Connect four

is a two-player connection game in which the players first choose a character (@-O) to play with and then take turns dropping in different places from the top into a seven-column, six-row vertically suspended grid. The pieces fall straight down, occupying the next available space within the column. The objective of the game is to be the first to form a horizontal or vertical line of four of one's own characters (discs).
First , the first player is prompted to enter the number of column to drop his discs in (O) , then the second player is prompted to enter the number of column to drop his discs in(@) and so, on .The player cannot drop in a full column . The game is finished when one of the players connects for discs horizontally or vertically. The game is elso finished when there is a draw.

Data Structure Used

The data structure used here is a class **LINKED_LIST** having the following members including getters , setters and constructors :-

Member type	Description
Char item	For holding the slot’s character
linked_list *next	Pointing to the next slot (down)
linked_list *pre	Pointing to the previous slot (up)
linked_list *last	Pointing to the last slot (top)
linked_list *r	Pointing to the right slot
linked_list *l	Pointing to the lift slot
void add (char i);	Adding items to the list
bool isEmpty();	Checking if the list is empty

Functions

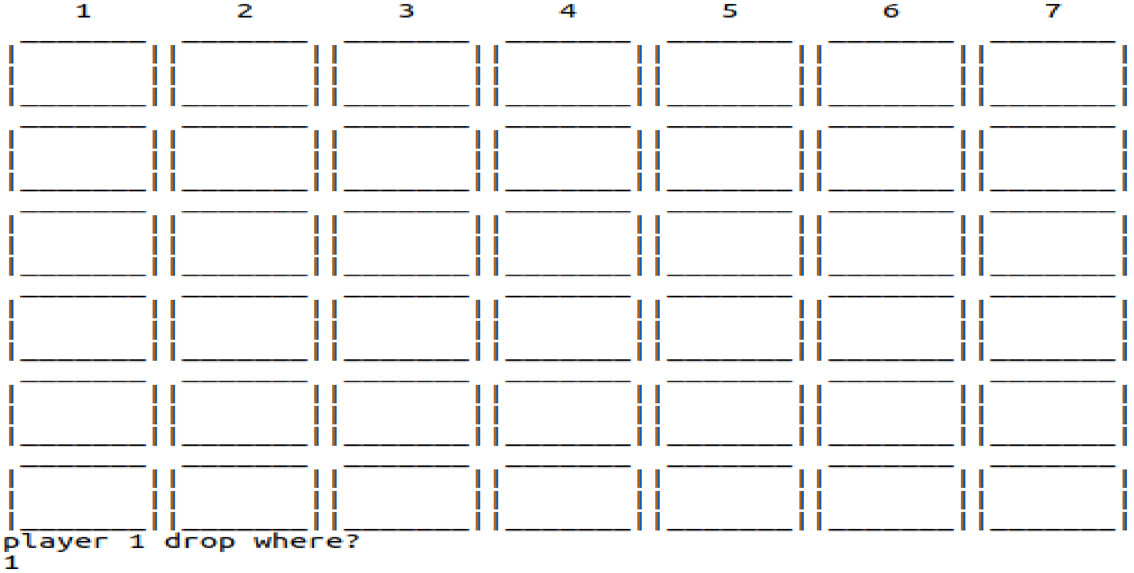
Prototype	Description
void display();	Display the board on screen
void printLine () ;	Draw the board
void printSides();	Draw the board

void connect();	Connects the slots horizontally
bool check (int col);	Checking if there is a winner
bool checkV (linked_list *col);	Checking if there is 4 identical vertical slots
bool checkH (linked_list *col);	Checking if there is 4 identical horizontal slots
linked_list *fnd (int i);	Find Column # i

Global Variables

Type	Description
linked_list c1(1);	Column #1
linked_list c2(2);	Column #2
linked_list c3(3);	Column #3
linked_list c4(4);	Column #4
linked_list c5(5);	Column #5
linked_list c6(6);	Column #6
linked_list c7(7);	Column #7

