmer's Manual.

WHAT IS AN OPERATING SYSTEM?

An operating system is your "silent partner" when you are using the computer. It provides the interface between the hardware and both you (the user) and the other system software. An operating system can be compared to the electricity in a house; you need it for the toaster and the blender to work, but you are not always aware that it's there.

An operating system (OS) is the piece of system software most closely associated with the hardware. The OS is unique to the microprocessor (computer). For example, MS-DOS runs on the 8086/8088 microprocessor family and will not run on another microprocessor (like the Z8000) unless major parts of the OS are rewritten. The figure on page 8-6 illustrates how the hardware, the system software and the application software are related.

Hardware/Software Relationships

- NOTE: 1. * Must adapt to new hardware
2. ** If adapted to operating system, these don't change.
3. * and ** represent System Software.

MS-DOS is a disk operating system that lets you create and keep track of files, run and link programs, and access peripheral devices, (eg. printers and disk drives) that are attached to your computer. MS-DOS is an important advance in microprocessor operating systems.

WHY IS MS-DOS SO IMPORTANT?

All Microsoft languages (BASIC interpreter, BASIC compiler, FORTRAN, COBOL, PASCAL) are available under MS-DOS. Your MS-DOS operating system will be the first that Microsoft will support when any new products or major releases are announced.

SYNTAX NOTATION

The following syntax notation is used throughout this chapter in descriptions of command and statement syntax:

[]	Square brackets indicate that the enclosed entry is optional.
< >	Angle brackets indicate that you supply the text for this entry. When the angle brackets enclose lowercase text, type in an entry defined by the text, eg. <filename>. When the angle brackets enclose upper case text, you must press the key named by the text; for example, <RETURN>.
{ }	Braces indicate that you have a choice between two or more entries. At least one of the entries enclosed in braces must be chosen unless the entries are also enclosed in square brackets.
...	Ellipses indicate that an entry may be repeated as many times as needed or desired.
	A bar indicates an OR statement in a command. When used with an MS-DOS filter, the bar indicates a pipe.
CAPS	Capital letters indicate portions of statements or commands that must be entered exactly as shown.

All other punctuation, such as commas, colons, slash marks, equal signs and blanks must be entered exactly as shown.

MS-DOS FILES

The Kookaburra contains the following MS-DOS files:

File name	Function of File
COMMAND.COM	MS-DOS command processor
MSDOS.SYS	MS-DOS operating system
IO.SYS	Hardware-Operating system interface
MODE.EXE	System Utilities

MS-DOS

MP.EXE	Clock Planner and Diary
AT.EXE	Address and Telephone Book
MW.EXE	Word Processor
MC.EXE	Spreadsheet
MT.EXE	Communications Program

You will recognise this list of files when you have learned the DIR (Show directory) command described later.

GETTING STARTED

INVOKING MS-DOS

Pressing the key <F12> as displayed on the main menu will transfer control to MS-DOS.

Once MS-DOS has been loaded, the system searches the MS-DOS disk for the COMMAND.COM file and loads it into memory. The COMMAND.COM file is a program that processes the commands you enter and then runs the appropriate programs. It is also called the COMMAND PROCESSOR.

When the command processor is loaded, you will see the following display on your screen:

THE KOOKABURRA SCREEN AFTER PRESSING <F12>

```
You are now in Ms-dos. To restart the menu, type MENU
[A]
[A]
```

You can now execute MS-DOS commands.

NOTE:

If you make a mistake while typing, press the control key on your keyboard, hold it down, and then press the <C> key. This <CONTROL C> function will abort your current entry. You can then re-answer the prompt or type another command. To correct a line before you press <RETURN>, use the <BACKSPACE> key to erase one letter at a time.

HOW TO CHANGE THE DEFAULT DRIVE

When you have invoked MS-DOS, your screen will display this message:

[A]

The [A] is the MS-DOS prompt from the command processor. It tells you that MS-DOS is ready to accept commands. The A in the prompt represents the default disk drive. This means that MS-DOS will search only the disk in drive A for any filenames you may enter and will write files to that disk unless you specify a different drive. You can ask MS-DOS to search the disk in drive B by changing the drive designation or by specifying B: in a command. To change the disk drive designation, enter the new drive letter followed by a colon, eg.

[A] (MS-DOS prompt)

[A] <B:> <RETURN>

[B] (The default drive has been changed to B. MS-DOS will search only the disk in drive B until you specify a different default drive).

To specify the drive in a command without changing the drive default:

[A] (MS-DOS prompt)

[A] <DIR D:> <RETURN> (The system will respond with:)

Volume in drive D has no label
Directory of D:

MAGDIARY	DOC	132	5-04-84	8:20a
MAGZONE	DOC	112	5-04-84	8:20a
		2 File(s)	192128 bytes free	

[A] (The drive default remains A).

HOW TO FORMAT YOUR RAM DISK

You must "format" all new disks either RAM or floppy before they can be used by MS-DOS. The mode command is used to format a RAM disk, see Chapter 7 page 7. The format command is used to format a floppy disk, see Chapter 10 page 6.

NOTE:

The ROM drives are already formatted. If you try to format a ROM drive you will get a "write protect" error on Drive "X" (where X represents the drive name). If a RAM or ROM drive is not inserted, when you try to use it, you will get a "Not Ready Error".

FILES

WHAT IS A FILE?

A file is a collection of related information. A file on your disk can be compared to a file folder in a desk drawer. For example, one file folder might contain the names and addresses of the employees who work in the office. You might name this file the Employee Master File. A file on your disk could also contain the names and addresses of employees in the office and could be named Employee Master File.

All program, text, and data on your disk reside in files and each file has a unique name. You refer to files by their names. The section on page 8-14 tells you how to name your files.

You create a file each time you enter and save data or text at your terminal. Files are also created when you write and name programs and save them on your disks.

HOW MS-DOS KEEPS TRACK OF YOUR FILES

The names of files are kept in directories on a disk. These directories also contain information on the size of the files, their location on the disk, and the dates that they were created and updated. The directory you are working in is called your current or WORKING directory.

An additional system area is called the File Allocation Table. It keeps track of the location of your files on the disk. It also allocates the free space on your disks so that you can create new files.

THE DIR (SHOW DIRECTORY) COMMAND

If you want to know what files are on your disk, you can use the DIR command. This command tells MS-DOS to display all the files in the current directory on the disk that is named. For example, if your MS-DOS disk is in drive E and you want to see the listing for the current directory on that disk, type:

<DIR E:><RETURN>

and MS-DOS will respond with a directory listing of all the files in the current directory on your MS-DOS disk. The display will look similar to this:

Volume in drive E has no label
Directory of E:/

IO	SYS	43424	4-11-84	2:10a
MSDOS	SYS	16690	4-11-84	4:30p
AUTOEXEC	BAT	60	4-11-84	4:30p
BIN	<DIR>		4-11-84	4:31p
CONFIG	SYS	52	4-11-84	4:30p
KOOKABURRA	DOC	63	4-11-84	4:30p
	7 Files		5120 bytes free	

[E]

Use <CTRL S> to stop the directory scrolling. Press any key to continue scrolling.

You can also get information about any file on your disk by typing DIR and a filename. For example, if you have created a file named MYFILE.TXT, the command:

<DIR MYFILE.TXT> <RETURN>

will give you a display of all the directory information (name of file, size of file, date last edited) for the file MYFILE.TXT. For more information on the DIR command, refer to MS-DOS Commands, page 8-60.

HOW TO NAME YOUR FILES

The name of a typical MS-DOS file will look like this:

NEWFILE.BAS

The name of a file consists of two parts. The filename is NEWFILE and the filename extension is BAS.

A filename can be from 1 to 8 characters long. The filename extension can be up to three characters. You can type any filename in small or capital letters and MS-DOS will translate these letters into uppercase characters.

In addition to the filename and the filename extension, the name of your file may include a drive designation. A drive designation tells MS-DOS to look on the disk in the designated drive to find the filename typed. For example, to find directory information about the file NEWFILE.BAS which is located on the disk in drive D (and drive D is NOT the default drive), type the following command:


```
<DIR D:NEWFILE.BAS> <RETURN>
```

Directory information about the file NEWFILE.BAS is now displayed on your screen.

If drive D is the default drive, MS-DOS will search only the disk in drive D for the filename NEWFILE and so the drive designation is not necessary. A drive designation is needed if you want to tell MS-DOS to look on the other drive to find a file.

Your filenames will probably be made up of letters and numbers, but other characters are allowed, too. Legal characters for filename extensions are the same as those for filenames.

LEGAL FILENAME CHARACTERS

A-Z	0-9	\$	&	#
%	'	()	-	@
\	^	{ }	_	`
!				

All of the parts of a filename comprise a file specification. The term file specification (or filespec) will be used in this manual to indicate the following filename format:

```
[<drive designation>:]<filename>[.<filename extension>]
```

Examples of file specifications are:

```
D:MYPROG.COB
E:YOURPROG.EXT
D:NEWFILE
TEXT
```

Remember that brackets indicate optional items. Angle brackets(<>) mean that you supply the text for the item.

Note:

1. The drive designation is not required unless you need to indicate to MS-DOS on which disk to search for a specific file.
2. You do not have to give your filename a filename extension, the system will automatically create one.

ILLEGAL FILENAMES

MS-DOS treats some file names specially, and certain 3-letter names are reserved for the names of devices. You must not use any of the following names for your file or extension names:

AUX or AUX2 Used when referring to input from or output to a device via a serial port (such as a terminal or printer). These may be used as alternate console devices.

PRN Used when referring to the printer device.

KBD Input from the Kookaburra keyboard.

LCD Output to the KOOKABURRA's LCD.

CON Input from the KOOKABURRA keyboard, output to the KOOKABURRA LCD. This is the default console device.

VID Output to KOOKABURRA's video controller.

VCON Input from KOOKABURRA's keyboard, output to KOOKABURRA's video. This is an alternate console device.

CLK Refers to the KOOKABURRA's clock device.

NUL Used when you do not want to create a particular file, but the command requires an input or output filename.

Even if you add device designations or filename extensions to these filenames, they remain associated with the devices listed above. For example, A:CON.XXX still refers to the console and is not the name of a disk file.

HOW TO COPY YOUR FILES

Just as with paper files, you often need more than one copy of a disk file. The COPY command allows you to copy one or more files to another disk. You can also give the copy a different name if you specify the new name in the COPY command.

The COPY command can also make copies of files on the same disk. In this case, you must supply MS-DOS with a different filename or you will overwrite the file. You cannot make a copy of a file on the same disk unless you specify a different filename for the new copy.

The format of the COPY command is:

<COPY filespec [filespec]> <RETURN>

For example:

<COPY A:MYFILE.TXT B:MYFILE.TXT> <RETURN>

will copy the file MYFILE.TXT on disk A to a file named MYFILE.TXT on disk B. A duplicate copy of MYFILE.TXT now exists.

If you want to duplicate the file named MYFILE.TXT on the same disk, type:

```
<COPY A:MYFILE.TXT A:NEWNAME.TXT> <RETURN>
```

You can also copy all files on a disk to another disk (ie. make a backup copy) with the COPY command (refer to page 8-53) and the DISKCOPY command (refer to page 10-7).

HOW TO PROTECT YOUR FILES

As with any information system, inadvertent errors may occur and information may be misused. If you are processing information that cannot be replaced or requires a high level of security, you should take steps to ensure that your data and programs are protected from accidental or unauthorized use, modification, or destruction. Simple measures you can take are down loading files (using TIME TERM) to another computer and saving them on Disk, or by saving them on Disk using a KOOKABURRA Expansion Box. Storing your KOOKABURRA in a secure place, will help maintain the integrity of the information in your files.

WILD CARDS

Two special characters called wild cards, can be used in filenames and filename extensions: the asterisk (*) and the question mark (?). These special characters give you greater flexibility when using filenames in MS-DOS commands.

THE ? WILD CARD

A question mark (?) in a filename or filename extension indicates that any character can occupy that position. For example, the MS-DOS command:

```
<DIR TEST?RUN.EXE> <RETURN>
```

will list all directory entries on the default drive that have 8 characters, begin with TEST, have any next character, end with the letters RUN, and have a filename extension of .EXE. Here are some examples of files that might be listed by the above DIR command:

```
TEST1RUN.EXE  
TEST2RUN.EXE
```

TEST6RUN.EXE

THE * WILD CARD

An asterisk (*) in a filename or filename extension indicates that any character can occupy that position or any of the remaining positions in the filename or extension. For example:

<DIR TEST*.EXE><RETURN>

will list all directory entries on the default drive with filenames that begin with the characters TEST and have an extension of .EXE. Here are some examples of files that might be listed by the above DIR command:

TEST1RUN.EXE
TEST2RUN.EXE
TEST6RUN.EXE
TESTALL.EXE

The wild card designation *.* refers to all files on the disk. Note that this can be very powerful and destructive when used in MS-DOS commands. For example, the command DEL *.* deletes all files on the default drive, regardless of filename or extension.

Examples:

1. To list the directory entries for all files named NEWFILE on drive A (regardless of their filename extensions), simply type:

<DIR A:NEWFILE.*> <RETURN>

2. To list the directory entries for all files with filename extensions of .TXT (regardless of their filenames) on the diskdrive B, type:

<DIR B:*.TXT> <RETURN>

This command is useful if, for example, you have given all your text programs a filename extension of .TXT. By using the DIR command with the wild card characters, you can obtain a listing of all your text files even if you do not remember all of their filenames.

DIRECTORIES

As you have learned, the names of your files are kept in a directory on each disk. The directory also contains information on the size of the files, their locations on the disk, and the dates they were created and last updated.

When you are working on several different projects, the number of files in the directory can become large and unwieldy. You may want your own files kept separate from a co-worker's, or you may want to organize your programs into categories that are convenient for you.

In an office, you can separate files by placing them in different filing cabinets, in effect, creating different directories of information. MS-DOS allows you to organize the files on your disks into directories. Directories are a way of dividing your files into convenient groups of files, eg. you may want all of your accounting programs in one directory and text files in another. Any one directory can contain any reasonable number of files, and it may also contain other directories (referred to as subdirectories). This method of organizing your files is called a hierarchical directory structure.

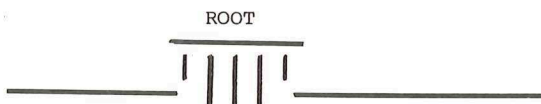
A hierarchical directory structure can be thought of as a "tree" structure: directories are branches of the tree and files are the leaves, except that the tree grows downward; that is, the "root" is at the top. The root is the first level in the directory structure. It is the directory that is automatically created when you format a disk and start putting files in it. You can create additional directories and subdirectories by following the instructions on page 8-27.

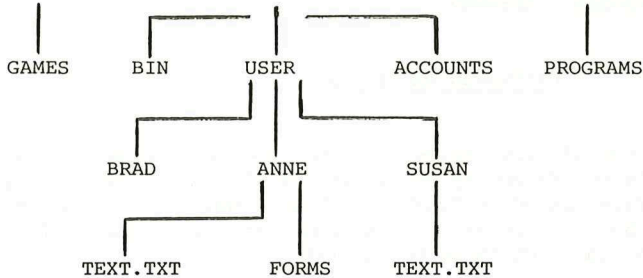
The tree or file structure grows as you create new directories for groups of files or for other users on the system. Within each new directory, files can be added, or new subdirectories can be created.

It is possible for you to "travel" around this tree, for instance, it is possible to find any file in the system by starting at the root and travelling down any of the branches to the desired file. Conversely, you can start where you are within the file system and travel towards the root.

The filenames discussed earlier in this section are relative to your current directory and do not apply system-wide. Thus, when you turn on your computer, you are "in" your directory. Unless you take special action when you create a file, the new file is created in the directory in which you are now working. Users can have files of the same name that are unrelated because each is in a different directory.

The figure below illustrates a typical hierarchical directory structure.





A sample Hierarchical Directory Structure

The ROOT directory is the first level in the directory structure. You can create subdirectories from the ROOT by using the MKDIR command (refer to MS-DOS Commands for information on MKDIR). In this example, five subdirectories of ROOT have been created. These include:

A directory of games, named GAMES

A directory of all external commands, named BIN (refer to Learning About Commands for more information)

A USER directory containing separate subdirectories for all users of the system

A directory containing accounting information, named ACCOUNTS

A directory of programs, named PROGRAMS.

Brad, Anne, and Susan each have their own directories which are subdirectories of the USER directory. Anne has a subdirectory under the \USER\ANNE directory named FORMS. Anne and Susan have files in their directories, each named TEXT.TXT. Notice that Susan's text file is unrelated to Anne's.

This organization of files and directories is not important if you only work with files in your own directory; but if you work with someone else or on several projects at one time, the hierarchical directory structure becomes extremely useful. For example, you could get a list of the files in Anne's FORMS directory by typing:

```
<DIR \USER\ANNE\FORMS> <RETURN>
```

Note: the backward slash mark (\) is used to separate directories from other directories and files.

