

00344C PROGRAM DESCRIPTION I

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Program Title TWELVE LETTER HANGMAN
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Program Description, Equations, Variables PROGRAM OVERVIEW
THIS PROGRAM PLAYS THE TIMELESS GAME OF HANGMAN. A TWO PLAYER GAME,
PLAYER 1 HIDES A WORD (OR WORDS) OF UP TO 12 LETTERS (INCLUDING SPACES).
THE CALCULATOR WILL THEN DISPLAY AN ASTERISK IN EACH POSITION WHERE A
HIDDEN LETTER EXISTS. (SPACES IN THE HIDDEN WORD WILL ALWAYS BE SHOWN
AS BLANKS.) PLAYER 2 THEN GUESSES A LETTER (OR THE WHOLE WORD -
[REDACTED]
[REDACTED] MORE ABOUT THIS LATER), AND THE CALCULATOR WILL SEARCH THE
HIDDEN WORD FOR THE GUESSED LETTER. AFTER THE SEARCH, THE CALCULATOR
WILL DISPLAY THE STATUS OF PLAYER 2'S GUESSES: EACH CORRECTLY
GUESSED LETTER WILL APPEAR IN ITS CORRESPONDING POSITION, WHILE UNGUESSED
LETTERS WILL BE SHOWN AS ASTERISKS.

Necessary Accessories ONE MEMORY MODULE
Operating Limits and Warnings THE HIDDEN WORD MUST CONTAIN 12 CHARACTERS; THUS AN 8
LETTER WORD MUST BE FOLLOWED BY 4 SPACES.
FLAGS 11 & 12 ARE USED - THEY ARE SPECIAL PURPOSE FLAGS AND ARE
NOT MAINTAINED BY CONTINUOUS MEMORY.

Reference(s) HP-41C STANDARD APPLICATIONS BOOK P. 18

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PROGRAM OVERVIEW (CONT.)

(CONTINUATION PAGE)

PLAYER 2 IS ALLOWED ONLY SIX WRONG GUESSES. UPON THE SEVENTH WRONG GUESS, PLAYER 2 IS HANGED, AND THE HIDDEN WORD IS REVEALED, ALONG WITH THE TOTAL NUMBER OF GUESSES. AFTER EACH WRONG GUESS, THE NUMBER OF WRONG GUESSES IS IN THE X REGISTER, SO TAKING THE CALCULATOR OUT OF ALPHA MODE WILL SHOW HOW MANY WRONG GUESSES PLAYER 2 HAS MADE.

WHEN A CORRECT GUESS IS MADE, THE FLAG OO ANNUNCIATOR WILL MOMENTARILY TURN ON. ALSO, WHEN A LETTER IS GUESSED, THE FLAG CORRESPONDING TO THE LETTER POSITION WILL BE SET, AND THAT POSITION WILL NEVER AGAIN BE TESTED - SPEEDING THE SEARCH PROCESS. WHEN ALL THE LETTERS OF THE HIDDEN WORD HAVE BEEN GUESSED, THE GAME IS OVER; THE CALCULATOR WILL CONFIRM THE HIDDEN WORD AND DISPLAY THE NUMBER OF GUESSES MADE.

RUNNING THE PROGRAM

TO RUN THE PROGRAM, LOAD THE PROGRAM AND PRESS R/S (OR XEQ "HANG"). THE DISPLAY WILL PROMPT PLAYER 1 FOR THE HIDDEN WORD (IN ALPHA MODE).