TEST CASES Horizontal Win



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    1         2         3         4         5         6         7
 ________  ________  ________  ________  ________  ________  ________ 
|        ||        ||        ||        ||        ||        ||        |
|________||________||________||________||________||________||________|
 ________  ________  ________  ________  ________  ________  ________ 
|        ||        ||        ||        ||        ||        ||        |
|________||________||________||________||________||________||________|
 ________  ________  ________  ________  ________  ________  ________ 
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|________||________||________||________||________||________||________|
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|        ||        ||        ||        ||        ||        ||        |
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|        ||        ||        ||        ||        ||        ||        |
|________||________||________||________||________||________||________|
player 1 drop where?
1
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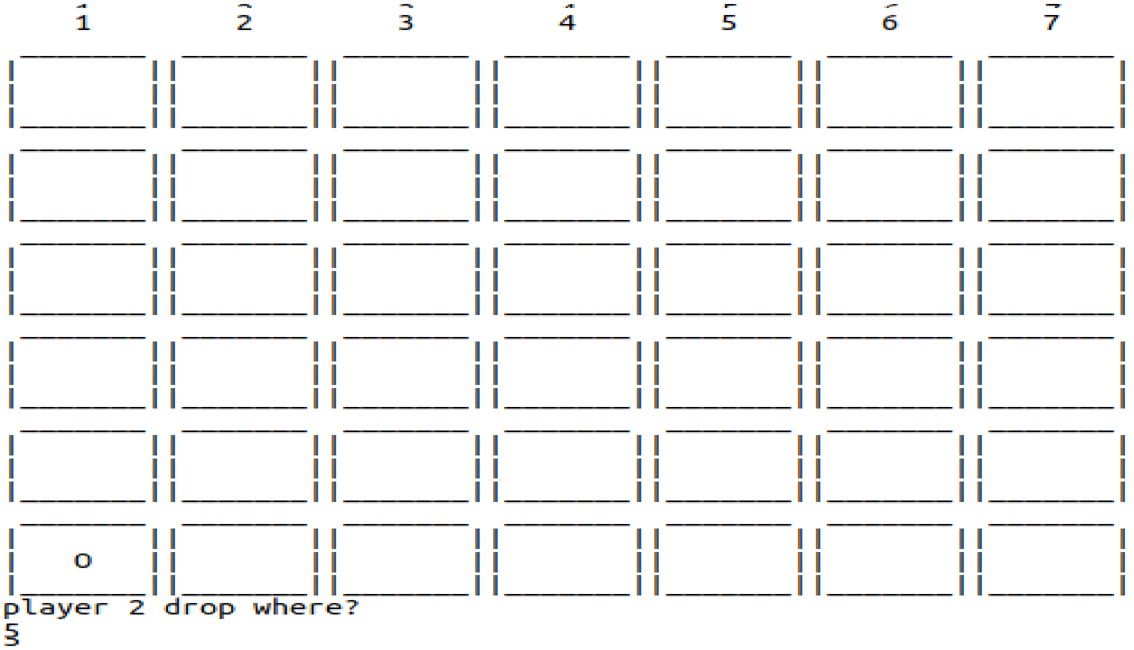

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    1         2         3         4         5         6         7
 ________  ________  ________  ________  ________  ________  ________ 
|        ||        ||        ||        ||        ||        ||        |
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|        ||        ||        ||        ||        ||        ||        |
|________||________||________||________||________||________||________|
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|________||________||________||________||________||________||________|
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|        ||        ||        ||        ||        ||        ||        |
|________||________||________||________||________||________||________|
 ________  ________  ________  ________  ________  ________  ________ 
|   O    ||        ||        ||        ||        ||        ||        |
|________||________||________||________||________||________||________|
player 2 drop where?
5
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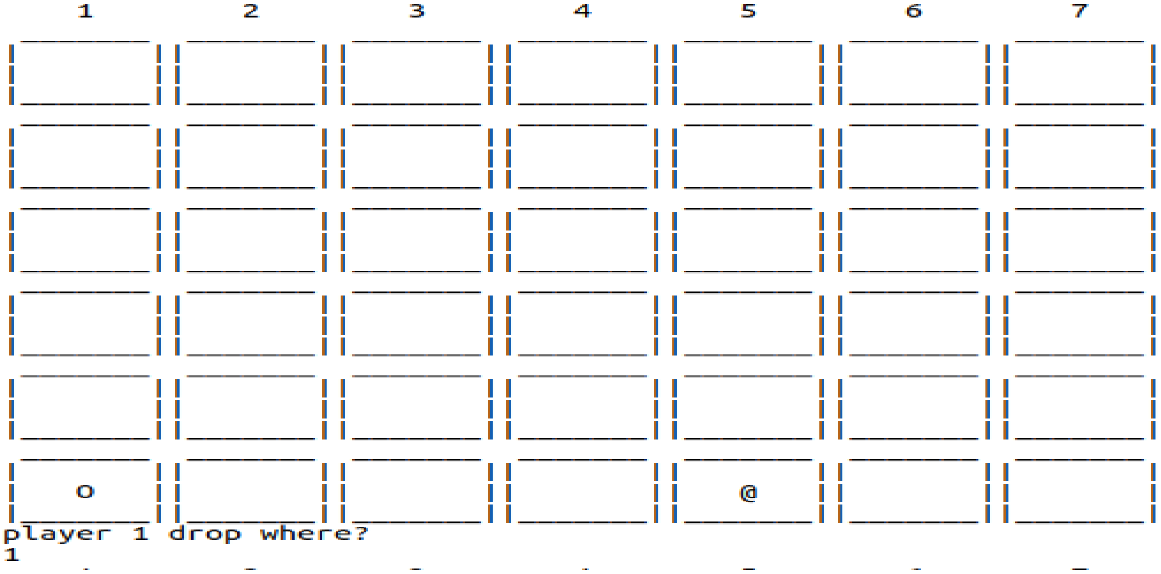

