On the Subject of ASCII Mazes

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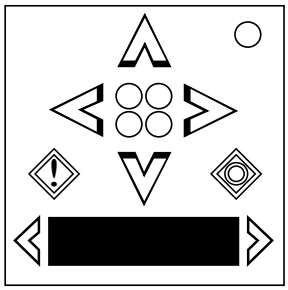

The screen at the bottom of the module displays three (extended) ASCII characters of a twelve character long sequence, separated by replacement characters (�).
Use the arrows to the left and right of the screen to cycle between displays.

Convert the sequence of ASCII characters into a sequence of 96 binary digits:

- The first six bits, when converted into octal, are used to determine the starting location.
- The last six bits, when converted into octal, are used to determine the location of the exit.
- The remaining 84 bits correspond to the presence of a wall within the 7×7 maze (not including edges):
  Seperate the 84 bits into two equal groups:
  - The first 42 bits correspond to the vertical walls.
  - The second group of 42 bits correspond to the horizontal walls.

The colours of the four LEDs are used in conjunction with the sequence of bits. The presence of the red, green, and blue colour channels indicate how each bit is used:

Top Left LED

1. If the blue channel is present, the first and second octal digits are swapped.
2. If the red channel is present, the first octal digit is one greater than the number of spaces between the right edge and the starting location. Otherwise the first octal digit is the number of spaces between the left edge and the starting location.
3. If the green channel is present, the second octal digit is one greater than the number of spaces between the bottom edge and the starting location. Otherwise the second octal digit is the number of spaces between the top edge and the starting location.

The same rules apply to the **bottom right LED** to indicate the position of the exit.

Top Right LED

For each vertical division between two horizontally adjacent spaces, a wall is present if its corresponding bit, in the first group of 42 bits, is a 1.

The colour of the top right LED affects the reading order:

1. If the red channel is present, the divisions are read from right to left.
   Otherwise the divisions are read from left to right.
2. If the green channel is present, the divisions are read from the bottom row to the top.
   Otherwise the divisions are read from the top row to the bottom.
3. If the blue channel is present, the reading direction alternates each row.

The same rules apply to the **bottom left LED** and the second group of 42 bits to indicate the presence of the horizontal walls of the maze.

When the maze is complete, every space must be reachable from every other space and there must be no loops.

Use the directional arrows to move around the maze, avoiding the walls.

Once the exit is reached, press the "©" button to submit your current location. If your current location is not the exit, the module will reset your position to the starting location.

Pressing the "!" button from anywhere within the maze will reset your position to the starting location.

ASCII Chart

ASCII	Index	Binary
NUL	000	00000000
SOH	001	00000001
STX	002	00000010
ETX	003	00000011
EOT	004	00000100
ENQ	005	00000101
ACK	006	00000110
BEL	007	00000111
BS	008	00001000
HT	009	00001001
LF	010	00001010
VT	011	00001011
FF	012	00001100
CR	013	00001101
SO	014	00001110
SI	015	00001111
DLE	016	00010000
DC1	017	00010001
DC2	018	00010010
DC3	019	00010011
DC4	020	00010100
NAK	021	00010101
SYN	022	00010110
ETB	023	00010111
CAN	024	00011000
EM	025	00011001
SUB	026	00011010
ESC	027	00011011
FS	028	00011100
GS	029	00011101
RS	030	00011110
US	031	00011111

ASCII	Index	Binary
(space)	032	00100000
!	033	00100001
"	034	00100010
#	035	00100011
$	036	00100100
%	037	00100101
&	038	00100110
'	039	00100111
(	040	00101000
)	041	00101001
*	042	00101010
+	043	00101011
,	044	00101100
-	045	00101101
.	046	00101110
/	047	00101111
0	048	00110000
1	049	00110001
2	050	00110010
3	051	00110011
4	052	00110100
5	053	00110101
6	054	00110110
7	055	00110111
8	056	00111000
9	057	00111001
:	058	00111010
;	059	00111011
<	060	00111100
=	061	00111101
>	062	00111110
?	063	00111111

