

Sample Execution

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```
matt@arch-asus ~/D/4/src> g++ -g -Wall -Wpedantic -pthread -o game game.cpp
matt@arch-asus ~/D/4/src> ./game
3D Tic Tac Toe!
```

Menu:

- 1) Play
- 2) Display Rules
- 0) Quit

Enter a selection ([0..2]): 1

Select a game mode:

- 1) Human Player vs Human Player
- 2) Human Player vs Computer Player
- 3) Computer Player vs Computer Player

Choose a game mode ([1..3]): 2

Choose a colour:

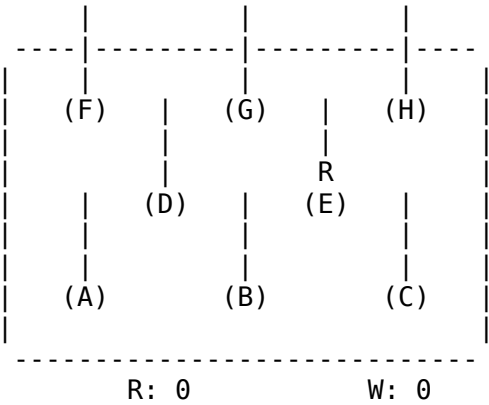
- 1) Red
- 2) White

Choice ([1..2]): 1

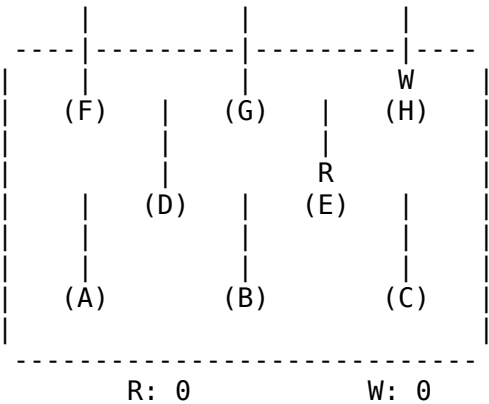
```

      |      |      |
  ----|----|----|----
      |      |      |
  (F)  |  (G)  |  (H)
      |      |      |
      |  (D)  |  (E)  |
      |      |      |
  (A)  |  (B)  |  (C)
      |      |      |
  ----|----|----|----
      R: 0      W: 0
```

Red's turn!
Peg ([A..F], case-sensitive): E



White's turn!



Red's turn!
Peg ([A..F], case-sensitive): C

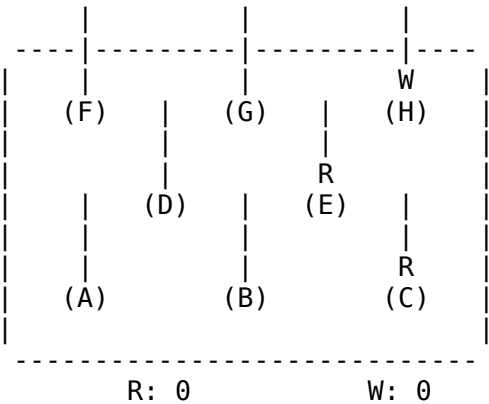


Diagram illustrating a 3D coordinate system with axes R and W . The R -axis is vertical, and the W -axis is horizontal. The origin is marked with $R: 0$ and $W: 0$. Points are labeled as follows:

- On the R -axis: (A), (B), (C)
- On the W -axis: (D), (E), (F), (G), (H), (W)

The points are arranged in a grid-like pattern, with (A) at the bottom left, (B) at the bottom middle, (C) at the bottom right, (D) at the middle left, (E) at the middle middle, (F) at the middle left, (G) at the middle middle, (H) at the middle right, and (W) at the top right.