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    1         2         3         4         5         6         7
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|        ||        ||        ||        ||        ||        ||        |
|________||________||________||________||________||________||________|
 ________  ________  ________  ________  ________  ________  ________ 
|        ||        ||        ||        ||        ||        ||        |
|________||________||________||________||________||________||________|
 ________  ________  ________  ________  ________  ________  ________ 
|        ||        ||        ||        ||        ||        ||        |
|________||________||________||________||________||________||________|
 ________  ________  ________  ________  ________  ________  ________ 
|        ||        ||        ||        ||        ||        ||        |
|________||________||________||________||________||________||________|
 ________  ________  ________  ________  ________  ________  ________ 
|        ||        ||        ||        ||        ||        ||        |
|________||________||________||________||________||________||________|
 ________  ________  ________  ________  ________  ________  ________ 
|   O    ||        ||        ||        ||   @    ||        ||        |
|________||________||________||________||________||________||________|
player 1 drop where?
1
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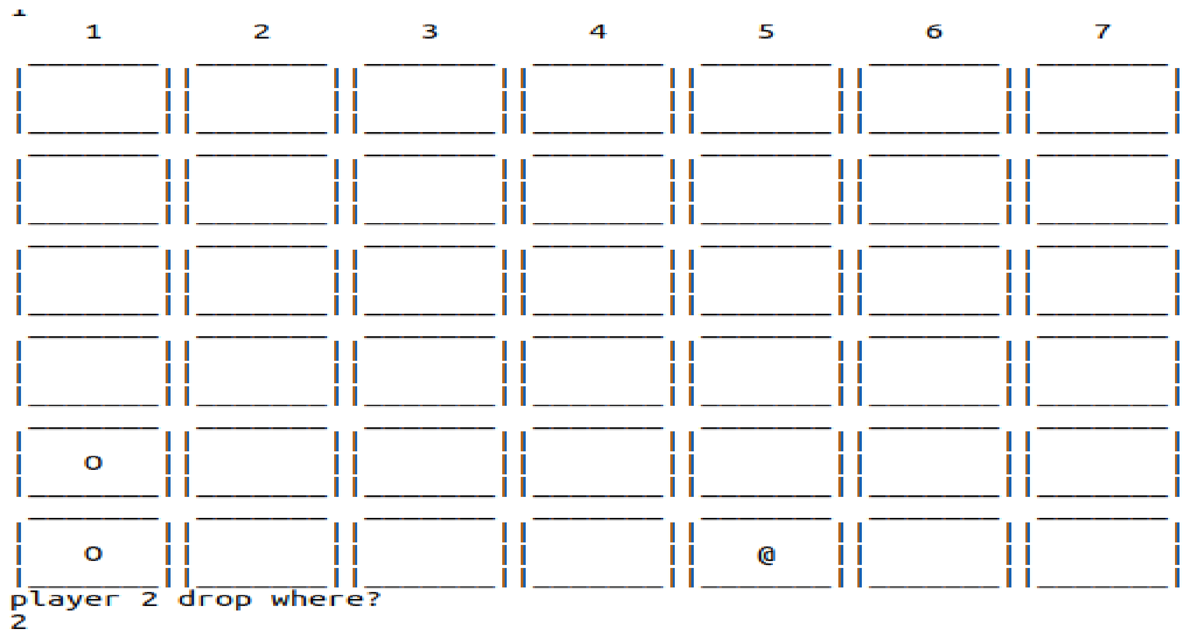