To find out what files Susan has in her directory, you could type:

```
<DIR \USER\SUSAN> <RETURN>
```

FILENAMES AND PATHS

When you use hierarchical directories, you must tell MS-DOS where the files are located in the directory structure. Both Susan and Anne, for example, have files named TEXT.TXT. Each will have to tell MS-DOS in which directory her file resides if she wants to access it. This is done by giving MS-DOS a PATHNAME to the file.

PATHNAMES

A simple filename is a sequence of characters that can optionally be preceded by a drive designation and followed by a simple filename, each separated from the previous one by a backslash(\).

The syntax of pathnames is:

```
[<d:>][<directory>]\[<directory ...>]\[<filename>] <RETURN>
```

If a pathname begins with a backslash, MS-DOS searches for the file beginning at the root (or top) of the tree. Otherwise, MS-DOS begins at the user's current directory, known as the working directory, and searches downward from there. The path name of Anne's TEXT.TXT file is \USER\ANNE\TEXT.TXT.

When you are in your working directory, a filename and its corresponding pathname may be used interchangeably. Some sample names are:

\	Indicates the root directory.
\PROGRAMS	Sample directory under the root directory containing program files.
\USER\SUSAN\FORMS\1A	A typical full pathname. This example is a file named 1A in the directory named FORMS belonging to the USER named Susan.
USER\ANNE	A relative pathname; it names the file or directory ANNE in subdirectory USER of the working directory. If the working directory is the root (\), it names \USER\ANNE.
TEXT.TXT	Name of a file or directory in the working directory.

MS-DOS provides special shorthand notations for the working directory and the parent directory (one level up) of the working directory:

- . MS-DOS uses this shorthand notation to indicate the name of the working directory in all hierarchical directory listings. MS-DOS automatically creates this entry when a directory is made.
- .. The shorthand name of the working directory's parent directory. If you type:

```
<DIR ..> <RETURN>
```

then MS-DOS will list the files in the parent directory of your working directory. If you type:

```
<DIR..\..> <RETURN>
```

then MS-DOS will list the files in the parent's PARENT directory.

PATHING AND EXTERNAL COMMANDS

External commands reside on disks as program files. They must be read from the disk before they can execute. (For more information on external commands, refer to Learning About Commands, page 8-30).

When you are working with more than one directory, it is convenient to put all MS-DOS external commands into a separate directory so they do not clutter your other directories. When you issue an external command to MS-DOS, MS-DOS immediately checks your working directory to find that command. You must tell MS-DOS in which directory these external commands reside. This is done with the PATH command.

For example, if you are in a working directory named \BIN\PROG, and all MS-DOS external commands are in \BIN, you must tell MS-DOS to choose the \BIN path to find the FORMAT command. The command:

```
<PATH\BIN> <RETURN>
```

tells MS-DOS to search in your working directory and the \BIN directory for all commands. You only have to specify this path once to MS-DOS during your terminal session. MS-DOS will now search in \BIN for the external commands. If you want to know what the current path is, type the word PATH and the current value of PATH will be printed.

For more information on the MS-DOS command PATH, refer to MS-DOS Commands, page 8-74.

PATHING AND INTERNAL COMMANDS

Internal commands are the simplest, most commonly used commands. They execute immediately because they are incorporated into the command processor. (For more information on internal commands, refer to Learning about Commands).

Some internal commands can use paths. The following four commands, COPY, DIR, DEL and TYPE have greater flexibility when you specify a pathname after the command.

The syntax of these four commands is shown below:

`<COPY pathname pathname> <RETURN>`

If the second pathname to COPY is a directory, all files are copied into that directory. The first pathname may only specify files in the working directory.

`<DEL pathname> <RETURN>`

If the pathname is a directory, all the files in that directory are deleted.

Note:

The prompt "Are you sure (Y/N)?" will be displayed if you try to delete a path. Type Y to complete the command, type N for the command to abort.

`<DIR pathname> <RETURN>`

Displays the directory for a specific path

`<TYPE pathname> <RETURN>`

You must specify a file in a path for this command. MS-DOS will display the file on your screen in response to the TYPE pathname command.

DISPLAYING YOUR WORKING DIRECTORY

All commands are executed while you are in your working directory. You can find out the name of the directory you are in by issuing the MS-DOS command CHDIR (Change Directory) with no options, eg. if your current directory is \USER\BRAD, when you type:

`<CHDIR> <RETURN>`

you will see:

`<E:\USER\BRAD>`

This is your current drive designation plus the working directory (\USER\BRAD).

If you now want to see what is in the \USER\BRAD directory, you can issue the MS-DOS command DIR. The following is an example of the display you might receive from the DIR command for a sub-directory:

Volume in drive D has no label
Directory of D:\USER\BRAD

.	<DIR>	8-09-82	10:09a
..	<DIR>	8-09-82	10:09a
TEXT	<DIR>	8-09-82	10:09a
FILE1	COM	5243	8-04-82 9:30a
4 files(s)		8376320 bytes free	

The top line means that volume identification for this disk was not assigned when the disk was formatted. Note that MS-DOS lists both files and directories in this output. As you can see, Brad has another directory in this tree structure named TEXT. The '.' indicates the working directory \USER\BRAD\ directory. All of these directories and files reside on the disk in drive D.

Because files and directories are listed together (see previous display), MS-DOS does not allow you to give a subdirectory the same name as a file in that directory. For example, if you have a path \BIN\USER\BRAD where BRAD is a subdirectory, you cannot create a file in the USER directory named BRAD.

CREATING A DIRECTORY

To create a sub-directory in your working directory, use the MKDIR (Make Directory) command, eg. to create a new directory named "NEWDIR" under your working directory, simply type:

<MKDIR NEWDIR> <RETURN>

After this command has been executed by MS-DOS, a new directory will exist in your tree structure under your working directory.

You can also make directories anywhere in the tree structure by specifying MKDIR and then a pathname. MS-DOS will automatically create the . and .. entries in the new directory.

HOW TO CHANGE YOUR WORKING DIRECTORY

Changing from your working directory to another directory is very easy in MS-DOS. Simply issue the CHDIR command and supply a pathname (see "FILENAMES AND PATHS", page 8-23, for an explanation of pathnames). For example:


```
CHDIR <directory> <RETURN>
```

will search for a directory in the current directory.

```
CHDIR <pathname> <RETURN>
```

will search the specified path for the directory, eg.

```
CHDIR \USER\SUSAN\FORMS <RETURN>
```

will change the working directory to FORMS. You can specify any pathname to travel to different branches and leaves of the directory tree. Remember, if a pathname begins with a backslash, MS-DOS searches for the directory beginning at the root (or top) of the tree. The command "CHDIR .." will always put you in the parent directory of your working directory.

HOW TO REMOVE A DIRECTORY

To delete a directory in the tree structure, use the MS-DOS RMDIR (Remove Directory) command. For example, to remove the directory NEWDIR from the working directory, type:

```
RMDIR <NEWDIR> <RETURN>
```

Note that the directory NEWDIR must be empty except for the . and .. entries before it can be removed; this will prevent you from accidentally deleting files and directories. You can remove any directory by specifying its pathname. To remove the \BIN\USER\BRAD directory, make sure that it has only the . and .. entries, then type:

```
RMDIR <\BIN\USER\BRAD> <RETURN>
```

To remove all the files in a directory (except for the . and .. entries) type DEL and then the pathname of the directory. For example, to delete all files in the \BIN\USER\ANNE directory, type:

```
DEL <\BIN\USER\ANNE *.*> <RETURN>
```

You cannot delete the . and .. entries. They are created by MS-DOS as part of the hierarchical directory structure.

LEARNING ABOUT COMMANDS

INTRODUCTION

Commands are a way of communicating with the computer. By entering MS-DOS commands at your terminal, you can ask the system to perform useful tasks. There are MS-DOS commands that:

Compare, copy, display, delete, and rename files

Copy and format disks

Execute system programs as well as your own programs

Analyse and list directories

Enter date, time, and remarks

Set various printer and screen options

Copy MS-DOS system files to another disk

Request MS-DOS to wait for a specific period of time

TYPES OF MS-DOS COMMANDS

There are two types of MS-DOS commands:

1. Internal commands
2. External commands

Internal commands are the simplest, most commonly used commands. You cannot see these commands when perform a directory listing on your MS-DOS disk; they are part of the command processor. When you type these commands, they execute immediately. The following commands are internal:

BREAK	DEL (ERASE)	MKDIR (MD)	SET
CHDIR (CD)	DIR	PATH	SHIFT
CLS	ECHO	PAUSE	TIME
COPY	EXIT	PROMPT	TYPE
CTTY	FOR	REM	VER
DATE	GOTO	REN (RENAME)	VERIFY
	IF	RMDIR (RD)	VOL

External commands reside on disks as program files. They must be read from disk before they can execute. If the disk containing the command is not in the drive, MS-DOS will not be able to find and execute the command.

Any filenames with a filename extension of .COM, .EXE or .BAT is considered an external command. For example, programs such as FORMAT.COM and COMP.COM are external commands. Because all external commands reside on disk, you can create commands and add them to the system. Programs that you create with most languages (including assembly language) will be .EXE (executable) files.

When you enter an external command, do not include its filename extension.

COMMAND OPTIONS

Options can be included in your MS-DOS commands to specify additional information to the system. If you do not include some options, MS-DOS provides a default value. Refer to individual command descriptions for the default values.

The following is the format of all MS-DOS commands:

Command [options]

where:

d:	refers to disk drive designation
filename	refers to any valid name for a disk file, including an optional filename extension. The filename option does not refer to a device or to a disk drive designation.
.ext	refers to an optional filename extension consisting of a period and 1-3 characters. When used, file extensions immediately follow filenames.
filespec	refers to an optional drive designation, a filename and an optional three letter filename extension in the following format: [<d:>]<filename>[<.ext>]
pathname	refers to a pathname or filename in the following format: [<directory>]\[<directory...>]\[<filename>]
switches	switches are options that control MS-DOS commands. They are preceded by a forward slash (for example, /P)
arguments	Provide more information to MS-DOS commands. You usually choose between arguments; for example, ON or OFF.

INFORMATION COMMON TO ALL MS-DOS COMMANDS

The following information applies to all MS-DOS commands:

1. Commands are usually followed by one or more options
2. Commands and options may be entered in uppercase or lowercase, or a combination of keys.
3. Commands and options must be separated by delimiters. Because they are easiest, you will usually use the space and comma as delimiters. For example:

`<RENAME,THISFILE THATFILE> <RETURN>`

You can also use the semicolon (;), the equal sign (=) or the tab key as delimiters in MS-DOS commands.

In this manual, we will use a space as the delimiter in commands.

4. Do not separate a file specification with delimiters, since the colon and the period already serve as delimiters.
5. When instructions say "Press any key", you can press any alpha or numeric key.
6. You must include the filename extension when referring to a file that already has a filename extension.
7. You can abort commands when they are running by pressing `<CTRL C>`.
8. Commands take effect only after you have pressed the `<RETURN>` key.
9. Wild cards (global filename characters) and device names (eg. PRN or CON) are not allowed in the names of any commands.
10. When commands produce a large amount of output on the screen, the display will automatically scroll to the next screen. You can press `<CONTROL S>` to suspend the display. Press any key to resume the display on the screen.
11. MS-DOS editing and function keys can be used when entering commands. Refer to MS-DOS Editing and Function Keys for a complete description of these keys.
12. The prompt from the command processor is the default drive designation plus a greater than symbol for example, `A>`

13. Disk drives will be referred to as source drives and destination drives. A source drive is the drive you will be transferring information from. A destination drive is the drive you will be transferring information to.

BATCH PROCESSING

Often you may find yourself typing the same sequence of commands over and over to perform some commonly used task. With MS-DOS, you can put the command sequence into a special file called a batch file, and execute the entire sequence simply by typing the name of the batch file. "Batches" of your commands in such files are processed as if they were typed at a terminal. Each batch file must be named with the .BAT extension, and is executed by typing the filename WITHOUT ITS EXTENSION.

You can create a batch file by using MAGWRITER or EDLIN.

Two MS-DOS commands are available for use expressly in batchfiles: REM and PAUSE. REM permits you to include remarks and comments in your batch files without these remarks being executed as commands. PAUSE prompts you with an optional message and permits you to either continue or abort the batch process at a given point. PAUSE and REM are described in detail on pages 8-75 and 8-82.

Batch processing is useful if you want to execute several MS-DOS commands with one batch command, such as when you format and check a new disk. For example, a batch file for this purpose might look like this:

```
REM This is a file to check new disks
REM It is named NEWDISK.BAT
PAUSE Insert new disk into drive b:
FORMAT B:
DIR B:
CHKDSK B:
```

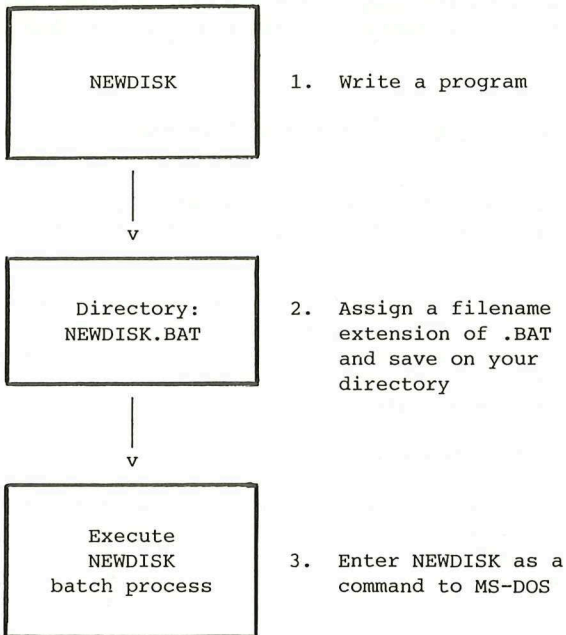
To execute this .BAT file, simply type the filename without the .BAT extension:

```
<NEWDISK> <RETURN>
```

The result is the same as if each of the lines in the .BAT file were entered at the terminal as individual commands.

The figure below illustrates the three steps used to write, save and execute an MS-DOS batch.

MS-DOS Batch File Steps



The following list contains information that you should read before you execute a batch process with MS-DOS:

1. Do not enter the filename BATCH (unless the name of the file you want to execute is BATCH.BAT).
2. Only the filename should be entered to execute the batch file. Do not enter the filename extension.
3. The commands in the file named <filename>.BAT are executed.
4. If you press <CTRL C> while in batch mode, this prompt appears:

Terminate batch job (Y/N)?

If you press <Y>, the remainder of the commands in the batch file are ignored and the system prompt appears.

If you press <N>, only the current command ends and batch processing continues with the next command in the file.

5. If you remove the disk containing a batch file being executed, MS-DOS prompts you to insert it again before the next command can be read.

6. The last command in a batch file may be the name of another batch file. This allows you to call one batch file from another when the first is finished.

CREATING A .BAT FILE WITH REPLACEABLE PARAMETERS

There may be times when you want to create an application program and run it with different sets of data. This data maybe stored in various MS-DOS files.

When used in MS-DOS commands, a **PARAMETER** is an option that you define. With MS-DOS, you can create a batch (.BAT) file with dummy (replaceable) parameters. These parameters, named %0 - %9, can be replaced by values supplied when the batch file executes. For example, when you type the command line:

```
<COPY CON MYFILE.BAT> <RETURN>
```

the next lines you type are copied from the console to a file named MYFILE.BAT on the default drive:

```
A: COPY CON MYFILE.BAT
COPY %1.MAC %2.MAC
TYPE %2.PRN
TYPE %0.BAT
```

Now, press <CTRL Z> <RETURN>. MS-DOS responds with this message:

```
1 File(s) copied
[X]
```

The file MYFILE.BAT, which consists of three commands, now resides on the disk in the default drive. The dummy parameters %1 and %2 are replaced sequentially by the parameters you supply when you execute the file. The dummy parameter %0 is always replaced by the drive designator, if specified, and the file name of the batch file (for example, MYFILE).

NOTE:

1. Up to 10 dummy parameters (%0 - %9) can be specified. Refer to the MS-DOS command **SHIFT** on page 8-99, if you wish to specify more than 10 parameters.
2. If you use the percent sign as part of a filename **WITHIN** a **BATCH FILE**, you must type it twice. For example, to specify the file ABC%.EXE, you must type it as ABC%%.EXE in the batch file.

EXECUTING A .BAT FILE

To execute the batch file MYFILE.BAT and to specify the parameters that will replace the dummy parameters, you must enter the batch filename (without its extension) followed by the parameters you want MS-DOS to substitute for %1, %2, etc.

