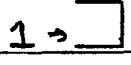
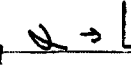
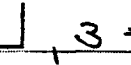
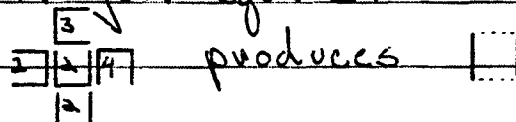


00663C PROGRAM DESCRIPTION I

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Program Title Maze: Construction and Play
Contributor's Name Layne K Johnson
Address 5502 W 8th
City Kennewick State/Country Wash. Zip Code 99336

Program Description, Equations, Variables The program makes a path through the maze. Path construction is governed by two things: One, it can't double back upon itself, and Two, the path can't exit through the bottom. Each square is represented by a number 0-5, and each number has its own meaning: 0 → depends on difficulty, 1 → , 2 → , 3 → , 4 → , 5 → out of bounds. The second half of the program allows the user to play the maze by interpreting the numbers. The program AKA's the four square's walls that surround you with the walls in your square.

Example 

Necessary Accessories 1 memory module
Operating Limits and Warnings If you exceed the boundaries of the maze you will be in a square with four walls. Go back through the wall you just went through.

Reference(s) _____

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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006630 USER INSTRUCTIONS

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SIZE:
(HP-41C) 026

STEP	INSTRUCTIONS	INPUT	FUNCTION	DISPLAY
1.	Enter the Program, set status			
2.	Input seed ($0 < x < 1$)	seed	XEQ "Maze"	
	The Program will now generate the maze.			
	Flag 1 indicator will come on as the program generates the path			
	Flag 2 will come as the program completes the maze.			
	When the maze is done the calculator will Beep and turn off.			
3.	Turn Calculator on, set User			
4.	Start the Program		A	DIFFICULTY?
5.	Select Difficulty level, 0-3 where zero is the most easy and three the hardest	0-3	R/S	*
6.	Input direction you wish to go B- Left D- Right C- UP E- Down		B, C, D, E	*
7.	Repeat step 6 till you exit maze. Exit shown by "OUT"			
*	Left, Top, Right, Bottom - Position □ → opening ■ → wall			

□ 67 □ 97 ■ 41C

STEP/ LINE	KEY ENTRY	KEY CODE (67/97 only)	COMMENTS	STEP/ LINE	KEY ENTRY	KEY CODE (67/97 only)	COMMENTS
01	L61 ^T Mazd		Initialize	51	XEQ 19		Increment Pointer
	CLRG				ST+ 100 25		and 25 according
	STO 24				RCL 20		to random square
	-5				XEQ 17		checks if space
	107X				RCL 100 25		for next square
	STO 23				RCL 23		is open- True
	10				/		go for another
	STO 21				INT		square- False
	STO 25				RCL 21		delete last square
10	3F 01			60	/		
	L61 12				FRC		
	1		25 = 0 maximum		X=0?		
	3		random no. = 3		GTO 00		
	RCL 25				2		
	10		25 ≠ 0 maximum		RCL 20		Set up to
	-		random no. = 4		X>2?		delete last
	X=0?				CHS		square
	R↓				+		
	+				ABS		
20	XEQ 18		Get Random No.	70	XEQ 17		
	1				XEQ 19		Delete last square
	+				ST- 100 25		
	STO 20				1		5 tries to place
	3				ST+ 22		a square?
	X≠2?		Check if Maze		RCL 22		
	GTO 00		exited right side		5		True- start all
	RCL 23				X>2?		over
	-9		True, go to		GTO 12		False- try again
	107X		randomize section		RCL 24		
30	X=2?			80	GTO ^T MAZE		
	GTO 14				L61 00		Clean counter
	L61 00		Check if Maze		STO 22		Go for another square
	RCL 20		exited left side		GTO 12		
	1				L61 17		
	X≠2?				1		Increment,
	GTO 00		True, go to		X≠2?		Decrement
	RCL 23		randomize section		GTO 00		Pointer and 25
	.1				RCL 21		according to
	X=2?				STX 23		random square
40	GTO 14			90	RTN		
	L61 00		Check if Maze		L61 00		Square equal to:
	RCL 20		exited top side		R↓		
	2				2		1 → Pointer ÷ 10
	X≠2?				X=2?		2 → Increment 25
	GTO 00		True, go to		15G 25		3 → Pointer x 10
	RCL 25		randomize section		R↓		4 → Decrement 25
	19				3		
	X=2?				X≠2?		
	GTO 14				GTO 00		
50	L61 00			100	RCL 21		

