

Ex: Maz

maze

entrance
[1,1]

0	1	1	1
0	1	1	0
1	0	0	1
1	1	0	1
1	0	1	0

exit
[5,4]

mark

1	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0

stack

[0]	1,1,1

top
(r, c, d)

```
void path(void) {  
    int i, row, col, nextRow, nextCol, dir, found=FALSE;  
    element position;  
    mark[1][1]=1; top=0;  
    stack[0].row=1; stack[0].col=1; stack[0].dir=1;
```

maze

nR,nC

d=1

entrance
[1,1]

exit
[3,4]

0	1	1	1
0	1	1	0
1	0	0	1
1	1	0	1
1	0	1	0

mark

1	0	0	0
1	0	0	0
0	1	1	0
0	0	0	0
0	0	0	0

stack

[0]

top

maze

entrance
[1,1]

0	1	1	1
0	1	1	0
1	0	0	1
1	1	0	1
1	0	1	0

exit
[3,4]

mark

	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0

stack

top

maze

entrance
[1,1]

0	1	1	1
0	d=3 nR,nC	1	0
1	0	0	1
1	1	0	1
1	0	1	0

exit
[3,4]

mark

	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0

stack

[0]

top

maze

entrance
[1,1]

1	0	1	1	1
0	4	1	1	0
1	0	0	0	1
1	1	0	0	1
1	0	1	0	0

exit
[3,4]

nR,nC

mark

	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0

stack

[0]

top

maze

entrance [1,1]

d=0 nR,nC	1	1	1
r,c	1	1	0
	0	0	1
	1	1	0
	1	0	1

exit [3,4]

mark

방문했으니 mark!

	0	0	0
1	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0

stack

1, 1, 5

[0] top

다음에 방문해야 하는 dir?
 (=backtracking 할 때는
 1~4까지는 방문했으니 5부터
 2번 확인해본다!)

maze

entrance
[1,1]

0	nR,nC	1	1
d=1	1	1	0
r,c	1	0	1
1	1	0	1
1	0	1	0

exit
[3,4]

mark

	0	0	0
1	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0

stack

[0]	1, 1, 5	top

maze

entrance
[1,1]

0	1	1	1
1	0	1	0
1	0	0	1
1	1	0	1
1	0	1	0

exit
[3,4]

$d=2$
 r,c
 nR,nC

mark

	0	0	0
1	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0

stack

[0]	1, 1, 5	top

maze

entrance
[1,1]

0	1	1	1
1	1	1	0
1	0	0	1
1	1	0	1
1	0	1	0

exit
[3,4]

Diagram details: The maze is a 5x4 grid. The entrance is at [1,1] (row 1, column 1) with blue arrows pointing to its eight neighbors. The current position is at [3,4] (row 3, column 4), labeled with red text *r,c* and *nR,nC*. A blue label *d=3* is next to it. The exit is at [3,4] (row 3, column 4) with blue text.

mark

	0	0	0
1	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0

stack

1, 1, 5

[0] top

maze

entrance
[1,1]

0	1	1	1
0	$d=0$ nR, nC	1	0
1	r, c	0	1
1	1	0	1
1	0	1	0

exit
[3,4]

mark

	0	0	0
1	0	0	0
0	1	0	0
0	0	0	0
0	0	0	0

stack

2, 1, 4
1, 1, 5

next 할 인자야 하는 direction
top
[0]

*maze*entrance
[1,1]

0	1	1	1
0	1	nR,nC	0
1	$\begin{matrix} \nearrow \\ \rightarrow \\ \searrow \end{matrix}$	$\begin{matrix} \nwarrow \\ \rightarrow \\ \searrow \end{matrix}$	1
1	1	0	1
1	0	1	0

r,c d=1

exit
[3,4]

mark

	0	0	0
1	0	0	0
0	1	0	0
0	0	0	0
0	0	0	0

stack

2, 1, 4
1, 1, 5

top

[0]

*maze*entrance
[1,1]

0	1	1	1
0	1	1	0
1	r,c	$d=2$ nR,nC	1
1	1	0	1
1	0	1	0

exit
[3,4]

mark

	0	0	0
1	0	0	0
0	1	0	0
0	0	0	0
0	0	0	0

stack

2, 1, 4
1, 1, 5

[0] top

*maze*entrance
[1,1]