Remember that the file MYFILE.BAT consists of 3 lines:

```
COPY %1.MAC %2.MAC
TYPE %2.PRN
TYPE %0.BAT
```

To execute the MYFILE batch process, type:

```
<MYFILE A: PROG1 B:PROG2> <RETURN>
```

MYFILE is substituted for %0, A:PROG1 for %1, and B:PROG2 for %2.

The result is the same as if you had typed each of the commands in MYFILE with their parameters, as follows:

```
COPY A:PROG1.MAC B:PROG2.MAC
TYPE B:PROG2.PRN
TYPE MYFILE.BAT
```

The following table illustrates how MS-DOS replaces each of the above parameters:

BATCH	PARAMETER1 (%0)	PARAMETER2 (%1)	PARAMETER3 (%2)
FILENAME (MYFILE)	(PROG1)	(PROG2)	
MYFILE	MYFILE.BAT	PROG1.MAC	PROG2.MAC
			PROG2.PRN

Remember that the dummy parameter %0 is always replaced by the drive designator (if specified) and the filename of the batchfile.

INPUT AND OUTPUT

MS-DOS always assumes that input comes from the keyboard and output goes to the terminal screen. However, the flow of command input and output can be redirected. Input can come from a file rather than a terminal keyboard, and output can go to a file or to a line printer instead of to the terminal. In addition, "pipes" can be created that allow output from one command to become the input to another. Redirection and pipes are discussed in the next sections.

REDIRECTING YOUR OUTPUT

Most commands produce output that is sent to your LCD. You can send this information to a file by using a greater-than sign(>) in your command. For example, the command:

```
<DIR> <RETURN>
```

displays a directory listing of the disk in the default drive on the LCD. The same command can send this output to a file named MYFILES by designating the output file on the command line:

```
<DIR >MYFILES> <RETURN>
```

If the file MYFILES does not already exist, MS-DOS creates it and stores your directory listing in it. If MYFILES already exists, MS-DOS overwrites what is in the file with the new data.

If you want to append your directory or a file to another file (instead of replacing the entire file), two greater-than signs(>>) can be used to tell MS-DOS to append the output of the command (such as a directory listing) to the end of a specified file. The command:

```
<DIR >>MYFILES> <RETURN>
```

appends your directory listing to a currently existing file named MYFILES. If MYFILES does not exist, it is created.

It is often useful to have input for a command come from a file rather than from the keyboard. This is possible in MS-DOS by using a less-than sign (<) in your command. For example, the command:

```
<SORT <NAMES> LIST1> <RETURN>
```

sorts the file NAMES and sends the sorted output to a file named LIST1.

FILTERS

A filter is a command that reads your input, transforms it in some way, and then outputs it, usually to your LCD or to a file. In this way, the data is said to have been "filtered" by the program. Since filters can be put together in many different ways, a few filters can take the place of a large number of specified commands.

MS-DOS filters include CIPHER, FIND, MORE and SORT. Their functions are described below:

CIPHER Encrypts/decrypts a file

FIND	Searches for a constant string of text in a file
MORE	Takes standard terminal output and displays it, one screen at a time
SORT	Sorts text

You can see how these filters are used in the next section.

COMMAND PIPING

If you want to give more than one command to the system at a time, you can "pipe" commands to MS-DOS. For example, you may occasionally need to have the output of one program sent as the input to another program. A typical case would be a program that produces output in columns. It could be desirable to have this column output sorted. Piping is done by separating commands with the pipe separator, which is the vertical bar symbol (|). For example, the command

```
<DIR | SORT> <RETURN>
```

will give you an alphabetically sorted listing of your directory. The vertical bar causes all output generated by the left side of the bar to be sent to the right side of the bar for processing.

Piping can also be used when you want to output to a file. If you want your directory sorted and sent to a new file (eg. DIREC.FIL), you could type:

```
<DIR | SORT >DIREC.FIL> <RETURN>
```

MS-DOS will create a file named DIREC.FIL on your default drive. DIREC.FIL contains a sorted listing of the directory on the default drive, since no other drive was specified in the command. To specify a drive other than the default drive, type:

```
<DIR | SORT >B:DIREC.FIL> <RETURN>
```

This sends the sorted data to a file named DIREC.FIL on drive B.

A pipeline may consist of more than two commands. For example,

```
<DIR | SORT | MORE> <RETURN>
```

will sort your directory, show it to you one screen at a time, and put "--MORE--" at the bottom of your screen when there is more output to be seen. You will find many uses for piping commands and filters.

MS-DOS

THE AUTOEXEC.BAT FILE

When you start MS-DOS, the command processor searches the MS-DOS disk for a file named AUTOEXEC.BAT. The AUTOEXEC.BAT file is a batch file that is automatically executed each time you start the system.

When MS-DOS finds the AUTOEXEC.BAT file, the file is immediately executed by the command processor. The AUTOEXEC.BAT file automatically loads the Kookaburra's System Menu each time you switch on.

MS-DOS COMMANDS**COMMAND FORMATS**

The following notation indicates how you should format MS-DOS commands:

1. You must enter any words shown in capital letters. These words are called keywords and must be entered exactly as shown. You can enter these keywords in any combination of upper/lower case; MS-DOS will convert all keywords to uppercase.
2. You supply the text for any items enclosed in angle brackets (< >), eg. you should enter the name of your file when <filename> is shown in the format.
3. Items in square brackets ([]) are optional. If you wish to include optional information, do not include the square brackets, only the information within the brackets.
4. An ellipsis (...) indicates that you may repeat an item as many times as you want.
5. You must include all punctuation where shown (with the exception of square brackets), such as commas, equal signs, question marks, colons slashes or blanks.

NOTE:

The following commands are not supported by the Kookaburras ROM version of MS-DOS. They are provided on a floppy system disk, when a Kookaburra Expansion box is purchased.

CAT.COM	CHKDSK.COM	CIPHER.COM
DISKCOPY.COM	FIND.EXE	FORMAT.COM
LOCATE.EXE	MORE.COM	PRINT.COM
RECOVER.COM	SORT.EXE	SYS.COM
FC.EXE	EXEFIX.COM	EDLIN.COM
DEBUG.COM	LINK.EXE	LOGIN.COM

NAME: BREAK

TYPE: Internal

PURPOSE:

Sets CONTROL C check

SYNTAX: <BREAK ON/OFF> <RETURN>

COMMENTS:

If you are running an application program that uses CONTROL C function keys, you will want to turn off the MS-DOS CONTROL C function so that when you press <CONTROL C> you affect your program and not the operating system. Specify BREAK OFF to turn off CONTROL C and BREAK ON when you have finished running your application program and are using MS-DOS.

NAME: CHDIR (CHANGE DIRECTORY)

TYPE: Internal

SYNONYM: CD

PURPOSE:

Changes directory to a different path; displays current (working) directory.

SYNTAX: <CHDIR [pathname]> <RETURN>

COMMENTS:

If your working directory is \BIN\USER\BRAD and you want to change your path to another directory (such as \BIN\USER\BRAD\FORMS), type:

```
<CHDIR \BIN\USER\BRAD\FORMS> <RETURN>
```

and MS-DOS will put you in the new directory. A shorthand notation is also available with this command:

```
<CHDIR ..> <RETURN>
```

This command will always put you in the parent directory of your working directory.

CHDIR used without a pathname displays your working directory. If your working directory is \BIN\USER\BRAD on drive B, and you type CHDIR <RETURN>, MS-DOS will display:

```
B:\BIN\USER\BRAD
```

NAME: CHKDSK (CHECK DISK)

TYPE: External

PURPOSE:

Scans the directory of the specified disk drive and checks it for consistency.

SYNTAX: <CHKDSK [d:] <filespec> [/F] [/V]> <RETURN>

COMMENTS:

CHKDSK should be run occasionally on each disk to check for errors in the directory. If any errors are found, CHKDSK will display error messages, if any, and then a status report.

A sample status report follows:

```
160256 bytes total disk space
  8192 bytes in 2 hidden files
   512 bytes in 2 directories
 30720 bytes in 8 user files
121344 bytes available on disk
```

```
65536 bytes total memory
53152 bytes free
```

CHKDSK will not correct the errors found in your directory unless you specify the /F (fix) switch. Typing /V causes CHKDSK to display messages while it is running.

You can redirect the output from CHKDSK to a file. Simply type:

```
<CHKDSK A:>filename> <RETURN>
```

The errors will be sent to the filename specified. Do not use the /F switch if you redirect CHKDSK output.

The following errors will be corrected automatically if you specify the /F switch:

Invalid drive specification

Invalid parameter

Invalid sub-directory entry

Cannot CHDIR to <filename>

Tree past this point not processed

First cluster number is invalid
entry truncated

Allocation error, size adjusted

Has invalid cluster, file truncated

Disk error reading FAT

Disk error writing FAT

<filename> contains
non-contiguous blocks

All specified file(s) are contiguous

You must correct the following errors returned by CHKDSK, even if you specified the /F switch:

Incorrect DOS version

You cannot run CHKDSK on versions of MS-DOS that are not 2.0 or higher.

Insufficient memory

Processing cannot continue

There is not enough memory in your machine to process CHKDSK for this disk. You must obtain more memory to run CHKDSK.

Errors found, F parameter not specified

Corrections will not be written to disk

You must specify the /F switch if you want the errors corrected by CHKDSK.

Invalid current directory

Processing cannot continue

Restart the system and re-run CHKDSK.

Cannot CHDIR to root

Processing cannot continue

The disk you are checking is bad. Try restarting MS-DOS and RECOVER the disk.

<filename> is cross linked on cluster

Make a copy of the file you want to keep, and then delete both files that are cross linked.

X lost clusters found in y chains

Convert lost chains to files (Y/N)?

If you respond <Y> to this prompt, CHKDSK will create a directory entry and a file for you to resolve this problem (files created by CHKDSK are named FILEnnnnnnnn).

CHKDSK will then display:

X bytes disk space freed

If you respond <N> to this prompt and have not specified the /F switch, CHKDSK frees the clusters and displays:

X bytes disk space would be freed.

Probable non-DOS disk

Continue (Y/N)?

The disk you are using is a non-DOS disk. You must indicate whether or not you want CHKDSK to continue processing.

Insufficient room in root directory

Erase files in root and repeat CHKDSK

CHKDSK cannot process until you delete files in the root directory.

Unrecoverable error in directory

Convert directory to file (Y/N)?

If you respond <Y> to this prompt, CHKDSK will convert the bad directory into a file. You can then fix the directory yourself or delete it.

NAME: CLS

TYPE: Internal

PURPOSE:

Clears the terminal screen

SYNTAX: <CLS> <RETURN>

COMMENTS:

The CLS command causes MS-DOS to send the ANSI escape sequence ESC[2J (which clears your screen) to your console.

NAME: COPY

TYPE: Internal

PURPOSE:

Copies one or more files to another disk. If you prefer, you can give the copies different names. This command can also copy files on the same disk.

SYNTAX: <COPY <filespec> [filespec] [pathname] [pathname] [/V]> <RETURN>

COMMENTS:

If the second filespec option is not given, the copy will be on the default drive and will have the same name as the original file (first filespec option). If the first filespec is on the default drive and the second filespec is not specified, the COPY will be aborted. Copying files to themselves is not allowed. MS-DOS will return the error message:

File cannot be copied onto itself
0 file(s) copied

The second option may take three forms:

1. If the second option is a drive designation (d:) only, the original file is copied with the original filename to the

designated drive.

2. If the second option is a filename only, the original file is copied to a file on the default drive with the filename specified.
3. If the second option is a full filespec, the original file is copied to a file on the default drive with the filename specified.

The /V switch causes MS-DOS to verify that the sectors written on the destination disk are recorded properly. Although there are rarely recording errors when you run COPY, you can verify that critical data has been correctly recorded. This option causes the COPY command to run more slowly because MS-DOS must check each entry recorded on the disk.

The COPY command also allows file concatenation (joining) while copying. Concatenation is accomplished by simply listing any number of files as options to COPY, separated by "+". For example:

```
<COPY A.XYZ + B.COM + B:C.TXT BIGFILE.CRP> <RETURN>
```

This command concatenates files named A.XYZ, B.COM and B:C.TXT and places them in the file on the default drive called BIGFILE.CRP.

To combine several files using wild cards into one file, you could type:

```
<COPY *.LST COMBIN.PRN> <RETURN>
```

This command would take all files with a filename extension of .LST and combine them into a file named COMBIN.PRN.

In the following example, for each file found matching *.LST, that file is combined with the corresponding .REF file. The result is a file with the same filename but with the extension.PRN. Thus, FILE1.LST will be combined with FILE1.REF to form FILE1.PRN; then XYZ.LST with XYZ.REF to form XYZ.PRN; and so on.

```
<COPY *.LST + *.REF *.PRN> <RETURN>
```

The following COPY command combines all files matching *.LST, then all files matching *.REF, into one file named COMBIN.PRN:

```
<COPY *.LST + *.REF COMBIN.PRN> <RETURN>
```

Do not enter a concatenation COPY command where one of the source filenames has the same extension as the destination. For example, the following command is an error if ALL.LST already exists:

```
<COPY *.LST ALL.LST> <RETURN>
```

The error would not be detected, however, until ALL.LST is appended. At this point it could have already been destroyed.

COPY compares the filename of the input file with filename of the destination. If they are the same, that one input file is skipped, and the error message "Content of destination lost before copy" is printed. Further concatenation proceeds normally. This allows "summing" files, as in this example:

```
<COPY ALL.LST + *.LST> <RETURN>
```

This command appends all *.LST files, except ALL.LST itself to ALL.LST. This command will not produce an error message and is the correct way to append files using the COPY command.

MS-DOS

NAME: CTTY

TYPE: Internal

PURPOSE:

Allows you to change the device from which you issue commands (TTY represents the console).

SYNTAX: <CTTY /DEV/DEV> <RETURN>

COMMENTS:

DEV stands for "device", ie. the device from which you are giving commands to MS-DOS. This command is useful if you want to change the device on which you are working. The command:

<CTTY /DEV/AUX> <RETURN>

moves all command I/O (input/output) from the current device (the console) to the AUX port, such as a terminal. The command:

<CTTY DEV/CON> <RETURN>

moves I/O back to the original device (here, the console). Refer to the Illegal Filenames section, More About Files, for a list of valid device names to use with the CTTY command.

NAME: DATE

TYPE: Internal

PURPOSE:

Enter or change the date known to the system. This date will be recorded in the directory for any files you create or alter.

You can change the date from your terminal or from a batch file. (MS-DOS does not display a prompt for the date if you use an AUTOEXEC.BAT file, so you may want to include a DATE command in that file).

SYNTAX: <DATE [<mm>-<dd>-<yy>]> <RETURN>

COMMENTS:

If you type:

<DATE> <RETURN>

DATE will respond with the message:

Current date is <mm>-<dd>-<yy>
Enter new date:

Press <RETURN> if you do not want to change the date shown.

You can also type a particular date after the DATE command as in:

```
<DATE 10-16-83> <RETURN>
```

In this case, you do not have to answer the "Enter new date" prompt. The new date must be entered using numerals only; letters are not permitted. The allowed options are:

```
<mm> = 1 - 12
<dd> = 1 - 31
<yy> = 80 - 99
```

The date, month, and year entries may be separated by hyphens (-) or slashes (/). MS-DOS is programmed to change months and years correctly, whether the month has 31, 30, 29 or 28 days. MS-DOS handles leap years, too.

If the options or separators are not valid, DATE displays the message:

```
Invalid date
Enter new date:
```

DATE then waits for you to enter a valid date.

```
NAME:      DEL (DELETE)
```

```
TYPE:      Internal
```

PURPOSE:

Deletes all files with the designated filespec.

```
SYNTAX:      <DEL [filespec] [pathname]> <RETURN>
```

COMMENTS:

If the filespec is *.* , the prompt "Are you sure?" appears. If a <Y> is typed as a response, then all files are deleted as requested. You can also type ERASE for the DELETE command.

```
NAME:      DIR (DIRECTORY)
```

```
TYPE:      Internal
```

PURPOSE:

Lists the files in the directory

```
SYNTAX:      <DIR [filespec] [pathname] [/P] [/W]> <RETURN>
```

COMMENTS:

If you just type DIR, all directory entries on the default drive are listed. If only the drive specification is given (DIR d:), all

entries on the disk in the specified drive are listed. If only a filename is entered with no extension, (DIR filename), then all files with the designated filename on the disk in the default drive are listed. If you designate a file specification, (eg. DIR d:filename.ext), all files with the filename specified on the disk in the drive specified are listed. In all cases, files are listed with their size in bytes and with the time and date of their last modification.

The wild card characters ? and * may be used in the filename option. Note that for your convenience the following DIR commands are equivalent:

COMMAND	EQUIVALENT
DIR	DIR *.*
DIR FILENAME	DIR FILENAME.*
DIR .EXT	DIR *.EXT
DIR .	DIR *.