00663C

PROGRAM LISTING

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□ 67 □ 97 ■ 41C

STEP/ LINE	KEY ENTRY	KEY CODE (67/97 only)	COMMENTS	STEP/ LINE	KEY ENTRY	KEY CODE (67/97 only)	COMMENTS
101	ST/ 23			151	GTO 13		
	RTN				LSB 25		loop limit
	LSI 00				GTO 20		
	R↓				CF 02		stop now
	4				CLST		
	X=4?				BEEP		
	USE 25				OFF		
	RTN				LSI 16		
	LSI 14				4.789		
110	XEQ 19			160	LSI 18		
	ST+ IND 25		Set up Register		RCL 24		Random no.
	RCL 25		Containing exit		9821		Generator
	RCL 21		square position		X		
	X				.211327		
	RCL 23				+		
	LOG				FRC		
	CHS				STO 24		
	1				X		
	-				INT		
120	+			170	RTN		
	STO 22				LSI 19		Place random
	10.019		Initialize for		RCL 20		square connect
	STO 25		Randomize routine		RCL 23		placement over
	CF 01				X		
	SF 02				RTN		
	LSI 20				LSI A		
	RCL 21				FIX 0		
	LSI 13				.0111		Initiatize
	STO 20				STO 01		Registers
130	RCL IND 25			180	XEQ 03		
	RCL 20				STO 04		
	X				XEQ 03		
	INT				STO 03		
	RCL 21				XEQ 03		
	/				STO 02		
	FRC				.2222		
	X≠0?				STO 05		
	GTO 00				DIFFICULTY?		
	XEQ 16				PROMPT		
140	RCL 20		Randomize	190	3		Select and
	/		routine		X>4?		Set up difficulty
	ST+ IND 25				X<4?		Level
	LSI 00				STO 63		
	RCL 21				4		
	107X				+		
	RCL 21		Increment for		XEQ IND X		
	STX 20		next line or		104		
	R↓		square		STO 09		Start
	RCL 20				GTO 10		
150	X≠4?			200	LSI 03		

□ 67 □ 97 ■ 41C

STEP/ LINE	KEY ENTRY	KEY CODE (67/97 only)	COMMENTS	STEP/ LINE	KEY ENTRY	KEY CODE (67/97 only)	COMMENTS
201	RCL 21		Rotate Sub routine	251	ST+ 06		Reduce .XXXX to finale output (loop)
	X				5		
	FRC				STO 25		
	Last X				---		
	INT				L61 08		
	4				DSE 26		
	107X				GTO 00		
	/				GTO 02		
	+				L61 00		
210	RTO			260	RCL 06		
	L61 10		Display Generation Routine		RCL 21		Combine position with Alpha display of open and closed walls
	0				X		
	XEQ 01				FRC		
	STO 06				STO 06		
	-1				Last X		
	XEQ 01				INT		
	1 E3				2		
	X				X > Y?		
	INT				GTO 00		
220	RCL 21			270	TF 0		
	/		Recalls walls surrounding occupied square ANDs them with occupied square's walls and combines in one register in the form .XXXX		GTO 08		Move left
	FRC				L61 00		
	ST+ 06				TF 0		
	RCL 21				GTO 08		
	XEQ 01				L61 02		
	1 E3				RCL 09		
	X				99		
	FRC				-		
	RCL 21			280	RCL 06		
230	/				+		Move UP
	ST+ 06		Move left		TF -		
	1				ARCL X		
	XEQ 01				PROMPT		
	RCL 21				L61 B		
	X				1		
	INT				ST- 09		
	1 E3				GTO 10		
	/				L61 C		
	ST+ 06				RCL 21		
240	RCL 21		Move Right	290	ST+ 09		
	CHS				GTO 10		Move Down
	XEQ 01				L61 B		
	1 E2				1		
	X				ST+ 09		
	INT				GTO 10		
	RCL 21				L61 E		
	/				RCL 21		
	FRC				ST- 09		
	1 E3				GTO 10		
250	/			300	L61 01		