0	1	1	1
0	1	1	0
1	0	1	1
1	1	0	1
1	0	1	0

Diagram illustrating a maze grid (5x4) with walls (1) and paths (0). The entrance is at [1,1] (row 1, column 1). The current position is at [3,4] (row 3, column 4), marked with red text $d=0$, nR, nC , and r, c . Blue arrows indicate possible moves from the current position: up, down, left, right, and diagonally up-left, up-right, down-left, and down-right.

exit
[3,4]*mark*

	0	0	0
1	0	0	0
0	1	1	0
0	0	0	0
0	0	0	0

stack

3, 2, 3
2, 1, 4
1, 1, 5

Diagram illustrating a stack structure. The stack contains three elements: 3, 2, 3; 2, 1, 4; and 1, 1, 5. The top element is 3, 2, 3, indicated by the label "top" in blue. The bottom element is 1, 1, 5, indicated by the label "[0]" in blue.

*maze*entrance
[1,1]

0	1	1	1
0	1	1	0
1	0	r,c	1
1	1	0	1
1	0	1	0

Diagram illustrating a maze grid. The entrance is at [1,1]. The current position is at (r,c) with d=1. The exit is at [3,4]. Blue arrows indicate possible moves from the current position.

mark

	0	0	0
1	0	0	0
0	1	1	0
0	0	0	0
0	0	0	0

stack

3, 2, 3
2, 1, 4
1, 1, 5

Diagram illustrating a stack structure. The top element is 3, 2, 3. The bottom element is 1, 1, 5. The stack is indexed from [0] at the bottom.

maze

entrance
[1,1]

0	1	1	1
0	1	1	0
1	0	0	1
1	1	0	1
1	0	1	0

exit
[3,4]

$d=0$
 nR, nC
 r, c

mark

	0	0	0
1	0	0	1
0	1	1	0
0	0	0	0
0	0	0	0

stack

3, 3, 2	top
3, 2, 3	
2, 1, 4	
1, 1, 5	

[0]

*maze*entrance
[1,1]

0	1	1	1
0	1	1	0
1	0	0	1
1	1	0	1
1	0	1	0

Diagram illustrating a maze grid with 5 rows and 4 columns. The entrance is at [1,1] (row 1, column 1). The exit is at [5,4] (row 5, column 4). A path is highlighted with blue arrows starting from the entrance and ending at the exit. The path consists of the following cells: (1,1), (1,2), (1,3), (2,3), (2,4), (3,4), (3,3), (3,2), (3,1), (4,1), (4,2), (4,3), (4,4), (5,4). The cell (2,4) is labeled r,c and $d=1$. The cell (5,4) is labeled nR,nC .

mark

	0	0	0
1	0	0	1
0	1	1	0
0	0	0	0
0	0	0	0

stack

3, 3, 2	top
3, 2, 3	
2, 1, 4	
1, 1, 5	

Diagram illustrating a stack structure. The stack contains the following elements (from top to bottom): 3, 3, 2; 3, 2, 3; 2, 1, 4; 1, 1, 5. The top element is 3, 3, 2. The bottom element is 1, 1, 5. The stack is indexed from 0 to 3.

*maze*entrance
[1,1]

0	1	1	1
0	1	1	0
1	0	0	1
1	1	0	1
1	0	1	0

d=2
r,c
nR,nCexit
[3,4]*mark*

	0	0	0
1	0	0	1
0	1	1	0
0	0	0	0
0	0	0	0

stack

[0]

3, 3, 2
3, 2, 3
2, 1, 4
1, 1, 5

top

*maze*entrance
[1,1]

0	1	1	1
0	1	1	0
1	0	0	1
1	1	0	1
1	0	1	0

d=3
nR,nCexit
[3,4]*mark*

	0	0	0
1	0	0	1
0	1	1	0
0	0	0	0
0	0	0	0

stack

[0]

3, 3, 2
3, 2, 3
2, 1, 4
1, 1, 5

top

*maze*entrance
[1,1]

0	1	1	1
0	1	1	1
1	0	0	0
1	1	0	1
1	0	1	0

Diagram illustrating a maze grid (5x4) with entrance at [1,1] and exit at [3,4]. The current position is (r,c) = (2,3) with distance d=4. Blue arrows show possible moves from (2,3) to (1,2), (1,3), (2,2), (2,4), (3,2), and (3,3). Red text indicates the current position (r,c) and distance (d=4).

mark

	0	0	0
1	0	0	1
0	1	1	0
0	0	0	0
0	0	0	0

stack

3, 3, 2	top
3, 2, 3	
2, 1, 4	
1, 1, 5	

Stack structure showing the path history. The top element is 3, 3, 2. The bottom element is 1, 1, 5. The stack is indexed from [0] at the bottom.

