

Amazing

This program will print out a different maze every time it is run and guarantees only one path through. You can choose the dimensions of the maze — i.e. the number of squares wide and long.

The original program author was Jack Hauber of Windsor, Connecticut.

AMAZING PROGRAM
CREATIVE COMPUTING MORRISTOWN, NEW JERSEY

WHAT ARE YOUR WIDTH AND LENGTH? 15,20

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10 PRINT TAB(28); "AMAZING PROGRAM"
20 PRINT TAB(15); "CREATIVE COMPUTING MORRISTOWN, NEW JERSEY"
30 PRINT:PRINT:PRINT
100 INPUT "WHAT ARE YOUR WIDTH AND LENGTH";H,V
102 IF H<>1 AND V<>1 THEN 110
104 PRINT "MEANINGLESS DIMENSIONS. TRY AGAIN.":GOTO 100
110 DIM W(H,V),V(H,V)
120 PRINT
130 PRINT
140 PRINT
150 PRINT
160 Q=0:Z=0:X=INT(RND(1)*H+1)
165 FOR I=1 TO H
170 IF I=X THEN 173
171 PRINT ".--":GOTO 180
173 PRINT ". ";
180 NEXT I
190 PRINT "."
195 C:=W(X,1)=C:C+1
200 R=X:S=1:GOTO 260
210 IF R>H THEN 240
215 IF S>V THEN 230
220 R:=1:S=1:GOTO 250
230 R=1:S=S+1:GOTO 250
240 R=R+1
250 IF W(R,S)=0 THEN 210
260 IF R=1,S=0 THEN 530
265 IF W(R-1,S)<>0 THEN 530
270 IF S=1 THEN 390
280 IF W(R,S-1)<>0 THEN 390
290 IF R=H THEN 330
300 IF W(R+1,S)<>0 THEN 330
310 X=INT(RND(1)*3+1)
320 ON X GOTO 790,820,860
330 IF S<>V THEN 340
334 IF Z=1 THEN 370
338 Q=1:GOTO 350
340 IF W(R,S+1)<>0 THEN 370
350 X=INT(RND(1)*3+1)
360 ON X GOTO 790,820,910
370 X=INT(RND(1)*2+1)
380 ON X GOTO 790,820
390 IF R=H THEN 470
400 IF W(R+1,S)<>0 THEN 470
405 IF S<>V THEN 420
410 IF Z=1 THEN 450
415 Q=1:GOTO 430
420 IF W(R,S+1)<>0 THEN 450
430 X=INT(RND(1)*3+1)
440 ON X GOTO 790,860,910
450 X=INT(RND(1)*2+1)
460 ON X GOTO 790,860
470 IF S<>V THEN 490
480 IF Z=1 THEN 520
485 Q=1:GOTO 500
490 IF W(R,S+1)<>0 THEN 520
500 X=INT(RND(1)*2+1)
510 ON X GOTO 790,910
520 GOTO 790
530 IF S=1=0 THEN 670
540 IF W(R,S-1)<>0 THEN 670
545 IF R=H THEN 610
547 IF W(R+1,S)<>0 THEN 610
550 IF S<>V THEN 560
552 IF Z=1 THEN 590
554 Q=1:GOTO 570
560 IF W(R,S+1)<>0 THEN 590
570 X=INT(RND(1)*3+1)
580 ON X GOTO 820,860,910
590 X=INT(RND(1)*2+1)
600 ON X GOTO 820,860
610 IF S<>V THEN 630
620 IF Z=1 THEN 660
625 Q=1:GOTO 640
630 IF W(R,S+1)<>0 THEN 660
640 X=INT(RND(1)*2+1)
650 ON X GOTO 820,910
660 GOTO 820
670 IF R=H THEN 740
680 IF W(R+1,S)<>0 THEN 740
685 IF S<>V THEN 700
690 IF Z=1 THEN 730
695 Q=1:GOTO 830
700 IF W(R,S+1)<>0 THEN 730
710 X=INT(RND(1)*2+1)
720 ON X GOTO 860,910
730 GOTO 860
740 IF S<>V THEN 760
750 IF Z=1 THEN 780
755 Q=1:GOTO 770
760 IF W(R,S+1)<>0 THEN 780
770 GOTO 910
780 GOTO 1000
790 W(R-1,S)=C
800 C=C+1:V(R-1,S)=2:R=R-1
810 IF C=H*V+1 THEN 1010
815 Q=0:GOTO 260
820 W(R,S-1)=C
830 C=C+1
840 V(R,S-1)=1:S=S-1:IFC=H*V+1 THEN 1010
850 Q=0:GOTO 260
860 W(R+1,S)=C
870 C=C+1:IF V(R,S)=0 THEN 880
875 V(R,S)=3:GOTO 890
880 V(R,S)=2
890 R=R+1
900 IF C=H*V+1 THEN 1010
905 GOTO 530
910 IF Q=1 THEN 960
920 W(R,S+1)=C:C=C+1:IF V(R,S)=0 THEN 940
930 V(R,S)=3:GOTO 950
940 V(R,S)=1
950 S=S+1:IF C=H*V+1 THEN 1010
955 GOTO 260
960 Z=1
970 IF V(R,S)=0 THEN 980
975 V(R,S)=3:Q=0:GOTO 1000
980 V(R,S)=1:Q=0:R=1:S=S-1:GOTO 250
1000 GOTO 210
1010 FOR J=1 TO V
1011 PRINT "I";
1012 FOR I=1 TO H
1013 IF V(I,J)<2 THEN 1030
1020 PRINT " ";
1021 GOTO 1040
1030 PRINT " I";
1040 NEXT I
1041 PRINT
1043 FOR I=1 TO H
1045 IF V(I,J)=0 THEN 1060
1050 IF V(I,J)=2 THEN 1060
1051 PRINT " ";
1052 GOTO 1070
1060 PRINT ":-";
1070 NEXT I
1071 PRINT "."
1072 NEXT J
1073 END