☐ 67 ☐ 97 ☒ 41C

STEP/ LINE	KEY ENTRY	KEY CODE (67/97 only)	COMMENTS	STEP/ LINE	KEY ENTRY	KEY CODE (67/97 only)	COMMENTS
301	RCL 09		Exited the maze?	351	XEQ 06		Difficulty 1
	RCL 02		Go to win		XEQ 03		.0101
	X=Z?				STO 00		
	GTO 09				RTN		
	R↓		Exceeded lower		LBI 04		Difficulty 0
	+		Maze boundary?		.1111		.1111
	↓		Return with .0000		STO 00		
	107X				RTN		
	X=Z?			359	-END-		
310	GTO 00			360			
	X=Z?		Exceeded upper				
	199		Maze boundary?				
	X≤Z?		Return with .0000				
	GTO 00						
	R↓						
	RCL 01		Exceeded upper				
	/		Maze boundary?				
	STO 05		Return with .0000				
	FRC						
320	RCL 01			70			
	X						
	9						
	X=Z?						
	GTO 00						
	R↓		Recall square				
	107X		pointed to by				
	RCL 100 05		Positional registers				
	X		Return with square				
	FRC		number.				
330	RCL 01		Return with number	80			
	X		representation of				
	INT		square - .XXXX				
	STO 05						
	RCL 100 05		subroutine				
	RTN						
	LBI 00						
	RCL 05						
	RTN						
	LBI 04		Win Display				
340	TOUT			90			
	PROMPT		Difficulty 3				
	LBI 07		.0000				
	CIX						
	STO 00						
	RTN		Difficulty 2				
	LBI 06		.1010				
	.101						
	STO 00						
	RTN						
350	LBI 05			00			

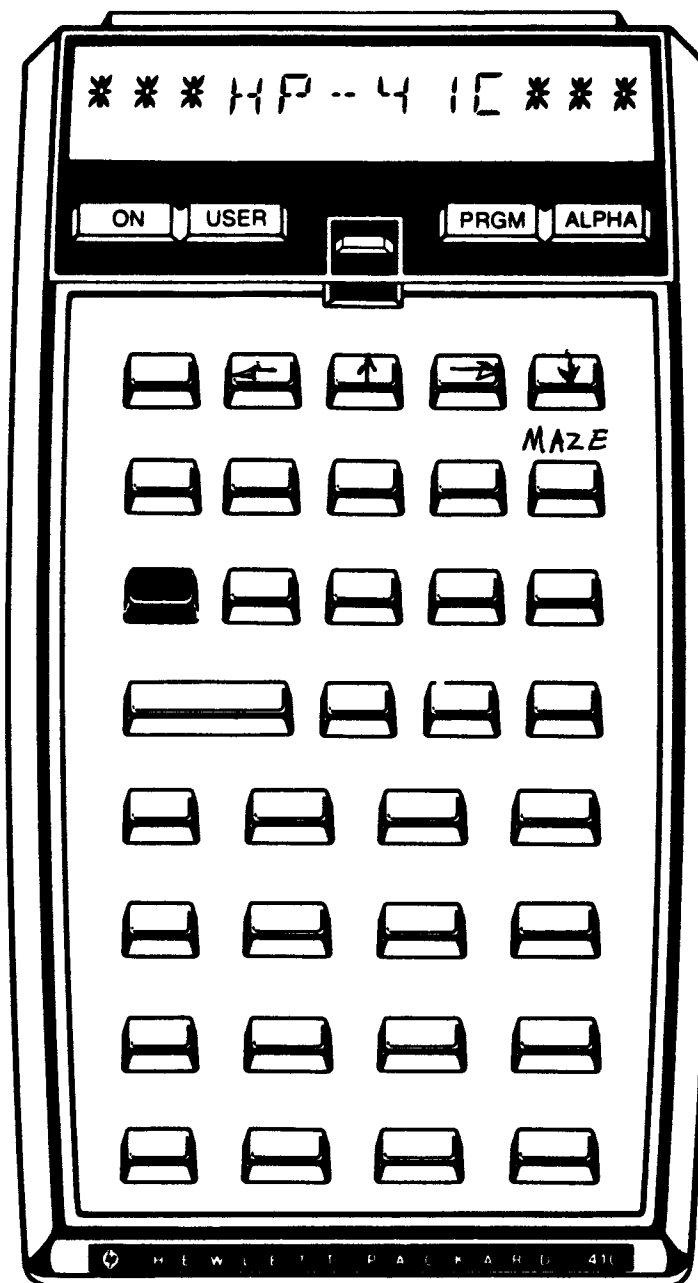
00663C

REGISTERS, STATUS, FLAGS, ASSIGNMENTS

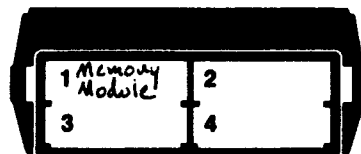
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KEYBOARD CARD LABELING