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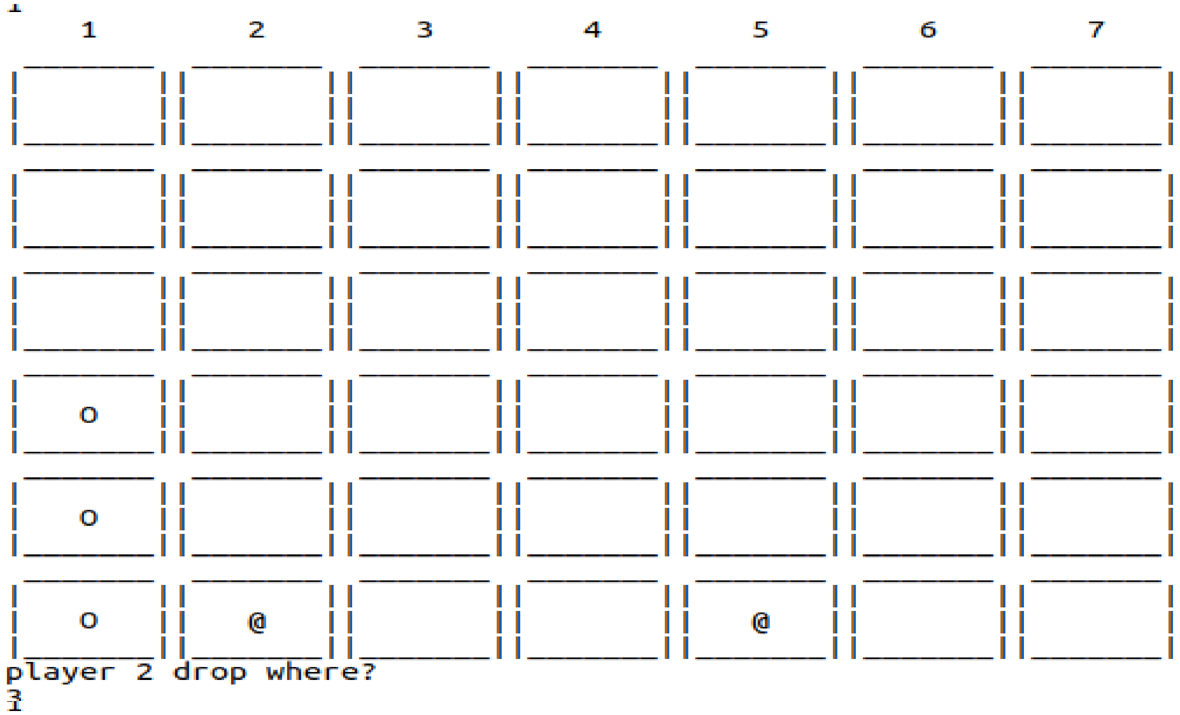
1
     1          2          3          4          5          6          7
 _________  _________  _________  _________  _________  _________  _________ 
|         ||         ||         ||         ||         ||         ||         |
|_________||_________||_________||_________||_________||_________||_________|
 _________  _________  _________  _________  _________  _________  _________ 
|         ||         ||         ||         ||         ||         ||         |
|_________||_________||_________||_________||_________||_________||_________|
 _________  _________  _________  _________  _________  _________  _________ 
|         ||         ||         ||         ||         ||         ||         |
|_________||_________||_________||_________||_________||_________||_________|
 _________  _________  _________  _________  _________  _________  _________ 
|         ||         ||         ||         ||         ||         ||         |
|_________||_________||_________||_________||_________||_________||_________|
 _________  _________  _________  _________  _________  _________  _________ 
|    O    ||         ||         ||         ||         ||         ||         |
|_________||_________||_________||_________||_________||_________||_________|
 _________  _________  _________  _________  _________  _________  _________ 
|    O    ||         ||         ||         ||    @    ||         ||         |
|_________||_________||_________||_________||_________||_________||_________|
player 2 drop where?
2
```



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1
     1          2          3          4          5          6          7
 _________  _________  _________  _________  _________  _________  _________ 
|         ||         ||         ||         ||         ||         ||         |