Two switches may be specified with DIR. The /P switch selects Page Mode. With /P, display of the directory pauses after the screen is filled. To resume display of output, press any key.

The /W switch selects wide display. With /W, only filenames are displayed, without other file information. Files are displayed five per line.

NAME: DISKCOPY

TYPE: Exteranl

PURPOSE:

Copies the contents of the disk in the source drive to the disk in the destination drive.

SYNTAX: <DISKCOPY [d:] [d:]> <RETURN>

COMMENTS:

The first option you specify is the source drive. The second option is the destination drive.

The disk in the destination drive must be formatted prior to using DISKCOPY.

You can specify the same drives or you may specify different drives. If the drives designated are the same, a single-drive copy operation is performed. You are prompted to insert the disks at the appropriate times. DISKCOPY waits for you to press any key before continuing.

After copying, DISKCOPY prompts:

Copy complete

Copy another (Y/N)?

If you press <Y>, the next copy is performed on the same drives that you originally specified, after you have been prompted to insert the proper disks. To end the COPY, press <N>.

Notes:

1. If you omit both options, a single-drive copy operation will be performed on the default drive.
2. If you omit the second option, the default drive will be used as the destination drive.
3. Both disks must have the same number of physical sectors and those sectors must be the same size.
4. Disks that have had a lot of file creation and deletion activity become fragmented, because disk space is not allocated sequentially. The first free sector found is the next sector allocated, regardless of its location on the disk.

A fragmented disk can cause poor performance due to delays involved in finding, reading, or writing a file. If this is the case, you must use the COPY command, instead of DISKCOPY, to copy your disk and eliminate the fragmentation. For example:

```
<COPY A:*. * B:> <RETURN>
```

copies all files from the disk in drive A to the disk in drive B.

5. DISKCOPY automatically determines the number of sides to copy, based on the source drive and disk.
6. If disk errors are encountered during a DISKCOPY, MS-DOS displays:

```
DISK error while reading drive A
Abort, Ignore, Retry?
```

Refer to Appendix C, Disk Errors, for information on this error message.

NAME: EXE2BIN

TYPE: External

PURPOSE:

Converts .EXE (executable) files to binary format. This results in a saving of disk space and faster program loading.

SYNTAX: <EXE2BIN <filespec> [d:] [<filename>
[<.ext>]]> <RETURN>

COMMENTS:

This command is useful only if you want to convert .EXE files to binary format. The file named by filespec is the input file. If no extension is specified, it defaults to .EXE. The input file is converted to .COM file format (memory image of the program) and placed in the output file. If you do not specify a drive, the drive of the input file will be used. If you do not specify an output filename, the input filename will be used. If you do not specify a filename extension in the output filename, the new file will be given an extension of .BIN.

The input file must be in valid .EXE format produced by the linker. The resident, or actual code and data part of the file must be less than 64K. There must be no STACK segment.

Two kinds of conversions are possible, depending on whether the initial CS:IP (Code Segment:Instruction Pointer) is specified in the .EXE file:

1. If CS:IP is not specified in the .EXE file, a pure binary conversion is assumed. If segment fixups are necessary (ie. the program contains instructions requiring segment relocation), you will be prompted for the fixup value. This value is the absolute segment at which the program is to be loaded. The resulting program will be usable only when loaded at the absolute memory address specified by a user application. The command processor will not be capable of properly loading the program.
2. If CS:IP is specified as 0000:100H, it is assumed that the file is to be run as a .COM file with the location pointer set at 100H by the assembler statement ORG; the first 100H bytes of the file are deleted. No segment fixups are allowed, as .COM files must be segment relocatable. Once the conversion is complete, you may rename the resulting file with a .COM extension. Then the command processor will be able to load and execute the program.

If CS:IP does not meet either of these criteria, or if it meets the .COM file criterion but has segment fixups, the following message will be displayed:

File cannot be converted

This message is also displayed if the file is not a valid executable file.

If EXE2BIN finds an error, one or more of the following error messages will be displayed:

File not found

The file is not on the disk specified.

Insufficient memory

There is not enough memory to run EXE2BIN.

File creation error

EXE2BIN cannot create the output file. Run CHKDSK to determine if the directory is full, or if some other condition caused the error.

Insufficient disk space

There is not enough disk space to create a new file.

Fixups needed - base segment (hex):

The source (>EXE) file contained information indicating that a load segment is required for the file. Specify the absolute segment address at which the finished module is to be located.

File cannot be converted

The input file is not in the correct format.

WARNING - Read error on EXE file.

Amount read less than size in header, this is a warning message only.

NAME: EXIT

TYPE: Internal

PURPOSE:

Exits the program COMMAND.COM (the command processor) and returns to a previous level, if one exists.

SYNTAX: <EXIT> <RETURN>

COMMENTS:

This command can be used when you are running an application program and want to start the MS-DOS command processor, then return to your program. For example, to look at a directory on drive B while running an application program, you must start the command processor by typing COMMAND in response to the default drive prompt:

<A:COMMAND> <RETURN>

You can now type the DIR command and MS-DOS will display the directory for the default disk. When you type EXIT, you return to the previous level (your application program).

NAME: FIND

TYPE: External

PURPOSE:

Searches for a specific string of text in a file or files.

SYNTAX: <FIND [/V /C /N] <string> [<filename...>]> <RETURN>

COMMENTS:

FIND is a filter that takes as options a string and a series of filenames. It will display all lines that contain a specified string from the files specified in the command line.

If no files are specified, FIND will take the input on the screen and display all lines that contain the specified string.

Switches for FIND are:

- /V causes FIND to display all lines not containing the specified string.
- /C causes FIND to print only the count of lines that contained a match in each of the files.
- /N causes each line to be preceded by its relative line number in the file.

The string should be enclosed in quotes, eg.

<FIND "Fool's Paradise" BOOK1.TXT BOOK2.TXT> <RETURN>

displays all lines from BOOK1.TXT and BOOK2.TXT (in that order) that contain the string "Fool's Paradise". The command

<DIR B: | FIND /V "DAT"> <RETURN>

causes MS-DOS to display all name of the files on the disk in drive B which do not contain the string DAT. Type double quotes around a string that already has quotes in it.

When an error is detected, FIND responds with one of the following error messages:

Incorrect DOS version

FIND will only run on versions of MS-DOS that are 2.0 or higher.

FIND: Invalid number of parametes

You did not specify a string when issuing the FIND command.

FIND: Syntax error

You typed an illegal string when issuing the FIND command.

FIND: File not found <filename>

The filename you have specified does not exist or FIND

cannot find it.

FIND: Read error in <filename>

An error occurred when FIND tried to read the file specified in the command.

FIND: Invalid parameter <option-name>

You specified an option that does not exist.

NAME: FORMAT

TYPE: External

PURPOSE: Formats the disk in the specified drive to accept MS-DOS files.

SYNTAX: <FORMAT [d]:[/O][/V][/S]> <RETURN>

COMMENTS:

This command initializes the directory and file allocation tables. If no drive is specified, the disk in the default drive is formatted.

NOTE: The following switches must be specified in the order in which they appear above.

The /O switch causes FORMAT to produce an IBM Personal Computer DOS version 1.X compatible disk. The /O switch causes FORMAT to reconfigure the directory with an OE5 hex byte at the start of each entry so that the disk may be used with 1.X versions of IBM PC DOS, as well as MS-DOS 1.25/2.00 and IBM PC DOS 2.00. This switch should only be given when needed because it takes a fair amount of time for FORMAT to perform the conversion, and it noticeably decreases 1.25 and 2.00 performance on disks with few directory entries.

The /V switch causes FORMAT to prompt for a volume label after the disk is formatted.

If the /S switch is specified, it must be the last switch typed; then FORMAT copies operating system files from the disk in the default drive to the newly formatted disk. The files are copied in the following order:

IO.SYS
MSDOS.SYS
COMMAND.COM

NAME: MKDIR

TYPE: Internal

SYNONYM: MD

PURPOSE:

MS-DOS

Makes a new directory

SYNTAX: <MKDIR pathname> <RETURN>

COMMENTS:

This command is used to create a hierarchical directory structure. When you are in your root directory, you can create subdirectories by using the MKDIR command. The command:

```
<MKDIR \USER> <RETURN>
```

will create a subdirectory \USER in your root directory. To create a directory named BRAD under \USER, type:

```
<MKDIR \USER\BRAD> <RETURN>
```

NAME MODE

TYPE External

PURPOSE:

Set Serial Port Protocol and format the RAM Disk

(See System Utilities, Chapter 7.)

NAME: MORE

TYPE: External

PURPOSE:

Sends output to console one screen at a time.

SYNTAX: <MORE> <RETURN>

COMMENTS:

MORE is a filter that reads from standard input (such as a command from your terminal) and displays one screen of information at a time. The MORE command then pauses and displays the --MORE-- message at the bottom of your screen.

Pressing the <RETURN> key will display another screen of information. This process continues until all the input data has been read.

The MORE command is useful for viewing a long file one screen at a time. If you type:

```
<TYPE MYFILES.COM | MORE> <RETURN>
```

MS-DOS will display the file MYFILES.COM (on the default drive) one screen at a time.

NAME: PATH

TYPE: Internal

PURPOSE:

Sets a command path

SYNTAX: <PATH [<pathname>[;<pathname>]...]><RETURN>

COMMENTS:

This command allows you to tell MS-DOS which directories should be searched for external commands after MS-DOS searches your working directory. The default value is \BIN, where \BIN is the name of the directory in which all MS-DOS external commands reside.

To tell MS-DOS to search your \BIN\USER\BRAD directory for external commands (in addition to a search of the \BIN directory), type:

```
<PATH \BIN\USER\BRAD> <RETURN>
```

MS-DOS will now also search the \BIN\USER\BRAD directory for external commands until you set another path or shut down MS-DOS. You can tell MS-DOS to search more than one path by specifying several pathnames separated by semicolons. For example:

```
<PATH \BIN\USER\BRAD;\BIN\USER\ANNE;\BIN\DEV>
<RETURN>
```

tells MS-DOS to search the directories specified by the above pathnames to find external commands. MS-DOS searches the pathnames in the order specified in the PATH command.

The command PATH with no options will print the current path. If you specify PATH ;, MS-DOS will set the NUL path meaning that only the working directory will be searched for external commands.

NAME: PAUSE

TYPE: Internal

PURPOSE:

Suspends execution of the batch file.

SYNTAX: <PAUSE [comment]> <RETURN>

COMMENTS:

During the execution of a batch file, you may need to change disks or perform some other action. PAUSE suspends execution until you press any key, except <CTRL C>.

When the command processor encounters PAUSE, it prints:

Strike a key when ready . . .

If you press <CTRL C>, another prompt will be displayed:

Abort batch job (Y/N)?

If you type <Y> in response to this prompt, execution of the remainder of the batch command file will be aborted and control will be returned to the operating system command level. Therefore, PAUSE can be used to break a batch file into pieces, allowing you to end the batch command file at an intermediate point.

The comment is optional and may be entered on the same line as PAUSE. You may also want to prompt the user of the batch file with some meaningful message when the batch file pauses, eg. you may want to change disks in one of the drives. An optional prompt message may be given in such cases. The comment prompt will be displayed BEFORE the "strike a key" message.

NAME: PRINT

TYPE: External

PURPOSE:

Prints a text file on a line printer while you are processing other MS-DOS commands (usually called "background printing").

SYNTAX: <PRINT [[filespec] [/T] [/C] [/S]> <RETURN>

COMMENTS:

You will use the PRINT command only if you have a line printer attached to your computer. The following switches are provided with this command:

/T TERMINATE: this switch deletes all files in the print queue (those waiting to be printed). A message to this effect will be printed.

/C CANCEL: this switch turns on cancel mode. The preceding filespec will be suspended in the print queue until you type a /P switch.

/P PRINT: this switch turns on print mode. The preceding filespec will be added to the print queue until you issue a /C switch.

PRINT with no options displays the contents of the print queue on your screen without affecting the queue.

Examples:

<PRINT /T> <RETURN> empties the print queue

<PRINT /T *.ASM> <RETURN> empties the print queue and queues all .ASM files on the default drive.

<PRINT A:TEMP1.TST/C A:TEMP2.TST A:TEMP3.TST> <RETURN>
removes the three files indicated from the print queue.

<PRINT TEMP1.TST /C TEMP2.TST /P TEMP3.TST> <RETURN>
removes TEMP1.TST from the queue, and adds TEMP2.TST and TEMP3.TST to the queue.

If an error is detected, PRINT will display one of the following error messages:

Name of list device [PRN:] :

This prompt appears when PRINT is run the first time. Any current device may be specified and that device then becomes the PRINT output device. As indicated in the brackets, simply pressing <RETURN> results in the device PRN being used.

List output is not assigned to a device:

This message will be displayed if the "Name of list device" specified to the above prompt is invalid. Subsequent attempts will return the same message until a valid device is specified.

PRINT queue is full:

There is room for 10 files in the queue. If you attempt to put more than 10 files in the queue, this message will appear on the console.

PRINT queue is empty:

There are no files in the print queue.

No files match d:XXXXXXXX.XXX:

A filespec was given for files to add to the queue, but no files match a specification. NOTE: if there are no files in the queue to match the cancelled filespec, no error message will appear.

Drive not ready:

If this message occurs when PRINT attempts a disk access, PRINT will keep trying until the drive is ready. Any other errors causes the current file to be cancelled. An error message would be output on your printer in such a case.

All files cancelled:

If the /T (TERMINATE) switch is issued, the message "All files cancelled by operator" will be output to your printer. If the current file being printed is cancelled by /C, the message "File cancelled by operator" will be printed.

NAME: PROMPT

TYPE: Internal

PURPOSE:

Changes the MS-DOS command prompt

SYNTAX: <PROMPT [<prompt-text>]> <RETURN>

COMMENTS:

This command allows you to change the MS-DOS system prompt (e.g. A:). If no text is typed, the prompt will be set to the default drive designation. You can set the prompt to a special prompt, such as the current time, by using the characters indicated below. The following characters can be used in the prompt command to specify special prompts. They must all be preceded by a dollar sign (\$) in the prompt command:

SPECIFY THIS CHARACTER	TO GET THIS PROMPT:
\$	The '\$' character
t	The current time
d	The current date
p	The current directory of the default drive
v	The version number
n	The default drive
g	The '>' character
l	The '<' character
b	The ' ' character
	A CR LF sequence
s	A space
h	A backspace
e	ASCII code X'1B (escape)

Examples:

```
<PROMPT $n> <RETURN>
    Sets the normal MS-DOS prompt (:)
```

```
<PROMPT> <RETURN>
    Sets the normal KOOKABURRA prompt (>)
```

```
<PROMPT Time = $t$ Date = $d> <RETURN>
    Sets a two-line prompt which prints -
    Time = (current time)
    Date = (current date)
```

If your terminal has an ANSI escape sequence driver, then you can use escape sequences in your prompts, eg:

```
<PROMPT $e[7m$n:$e[m> <RETURN>
    Sets the prompts in inverse video mode and
    returns to video mode for other text
```

NAME: RECOVER

TYPE: External

PURPOSE:

Recovers a file or an entire disk containing bad sectors.

SYNTAX: <RECOVER filename | d:> <RETURN>

COMMENTS:

If a sector on a disk is bad, you can recover either the file containing that sector (without the bad sector) or the entire disk (if the bad sector was in the directory).

To recover a particular file, type:

 <RECOVER filename> <RETURN>

This will cause MS-DOS to read the file sector by sector and to skip the bad sector(s). When MS-DOS finds the bad sector(s), the sector(s) are marked and MS-DOS will no longer allocate your data to that sector.

To recover a disk, type:

 <RECOVER d:> <RETURN>

where d: is the letter of the drive containing the disk to be recovered.

If there is not enough room in the root directory, RECOVER will print a message and store information about the extra files in the File Allocation Table. You can run RECOVER again to regain these files when there is more room in the root directory.

NAME: REM

TYPE: Internal

PURPOSE:

Displays remarks which are on the same line as the REM command in a batch file during execution of that batch file.

SYNTAX: <REM [comment]> <RETURN>

COMMENTS:

The only separators allowed in the comment are the space, tab, and comma, eg.

```
1:      REM      This file checks new disks
2:      REM      It is named NEWDISK.BAT
3:      PAUSE    Insert new disk in drive B:
4:      FORMAT   B:/S
5:      DIR B:
```

6: CHKDSK B:
NAME: REN (RENAME)

TYPE: Internal

PURPOSE:

Changes the name of the first option (filespec) to the second option (filename)

SYNTAX: <REN filespec filename> <RETURN>

COMMENTS:

The first option (filespec) must be given a drive designation if the disk resides in a drive other than the default drive. Any drive designation for the second option (filename) is ignored. The file will remain on the disk where it currently resides.

