

# Program Description I

Program Title Blackjack - Las Vegas Style

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Program Description, Equations, Variables, etc. This blackjack game incorporates all the standard Las Vegas rules with the following minor exceptions: (i) a player cannot split pairs, and (ii) a natural 21 does not win for the dealer (although it does win for the player).

A player may at any time change the random variable seed by pressing F A. The order of the display following a player's move is always:

- 1.) 0
- 2.) dealer's up card
- 3.) player's last dealt card
- 4.) player's current total

The only exception is when the player is dealt a natural 21, at which time he always wins. Aces are counted as 11 if total is less than 11, or 1 if total is greater than 11. If an ace has previously been counted as 11 and the player busts, then the total is automatically reset to count the ace as 1.

Following a dealer's move, the display will always flash:

- 1.) the player's final total
- 2.) the dealer's final total
- 3.) the appropriate response: 55178 ("Bliss"), 3507.1 ("I Lose"), or no response if there is a tie.

Operating Limits and Warnings The dealing of cards tends to take a long time as the number of cards in the deck get close to 0. At this point a player may wish to re-enter the number of decks and proceed anew.

This program has been verified only with respect to the numerical example given in *Program Description II*. User accepts and uses this program material AT HIS OWN RISK, in reliance solely upon his own inspection of the program material and without reliance upon any representation or description concerning the program material.

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# Program Description II

Sketch(es)

Sample Problem(s) 1.) Initialize by pressing A; 2.) use one deck of cards - key in "1" and press B. 3.) To deal, press C; display will flash: 0, 10, 7, 10 which means that the dealer's up card is a ten, the player's up card is a seven, and the player's total is 10; 4.) Take a card - press D; display will then flash: 0, 10, 2, 12 which implies that player was dealt a "2" and now has a total of 12. Take another hit; display will flash "22", then "20", then 55178 to indicate dealer has won.

Note that the order of display if player has not busted is always

- 1.) 0
- 2.) dealer's up card
- 3.) last card dealt to player
- 4.) player's current total

unless player is dealt a natural 21, in which case he wins automatically.

~~Solution(s)~~ Also note that player may at any time change random number seed by pressing f a.

Reference(s)



STEP	KEY ENTRY	KEY CODE	COMMENTS	STEP	KEY ENTRY	KEY CODE	COMMENTS
001	f LBL A	31 25 11	initialize random number seed		STD D	33 14	display: D dealer's up play last players to
	.	03			g GSB fd	22 31 14	
	5	05			f LBL 6	31 25 06	
	2	02		060	D	00	
	8	08			↑	41	
	4	04			RCL D	34 14	
	1	01			RCL B	34 12	
	6	06			RCL A	34 11	
	3	03			g STK	32 84	
					h RTN	35 22	
010	STD E	33 15	enter # of decks to be used		f LBL D	31 25 14	
	CLX	44			f GSB 1	31 22 01	
	R/s	84			STD B	33 12	
	f LBL B	31 25 12		070	RCL A	34 11	
	5	05			h X $\geq$ y	35 52	
	2	02			f GSB 3	31 22 03	
	X	71			STD A	33 11	
	STD 0	33 00			GTO 6	22 06	
	1	01			f LBL E	31 25 15	
	3	03			h SFI	35 51 01	
020	h ST I	35 33	change random number seed		h CFI	35 61 00	
	÷	81			g LBL fc	32 25 13	
	1	01			f GSB 1	31 22 01	
	+	61		080	RCL D	34 14	
	f LBL D	31 25 00			f GSB 3	31 22 03	
	STD (i)	33 24			STD D	33 14	
	f DSZ	31 33			1	01	
	GTO 0	22 00			2	02	
	CLX	44			g X>y	32 81	
	R/s	84			GTO fc	22 31 13	
030	g LBL fa	32 25 11	deal		RCL D	34 14	dealer & player tie
	RCL E	34 15			RCL A	34 11	
	↑	41			g X>y	32 81	
	h y <sup>x</sup>	35 63		090	GTO fd	22 31 14	
	STD E	33 15			h X $\geq$ y	35 52	
	CLX	44			g X>y	32 81	
	R/s	84			GTO fe	22 31 15	
	f LBL C	31 25 13			f -x-	31 84	
	DSP 0	23 00			h X $\geq$ y	35 52	
	h CFI	35 61 00			f -x-	31 84	
040	h CFI	35 61 01	check to see if player has natural 21		R/s	84	player wins
	f GSB 1	31 22 01			g LBL fd	32 25 14	
	STD D	33 14			RCL A	34 11	
	f GSB 1	31 22 01		100	f -x-	31 84	
	STD B	33 12			RCL D	34 15	
	f GSB 1	31 22 01			f -x-	31 84	
	STD A	33 11			3	03	
	RCL B	34 12			5	05	
	f GSB 3	31 22 03			0	00	
	STD A	33 11			7	07	
050	2	02			.	03	(deals a card)
	1	01			1	01	
	g X $\neq$ y	32 61			DSP 1	23 01	
	GTO 6	22 06		110	R/s	84	
	f GSB 1	31 22 01			f LBL 1	31 25 01	
	RCL D	34 14			0	00	
	+	61					