ASCII	Index	Binary
@	064	01000000
A	065	01000001
B	066	01000010
C	067	01000011
D	068	01000100
E	069	01000101
F	070	01000110
G	071	01000111
H	072	01001000
I	073	01001001
J	074	01001010
K	075	01001011
L	076	01001100
M	077	01001101
N	078	01001110
O	079	01001111
P	080	01010000
Q	081	01010001
R	082	01010010
S	083	01010011
T	084	01010100
U	085	01010101
V	086	01010110
W	087	01010111
X	088	01011000
Y	089	01011001
Z	090	01011010
[	091	01011011
\	092	01011100
]	093	01011101
^	094	01011110
_	095	01011111

ASCII	Index	Binary
`	096	01100000
a	097	01100001
b	098	01100010
c	099	01100011
d	100	01100100
e	101	01100101
f	102	01100110
g	103	01100111
h	104	01101000
i	105	01101001
j	106	01101010
k	107	01101011
l	108	01101100
m	109	01101101
n	110	01101110
o	111	01101111
p	112	01110000
q	113	01110001
r	114	01110010
s	115	01110011
t	116	01110100
u	117	01110101
v	118	01110110
w	119	01110111
x	120	01111000
y	121	01111001
z	122	01111010
{	123	01111011
|	124	01111100
}	125	01111101
~	126	01111110
DEL	127	01111111

Extended ASCII Chart

ASCII	Index	Binary
Ç	128	10000000
ü	129	10000001
é	130	10000010
â	131	10000011
ä	132	10000100
à	133	10000101
å	134	10000110
ç	135	10000111
ê	136	10001000
ë	137	10001001
è	138	10001010
ï	139	10001011
î	140	10001100
ì	141	10001101
Ä	142	10001110
Å	143	10001111
É	144	10010000
æ	145	10010001
Æ	146	10010010
ô	147	10010011
ö	148	10010100
ò	149	10010101
û	150	10010110
ù	151	10010111
ÿ	152	10011000
Ö	153	10011001
Ü	154	10011010
ø	155	10011011
£	156	10011100
Ø	157	10011101
×	158	10011110
ƒ	159	10011111

ASCII	Index	Binary
á	160	10100000
í	161	10100001
ó	162	10100010
ú	163	10100011
ñ	164	10100100
Ñ	165	10100101
ª	166	10100110
º	167	10100111
¿	168	10101000
®	169	10101001
¬	170	10101010
½	171	10101011
¼	172	10101100
¡	173	10101101
«	174	10101110
»	175	10101111
░	176	10110000
▒	177	10110001
▓	178	10110010
│	179	10110011
┤	180	10110100
Á	181	10110101
Â	182	10110110
À	183	10110111
©	184	10111000
╣	185	10111001
║	186	10111010
╗	187	10111011
╝	188	10111100
¢	189	10111101
¥	190	10111110
┐	191	10111111

ASCII	Index	Binary
└	192	11000000
┴	193	11000001
┬	194	11000010
├	195	11000011
─	196	11000100
┼	197	11000101
ã	198	11000110
Ã	199	11000111
╚	200	11001000
╔	201	11001001
╩	202	11001010
╦	203	11001011
╠	204	11001100
═	205	11001101
╬	206	11001110
¤	207	11001111
ð	208	11010000
Ð	209	11010001
Ê	210	11010010
Ë	211	11010011
È	212	11010100
ı	213	11010101
Í	214	11010110
Î	215	11010111
Ï	216	11011000
┘	217	11011001
┌	218	11011010
█	219	11011011
▄	220	11011100
¦	221	11011101
Ì	222	11011110
▀	223	11011111

ASCII	Index	Binary
Ó	224	11100000
ß	225	11100001
Ô	226	11100010
Ò	227	11100011
õ	228	11100100
Õ	229	11100101
µ	230	11100110
þ	231	11100111
Þ	232	11101000
Ú	233	11101001
Û	234	11101010
Ù	235	11101011
ý	236	11101100
Ý	237	11101101
¯	238	11101110
´	239	11101111
≡	240	11110000
±	241	11110001
‗	242	11110010
¾	243	11110011
¶	244	11110100
§	245	11110101
÷	246	11110110
¸	247	11110111
°	248	11111000
¨	249	11111001
·	250	11111010
¹	251	11111011
³	252	11111100
²	253	11111101
■	254	11111110
nbsp	255	11111111