*maze*entrance
[1,1]

0	1	1	1
0	1	1	1
1	0	1	1
1	1	0	1
1	0	1	0

Diagram illustrating a maze grid (5x4) with walls (1) and open paths (0). The entrance is at [1,1] (row 1, column 1). The current position is at [3,4] (row 3, column 4), marked with red text r, c . The distance from the entrance is $d=5$, marked with red text nR, nC . Blue arrows indicate the possible moves from the current position: up, down, left, right, and diagonally up-left, up-right, down-left, and down-right.

mark

	0	0	0
1	0	0	1
0	1	1	0
0	0	0	0
0	0	0	0

stack

3, 3, 2	top
3, 2, 3	
2, 1, 4	
1, 1, 5	

Diagram illustrating a stack structure. The stack contains the following elements (from top to bottom): 3, 3, 2; 3, 2, 3; 2, 1, 4; 1, 1, 5. The top element is 3, 3, 2, indicated by the blue text "top". The bottom element is 1, 1, 5, indicated by the blue text "[0]".

Maze Search : Example

maze

entrance
[1,1]

0	1	1	1
0	1	d=6 nR,nC	r,c
1	0	0	1
1	1	0	1
1	0	1	0

exit
[3,4]

mark

	0	0	0
1	0	0	1
0	1	1	0
0	0	0	0
0	0	0	0

stack

	top
3, 3, 2	
3, 2, 3	
2, 1, 4	
1, 1, 5	[0]

maze

entrance
[1,1]

0	1	1	1
0	1	1	1
1	0	0	1
1	1	0	1
1	0	1	0

exit
[3,4]

mark

	0	0	0
1	0	0	1
0	1	1	0
0	0	0	0
0	0	0	0

stack

3, 3, 2
3, 2, 3
2, 1, 4
1, 1, 5

top

[0]

maze

깊이 얹비...

mark

stack

entrance
[1,1]

0	1	1	1
0	1	1	1
1	0	0	1
1	1	0	1
1	0	1	0

exit
[3,4]

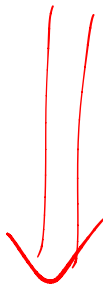
	0	0	0
1	0	0	1
0	1	1	0
0	0	0	0
0	0	0	0

[0]

3, 3, 2
3, 2, 3
2, 1, 4
1, 1, 5

top

POP



maze

entrance
[1,1]

0	1	1	1
0	1	1	0
1	0	1	1
1	1	0	1
1	0	1	0

exit
[3,4]

r, c nR, nC $d=2$

mark

	0	0	0
1	0	0	1
0	1	1	0
0	0	0	0
0	0	0	0

stack

3, 2, 3
2, 1, 4
1, 1, 5

top

[0]

*maze*entrance
[1,1]

0	1	1	1
0	1	1	0
1	0	r,c	1
1	1	0	d=3 nR,nC
1	0	1	0

exit
[3,4]

mark

	0	0	0
1	0	0	1
0	1	1	0
0	0	0	0
0	0	0	0

stack

3, 2, 3
2, 1, 4
1, 1, 5

[0] top

*maze*entrance
[1,1]

0	1	1	1
0	1	1	0
1	0	0	1
1	1	0	1
1	0	1	0

Diagram illustrating a maze grid (5x4) with entrance at [1,1] and exit at [3,4]. The current position is (r,c) = (2,2) with distance d=4. The next position is (nR,nC) = (3,4).

mark

	0	0	0
1	0	0	1
0	1	1	0
0	0	0	0
0	0	0	0

stack

3, 2, 3
2, 1, 4
1, 1, 5

Diagram illustrating a stack structure. The stack contains the following elements (from top to bottom): 3, 2, 3; 2, 1, 4; 1, 1, 5. The top element is 3, 2, 3. The bottom element is 1, 1, 5. The stack is indexed from [0] at the bottom.