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1 100 ' NAME: AMAZING***  
2 105 '  
3 110 ' BY: Jack Hauber and S. J. Garland on 12/13/72  
4 115 '  
5 120 ' DESCRIPTION: Constructs a maze of any size the user wishes (up  
6 125 ' to 25 rows by 23 columns). Each maze is unique and guaranteed  
7 130 ' to have only one solution.  
8 135 '  
9 140 ' INSTRUCTIONS: Type "RUN" for complete instructions.  
10 145 '  
11 150 ' CATEGORY: DEMONS***  
12 155 '  
13 160 ' LANGUAGE: BASIC  
14 165 '  
15 170 ' INDEX LINE:  
16 175 ' |Constructs unique, 1 solution |maze  
17 180 '  
18 185 '  
19 220 RANDOMIZE  
20 230 PRINT "THIS PROGRAM WILL PRINT A DIFFERENT MAZE EACH TIME IT IS"  
21 240 PRINT "RUN. THERE WILL BE A UNIQUE PATH THROUGH THE MAZE. YOU"  
22 250 PRINT "CAN CHOOSE ANY DIMENSIONS FOR THE MAZE UP TO 25 SQUARES"  
23 260 PRINT "LONG AND 23 SQUARES WIDE."  
24 270 PRINT  
25 280 PRINT "WHAT ARE YOUR LENGTH AND WIDTH (E. G. 13,10)";  
26 290 INPUT R9, C9  
27 300 DIM W(25,23), V(25,23)  
28 310 LET N9 = R9*C9  
29 320 MAT W = ZER(R9,C9)           'KEEPS TRACK OF SQUARES VISITED  
30 330 MAT V = ZER(R9,C9)           'AND THEIR RIGHT, BOTTOM WALLS  
31 340 LET B = 0                   'FLAG NO EXIT TO BOTTOM YET  
32 350 REM FIND SQUARE IN WHICH TO START  
33 360 LET F = INT(RND*C9+1)  
34 370 PRINT                         'PRINT TOP BORDER  
35 380 FOR C = 1 TO C9  
36 390   IF C = F THEN 420  
37 400   PRINT ":--";  
38 410   GOTO 430  
39 420   PRINT ":";  
40 430 NEXT C  
41 440 PRINT ":";
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42 450 LET R = 1                      'START IN FIRST ROW
43 460 LET C = F                      'AND COLUMN UNDER HOLE IN BORDER
44 470 LET N = 1                      'COUNT OF SQUARES VISITED
45 480 LET W(R,C) = N
46 490 '
47 500 ' A CORRIDOR IS CONSTRUCTED BY MOVING IN A RANDOM DIRECTION FROM
48 510 ' THE CURRENT SQUARE TO SOME SQUARE THAT HAS NOT BEEN VISITED
49 520 ' YET AND ERASING THE WALL BETWEEN THE TWO SQUARES. IF NO SUCH
50 530 ' MOVE IS POSSIBLE, A SIDE CORRIDOR IS STARTED IN SOME SQUARE
51 540 ' ALREADY VISITED WHICH IS ADJACENT TO AN UNVISITED SQUARE. ONLY
52 550 ' ONE EXIT TO THE BOTTOM OF THE MAZE IS ALLOWED.
53 560 '
54 570 REM MAKE LIST OF UNBLOCKED DIRECTIONS
55 580 LET D = 0
56 590 REM CAN WE GO LEFT
57 600 IF C = 1 THEN 640                'NO, ON BORDER
58 610 IF W(R,C-1) > 0 THEN 640        'NO, SQUARE USED ALREADY
59 620 LET D = D+1                     'YES, ADD "LEFT" TO LIST
60 630 LET D(D) = 1
61 640 REM CAN WE GO RIGHT
62 650 IF C = C9 THEN 690                'NO, ON BORDER
63 660 IF W(R,C+1) > 0 THEN 690        'NO, SQUARE USED ALREADY
64 670 LET D = D+1                     'YES, ADD "RIGHT" TO LIST
65 680 LET D(D) = 2
66 690 REM CAN WE GO UP
67 700 IF R = 1 THEN 740                'NO, ON BORDER
68 710 IF W(R-1,C) > 0 THEN 740        'NO, SQUARE USED ALREADY
69 720 LET D = D+1                     'YES, ADD "UP" TO LIST
70 730 LET D(D) = 3
71 740 REM CAN WE GO DOWN
72 750 IF R < R9 THEN 780                'MAYBE, NOT ON BORDER
73 760 IF B = 1 THEN 810                'NO, ALREADY HAVE EXIT TO BOTTOM
74 770 GOTO 790                         'YES, ALLOW EXIT TO BOTTOM
75 780 IF W(R+1,C) > 0 THEN 810        'NO, SQUARE USED ALREADY
76 790 LET D = D+1                     'YES, ADD "DOWN" TO LIST
77 800 LET D(D) = 4
78 810 REM CHOOSE DIRECTION
79 820 IF D = 0 THEN 1090                'ALL DIRECTIONS BLOCKED
80 830 LET X = INT(D*RND+1)             'PICK RANDOM DIRECTION
81 840 ON D(X) GOTO 850,890,930,970
82 850 REM GO LEFT