NOTE: THE HIDDEN WORD MUST TOTAL 12 CHARACTERS, SO IF THE WORD HAS 8 LETTERS, INPUT THE WORD, AND PRESS "SPACE" 4 TIMES. THEN PRESS R/S. THE CALCULATOR WILL THEN PERFORM THREE OPERATIONS, EACH SLIGHTLY TIME-CONSUMING. FIRST, THE HIDDEN WORD IS BROKEN APART LETTER BY LETTER. THEN, THE CALCULATOR WILL SEARCH FOR SPACES IN THE WORD. IF A SPACE IS FOUND, THE FLAG CORRESPONDING TO THAT POSITION WILL BE SET; THE POSITION WILL ALWAYS DISPLAY BLANK AND WILL NEVER AGAIN BE TESTED. FINALLY, THE DISPLAY IS BUILT - AN ASTERISK FOR EACH LETTER OF THE HIDDEN WORD OR WORDS, AND A BLANK FOR EVERY SPACE. THIS STATUS - THE DISPLAY OF ASTERISKS, BLANKS (AND LETTERS) - IS THE PROMPT FOR A GUESS FROM PLAYER 2.

TO GUESS A LETTER, SIMPLY INPUT THE LETTER AND PRESS R/S. THIS INITIATES THE SEARCH PROCESS. IF THE LETTER IS NOT FOUND, THE CALCULATOR WILL FIRST DETERMINE IF THE GUESS WAS FATAL (THE SEVENTH WRONG GUESS HANGS PLAYER 2). IF PLAYER 2 IS STILL ALIVE, THE DISPLAY WILL BE REBUILT, PROMPTING PLAYER 2 FOR ANOTHER GUESS. IF, HOWEVER, THE GUESS IS CORRECT, THE CALCULATOR FIRST DETERMINES IF THE HIDDEN WORD IS COMPLETELY GUESSED. IF THE WORD IS COMPLETED, THE DISPLAY WILL SHOW "DONE," THE HIDDEN WORD, AND THE NUMBER OF GUESSES TAKEN. (FROM HERE, TO START THE GAME ANEW, PRESS R/S; AFTER CLEARING, THE CALCULATOR WILL PROMPT PLAYER 1 FOR ANOTHER HIDDEN WORD.) IF THE HIDDEN WORD IS NOT COMPLETED BY THE LAST GUESS, THE DISPLAY WILL BE BUILT SHOWING THE NEW STATUS OF GUESSED LETTERS - PROMPTING PLAYER 2 FOR ANOTHER GUESS.

TO GUESS THE WHOLE WORD, INPUT THE WORD WITH SPACES AT THE END AS NEEDED TO MAKE THE WORD 12 CHARACTERS, AND EXECUTE LOCAL LABEL α (ALPHA, Σ -). IF THE GUESS IS CORRECT, THE DISPLAY WILL SHOW "DONE," THE WORD, AND THE NUMBER OF GUESSES. IF THE GUESS IS WRONG, THE SAME PROCESS WILL OCCUR AS WHEN AN INCORRECT LETTER GUESS IS MADE.

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Sample Problem (Sketch if Desired)

PLAYER 1 HIDES WORD "HP IS GREAT"

NOTE: WORD IS 11 CHARACTERS LONG. SINCE THE HIDDEN WORD MUST TOTAL 12 CHARACTERS, THERE WILL BE AN ADDITIONAL "SPACE" AT THE END OF THE WORD.

SOLUTION:

Input	Function	Display	Comments
	USER		SET USER MODE
	[XEQ] SIZE 020		MINIMUM SIZE
	[XEQ] HANG	WORD?	PROMPTS PLAYER 1 FOR WORD
HP_IS_GREAT	R/S	** ** *****	PLAYER 1 INPUTS "HP_IS_GREAT." (NOTE SPACE IN POSITION 12)
			PRESS R/S TO HIDE WORD.
			ASTERISKS & SPACES SHOW FORM OF HIDDEN WORD AND PROMPT PLAYER 2 FOR GUESS.
E	R/S	** ** **E**	PLAYER 2 GUESSES "E". GUESS IS CORRECT. DISPLAY SHOWS STATUS PLAYER 2 PROMPTED FOR ANOTHER GUESS.
A	R/S	** ** **EA*	GUESS "A" CORRECT
S	R/S	** *S **EA*	GUESS "S" CORRECT
P	R/S	*P *S **EA*	GUESS "P" CORRECT
M	R/S	*P *S **EA*	GUESS "M" INCORRECT
	[ALPHA]	1.0000	CHECK NO. OF INCORRECT GUESSES
	[ALPHA]	*P *S **EA*	RESTORE DISPLAY
T	R/S	*P *S **EAT	GUESS "T" CORRECT
HP_IS_GREAT	[ALPHA] [a]	DONE WORD IS HP_IS_GREAT YOU TOOK 7 GUESSES	WORD GUESS (NOTE "SPACE" IN POSITION 12) GUESS IS CORRECT
	R/S	WORD?	CLEARs CALCULATOR. PROMPTS PLAYER 1 FOR ANOTHER WORD.