The wild card characters may be used in either option. All files matching the first filespec are renamed. If wild card characters appear in the second filename, corresponding character positions will not be changed.

For example, the following command changes the names of all files with the .LST extension to similar names with the .PRN extension:

```
<REN *.LST.T *.PRN> <RETURN>
```

In the next example, REN renames the file ABODE on drive B to ADOBE:"

```
<REN B:ABODE ?D?B?> <RETURN>
```

the file remains on drive B.

An attempt to rename a filespec to a name already present in the directory will result in the error message "File not found".

NAME: RMDIR (REMOVE DIRECTORY)

TYPE: Internal

SYNONYM: RD

PURPOSE:

Removes a directory from a hierarchical directory structure

SYNTAX: <RMDIR pathname> <RETURN>

COMMENTS:

This command removes a directory that is empty except for the . and .. shorthand symbols.

To remove the \BIN\USER\BRAD directory, first issue a DIR command for that path to ensure that the directory does not contain any important files that you do not want deleted. Then type:

```
<RMDIR \BIN\USER\BRAD> <RETURN>
```

The directory has been deleted from the directory structure.

NAME: SET

TYPE: Internal

PURPOSE:

Sets one string value equivalent to another string for use in later programs

SYNTAX <SET [<string=string>]> <RETURN>

COMMENTS:

This command is meaningful only if you want to set values that will be used by programs you have written. An application program can check all values that have been set with the SET command by issuing SET with no options. For example, SET TTY = VT52 sets your TTY value to VT52 until you change it with another SET command.

The SET command can also be used in batch processing. In this way, you can define your replaceable parameters with names instead of numbers. If your batch file contains the statement "LINK %FILE%", you can set the name that MS-DOS will use for that variable with the SET command. The command SET FILE=DOMORE replaces the %FILE% parameter with the filename DOMORE. Therefore, you do not need to edit each batch file to change their replaceable parameter names. Note that when you use text instead of numbers as replaceable parameters, the name must be ended by a percent sign.

NAME: SORT

TYPE: External

PURPOSE:

SORT reads input from your terminal, sorts the data, then writes it to your terminal screen or files.

SYNTAX: <SORT [/R] [/+n]> <RETURN>

COMMENTS:

SORT can be used, for example, to alphabetize a file by a certain column. There are two switches which allow you to select options:

/R reverse the sort; that is, sort from Z to A.

/+n sort starting with column n where n is some number. If you do not specify this switch, SORT will begin sorting from column 1.

Examples:

This command will read the file UNSORT.TXT, reverse the sort, and then write the output to a file named SORT.TXT:

```
<SORT /R <UNSORT.TXT >SORT.TXT> <RETURN>
```

The following command will pipe the output of the directory command to the SORT filter. The SORT filter will sort the directory listing starting with column 14 (this is the column in the directory listing that contains the file size), then send the output to the console. Thus, the result of this command is a directory sorted by file size:

```
<DIR | SORT /+14> <RETURN>
```

The command

```
<DIR | SORT /+14 | MORE> <RETURN>
```

will do the same thing as the command in the previous example, except that the MORE filter will give you a chance to read the sorted directory one screen at a time.

NAME: SYS (SYSTEM)

TYPE: External

PURPOSE:

Transfers the MS-DOS system files from the disk in the default drive to the disk in the drive specified by d:.

SYNTAX: <SYS d:> <RETURN>

COMMENTS:

SYS is normally used to update the system or to place the system on a formatted disk which contains no files. An entry for d: is required.

If IO.SYS and MSDOS.SYS are on the destination disk, they must take up the same amount of space on the disk as the new system will need. This means that you cannot transfer system files from an MS-DOS 2.0 disk to an MS-DOS 1.1 disk. You must reformat the MS-DOS 1.1 disk with the MS-DOS FORMAT command before the SYS command will work.

The destination disk must be completely blank or already have the system files IO.SYS and MSDOS.SYS.

The transferred files are copied in the following order:

IO.SYS
MSDOS.SYS

IO.SYS and MSDOS.SYS are both hidden files that do not appear when the DIR command is executed. COMMAND.COM (the command processor) is not transferred. You must use the COPY command to transfer COMMAND.COM.

If SYS detects an error, one of the following messages will be displayed:

No room for system on destination disk
There is not enough room on the destination disk for the IO.SYS and MSDOS.SYS files.

Incompatible system size
The system files IO.SYS and MSDOS.SYS do not take up the same amount of space on the destination disk as the new system will need.

NAME: TIME

TYPE: Internal

PURPOSE:

Displays and sets the time

SYNTAX: <TIME [<hh>[:<mm>]]> <RETURN>

COMMENTS:

If the TIME command is entered without any arguments, the following message is displayed:

Current time is <hh>:<mm>:<ss>.<cc>
Enter new time:

Press the <RETURN> key if you do not want to change the time shown. A new time may be given as an option to the TIME command as in:

<TIME 8:20> <RETURN>

The new time must be entered using numerals only; letters are not allowed. The allowed options are:

<hh> = 00-24
<mm> = 00-59

The hour and minute entries must be separated by colons. You do not have to type the <ss> (seconds) or <cc> (hundredths of seconds) options. MS-DOS uses the time entered as the new time if the options and separators are valid. If the options or separators are not valid, MS-DOS displays the message:

MS-DOS

Invalid time
Enter new time:

MS-DOS then waits for you to type a valid time.

NAME: TYPE

TYPE: Internal

PURPOSE:

Displays the contents of the file on the console screen.

SYNTAX: <TYPE filespec> <RETURN>

COMMENTS:

Use this command to examine a file without modifying it. (Use DIR to find the name of a file and TIME WRITER or EDLIN to alter the contents of a file). The only formatting performed by TYPE is that tabs are expanded to spaces consistent with tab stops every eighth column. Note that a display of binary files causes control characters (such as CONTROL-Z) to be sent to your computer, including bells, form feeds, and escape sequences.

NAME: VER

TYPE: Internal

PURPOSE:

Prints MS-DOS version number

SYNTAX: <VER> <RETURN>

COMMENTS:

If you want to know what version of MS-DOS you are using, type VER. The version number will be displayed on your screen.

NAME: VERIFY

TYPE: Internal

PURPOSE:

Turns the verify switch on or off when writing to disk

SYNTAX: <VERIFY [ON/OFF]> <RETURN>

COMMENTS:

This command has the same purpose as the /V switch in the COPY command. If you want to verify that all files are written correctly to disk, you can use the VERIFY command to tell MS-DOS to verify that your files are intact (no bad sectors, for example). MS-DOS will

perform a VERIFY each time you write data to a disk. You will receive an error message only if MS-DOS was unable to successfully write your data to disk.

VERIFY ON remains in effect until you change it in a program (by a SET VERIFY system call), or until you issue a VERIFY OFF command to MS-DOS.

If you want to know what the current setting of VERIFY is, type <VERIFY> with no options.

NAME: VOL (VOLUME)

TYPE: Internal

PURPOSE:

Displays disk volume number, if it exists

SYNTAX: <VOL [d:]> <RETURN>

COMMENTS:

This command prints the volume ID of the disk in drive d:. If no drive is specified, MS-DOS prints the volume ID of the disk in the default drive.

BATCH PROCESSING COMMANDS

The following commands are called batch processing commands. They can add flexibility and power to your batch programs. The commands discussed are ECHO, FOR, GOTO, IF and SHIFT.

NAME: ECHO

TYPE: Internal

PURPOSE:

Turns batch echo feature on and off

SYNTAX: <ECHO [ON/OFF/ message]> <RETURN>

COMMENTS:

Normally, commands in a batch file are displayed ("echoed") on the console when they are seen by the command processor. ECHO OFF turns off this feature. ECHO ON turns the echo back on.

NAME: FOR

TYPE: Internal

PURPOSE:

Command extension used in batch and interactive file processing.

SYNTAX: <FOR %%<c> IN <set> DO <command>> <RETURN> - for batch processing

<FOR %<c> IN <set> DO <command>> <RETURN> - for interactive processing

COMMENTS:

<c> can be any character, except numbers, to avoid confusion with the %0-%9 batch parameters.

<set> is (#<item>*)

The %%<c> variable is set sequentially to each member of <set>, and then <command> is evaluated. If a member of <set> is an expression involving * and/or ?, then the variable is set to each matching pattern from disk. In this case, only one such <item> may be in the set, and any <item> besides the first is ignored. Note that the words IN, FOR, and DO must be in uppercase.

Examples:

```
<FOR %%f IN ( *.ASM ) DO MASM %%f;> <RETURN>
<FOR %%f IN (FOO BAR BLECH) DO REM %%f> <RETURN>
```

The '%' is needed so that after batch parameter (%0-%9) processing is done, there is one '%' left. If only 'f' were there, the batch parameter processor would see the '%', look at 'f', decide that 'f' was an error (bad parameter reference) and throw out the 'f', so that the command FOR would never see it. If the FOR is not in a batch file, then only one '%' should be used.

NAME: GOTO

TYPE: Internal

PURPOSE:

Command extension used in batch file processing.

SYNTAX: <GOTO label> <RETURN>

COMMENTS:

GOTO causes commands to be taken from the batch file beginning with the line after the <label> definition. If no label has been defined, the current batch file will terminate.

Example:

```
:foo
REM looping
GOTO foo
```

will produce an infinite sequence of messages:
REM looping ...

Starting a line in a batch file with ':' causes the line to be ignored by batch processing. The characters following GOTO define a label, but this procedure may also be used to put in comment lines.

NAME: IF

TYPE: Internal

PURPOSE:

Command extension used in batch file processing

SYNTAX: <IF <condition> <command>> <RETURN>

COMMENTS:

The parameter <condition> is one of the following:

ERRORLEVEL <number>

True if and only if the previous program executed by COMMAND had an exit code of <number> or higher.

<string1> == <string2>

True if and only if <string1> and <string2> are identical after parameter substitution. Strings may not have embedded separators.

EXIST <filename>

True if and only if <filename> exists.

NOT <condition>

True if and only if <condition> is false.

The IF statement allows conditional execution of commands. When the <condition> is true, then the <command> is executed. Otherwise, the <command> is ignored.

NOTE:

The words ERRORLEVEL, EXIST and NOT must be uppercase.

Examples: <IF NOT EXIST \TMP\FOO ECHO Can't find file> <RETURN>
<IF NOT ERRORLEVEL 3 LINK \$1,,> <RETURN>

NAME: SHIFT

TYPE: Internal

PURPOSE:

Allows access to more than 10 replaceable parameters in batchfile processing.

SYNTAX: <SHIFT> <RETURN>

COMMENTS:

Usually, command files are limited to handling 10 parameters, %0through %9. To allow access to more than ten parameters, use SHIFT

to change the command line parameters. For example:

```
if      %0 = "foo"  
        %1 = "bar"  
        %2 = "name"  
        %3 - %9 are empty
```

then a SHIFT will result in the following:

```
%0 = "bar"  
%1 = "name"  
%2 - %9 are empty
```

If there are more than 10 parameters given on a command line, those that appear after the 10th (%9) will be shifted one at a time into %9 by successive shifts.

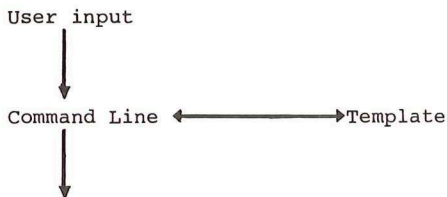
MS-DOS EDITING AND FUNCTION KEYS**SPECIAL MS-DOS EDITING KEYS**

The special editing keys deserve particular emphasis because they depart from the way in which most operating systems handle command input. You do not have to type the same sequences of keys repeatedly, because the last command line is automatically placed in a special storage area called a template.

By using the template and the special editing keys, you can take advantage of the following MS-DOS features:

1. A command line can be instantly repeated by pressing two keys.
2. If you make a mistake in the command line, you can edit it and retry without having to retype the entire command line.
3. A command line that is similar to a preceding command line can be edited and executed with a minimum of typing by pressing a special editing key.

The relationship between the command line and the template is shown below:

**COMMAND.COM**

As seen here, the user (you) types a command to MS-DOS on the command line. When you press the <RETURN> key, the command is automatically sent to the command processor (COMMAND.COM) for execution. At the same time, a copy of this command is sent to the template. You can now recall the command or modify it with MS-DOS special editing keys.

The following table contains a complete list of the special editing keys.

NOTE:

The equivalent Kookaburra keys for each function are listed below. You must use upper case letters. Press ESC, release it and then press the next key.

EDITING FUNCTION	KEYBOARD
Copies one character from the template to the command line	F1
Copies characters up to the character specified in the template and puts these characters on the command file	F2
Copies all remaining characters in the template to the command line	F3
Skips over (does not copy) the characters in the template up to the character specified	F4
Make the new line the new template. (Does not execute the command)	F5

Editing keys continued

EDITING FUNCTION	KEYBOARD
Puts a Control-Z (1AH) end-of-file character in the new template	F6
Escape sequence to represent escape character.	F7
Turns insert mode on/off, this is the default mode (toggle insert Mode)	F8
Skips over (does not copy) a character in the template	F9
Voids the current input, leaves the template unchanged	F10
Same as backspace	<-- arrow key
Makes the new line the new template (Executes the command)	<RETURN>

Example: If you type the following command:

```
<DIR PROG.COM> <RETURN>
```

MS-DOS displays information about the file PROG.COM on your screen. The command line is also saved in the template. To repeat the command, just press the keys F3 and <RETURN>.

The repeated command is displayed on the screen as you type, eg.

```
<F3 DIR PROG.COM> <RETURN>
```

Notice that pressing the F3 key causes the contents of the template to be copied to the command line; pressing <RETURN> causes the command line to be sent to the command processor for execution.

If you want to display information about a file named PROG.ASM, you can use the contents of the template and type:

```
<F2 C> <RETURN>
```

Typing <F2 C> copies all characters from the template to the command line, up to but not including "C". MS-DOS displays:

```
DIR PROG.
```

Note that the underline is your cursor. Now type:

```
<.ASM>
```

The result is:

```
DIR PROG.ASM
```

The command line "DIR PROG.ASM" is now in the template and ready to be sent to the command processor for execution. To do this, press <RETURN>.

Now assume that you want to execute the following command:

```
TYPE PROG.ASM
```

To do this, type:

```
<TYPE <F8> <F3> <RETURN>
```

Notice that when you are typing, the characters are entered directly into the command line and overwrite corresponding characters in the template. This automatic replacement feature is turned off when you press the F8 key. Thus, the characters "TYPE" replace the characters "DIR" in the template. To insert a space between TYPE and PROG.ASM, you press F8 and then the space bar. Finally, to copy the rest of the template to the command line, you press F3 and then <RETURN>. The

command TYPE PROG.ASM has been processed by MS-DOS, and the template becomes

"TYPE PROG.ASM".

If you had misspelled "TYPE" as "BYTE", a command error would have occurred. Still, instead of throwing away the whole command, you could save the misspelled line before you press <RETURN> by creating a new template with the <RETURN> key:

<BYTE PROG.ASM> <RETURN>

You could then edit this erroneous command by typing:

<T> <F1> <P> <F3> <RETURN>

The F1 key copies a single character from the template to the command line. The resulting command line is then the command that you want:

TYPE PROG.ASM

As an alternative, you can use the same template containing BYTEPROG.ASM and then use the F9 and F8 keys to achieve the same result:

<F9> <F9> <F1> <F8> <YP> <F3> <RETURN>

To illustrate how the command line is affected as you type, examine the keys typed on the left, their effect on the command line is shown on the right:

<F9>	Skips over 1st template character
<F9>	Skips over 2nd template character
<F1> <T>	Copies 3rd template character
<F8> <TYP>	Inserts two characters
<F3> <TYPE PROG.ASM>	Copies rest of template

Notice that <F9> does not affect the command line. It affects the template by deleting the first character. Similarly, <F4> deletes characters in the template, up to but not including a given character.

CONTROL CHARACTER FUNCTIONS

A control character function is a function that affects the command line. You have already learned about <CTRL C> and <CTRL S>. Other control character functions are described on page 8-86.

Remember that when you type a control character, such as <CTRL C>, you must hold down the control key and then press the <C> key.

CONTROL CHARACTER FUNCTIONS

CONTROL CHARACTER	FUNCTION
<CTRL N>	Cancels echoing of output to line printer
<CTRL C>	Aborts current command
<CTRL H>	Removes last character from command line and erases character from terminal screen
<CTRL J>	Inserts physical end-of-line, but does not empty command line. Use the <LINE FEED> key to extend the current logical line beyond the physical limits of one terminal screen
<CTRL P>	Echoes terminal output to the line printer
<CTRL S>	Suspends display of output to terminal screen. Press any key to resume
<CTRL X>	Cancels the current line, empties the command line and then outputs a back slash (\), carriage return and line feed. The template used by the special editing commands is not affected.

