SORTING ON HP-67/97

The June 1977 issue of HP Key Notes described a Bubble Sort Routine (#00619D) for HP 67/97 that sorts as many as 21 data registers using 69 programs steps. I have written programs for the Bubble Sort using only 21 steps for as many as 22 data registers. The HP program can sort in either ascending or descending mode, presumably selecting by keyboard entry. My program can do either but one step in the program has to be changed when using only 21 steps. Keyboard selection of the mode can, of course, be done with 17 additional program steps and about 1/3 longer run time for a maximum disorder sort.

I have also enclosed a Shell Sort routine which has 45 steps but which is much faster than the Bubble Sort. For the full 22 registers at maximum disorder, for example, the Shell Sort runs in less than half the time of the Bubble Sort (or 3 minutes faster!). When the number of registers to be sorted is small -- 6 or less -- the Bubble Sort is a few seconds faster.

I use the Sort routines in a "Racing Results" program for boat racing where the competitors' elapsed times are converted to corrected times. Then, the competitors are sorted into order of corrected finish by the Shell Sort.

This program has greatly speeded up our Sailing Club's time in determining handicap race results as well as reducing errors. Now, if I only had an HP 97 sort that we could post printed results ...!

I hope these programs -- or routines -- will be helpful to the Club Members; and I am sure someone will make my programs more efficient!

A. Babcock Jr., (2154)

R/S

USER INSTRUCTIONS

1. Load side 1 of program card.
2. Enter data to be sorted in R_1-R_{s22}.
3. Set DSP to correspond with maximum decimal places in data to be sorted.
4. Store # of data to be sorted in R_0.
5. To sort, press D.
6. For a new sort, clear all registers, go to step #2.

STEP	KEY ENTRY 1	KEY CODE
1	f LBL D	31 25 14
	RCL 0	34 00
	STO D	33 14
	f LBL 0	31 25 00
5	RCL D	34 14
	2	02
	+	81
	INT	31 83
	STO D	33 14
10	f X=0	31 51
	h RTN	35 22
	f LBL 1	31 25 01
	RCL 0	34 00
	h ST I	35 33
15	f LBL 2	31 25 02
	RCL(i)	34 24
	h RC L	35 34
	STO E	33 15
	RCL D	34 14
20	—	51
	f X=0	31 51
	GTO 4	22 04
	h X≠I	35 24
	h X≠Y	35 52
25	RCL(i)	34 24
	g X>Y	32 81
	f GSB 3	31 22 03
	RCL E	34 15
	h ST I	35 33
30	f DSZ	31 33
	GTO 2	22 02
	f LBL 3	31 25 03
	h X≠Y	35 52
	STO(i)	33 24
35	h X≠Y	35 52
	RCL E	34 15
	h ST I	35 33
	h R↓	35 53
	STO(i)	33 24
40	h SF 2	35 51 02
	h RTN	35 52
	f LBL 4	31 25 04
	h F2?	35 71 02
	GTO 1	22 01
45	GTO 0	22 00
	END	END

STEP	KEY ENTRY 2	KEY CODE
1	f LBL D	31 25 14
	RCL 0	34 00
	h ST I	35 33
	f LBL 1	31 25 01
5	RCL(i)	34 24
	f DSZ	31 35
	GTO 2	22 02
	h F?2	35 71 02
	GTO D	22 14
10	h RTN	35 22
	f LBL 2	31 25 02
	RCL(i)	34 24
	g X<Y	32 71
	GTO 1	22 01
15	h SF 2	35 51 02
	f ISZ	31 34
	STO(i)	33 24
	f DSZ	31 33
	h X≠Y	35 52
20	STO(i)	33 24
21	GTO 1	22 01
	END	END

→ REGISTERS:
R0 - N, R1-22 DATA
R2 - M; R3 n (Temp)
I - USED

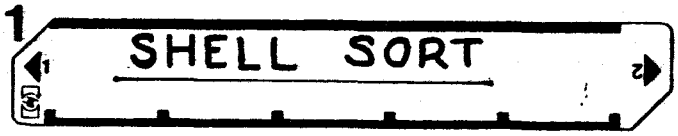
→ LABELS:
D - SORT
0-4 USED

→ FLAGS:
F2 - USED

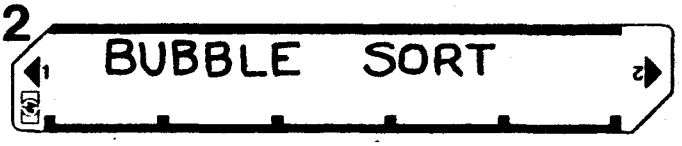
SEE ARTICLE DESCRIBING PROGRAM ELSEWHERE THIS ISSUE.