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```
83  860 LET C = C-1
84  870 LET V(R,C) = 2                                'NEW SQUARE HAS ONLY BOTTOM WALL
85  880 GOTO 1030
86  890 REM GO RIGHT
87  900 LET V(R,C) = V(R,C) + 2                      'ERASE RIGHT WALL OF THIS SQUARE
88  910 LET C = C+1
89  920 GOTO 1030
90  930 REM GO UP
91  940 LET R = R-1
92  950 LET V(R,C) = 1                                'NEW SQUARE HAS ONLY RIGHT WALL
93  960 GOTO 1030
94  970 REM GO DOWN
95  980 LET V(R,C) = V(R,C) + 1                      'ERASE BOTTOM WALL OF THIS SQUARE
96  990 LET R = R+1
97  1000 IF R <= R9 THEN 1030                      'STILL IN MAZE
98  1010 LET B = 1                                    'FLAG EXIT TO BOTTOM
99  1020 GOTO 1140                                    'AND GO VISIT OTHER SQUARES
100 1030 REM MARK SQUARE AS USED
101 1040 LET N = N+1
102 1050 LET W(R,C) = N
103 1060 IF N < N9 THEN 570
104 1070 REM DONE
105 1080 GOTO 1180
106 1090 REM RESTART IN USED SQUARE ADJACENT TO UNUSED SQUARE
107 1100 LET C = C+1
108 1110 IF C <= C9 THEN 1160
109 1120 LET R = R+1
110 1130 IF R <= R9 THEN 1150
111 1140 LET R = 1
112 1150 LET C = 1
113 1160 IF W(R,C) > 0 THEN 570
114 1170 GOTO 1100
115 1180 REM PRINT OUT MAZE
116 1190 FOR R = 1 TO R9
117 1200    PRINT "I";
118 1210    FOR C = 1 TO C9
119 1220        IF V(R,C) < 2 THEN 1250
120 1230        PRINT "  ";
121 1240        GOTO 1260
122 1250        PRINT "  I";
123 1260    NEXT C
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```
124 1270 PRINT
125 1280 FOR C = 1 TO C9
126 1290     IF MOD(V(R,C),2) = 0 THEN 1320
127 1300     PRINT ":" ;
128 1310     GOTO 1330
129 1320     PRINT ":-";
130 1330 NEXT C
131 1340 PRINT ":""
132 1350 NEXT R
133 1360 END
```

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