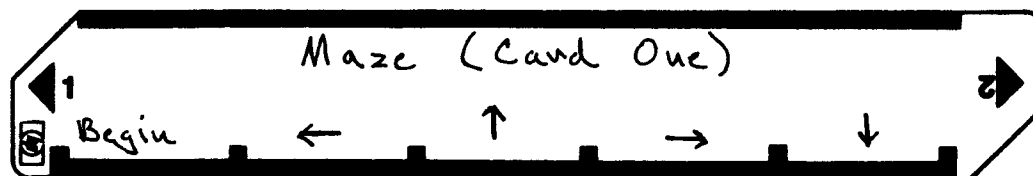
KEYBOARD



SYSTEM
CONFIGURATION



CARD



PROGRAM REGISTERS NEEDED: 88

ROW 1 (1 : 4)



ROW 2 (5 : 12)



ROW 3 (13 : 20)



ROW 4 (21 : 29)



ROW 5 (30 : 38)



ROW 6 (38 : 46)



ROW 7 (47 : 53)



ROW 8 (54 : 61)



ROW 9 (62 : 70)



ROW 10 (71 : 78)



ROW 11 (78 : 83)



ROW 12 (83 : 91)



ROW 13 (92 : 101)



ROW 14 (101 : 110)



ROW 15 (111 : 119)



ROW 16 (120 : 124)



ROW 17 (125 : 131)



ROW 18 (132 : 140)



ROW 19 (140 : 148)



ROW 20 (149 : 155)



ROW 21 (156 : 161)



ROW 22 (162 : 165)



ROW 23 (166 : 174)



ROW 24 (175 : 180)



ROW 25 (180 : 186)



ROW 26 (186 : 188)



ROW 27 (188 : 197)



ROW 28 (197 : 207)



ROW 29 (208 : 216)



ROW 30 (216 : 224)



ROW 31 (224 : 231)



ROW 32 (231 : 238)



ROW 33 (239 : 245)



ROW 34 (246 : 253)



ROW 35 (254 : 260)



ROW 36 (261 : 270)



ROW 37 (270 : 277)



ROW 38 (278 : 286)



ROW 39 (286 : 292)



ROW 40 (293 : 299)



ROW 41 (300 : 310)



ROW 42 (310 : 318)



ROW 43 (318 : 327)



ROW 44 (328 : 337)



ROW 45 (338 : 347)