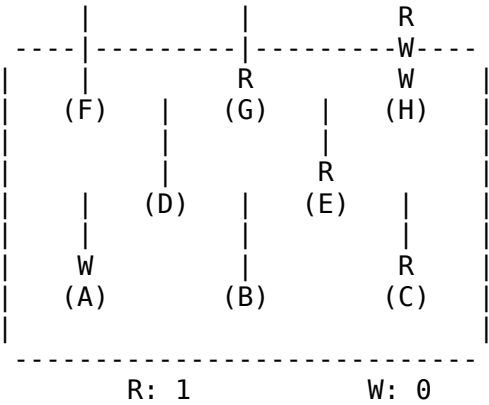
Diagram of a 3x3 grid world environment. The grid has three rows and three columns. The top row contains nodes (F), (G), and (H). The middle row contains nodes (D), (E), and an empty node. The bottom row contains nodes (A), (B), and (C). A dashed line runs horizontally above the top row and below the bottom row. A dashed line runs vertically to the left of the first column. A dashed line runs horizontally below the bottom row. The bottom row is labeled 'R: 1' and 'W: 0'.

Diagram illustrating a game tree structure (a 3x3 grid) with nodes labeled (A) through (H) and (R) and (W) indicating player moves. The grid is bounded by dashed lines. The bottom row is labeled "R: 1" and "W: 0".

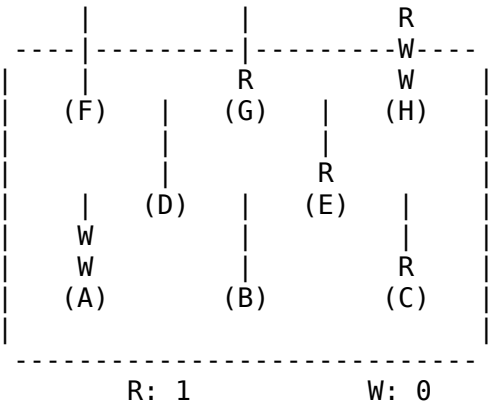
Nodes and their connections (edges):

- Column 1 (R: 1): (F) connects to (D), (D) connects to (W), (W) connects to (A).
- Column 2 (W: 0): (G) connects to (E), (E) connects to (R), (R) connects to (B).
- Column 3 (W: 0): (H) connects to (R), (R) connects to (C).

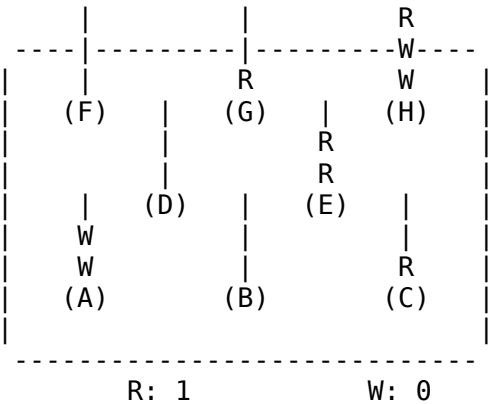
Red's turn!
Peg ([A..F], case-sensitive): H



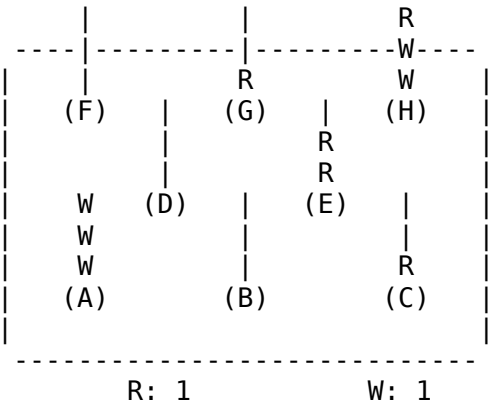
White's turn!



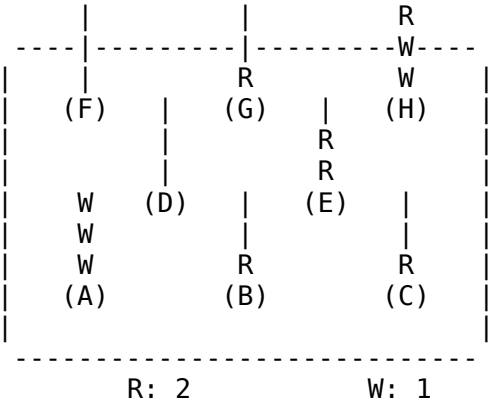
Red's turn!