TECHNICAL SPECIFICATIONS

TABLE OF CONTENTS

GENERAL SPECIFICATIONS.....	9-2
THE SERIAL PORTS.....	9-3
THE PARALLEL PORT.....	9-5
THE LCD AND VIDEO DISPLAY.....	9-7
CHANGING CURSOR TYPE ON THE KOOKABURRA DISPLAY...	9-7
THE EXPANSION BUS.....	9-8
THE BATTERIES.....	9-9
THE I/O MAP.....	9-13
INTERNAL PSEUDO DISK DRIVES.....	9-13
INTERNAL TIMERS AND CLOCK.....	9-13
THE KEYBOARD.....	9-13
POWER SAVING TECHNIQUES.....	9-15
AUTOMATIC SHUT DOWN.....	9-15

TECHNICAL SPECIFICATIONS

GENERAL SPECIFICATIONS

SIZE: Depth.....285mm
Width.....325mm
Height
Closed.....58mm
Open.....250mm

WEIGHT: 4 KG

POWER: 3A @ 7 VAC. (From an external Power Pack)

TYPICAL: 15w

OPERATING TEMPERATURE RANGE: 0 DEG C to 40 DEG C

STORAGE TEMPERATURE RANGE: 20 DEG C to 60 DEG C

HUMIDITY: 92% RH (Non Condensing)

PROCESSOR: 16 bit Intel 80186

MEMORY: INTERNAL-

ROM. 128K BYTES

RAM. Up to 256K BYTES, '96K STANDARD'

EXPANSION PACKS-

Up to two, each with a maximum of 128K BYTES of ROM.

EXTERNAL-

256K BYTES of external RAM.

KEYBOARD: Full QWERTY, With 12 Special Function Keys.

DISPLAY: 16 Line by 80 Character Dot Matrix Liquid Crystal Display. (128 x 480 Pixels)

VIDEO OUTPUT: Composite Black and White. 1V p-p, 0.3V SYNC LEVEL.

REAL TIME CLOCK: 24 Hour Clock and Alarm.

The Clock should not require resetting even when the Ni-Cad batteries are changed. To change the time see Chapter 2.

THE SERIAL PORTS

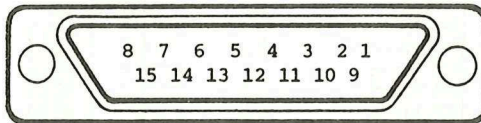
The two serial Ports are RS232 compatible, except that they use +5 and -4.5 volts instead of the standard + and - 12 volts. Both ports are located on P3, the table below gives pinout details. To output to one of the serial ports, type:

[X] <COPY FILENAME AUX> <RETURN>

Where AUX is port A AND AUX2 is port B

NOTE:

AUX is SER0 and AUX2 is SER1.

P3 AS SEEN FROM REAR OF KOOKABURRA**PIN DESCRIPTION OF P3:**

SIGNAL NAME	I/O	SER0	SER1
TXD. (TRANSMITTED DATA)	OUTPUT	9	5
RXD. (RECEIVED DATA)	INPUT	3	14
RTS. (REQUEST TO SEND)	OUTPUT	10	6
CTS. (CLEAR TO SEND)	INPUT	2	13
DSR. (DATA SET READY)	INPUT	4	15
DTR. (DATA TERMINAL READY)	OUTPUT	11	7
+5 VOLTS	PIN 8		
GROUND	PIN 1 AND 12		

NOTE:

1. The power on the serial port connector is only available when the ports are being used. The rating for pin 8 is 5 volts at 100 mA maximum.

2. If the serial port is being used without handshaking, CTS must be strapped to RTS or to +5 volts to enable the UART to transmit.

The following range of parameters can be set on each Port by use of the MS-DOS Utility MODE, see page 7-3.

TECHNICAL SPECIFICATIONS

BAUD RATE: 150 TO 19,200 BPS

PARITY: OFF, ODD or EVEN

STOPBITS: 1 or 2

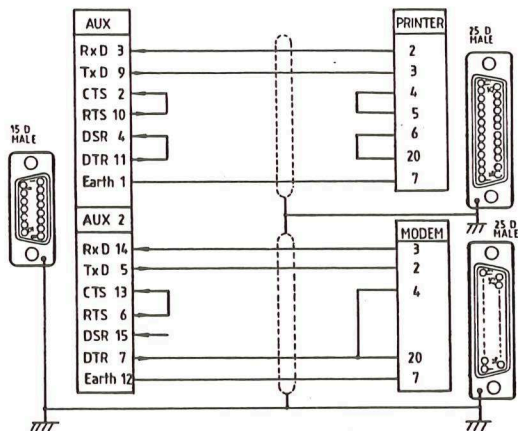
DATA BITS: 5, 6, 7 or 8

If you need to use both serial ports on the KOOKABURRA, it is necessary to purchase or make a special cable, as both ports are on the same connector (P3). The following table shows how to separate the two ports.

KOOKABURRA Plug:- 15 way 'D' Type.

Recommended RS232 Plug:- 25 way 'D' Type.

RECOMMENDED CONNECTIONS



NOTE:

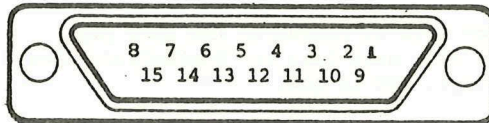
1. When connecting a device, each case needs to be considered individually, depending on the signals required, and supported by the external device.
2. Cable screens to be electrically bonded to conductive backshells.
3. This is a dedicated cable with:
 - a) 'AUX' wired for a 3 wire DTE (e.g. PRINTER). This implies no hardware handshake, only XON/XOFF, data flow control.
 - b) 'AUX2' wired for a special DCE (e.g. SENDATA 300 & SENDATA 2000 MODEMS).
4. DSR is available in the hardware but is not used by the software UART driver.
5. XON/XOFF handshake should be used instead of RTS/CTS. The UART chip stops sending if CTS is dropped in the middle of a character; this may cause data corruption.

THE PARALLEL PORT

There is one Parallel Port (P2) which has 8 data bits and five control lines. To output data on this port type:

[X] <COPY FILENAME PRN> <RETURN>

P2 AS SEEN FROM REAR OF KOOKABURRA



PIN DESCRIPTION of P2:

PIN	I/O	NAME	SIGNAL TYPE	ACTIVE LEVEL
12	I/O	D0	DATA	HIGH
4	I/O	D1	DATA	HIGH
11	I/O	D2	DATA	HIGH
3	I/O	D3	DATA	HIGH
10	I/O	D4	DATA	HIGH
2	I/O	D5	DATA	HIGH
9	I/O	D6	DATA	HIGH
1	I/O	D7	DATA	HIGH
15	O	OBF	OUTPUT BUFFER FULL	LOW
13	I	ACK	ACKNOWLEDGE	LOW
5	I	OE	OUTPUT ENABLE	LOW
6	I	STR	INPUT STROBE	LOW
7	O	IBE	INPUT BUFFER EMPTY	LOW
14	N/A	+5V	POWER	N/A
8	N/A	GND	EARTH	N/A

NOTE:

The power on the parallel port is only available when the port is being used. The rating for pin 14 is 5 volts at 100 mA maximum.

SIGNAL DESCRIPTION

ALL SIGNALS ARE TTL COMPATIBLE.

OBF: This line is pulsed low when data is available in the Output Register. (Minimum pulse width 2 micro seconds).

TECHNICAL SPECIFICATIONS

ACK: After the data has been read, acknowledge should be pulsed low to tell the KOOKABURRA to output the next byte of data.

--

OE: Output Enable. Should be low to read from the KOOKABURRA and high for writing.

STR: Input Strobe. After Data is placed on the data pins, pulse this low to latch data into the KOOKABURRA. Should not be initiated until IBE is Low.

IBE: Indicates that the input buffer is empty, and ready for the next Byte.

CONNECTING A PRINTER TO THE PARALLEL PORT

A printer may be connected via the parallel port P2. Pins 13 and 15 are handshake lines for transmission from the KOOKABURRA. Pins 6 and 7 are handshake lines for reception to the KOOKABURRA. The following connections will enable you to output data to a centronics compatible printer.

THE PRINTER CABLE

Printer end: 36 way Centronics style plug.

KOOKABURRA end : 15 way D style plug

KOOKABURRA END		PRINTER END	
1	↔	9	
2	↔	7	
3	↔	5	
4	↔	3	
Pin 5 TO Pin 8			
8		19 to 30 Inclusive.	
9	↔	8	
10	↔	6	
11	↔	4	
12	↔	2	
13	↔	10	
14	↔	31*	
15	↔	1	

* Required only if target printer does not have pull up resistor on PIN 31.

THE LCD AND VIDEO DISPLAY

Both the LCD and Video output of the KOOKABURRA are ANSI compatible. Refer to Appendix A for a list of ANSI Escape sequences.

CHANGING CURSOR TYPE ON THE KOOKABURRA DISPLAY

The cursor on the Kookaburra has four different modes programmable by the User. These are:

1. Invisible cursor
2. Steady underline cursor
3. Flashing underline cursor
4. Flashing inverse video block cursor

The cursor type is changed by sending the appropriate ANSI escape sequence to the display. These codes are as follows:

ESC [1 v make cursor invisible

ESC [2 v make cursor underline

ESC [3 v make cursor block

ESC [4 v make cursor non blink (The LCD cannot provide a non-blinking block cursor)

ESC [5 v make cursor blink

These cannot be sent directly from the keyboard, but need to be sent by a user program (see section on redefinable function keys).

CLEANING THE LCD

Care should be taken when cleaning the display window. A soft clean cloth should be used to avoid scratching.

THE VIDEO

To switch the video on press <F5>, while the System menu is displayed, this will transfer the console output from the LCD to the video monitor. To switch the video off press <F6>, this will return console output to the LCD. The video output is ANSI compatible. Refer to Appendix A for a list of ANSI Escape sequences.

THE EXPANSION BUS

PIN DESCRIPTION

PIN	FUNCTION	PIN	FUNCTION
1	0V COMMON	2	0V COMMON
3	7V AC	4	7V AC
5	COMM AC	6	COMM AC
7	HOLD (LOW)	8	INT1 (LOW)
9	INTA (LOW)	10	INT2 (LOW)
11	NMI (LOW)	12	DMA REQ (LOW)
13	WAIT (LOW)	14	DEN (LOW)
15	WR (LOW)	16	RD (LOW)
17	RESET (LOW)	18	PCS2 (LOW)
19	HOLDA	20	6 Mhz CLOCK
21	DT/R	22	ALE
23	M/IO	24	BHE (LOW)
25	A19	26	A18
27	A17	28	A16
29	A15	30	A14
31	A13	32	A12

The expansion bus

Pin description continued

33	A11	34	A10
35	A9	36	A8
37	D15	38	D14
39	D13	40	D12
41	D11	42	D10
43	D9	44	D8
45	D7	46	D6
47	D5	48	D4
49	D3	50	D2
51	D1	52	D0
53	A7	54	A6
55	A5	56	A4
57	A3	58	A2
59	A1	60	A0

TECHNICAL SPECIFICATIONS

NOTE:

Power on pins 3,4,5 and 6 comes from the EXPANSION BOX.

PINOUT OF THE PERSONALITY SOCKETS

(FOR ROM MODULES)

PIN	FUNCTION	PIN	FUNCTION
1	INT (LOW)	34	WAKEUP (LOW)
2	WAIT (LOW)	33	A16
3	+ CPU	32	+ MEM
4	A15	31	A14
5	A12	30	WR (LOW)
6	A7	29	A13
7	A6	28	A8
8	A5	27	A9
9	A4	26	A11
10	A3	25	RD (LOW)
11	A2	24	A10
12	A1	23	SELECT (LOW)
13	A0	22	D7
14	D0	21	D6
15	D1	20	D5
16	D2	19	D4
17	OV	18	D3

NOTE: WAKEUP, powers up the Kookaburra
THE BATTERIES

THE MAIN BATTERIES

The KOOKABURRA uses five "D" sized Ni-Cad batteries to provide operating power, when being used in portable mode. To obtain maximum battery life, the machine should be run on batteries until a low battery indication is given (flashing LED). Then charge for approximately 24 hours. The computer can be run continuously on mains power but due to a slight NI-CAD "memory effect", the battery capacity will be somewhat reduced from the optimum discharge/charge cycle operation.

As explained in chapter one, care should be taken when inserting the main battery to ensure it is inserted the right way. If however, the main battery is inserted around the wrong way an internal fuse will blow, protecting your KOOKABURRA. If this fuse is inadvertently blown, your KOOKABURRA should be returned to your nearest distributor as the fuse can only be replaced by a qualified technician.

TECHNICAL SPECIFICATIONS

THE LITHIUM BATTERY

The Lithium Battery has a shorting plug which enables it to be removed from the circuit. This is connector "L.BAT"

When inserting or removing memory devices, first ALWAYS remove the mains power adapter, the MAIN Battery and the Lithium battery shorting plug "L.BAT". This will ensure there is no power connected to the memory.

NOTE:

When this is done all information in RAM will be lost!.

THE I/O MAP

DEVICE	ADDRESS	DESCRIPTION
SERIAL PORT A.	8 A	DATA STATUS / COMMAND
SERIAL PORT B.	C E	DATA STATUS / COMMAND
VIDEO CONTROLLER	10 14 16	DATA PARAMETER STATUS / COMMAND
	1C 1E	DATA \ CTRL 0 STATUS / COMMAND /
INTERRUPT MASK	30 32 38 3A 3C 3E 48 4C	PERSONALITY MODULE 1 PARALLEL PORT IN PARALLEL PORT OUT VIDEO LINE (HIGH) PERSONALITY MODULE 0 KEYBOARD DISABLE PARRALLEL INPUT STROBE ENABLE UPPER 128K RAM. - MASK FOR SERIAL PORTS AND CLOCK ARE INTERNAL TO DEVICE. VIDEO FIELD INT. IS MASKED WHEN +ACC IS OFF.
POWER CONTROL (WRITE)	40 42 44 46	BASE POWER REQUEST CPU POWER REQUEST ACC POWER REQUEST PROTECT BIT

THE I/O MAP CONTINUED

DEVICE	ADDRESS	DESCRIPTION
KEYBOARD (READ)	40	D0 TO D6 = KEY CODE D7 = CONTROL KEY (LOW) D8 = DATA VALID D9 = RESET KEY (LOW) D10 = SHIFT KEY (LOW) D11 TO D15 - NOT USED
MISC. CONTROL (WRITE)	50 52 54 56 58 5A 5C 5E	SELECT PERSONALITY MODULE 0=B SELECT NO ROM (DRIVE A) KEY CLICK ON/OFF 0=ON, 1=OFF BUZZER ON/OFF 1=ON, 0=OFF BRILLIANCE BIT 0 BRILLIANCE BIT 1 BRILLIANCE BIT 2 BRILLIANCE BIT 3
INTERRUPT STATUS (READ)	50	D0 = PARALLEL PORT OUT D1 = PARALLEL PORT IN D2 = VIDEO FIELD D3 = PERSONALITY MODULE 1 D4 = PERSONALITY MODULE 0 D5 = KEYBOARD D6 = CLOCK D7 = VIDEO LINE D8 = SERIAL PORT A (HIGH) D9 = SERIAL PORT B (HIGH) D10 = RESET KEY (HIGH) (depends on version) D11 = (SHIFT KEY) (HIGH) D12 = BATTERY LOW (LOW) D13 = EXTERNAL NMI (LOW) D14 = (ON KEY) (HIGH) D15 = (3 MIN TIMER) (HIGH)

THE I/O MAP CONTINUED

DEVICE	ADDRESS	DESCRIPTION
BAUD RATE	60 62 64 66 68 6A 6C 6E	DTRA DTRB BAUD RATE A - BIT 0 " " " - " 1 " " " - " 2 BAUD RATE B - BIT 0 " " " - " 1 " " " - " 2
PARALLEL	70	DATA IN/OUT
REAL TIME CLOCK	84 86 88 8A 8C 8E	SECONDS SET/READ /SET ALARM MINUTES " " " " HOURS " " " " DATE SET/READ MONTH SET/READ CONTROL/STATUS

TECHNICAL SPECIFICATIONS

THE I/O MAP FOR THE MEB2 EXPANSION BOX

DEVICE	ADDRESS	DESCRIPTION
FLOPPY DISK DATA	100 102 104 106	STATUS / COMMAND TRACK REG. SECTOR REG. DATA REG.
FLOPPY DISK CONTROL REGISTERS	110 112 114 116 118 11A	ROM / RAM RAM = (LOW) ENABLE PRECOMPENSATION MOTOR ON DRIVE B / DRIVE A. A = (LOW) SIDE 1 / SIDE 0. 0 = (LOW) S / D DENSITY D = (LOW)
FLOPPY DISK STATUS	120	D0 DISK CHANGE (LOW) (for selected drive) D1 DISK CHANGE A (LOW) D2 DISK CHANGE B (LOW) D3 READY (for selected drive) D4 READY for drive A (LOW) D5 READY for drive B (LOW) D6 NMI (LOW)
RESERVED !	180 THRU TO 1FF	RESERVED FOR FUTURE EXPANSION BUS PRODUCTS.
80186 INTERNAL CONTROL REGISTERS	FF00 THRU TO FFFF	SEE INTEL DATA BOOK FOR MORE DETAILS.