1. SHELL SORT BY: A. B. BABCOCK, JR. #2154
2. BUBBLE SORT BY:

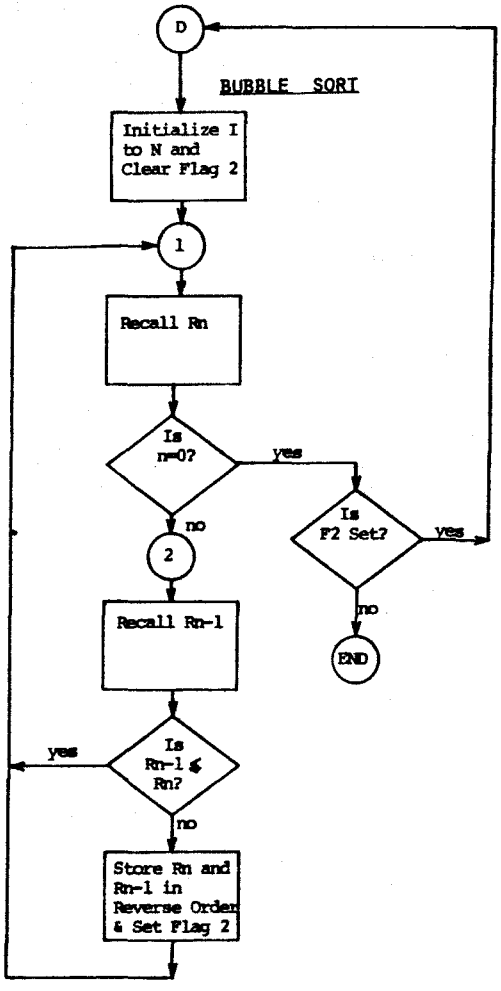
1

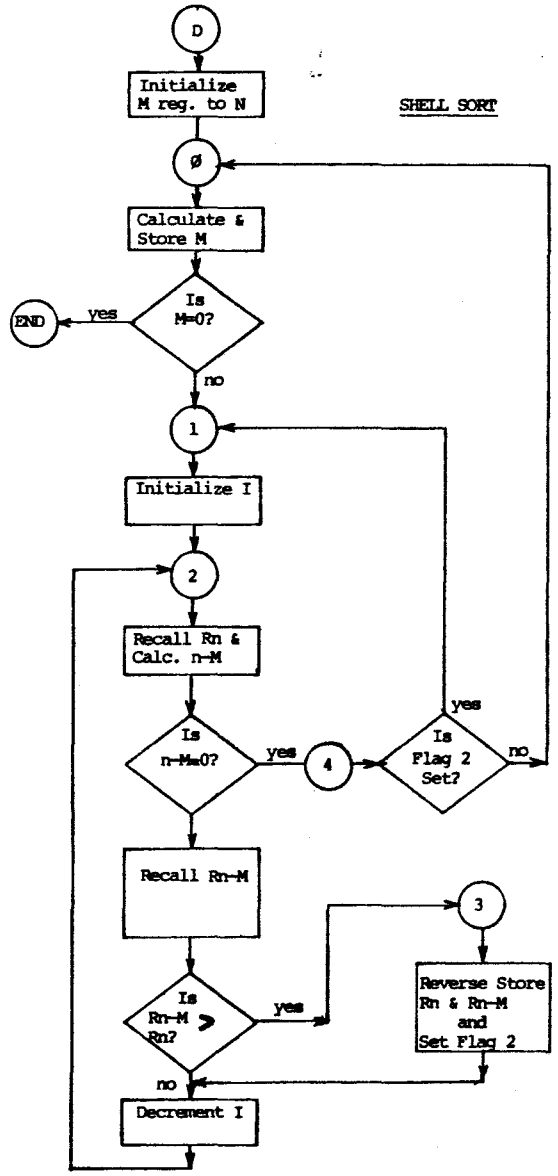


2



STEP	INSTRUCTIONS	INPUT DATA/UNITS	KEYS	OUTPUT DATA/UNITS
1	LOAD SIDE 1 OF PROGRAM CARD			
	AFTER REGISTERS R1 THROUGH			
	RS22 HAVE BEEN STORED WITH			
	DATA TO BE SORTED.			
2	SORT		D	
3	REVIEW DATA REGISTERS FOR			
	SORTED VALUES		h REG.	
	NOTES: ① NUMBER OF DATA TO			
	BE SORTED SHOULD BE IN R0			
	② SORTS R1-RN (RN≤22) IN AS-	0		
	SENDING ORDER.			
	③ MAX RUN TIME (22 DATA) 1-2:45 2-6:06			





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