00344C USER INSTRUCTIONS

				SIZE: (HP-41C) 020
STEP	INSTRUCTIONS	INPUT	FUNCTION	DISPLAY
1	ENTER PROGRAM, CHECK STATUS, SET USER MODE			
2	EXECUTE		R/S	WORD?
2	OR EXECUTE		XEQ HANG	WORD?
3	PLAYER 1 INPUTS HIDDEN WORD*	HIDDEN WORD	R/S	ASTERISKS AND SPACES DEPENDING ON FORM OF HIDDEN WORD
4	PLAYER 2 GUESSES LETTER	LETTER	R/S	ASTERISKS, SPACES AND/OR LETTERS
4	OR PLAYER 2 GUESSES WORD *	GUESSED WORD	ALPHA SHIFT A	IF NOT DONE
5	REPEAT STEP 4 UNTIL DONE			
6	IF DONE			"DONE"
				"WORD IS"
				" HIDDEN WORD "
				"YOU TOOK"
	OR			" _ GUESSES"
6	IF PLAYER 2 IS HANGED			"FATAL ERROR"
				"WORD IS"
				" HIDDEN WORD "
				"YOU TOOK"
				" _ GUESSES"
7	TO START NEW GAME		R/S	WORD?
	AND RETURN TO STEP 3			
	* WHENEVER INPUTTING THE WORD			12 CHARACTERS MUST BE USED.
	FOR EXAMPLE, TO INPUT A 9-LETTER WORD, INPUT THE WORD			
	FOLLOWED BY 3 "SPACES."			

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PROGRAM LISTING

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STEP/ LINE	KEY ENTRY	KEY CODE (67/97 only)	COMMENTS	STEP/ LINE	KEY ENTRY	KEY CODE (67/97 only)	COMMENTS
01	LBL HANG		INITIALIZATION: CLEAR REGISTERS & FLAGS 00-12	51	I		BUILD DISPLAY
	CLRG				ST+19		
	.012				LBL 17		
	STO 00				ISG 00		
	LBL 14				GTO 15		
	CF IND 00				CLA		
	ISG 00				GTO \$		
	GTO 14		PROMPT PLAYER 1 FOR HIDDEN WORD.		LBL P		PROMPT PLAYER 2 FOR GUESS
	"WORD?"				CF 00		
10	AON			60	AON		
	PROMPT				X<?Y		
	ASTO 13				PROMPT		
	ASTO 15				I		
	ASHF				ST+18		
	ASTO 14		BREAK HIDDEN WORD INTO INDIVIDUAL LETTERS.		LBL SRCH		SEARCH FOR LETTER
	ASTO 16				I.012		
	LBL DSPEL				STO 00		
	12.006				ASTO Y		
	STO 00				LBL 06		
20	LBL 01			70	CLA		
	" "				FS? IND 00		SKIP IF FLAG N SET
	ARCL 14		STORE LETTERS IN MEMORIES 01 THROUGH 12		GTO 07		
	ASTO 14				ARCL IND 00		
	ASHF				ASTO X		
	ASTO IND 00				X≠Y?		
	DSE 00				GTO 07		
	GTO 01				SF 00		IF LETTER FOUND SET 00 SET FLAG N
	G				SF IND 00		
	STO 00		SEARCH FOR SPACES.		I		
30	LBL 02			80	ST+19		
	" "				LBL 07		
	ARCL 13				ISG 00		
	ASTO 13				GTO 06		
	ASHF				FS? 00		IF LETTER FOUND TEST IF WORD COMPLETE
	ASTO IND 00				GTO 0		
	DSE 00		SEARCH FOR SPACES.		LBL T		
	GTO 02				G		
	LBL 5				RCL 17		IF LETTER NOT FOUND, TEST IF FATAL
	CLA				I		
40	I.012			90	+		
	STO 00				STO 17		
	" "				X<=Y?		
	ASTO Y				GTO \$		NOT FATAL - BUILD DISPLAY FATAL ERROR
	LBL 15		IF SPACE EXISTS IN MEMORY N SET FLAG N		"FATAL ERROR"		
	CLA				LBL 10		
	ARCL IND 00				AVIEW		
	ASTO X				PSE		
	X≠Y?				"WORD IS"		
	GTO 17				AVIEW		
50	SF IND 00			100	PSE		