INTERNAL PSEUDO DISK DRIVES

The internal RAM disk drive "[D]" has a format of 256 bytes per sector, one cluster per sector and a maximum of 32 directory entries. The maximum size that this drive will format to, is 192K bytes, if sufficient RAM is available. Refer to Chapter 8 for a description on how to format the RAM disk.

INTERNAL TIMERS AND CLOCK

TIMERS

The 80186 provides three internal 16-bit programmable timers. One of these timers is available to the user.

For a complete description of these timers refer to the Intel Microprocessor and Peripheral Handbook.

THE REAL TIME CLOCK

The Kookaburra uses the RCA CDP1879 Real Time Clock.

The real-time clock is used only for time-of-day, with an alarm capability that can be set for combinations of seconds, minutes or hours. Alarm time is configured by loading alarm latches that activate an interrupt output through a comparator when the counter and alarm latch values are equal. A transparent "freeze" circuit precludes clock rollover during counter and latch access times to assure stable and accurate values in the counters and alarm latches. For a complete description, refer to the RCA data sheets for this device. The date is kept and updated by the system software.

THE KEYBOARD

NOTE:

Refer to Appendix D for ASCII codes of all valid key combinations.

REDEFINABLE FUNCTION KEYS

The 12 function keys, <HELP> key and <arrow> keys on the Kookaburra can be defined by the user to any string he chooses, limited to 128 characters in total and 40 characters per definition. By using the SHIFT and CTRL keys with the function keys this makes available a total of 51 user definable keys.

TECHNICAL SPECIFICATIONS

The function keys have a default definition which is that used by IBM called 'extended ascii'. Extended ascii returns two characters; a NULL followed by an IBM code.

To redefine a particular key, a proprietary ANSI sequence, as outlined below, is sent to the display. However, they can not be sent directly from the keyboard since MSDOS traps the ESC character. A user program is therefore required, for example in Basic. The device can only be CON or VCON, and not AUX or AUX2.

ESC [NNNR'--string--'p	to define a string of characters.
ESC [NNNR;AA;BB;CC;DDp	to define a string of decimal bytes.
ESC [NNNR'--string--';Aap	string and decimal bytes.
ESC [NNNR;AA;BB;CC'--string--'p	decimal bytes and string.

NOTE:

In the above NNN corresponds to the function number. For example:
001 or just 1 corresponds to function key <F1>
101 corresponds to <SHIFT F1>
203 corresponds to <CTRL F3>

EXAMPLE

Redefine <CTRL F4> to type 'list' followed by carriage return.

ESC [204R'list';13p

OTHER SEQUENCES

A particular key definition can be cleared by simply assigning it to be a NULL string, as in the following example:

ESC [204R''p (N.B. '' represent 2 single quotes, NOT a double quote.)

An application program may use the function keys (their default codes), but the user may not want to clear all his definitions. In this situation the user may 'switch off' the user definitions so that the function keys only return to their defaults. Then, when he has finished, he can switch them on again.

ESC [RF switches the user definitions off

ESC [RO switches the user definitions on

If the user desires, he can clear all his definitions in one go:

ESC [RR resets all reassignable keys to default codes

TECHNICAL SPECIFICATIONS

A simple BASIC86 program can be written to send the above sequence, e.g.

```
10 REM DEFINE <CTRL F4> TO LIST
20 E$ = CHR$(27) :REM ESC CHARACTER
30 PRINT E$;"[204R'LIST';13p"
40 END
```

POWER SAVING TECHNIQUES

The Kookaburra is a portable computer powered by either batteries or an external supply. To conserve power while operating from batteries, various sections of the KOOKABURRA are powered down whilst not being utilised. The following gives a description of how this is performed. There are four states concerned with powering the machine:

1. ON AND VIDEO

Everything is powered up. There would normally be external power available when video or expansion unit is used, so no power saving techniques are necessary.

2. ON

This is normal, full operation except for video or expansion box. When the CPU is only waiting for a response from another device it will shut itself down into the warm state.

3. WARM

Power is only applied to those circuit areas required to enable a wake-up call to be recognised. These are:

- a. Power Down Timer
- b. Keyboard
- c. Serial I/O port
- d. Parallel I/O port

4. COLD

Power is applied to volatile memory, the real time clock and circuit to monitor an 'ON' call. This can come from:

- a. Pressing dedicated 'ON' key
- b. Real time clock alarm
- c. Personality modules

AUTOMATIC SHUT DOWN

To prolong the life of batteries, an automatic shut down will take effect three (3) minutes after the last key was pressed. The Kookaburra will shut down into a cold state (see previous page), however, when the <ON> key is pressed, the system will take you to the screen you were working on before the shut down. No information will

TECHNICAL SPECIFICATIONS

be lost.

This function can be disabled by pressing <SHIFT CTRL C>. The Kookaburra will not power down until <SHIFT OFF> is pressed. Pressing <SHIFT CTRL C> again will enable the automatic shut down.

NOTE:

If an expansion box or video monitor is being used by the Kookaburra, the automatic shut down will not take effect, as it is assumed the computer is powered by an external supply. The automatic shut down will also not apply if a user written program is being executed.

CHAPTER 10

DISK EXPANSION UNIT

TABLE OF CONTENTS

Technical Specifications.....	10-2
Operation of the Disk Unit.....	10-2
Operation Notes.....	10-4
Floppy Disk Care.....	10-5
The Write Protect Tab.....	10-5
Formatting a disk.....	10-6
Format Options.....	10-6
Disk Copy.....	10-6

•WARNING•

THERE ARE NO USER SERVICEABLE PARTS
INSIDE THE KOOKABURRA DISK EXPANSION
UNIT . OPENING THIS UNIT MAY CAUSE
SERIOUS INJURY. TIME ASSUMES NO
RESPONSIBILITY FOR ANY UNIT OPENED

DISK EXPANSION UNIT

TECHNICAL SPECIFICATIONS

Operating temperature range:	0 to 45 degrees C
Weight:	6.5 Kg
Size:	325 X 285 X 72
Power supply:	110,210 or 240 VAC. +/-10% 50 or 60 Hz factory set.
Power consumption:	60 Watts, approximately.
Disk capacity:	320K/360K bytes formatted per disk.
Disk drives:	double sided, double density, 48 TPI.
Sectors per track:	8 or 9
Operating System:	MS-DOS 2.0
Software supplied:	MS-DOS system disk with utilities.
Memory:	Standard 128K bytes, expandable to 256K bytes.

NOTE:

Angled brackets are used to identify text that MUST be entered by the user.

OPERATION OF THE DISK UNIT

CONNECTING TO MAINS POWER

The mains cord should be plugged into an AC outlet with the same voltage as specified on the rear of the unit, preferably one with no other appliances connected to it. The power consumption of the expansion unit is approximately 60 watts.

SELECT MAINS VOLTAGE

Voltage of the Disk Expansion Unit can be changed to 120 volts, 208 volts, and 240 volts by following the procedure below and the wiring diagrams on the following page.

1. DISCONNECT FROM MAINS POWER.

2. Remove the two screws and washers at either end of rear panel. This will expose the mains wiring and transformer as shown in the wiring diagram.
3. Using push-on connectors or solder with heat shrink tubing, make connections as shown in wiring diagram for the desired voltage.

In the case of 120 V wiring (where two wires must connect to the same transformer pin), it may be easier to double up the wires in the screw type terminal block instead of on the transformer pin.

4. The fuse should be changed to match the voltage, i.e:

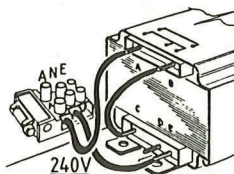
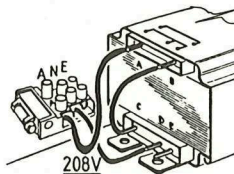
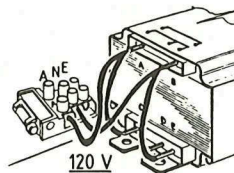
120 V - 2A

208 V - 1A

240 V - 1A

5. Replace the rear panel, being careful that connections are secure and no wires will be pinched by the panel.
6. Record the new mains voltage on the expansion box, preferably next to the on/off switch, to prevent future connection of the wrong voltage supply.

VOLTAGE SELECTION WIRING DIAGRAM



DISK EXPANSION UNIT

OPERATING PROCEDURE

1. The computer and disk unit should initially be switched off.
2. Connect the 60 way cable (see below).
3. Switch the disk unit on. The power switch is located on the rear corner where the mains lead enters. NOTE: (ON is indicated by the red end of the switch rocker being exposed. OFF is indicated, when this red end can no longer be seen.).
4. Insert the SYSTEM DISK in the left drive (Drive "E").
5. Turn the computer on by pressing the <ON> key.
6. The computer will display the system menu.
7. Press <F7> as per system menu.
8. The system will respond by reading and booting from the SYSTEM DISK and will return you to the system menu. This is indicated by the activity light on the left hand disk.
9. When switching the computer off, after running from disc, the <SHIFT OFF> operation must be performed twice. The first time you press <SHIFT OFF>, the computer will return to the ROM based operating system, from the disk based system. You must then repeat the <SHIFT OFF> procedure to actually turn the machine off.

CONNECTING TO THE COMPUTER

WARNING: BEFORE ATTEMPTING TO CONNECT/DISCONNECT THE
DISK EXPANSION UNIT, ALWAYS ENSURE THAT
THE POWER IS SWITCHED OFF ON BOTH DEVICES.

Connect the black 60 way cable to the computer and the Disk Expansion Unit by aligning the connector carefully with the indexing keys facing upward and press home firmly. The ejector/latches on the receptacles in both the computer and disk unit should give an audible click as the connector is firmly seated. These ejectors must be activated by an outward motion, which will pop the connector out, when removing the cable.

OPERATION NOTES

1. If your computer gives a low battery indication when connected to the disk unit, simply use the power plug pack supplied with the computer.
2. The left disc drive is drive "E" and the righthand disk drive is

"F".

3. Your disk expansion unit comes complete with 128K bytes of Dynamic RAM, which the system uses during normal operation and is transparent to the user. Any files saved on the ramdisk drive "D" will automatically be stored in the computers static RAM.

FLOPPY DISK CARE

These precautions should be followed to maximize the the life of floppy disks and protect your data.

1. Do not touch the exposed disk surfaces, (those parts not covered by the cardboard).
2. Keep the disk away from any magnetic fields.
3. Do not bend the disk.
4. Do not write on a disk label with any sharp object, such as a pencil or pen.
5. Do not use an eraser to remove any names etc., on the disk.
6. Always insert the disk with its label facing up.
7. Always store the disk in its envelope.
8. Store disks upright in their boxes when not in use.
9. Do not expose the disk to heat or direct sunlight (operating temperature range 10 to 50 degrees C).
10. Avoid contact with water or solvents.

THE WRITE PROTECT TAB

To write data onto a 5 and 1/4 inch disk you must remove the write protect tab. To guard against accidentally erasing or overwriting of data on the disk, ensure the write protect tab is in place.

LOCATION OF THE WRITE PROTECT TAB

Remove a 5 and 1/4 inch disk from its envelope and position it in front of you so that the manufacturers label is in the top left corner and the elongated cutout, exposing part of the disk is on the edge closest to you.

Now, if you look at the right-hand edge of the disk, you will notice a small cutout about 5mm square. To protect the disk you must bend a write protect tab over this cutout, ensuring it is stuck down firmly. Write protect tabs are supplied with each box of disks sold. They are

usually silver or white, about 2cm by 1cm and come on a sheet of wax paper.

FORMATTING A DISK

To format a disk, use the following command format:

`<FORMAT> <X:/S/S/S/S> <RETURN>`

where X is either E(Drive E) or F(Drive F) and /s/s/s/s are the options required (see options list).

When the above is typed in, the message "insert disk and strike any key when ready" is displayed. Hit a key and formatting starts.

WARNING: FORMATTING A DISK WILL DESTROY ALL INFORMATION ALREADY ON IT.

FORMAT OPTIONS

1. `</E>` This tells the format program to VERIFY the formatted disk. It does not format the disk.
2. `</8>` The disk will be formatted with 8 Sectors per Track. If not specified, the default is used, which is 9 sectors per track, which is IBM DOS 2.0 compatible.
3. `</1>` The disk is formatted as a single sided disk.
4. `</V>` Gives the disk a volume name.
5. `</C>` This option clears the disks directory. It is used to delete all files on a disk quickly.

DISK COPY

Using the MS-DOS command `COPY *.*` will copy everything that is on the current directory only. If you have subdirectories on the disk, the files in these directories will not be copied. To copy everything from a disk, use the utility DISKCOPY, which is on the system disk provided. To copy your system disk, be sure to use DISKCOPY.

`<DISKCOPY> <E:> <F:> <RETURN>` Will copy everything on drive E to drive F.

NOTE:

1. FORMAT, formats floppy disks, MODE RF, formats RAM disks.

DISK EXPANSION UNIT

2. A system disk is shipped with each disk expansion unit. It is recommended that you make one or two copies of this disk and put them aside, in case you inadvertently damage one.
3. DISKCOPY is used to create a system disk.

APPENDICES

APPENDIX A - ANSI ESCAPE SEQUENCES.....A-1

APPENDIX B - FUNCTIONAL BLOCK DIAGRAM.....B-1

APPENDIX C - DISK ERRORS.....C-1

APPENDIX D - KEY CODES.....D-1

APPENDIX A

ANSI ESCAPE SEQUENCES

An ANSI escape sequence is a series of characters (beginning with an escape character or keystroke) that you can use to define functions to MS-DOS. Specifically, you can reassign keys, change graphics functions, and affect cursor movement. The sequences are put into effect by sending them to either the LCD or Video screen, for example, by a PRINT statement from BASIC86. To redefine key <F4> to replace the DIR command we have the sequence:

```
ESC[004R;'DIR',13p
```

From BASIC86 we may have:

```
10 PRINT CHR$(27);"[004R'DIR',13p"
```

This appendix explains how the ANSI escape sequences are defined for MS-DOS version 2.0. Examples on how to use ANSI escape sequences are included at the end of this appendix.

NOTES:

1. The default value is used when no explicit value or a value of zero is specified.
2. Pn represents "numeric parameter". This is a decimal number specified with ASCII digits.
3. Ps represents "selective parameter". This is any decimal number that is used to select a subfunction. Multiple subfunctions may be selected by separating the parameters with semicolons.

CURSOR FUNCTIONS

The following escape sequences affect the cursor position on the screen:

CUP - Cursor Position

```
ESC [P1; Pc H
```

HVP - Horizontal & vertical Position

```
ESC [P1; Pc f
```

ANSI ESCAPE SEQUENCES

CUP and HVP move the cursor to the position specified by the parameters. The first parameter specifies the line number, and the second parameter specifies the column number. The default value is 1. When no parameters are specified, the cursor is moved to the home position.

CUU - Cursor Up

ESC [Pn A

This sequence moves the cursor up one line without changing columns. The value of Pn determines the number of lines moved. The default value for Pn is 1. The CUU sequence is ignored if the cursor is already on the top line.

CUD - Cursor Down

ESC [Pn B

This sequence moves the cursor down one line without changing columns. The value of Pn determines the number of lines moved. The default value for Pn is 1. The CUD sequence is ignored if the cursor is already on the bottom line.

CUF - Cursor Forward

ESC [Pn C

The CUF sequence moves the cursor forward one column without changing lines. The value of Pn determines the number of columns moved. The default value for Pn is 1. The CUF sequence is ignored if the cursor is already in the far right column.

CUB - Cursor Backward

ESC [Pn D

This escape sequence moves the cursor back one column without changing lines. The value of Pn determines the number of columns moved. The default value for Pn is 1. The CUB sequence is ignored if the cursor is already in the far left column.

DSR - Device Status Report

ESC [6 n

The console driver will output a CPR sequence (see below) on receipt of the DSR escape sequence.

CPR - Cursor Position Report (from console driver to system)

ESC [Pn; Pn R

ANSI ESCAPE SEQUENCES

The CPR sequence reports current cursor position via standard input. The first parameter specifies the current line and the second parameter specifies the current column.

SCP - Save Cursor Position

ESC [s

The current cursor position is saved. This cursor position can be restored with the RCP sequence (see below).

RCP - Restore Cursor Position

ESC [u

This sequence restores the cursor position to the value it had when the console driver received the SCP sequence.