|_________||_________||_________||_________||_________||_________||_________|
 _________  _________  _________  _________  _________  _________  _________ 
|         ||         ||         ||         ||         ||         ||         |
|_________||_________||_________||_________||_________||_________||_________|
 _________  _________  _________  _________  _________  _________  _________ 
|         ||         ||         ||         ||         ||         ||         |
|_________||_________||_________||_________||_________||_________||_________|
 _________  _________  _________  _________  _________  _________  _________ 
|    O    ||         ||         ||         ||         ||         ||         |
|_________||_________||_________||_________||_________||_________||_________|
 _________  _________  _________  _________  _________  _________  _________ 
|    O    ||         ||         ||         ||         ||         ||         |
|_________||_________||_________||_________||_________||_________||_________|
 _________  _________  _________  _________  _________  _________  _________ 
|    O    ||    @    ||         ||         ||    @    ||         ||         |
|_________||_________||_________||_________||_________||_________||_________|
player 2 drop where?
3
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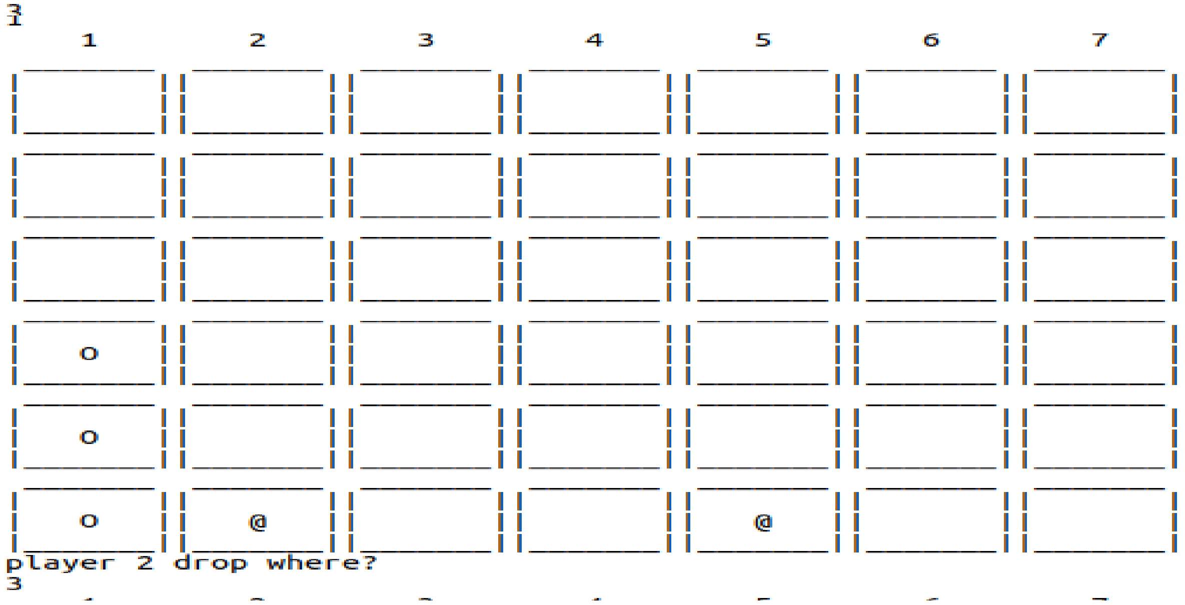

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1
     1          2          3          4          5          6          7
 _________  _________  _________  _________  _________  _________  _________ 
|         ||         ||         ||         ||         ||         ||         |
|_________||_________||_________||_________||_________||_________||_________|
 _________  _________  _________  _________  _________  _________  _________ 
|         ||         ||         ||         ||         ||         ||         |