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STEP/ LINE	KEY ENTRY	KEY CODE (67/97 only)	COMMENTS	STEP/ LINE	KEY ENTRY	KEY CODE (67/97 only)	COMMENTS
101	CLA			151	X ≠ Y ?		
	ARCL 15		SHOW HIDDEN WORD		GTO T		INCORRECT GUESS TEST IF FATAL
	ARCL 16				CLA		
	AVIEW				ARCL 16		
	PSE				ASTO Y		
	"YOU TOOK"				CLA		
	AVIEW				ARCL 14		
	PSE				ASTO X		
	CLA				X ≠ Y ?		
110	CF 29			160	GTO T		CORRECT, "DONE"
	FIX 0				GTO 11		
	ARCL 18		SHOW NO. OF GUESSES MADE		END		
	"I GUESSES"						
	PROMPT						
	GTO HANG						
	LBL 0		CHECK IF WORD COMPLETE				
	12						
	RCL 19						
	X ≠ Y ?						
120	GTO \$		NOT COMPLETE-BUILD DISPLAY	70			
	LBL 11		COMPLETE "DONE" GTO 10				
	"DONE"						
	GTO 10						
	LBL \$						
	1.012		BUILD DISPLAY				
	STO 00						
	CLA						
	LBL 03						
	FC? IND 00						
130	GTO 04		FLAG N SET-RECALL N	80			
	ARCL IND 00						
	LBL 05						
	ISG 00						
	GTO 03						
	GTO P		FLAG N CLEAR SHOW *				
	LBL 04						
	"I *"						
	GTO 05						
	LBL 0		WORD GUESS	90			
140	I						
	ST+ 18						
	ASTO 13						
	ASHF						
	ASTO 14						
	CLA						
	ARCL 15						
	ASTO Y						
	CLA						
	ARCL 13						
150	ASTO X			00			

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ROW 1 (1 - 3)



ROW 2 (4 - 9)



ROW 3 (9 - 17)



ROW 4 (17 - 18)



ROW 5 (18 - 26)



ROW 6 (26 - 34)



ROW 7 (35 - 40)



ROW 8 (40 - 46)



ROW 9 (46 - 53)



ROW 10 (53 - 58)



ROW 11 (58 - 65)



ROW 12 (65 - 68)



ROW 13 (69 - 76)



ROW 14 (77 - 84)



ROW 15 (84 - 89)



ROW 16 (90 - 94)



ROW 17 (94 - 98)



ROW 18 (98 - 105)



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ROW 19 (106 - 110)



ROW 20 (110 - 113)



ROW 21 (113 - 116)



ROW 22 (116 - 122)



ROW 23 (122 - 125)



ROW 24 (125 - 133)



ROW 25 (134 - 139)



ROW 26 (140 - 147)



ROW 27 (148 - 155)



ROW 28 (155 - 162)



ROW 29 (162 - 162)