ERASING

The following escape sequences affect erase functions:

ED - Erase Display

ESC [2 J

The ED sequence erases the screen, and the cursor goes to the home position.

EL - Erase Line

ESC [K

This sequence erases from the cursor to the end of the line (including the cursor position).

MODES OF OPERATION

The following escape sequences affect screen graphics:

SGR - Set Graphics Rendition

ESC [Ps' ...; Ps m

The SGR escape sequence invokes the graphic functions specified by the parameter(s) described below. The graphic functions remain until the next occurrence of an SGR escape sequence.

PARAMETER

PARAMETER FUNCTION

ANSI ESCAPE SEQUENCES

0	All attributes off	
1	Bold on	
4	Underscore on	monochrome displays only
5	Blink on	
7	Reverse video on	
8	Concealed on	ISO 6429 standard
30	Black foreground	ISO 6429 standard
31	Red foreground	ISO 6429 standard
32	Green foreground	ISO 6429 standard
33	Yellow foreground	ISO 6429 standard
34	Blue foreground	ISO 6429 standard
35	Magenta foreground	ISO 6429 standard
36	Cyan foreground	ISO 6429 standard
37	White foreground	ISO 6429 standard
40	Black background	ISO 6429 standard
41	Red background	ISO 6429 standard
42	Green background	ISO 6429 standard
43	Yellow background	ISO 6429 standard
44	Blue background	ISO 6429 standard
45	Magenta background	ISO 6429 standard
46	Cyan background	ISO 6429 standard
47	White background	ISO 6429 standard

SM - Set Mode

ESC [= Ps h
 or ESC [= h
 or ESC [= 0 h
 or ESC [? 7 h

The SM escape sequence changes the screen width or type to one of the following parameters:

<u>PARAMETER</u>	<u>PARAMETER FUNCTION</u>
0	40 X 25 black and white
1	40 X 25 colour
2	80 X 25 black and white
3	80 X 25 colour
4	320 X 200 colour
5	320 X 200 black and white
6	640 X 200 black and white
7	wrap at end of line

RM - Reset Mode

ESC [= Ps 1
 or ESC [= 1
 or ESC [= 0 1

ANSI ESCAPE SEQUENCES

or ESC [? 7 1

Parameters for RM are the same as for SM (Set Mode), except that parameter 7 will reset the wrap at the end of line mode.

KEYBOARD REASSIGNMENT

Function Keys <F1> to <F12>, <HELP> and the <arrow> keys are redefinable using ANSI Escape Sequences.

To specify which function key is to be redefined, use the following codes:

	<SHIFT>	<CTRL>
<F1> = 001 or 1	101	201
<F2> = 002 or 2	102	202
.	.	.
.	.	.
<F12> = 012 or 12	112	212
<HELP> = 013 or 13	113	213
<-- = 014 or 14	114	214
--> = 015 or 15	115	215
= 016 or 16	116	216
= 017 or 17	117	217

Refer to page 9-19 for a detailed explanation of redefining function keys.

EXAMPLES:

1. Redefine the <F10> key to a DIR command followed by carriage return:

```
ESC [10R'DIR';13p
```

The '10' is the code for <F10>, the 'R' is for redefine, the 'DIR' is the new definition, the '13' code for carriage return, and the 'p' stands for end of redefine command.

2. Redefine <CTRL HELP> to a CD BIN (change directory) command followed by carriage return:

```
ESC [213R'CD BIN';13p
```

The '213' is the code for <CTRL HELP>.

APPENDIX C

DISK ERRORS

If a disk or device error occurs at any time during a command or program, MS-DOS returns an error message in the following format:

<yyy> ERROR WHILE <I/O action> ON DRIVE x
Abort,Ignore,Retry?

In this message, <yyy> may be one of the following:

WRITE PROTECT
BAD UNIT
NOT READY
BAD COMMAND
DATA
BAD CALL FORMAT
SEEK
NON-DOS DISK
SECTOR NOT FOUND
NO PAPER
WRITE FAULT
READ FAULT
DISK

The <I/O action> may be either of the following:

READING
WRITING

The drive <x> indicates the drive in which the error has occurred.

MS-DOS waits for you to enter one of the following responses:

- A Abort. Terminate the program requesting the disk read or write.
- I Ignore. Ignore the bad sector and pretend the error did not occur.
- R Retry. Repeat the operation. This response is to be used when the operator has corrected the error (such as with NOT READY or WRITE PROTECT errors).

Usually, you will want to attempt recovery by entering responses in this order:

R (to try again)

DISK ERRORS

A (to terminate program and try a new disk)

One other error message might be related to faulty disk read or write:

FILE ALLOCATION TABLE BAD FOR DRIVE x

This message means that the copy in memory of one of the allocation tables has pointers to nonexistent blocks. Possibly the disk was incorrectly formatted or not formatted before use. If this error persists, the disk is currently unusable and must be formatted prior to use.

APPENDIX D

KEY CODES

KEY COMBINATIONS

The following tables lists all valid key combinations.

KEY	CAPS LOCK "OFF"		CAPS LOCK "ON"		CTRL
	unSHIFTED	SHIFTED	unSHIFTED	SHIFTED	
A	97 (a)	65 (A)	65 (A)	97 (a)	01
B	98 (b)	66 (B)	66 (B)	98 (b)	02
C	99 (c)	67 (C)	67 (C)	99 (c)	03
-	-	-	-	-	-
-	-	-	-	-	-
Z	122 (z)	90 (Z)	90 (Z)	122 (z)	26

Refer to ASCII table for other alpha characters.

KEY CODES

KEY	unSHIFTED	SHIFTED	CTRL
space bar	32	32	32
!1	49	33	no code
@2	50	64	no code
#3	51	35	no code
\$4	52	36	no code
%5	53	37	no code
^6	54	94	no code
&7	55	38	30
*8	56	42	no code
(9	57	40	no code
)0	48	41	no code
-	45	95	31
+ =	61	43	no code
- \	96	126	no code
{ [	91	123	27
}]	93	124	29
: ;	59	58	no code
" '	39	34	no code
\	92	124	28
< ,	44	60	LCD lighter
> .	46	62	LCD darker
? /	47	63	click on/off

KEY	unSHIFTED	SHIFTED	CTRL
F1	00 59	00 84	00 94
F2	00 60	00 85	00 95
F3	00 61	00 86	00 96
F4	00 62	00 87	00 97
F5	00 63	00 88	00 98
F6	00 64	00 89	00 99
F7	00 65	00 90	00 100
F8	00 66	00 91	00 101
F9	00 67	00 92	00 102
F10	00 68	00 93	00 103
F11	00 133	00 158	00 178
F12	00 134	00 159	00 179
HELP	00 135	00 160	00 180
L ARROW	00 75	00 74	00 115
R ARROW	00 77	00 78	00 116
UP ARROW	00 72	00 71	00 73
DOWN ARROW	00 80	00 79	00 81
ESC	27	27	27
TAB	09	00 15	no code
BACKSPACE	08	00 83	127 (DEL)
LF	10	00 82	82 (R)
RETURN	13	13	13
OFF ON	ON	OFF	no effect
RESET	no effect	RESET	no effect

NOTE: These keys returned as 1 or 2 byte code.

The reverse of this table is the ASCII character set.

ASCII CHARACTER CODES

HEX	DEC	CHR	KEY	HEX	DEC	CH	HEX	DEC	CH	HEX	DEC	CH
00H	00	NULL	none	20H	032	SP	40H	064	@	60H	096	
01H	01	SOH	CTRL A	21H	033	!	41H	065	A	61H	097	a
02H	02	STX	CTRL B	22H	034	"	42H	066	B	62H	098	b
03H	03	ETX	CTRL C	23H	035	#	43H	067	C	63H	099	c
04H	04	EOT	CTRL D	24H	036	\$	44H	068	D	64H	100	d
05H	05	ENQ	CTRL E	25H	037	%	45H	069	E	65H	101	e
06H	06	ACK	CTRL F	26H	038	&	46H	070	F	66H	102	f
07H	07	BEL	CTRL G	27H	039	'	47H	071	G	67H	103	g
08H	08	BS	CTRL H	28H	040	(	48H	072	H	68H	104	h
09H	09	HT	CTRL I	29H	041	)	49H	073	I	69H	105	i
0aH	10	LF	CTRL J	2AH	042	*	4AH	074	J	6AH	106	j
0bH	11	VT	CTRL K	2BH	043	+	4BH	075	K	6BH	107	k
0cH	12	FF	CTRL L	2CH	044	,	4CH	076	L	6CH	108	l
0dH	13	CR	CTRL M	2DH	045	-	4DH	077	M	6DH	109	m
0eH	14	SO	CTRL N	2EH	046	.	4EH	078	N	6EH	110	n
0fH	15	SI	CTRL O	2FH	047	/	4FH	079	O	6FH	111	o
10H	16	DEL	CTRL P	30H	048	0	50H	080	P	70H	112	p
11H	17	DC1	CTRL Q	31H	049	1	51H	081	Q	71H	113	q
12H	18	DC2	CTRL R	32H	050	2	52H	082	R	72H	114	r
13H	19	DC3	CTRL S	33H	051	3	53H	083	S	73H	115	s
14H	20	DC4	CTRL T	34H	052	4	54H	084	T	74H	116	t
15H	21	NAK	CTRL U	35H	053	5	55H	085	U	75H	117	u
16H	22	SYN	CTRL V	36H	054	6	56H	086	V	76H	118	v
17H	23	ETB	CTRL W	37H	055	7	57H	087	W	77H	119	w
18H	24	CAN	CTRL X	38H	056	8	58H	088	X	78H	120	x
19H	25	EM	CTRL Y	39H	057	9	59H	089	Y	79H	121	y
1AH	26	SUB	CTRL Z	3AH	058	:	5AH	090	Z	7AH	122	z
1BH	27	ESC	CTRL [	3BH	059	;	5BH	091	[	7BH	123	{
1CH	28	FS	CTRL \	3CH	060	<	5CH	092	\	7CH	124	
1DH	29	GS	CTRL]	3DH	061	=	5DH	093	]	7DH	125	}
1EH	30	RS	CTRL ^	3EH	062	>	5EH	094	^	7EH	126	~
1FH	31	US	CTRL _	3FH	063	?	5FH	095	_	7FH	127	DEL

DEL = CTRL BACKSPACE

GLOSSARY

- ABORT: Terminate execution of a Command or Program.
- ACCESS TIME: The time required to locate and make available information from a storage location.
- ACOUSTIC
COUPLER: A communications device into which fits a telephone handset. Digital signals can then be sent to or from a computer via the telephone system.
- APPLICATION: Used to describe a program designed to perform a particular end users task.
- ASCII: American Standard Code for Information Interchange. A code used to represent printable characters and some control codes. It is used for data storage and communications.
- BACKUP: This is the extra copy of a file or disk in case something goes wrong with the original.
- BASIC: Beginners All Purpose Symbolic Instruction Code. A popular programming language.
- BATCH FILE: A file containing command sequences for a commonly used task. Instead of retyping the commands over and over again, the batch file is executed
- BAUD RATE: A measurement of the rate at which data is transmitted. Based on the number of signal elements per second.

GLOSSARY

- BIT:** One of two digits 0 and 1 used in binary notation (base two) to represent on or off signals.
- BUFFER:** A temporary store for data which is being transferred.
- BYTE:** A Byte is an eight bit binary number and can be used to represent one character of information.
- CONCATENATION:** Linking or chaining together of files. The command Copy can be used to concatenate files.
- CURSOR:** A marker displayed on the console to represent current display position. Pressing a key will result in the character appearing on the console in place of the cursor. The Kookaburra allows you to change the type of cursor displayed.
- DATA:** A general term for numbers, digits, characters and symbols which are accepted, stored and processed by the computer.
- DEBUG:** The process of removing faults and errors in a program.
- DEFAULT DRIVE:** The current drive the computer is using which is indicated by the MS-DOS prompt, e.g. [A]. The "A" indicates that MS-DOS will search for or write to files on drive "A" only, unless specifically told to do so on another drive.
- DELETE:** Deleting a file removes all its directory information. This means that the operating system can no longer find it and the space the file occupied is assumed to be free for use.
- DELIMITERS:** Special characters (, ; = :) or blanks which the computer recognises to distinguish between a command and related information, e.g. RENAME,THISFILE THATFILE.
- DIRECTORY:** The names of files are kept in directories on a disk. Directories also contain information on the size of the files, their location on the disk and the date they were created or last updated.
- DISK DRIVE:** This name refers to mass storage devices, they can be either HARD or FLOPPY Disk Drives. In general Hard disks have a much higher storage capacity than floppy drives. The Kookaburra computer along with supporting hard and floppy disk drives, has a RAM disk. A RAM disk is a block of the computer's solid state memory, which is treated by the computer as a disk drive. RAM disks can be written to or read from very quickly, in fact many times faster than with Hard disks. Hard disks in turn have a better access time than Floppy

disks.

DUMP: A word used to describe the process of copying data in a section of memory and sending it to a peripheral device (eg. a printer) or to a backing store.

EPROM: Solid state memory that is Erasable Programmable Read Only Memory. A memory device that stores data permanently, even when power is removed. Its contents can be erased by ultra violet light and replaced with new data.

ERROR MESSAGE: When an error occurs a message will be shown on the screen to indicate the type of error and in most cases an alternative action.

EXTENSION: The extension part of a filename is the full stop and one to three characters, which may be added after the file name. The filename has a maximum of eight characters. eg.

XXXXXXX (filename)

XXXXXXX.XXX (filename with extension)

NOTE: X may be A-Z 0-9 \$&#%()-@^{}~`!

FILE: A file is a collection of related information and can be compared to a folder in a filing cabinet. All programs, text and data on a disk reside in files and each file has a unique name.

FILESPEC: Filespec refers to an optional drive designation, a filename, and an optional three letter filename extension in the following format.

[<d:>]<filename>[<.ext>]

FLOPPY DISK: A device used for permanent storage of data. A floppy disk is a thin, flexible and circular piece of plastic coated with a magnetic material similar to that on cassette tapes. This piece of plastic is enclosed in a cardboard envelope, which leaves exposed only a small section for a read/write head to make contact with. To write or read data on the floppy disk it is inserted into a disk drive, which spins the plastic disk at high speed, while the read/write head passes over its surface.

FORMAT: All new disks must be formatted before they can be used by MS-DOS. Formatting a new disk, writes addressing and timing marks onto it, along with a directory and file allocation table (FAT). These markers must be

GLOSSARY

there, as the operating system uses them to place information. Disks formatted on the Kookaburra also have a Boot Sector added.

- INPUT:** Any information that is used by the computer. It may be information read from a disk file or entered through the keyboard, etc..
- INTERFACE:** A name given to any electronic circuitry used to connect two or more devices.
- LCD:** This stands for Liquid Crystal display, which is the name of the display in the Kookaburra.
- NULL:** Binary zero or a forced blank.
- OUTPUT:** Any information that is the result of computer activity. It may be information displayed on your screen or a printout, it can be data saved to a disk file or sent over a telephone line.
- PARAMETERS:** An option you define through the command line to determine further action by the system, eg. %0 - %9.
- PATHNAME:** A pathname is a sequence of directory names followed by a filename, each separated from the previous one by a back slash (\). A pathname allows you to access a file that is in a subdirectory of another directory. A pathname is not required for files in your current Working directory.
- PIPE:** Pipes allow the output from one command to become the input to another.
- PROGRAM:** A set of instructions which the computer carries out to achieve the required result.
- PROMPT:** Symbol(s) showing you the system is ready to accept the next command, eg. [A] is the MS-DOS prompt when you first enter MS-DOS.
- RAM:** (RANDOM ACCESS MEMORY), solid state memory that can be read from and written to. Information in these devices is maintained only while power is applied.
- READ/WRITE MEMORY:** This type of memory can be written into as well as read.
- ROM:** (READ ONLY MEMORY), memory which holds data or instructions permanently. The content of ROM is fixed at the time of manufacture.

GLOSSARY

- SAVE:** The process of storing the latest version of a file on a disk. A "save" has to be performed before beginning a new task otherwise the updated version of the file will be lost.
- SCROLL:** The continuous movement of the display on the screen. To scroll up press the key with arrow pointing down. To scroll down press the key with the arrow pointing up.
- SOFTWARE:** Refers to all the programs that can be run on a particular computer.
- TREE:** This describes a non-linear method of storing data in a computer. One piece of data related to several other pieces and each one of these then relates to more. The computer tree, however, is upside down with the branches spreading out and downwards.
- WORD**
- PROCESSOR:** This is a software package designed for the typing and production of letters, reports and documents. In addition to allowing corrections of a single character it will justify right and left hand margins, centralise headings, move, copy and erase paragraphs, and search for particular words. The Kookaburra has its own word processor - the TIME Writer.