*maze*entrance
[1,1]

0	1	1	1
0	1	1	0
1	0	0	1
1	1	0	1
1	0	1	0

Diagram illustrating a maze grid (4x4) with values 0 or 1. The entrance is at [1,1] (row 1, column 1). The exit is at [3,4] (row 3, column 4). A red dot marks the current position at [2,2] (row 2, column 2), labeled $d=0$ and nR, nC . Blue arrows indicate possible moves from the current position to adjacent cells (up, down, left, right, and diagonals).

mark

	0	0	0
1	0	0	1
0	1	1	0
0	0	1	0
0	0	0	0

stack

3, 3, 5
3, 2, 3
2, 1, 4
1, 1, 5

Diagram illustrating a stack structure. The stack contains elements: 3, 3, 5; 3, 2, 3; 2, 1, 4; 1, 1, 5. The top of the stack is indicated by the label *top*. The bottom element is labeled [0].

*maze*entrance
[1,1]

0	1	1	1
0	1	1	0
1	0	0	1
1	1	0	1
1	0	1	0

Diagram illustrating a maze grid with 5 rows and 4 columns. The entrance is at [1,1] (row 1, column 1). The exit is at [3,4] (row 3, column 4). The current position is at [3,3] (row 3, column 3), labeled r, c . The next position is at [3,4] (row 3, column 4), labeled nR, nC . The distance from the entrance to the current position is $d=1$. Blue arrows indicate possible moves from the current position: up, down, left, right, and diagonally up-left, up-right, down-left, and down-right.

mark

	0	0	0
1	0	0	1
0	1	1	0
0	0	1	0
0	0	0	0

stack

3, 3, 5	top
3, 2, 3	
2, 1, 4	
1, 1, 5	

Diagram illustrating a stack structure. The stack contains the following elements (from top to bottom): 3, 3, 5; 3, 2, 3; 2, 1, 4; 1, 1, 5. The top element is 3, 3, 5. The bottom element is 1, 1, 5. The stack is indexed from [0] at the bottom.

*maze*entrance
[1,1]

0	1	1	1
0	1	1	0
1	0	0	1
1	1	0	1
1	0	1	0

Diagram illustrating a maze grid with 5 rows and 4 columns. The entrance is at [1,1] (row 1, column 1). The exit is at [5,4] (row 5, column 4). A path is highlighted with blue arrows starting from the entrance, moving right to [1,2], then down to [2,2], then down to [3,2], then right to [3,3], then right to [3,4], then down to [4,4], then down to [5,4]. The distance from the entrance to the exit is d=2. The current position is r,C and the next position is nR,nC.

mark

	0	0	0
1	0	0	1
0	1	1	0
0	0	1	0
0	0	0	0

stack

3, 3, 5
3, 2, 3
2, 1, 4
1, 1, 5

Diagram illustrating a stack structure. The stack contains the following elements (from top to bottom): 3, 3, 5; 3, 2, 3; 2, 1, 4; 1, 1, 5. The top element is 3, 3, 5. The bottom element is 1, 1, 5. The stack is indexed from [0] at the bottom.

*maze*entrance
[1,1]

0	1	1	1
0	1	1	0
1	0	0	1
1	1	0	1
1	0	1	0

Diagram illustrating a maze grid with 5 rows and 4 columns. The entrance is at [1,1]. A path is highlighted with blue arrows starting from the entrance and moving to the cell at [3,4], which is labeled 'exit'. The distance from the entrance to the exit is indicated as 'd=3'. The current position is labeled 'r,c' and 'nR,nC'.

mark

	0	0	0
1	0	0	1
0	1	1	0
0	0	1	0
0	0	0	0

stack

3, 3, 5
3, 2, 3
2, 1, 4
1, 1, 5

Diagram illustrating a stack structure. The stack contains the following elements from top to bottom: 3, 3, 5; 3, 2, 3; 2, 1, 4; 1, 1, 5. The top element is 3, 3, 5. The bottom element is 1, 1, 5. The stack is indexed from [0] at the bottom.