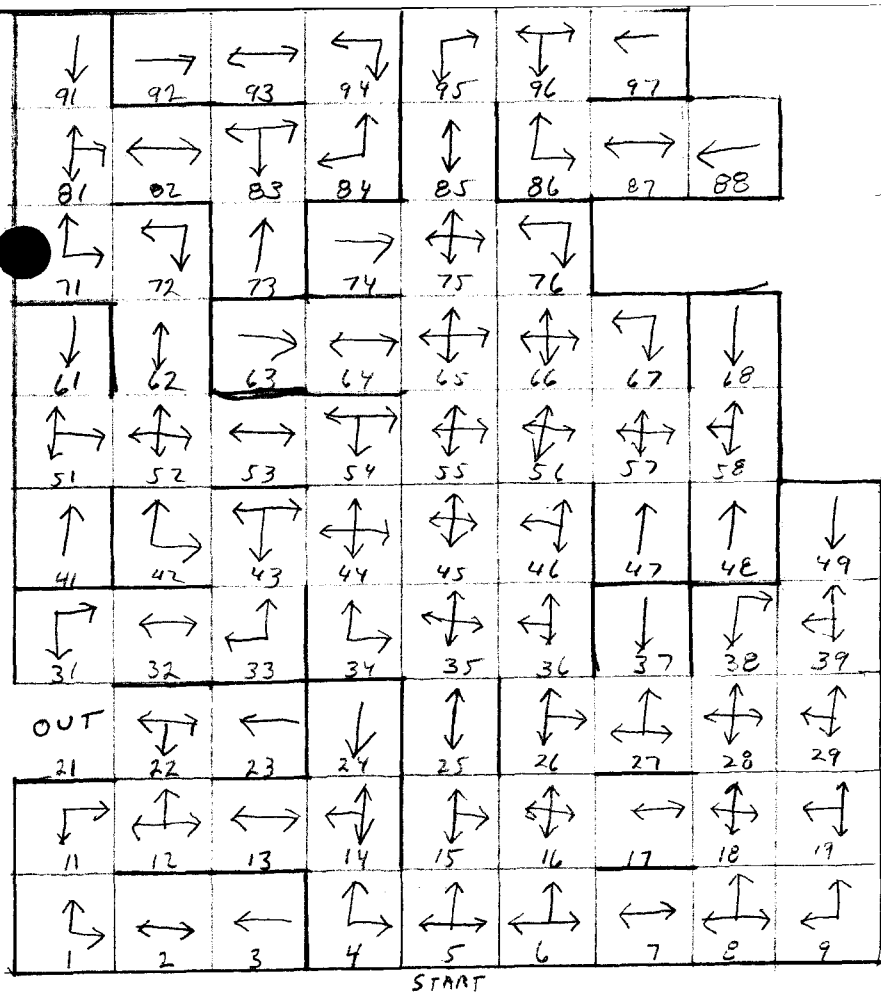


ROW 46 (347 : 353)



ROW 47 (354 : 359)

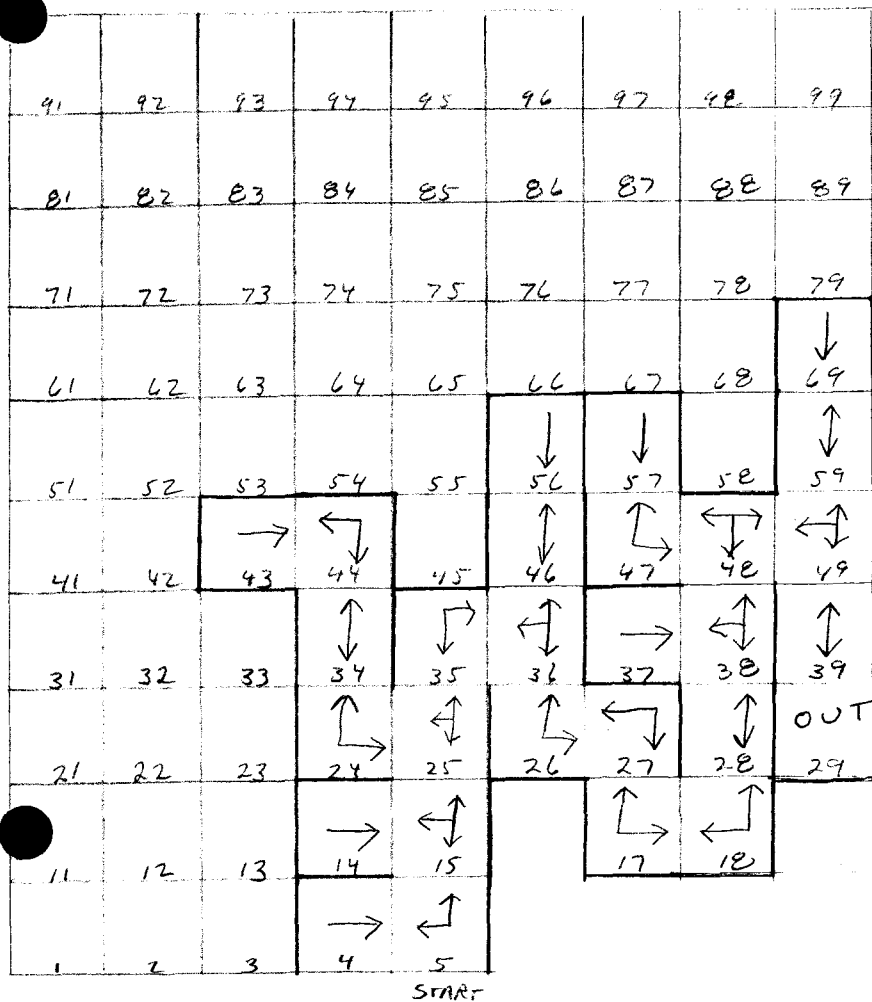




B C D E
← ↑ → ↓

SEED = .8529637919

DIFFICULTY = 3



SEED = .0356819427

DIFFICULTY = 0