Peg ([A..F], case-sensitive): E



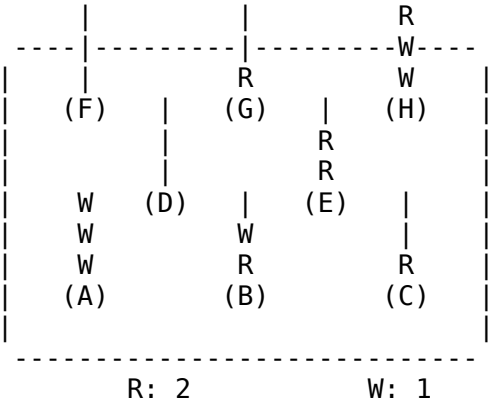
White's turn!



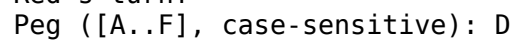
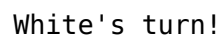
Red's turn!
Peg ([A..F], case-sensitive): B



White's turn!



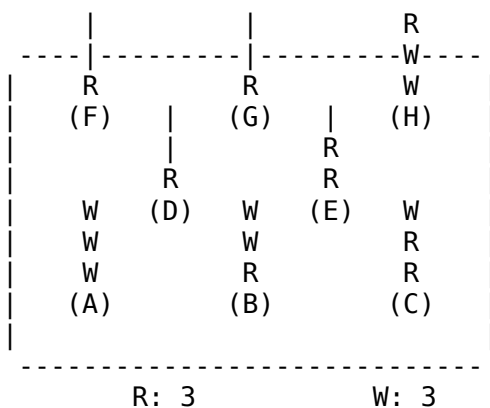
```
Peg ([A..F], case-sensitive): C
```



(F)	(G)	(H)
(D)	(E)	(C)
(A)	(B)	(C)

R: 2 W: 3

```
Peg ([A..F], case-sensitive): F
```



R: 3 W: 3

Red's turn!
Peg ([A..F], case-sensitive): F

					R
	-----R-----		-----R-----		W-----
	R		R		W
	(F)		(G)		(H)
		W		R	
		R		R	
	W	(D)	W	(E)	W
	W		W		R
	W		R		R
	(A)		(B)		(C)
	-----		-----		-----
	R: 3		W: 3		

White's turn!

					R
	-----R-----		-----R-----		W-----
	R		R		W
	(F)	W	(G)		(H)
		W		R	
		R		R	
	W	(D)	W	(E)	W
	W		W		R
	W		R		R
	(A)		(B)		(C)
	-----		-----		-----
	R: 3		W: 3		

Red's turn!
Peg ([A..F], case-sensitive): G

					R
	-----R-----		-----R-----		W-----
	R		R		W
	(F)	W	(G)		(H)
		W		R	
		R		R	
	W	(D)	W	(E)	W
	W		W		R
	W		R		R
	(A)		(B)		(C)
	-----		-----		-----
	R: 5		W: 3		

White's turn!

				R
	-----R-----		-----R-----	W-----
	R		R	W
(F)	W	(G)	W	(H)
	W		R	
	R		R	
W	(D)	W	(E)	W
W		W		R
W		R		R
(A)		(B)		(C)
	-----		-----	
	R: 5		W: 3	

Red's turn!
Peg ([A..F], case-sensitive): F

	R				R
	-----R-----		-----R-----		W-----
	R		R		W
(F)	W	(G)	W		(H)
	W		R		
	R		R		
W	(D)	W	(E)	W	
W		W		R	
W		R		R	
(A)		(B)		(C)	
	-----		-----		
	R: 6		W: 3		

White's turn!

	R		W		R
	-----R-----		-----R-----		W-----
	R		R		W
(F)	W	(G)	W		(H)
	W		R		
	R		R		
W	(D)	W	(E)	W	
W		W		R	
W		R		R	
(A)		(B)		(C)	
	-----		-----		
	R: 6		W: 6		

Game Over!
The game is a tie!

Play Again:
1) Yes
2) No

Choice ([1..2]): 2
matt@arch-asus ~/D/4/src>