## REGISTERS

0 total # of cards remaining	1 # aces	2 # 2's	3 # 3's	4 # 4's	5 # 5's	6 # 6's	7 # 7's	8 # 8's	9 # 9's
S0 # 10's	S1 # jacks	S2 # queens	S3 # kings	S4	S5	S6	S7	S8	S9
A player's current total	B player's last card	C	D dealer's total	E random # seed	I used				

STEP	KEY ENTRY	KEY CODE	COMMENTS	STEP	KEY ENTRY	KEY CODE	COMMENTS
	h ST I	35 33	checks to see if all cards dealt		1	01	
	g DSZ (i)	32 33		170	h X <del>zy</del> y	35 52	
	GTO 2	22 02			g X <del>zy</del> y	32 71	
	h <del>x</del>	35 62			h RTN	35 22	
	f LBL 2	31 25 02			h F? 0	35 71 00	
	RCL E	34 15			GTO 8	22 08	
	g	09			h F? 1	35 71 01	
120	g	09			STD D	33 14	
	7	07			h F? 1	35 71 01	
	X	71			GTO f <del>8</del>	22 31 14	
	g FRAC	32 83	checks to see if all of one denomination dealt		STD A	31 11	dealer wins
	STD E	33 15		180	f GSB 1	31 22 01	
	1	01			RCL A	34 11	
	4	04			h X <del>zy</del> y	35 52	
	X	71			RCL D	34 14	
	f INT	31 83			+	61	
	f X=0	31 51			g LBL fe	32 25 15	
130	GTO 2	22 02			h X <del>zy</del> y	35 52	
	h ST I	35 33			f -X-	31 84	
	g DSZ (i)	32 33			h X <del>zy</del> y	35 52	
	GTO 9	22 09	converts jacks, queens, + kings to ten	190	f -X-	31 84	
	g ISZ (i)	32 34			5	05	
	GTO 2	22 02			5	05	
	f LBL 9	31 25 09			1	01	
	1	01			7	07	
	0	00			8	08	
	g X <del>zy</del> y	32 81			R/S	84	
140	h X <del>zy</del> y	35 52			f LBL 8	31 25 08	
	h RTN	35 22			h CF 0	35 61 00	
	f LBL 3	31 25 03			1	01	
	1	01	(aces check)		0	00	
	g X=y	32 51		200	-	51	
	GTO 4	22 04			h RTN	35 22	
	h R <del>u</del>	35 53					
	h X <del>zy</del> y	35 52					
	1	01					
	g X=y	32 51					
150	GTO 4	22 04					
	h R <del>u</del>	35 53					
	+	61					
	GTO 7	22 07					
	f LBL 4	31 25 04		210			
	h R <del>u</del>	35 53					
	h X <del>zy</del> y	35 52					
	1	01					
	1	01					
	g X <del>zy</del> y	32 71					
160	GTO 5	22 05					
	h SFO	35 51 00					
	+	61					
	h RTN	35 22					
	f LBL 5	31 25 05		220			
	h R <del>u</del>	35 53					
	+	61					
	f LBL 7	31 25 07					
	2	02					

LABELS					FLAGS	SET STATUS		
A Initialize random # seed	B Initialize # of decks	C Deal	D Hit player	E Dealer's play	0 aces	FLAGS ON OFF 0 <input type="checkbox"/> <input checked="" type="checkbox"/> 1 <input type="checkbox"/> <input checked="" type="checkbox"/> 2 <input type="checkbox"/> <input checked="" type="checkbox"/> 3 <input type="checkbox"/> <input checked="" type="checkbox"/>	TRIG DEG <input checked="" type="checkbox"/> GRAD <input type="checkbox"/> RAD <input type="checkbox"/>	DISP FIX <input checked="" type="checkbox"/> SCI <input type="checkbox"/> ENG <input type="checkbox"/> n 0
a change random # seed	b	c used	d player wins	e dealer wins	1 signifies Dealer's turn			
0 used	1 changes rand. # to card, etc	2 used	3 checks for aces	4 used	2			
5 used	6 display	7 used	8 used	9 used	3			