|_________||_________||_________||_________||_________||_________||_________|
 _________  _________  _________  _________  _________  _________  _________ 
|         ||         ||         ||         ||         ||         ||         |
|_________||_________||_________||_________||_________||_________||_________|
 _________  _________  _________  _________  _________  _________  _________ 
|    O    ||         ||         ||         ||         ||         ||         |
|_________||_________||_________||_________||_________||_________||_________|
 _________  _________  _________  _________  _________  _________  _________ 
|    O    ||         ||         ||         ||         ||         ||         |
|_________||_________||_________||_________||_________||_________||_________|
 _________  _________  _________  _________  _________  _________  _________ 
|    O    ||    @    ||         ||         ||    @    ||         ||         |
|_________||_________||_________||_________||_________||_________||_________|
player 2 drop where?
3
     1          2          3          4          5          6          7
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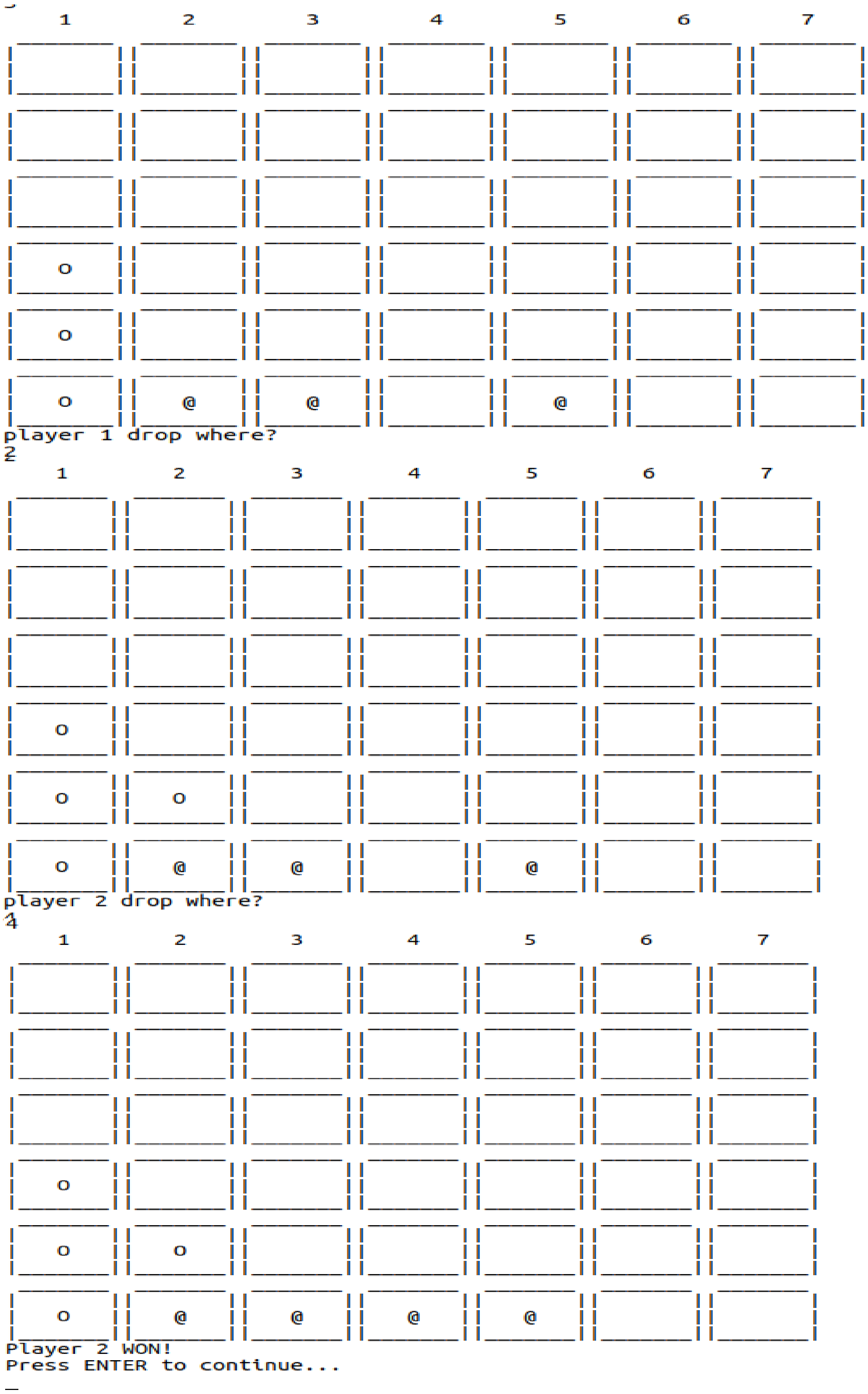

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    1        2        3        4        5        6        7
 _______  _______  _______  _______  _______  _______  _______
|       ||       ||       ||       ||       ||       ||       |
|_______||_______||_______||_______||_______||_______||_______|
 _______  _______  _______  _______  _______  _______  _______
|       ||       ||       ||       ||       ||       ||       |
|_______||_______||_______||_______||_______||_______||_______|
 _______  _______  _______  _______  _______  _______  _______
|       ||       ||       ||       ||       ||       ||       |
|_______||_______||_______||_______||_______||_______||_______|
 _______  _______  _______  _______  _______  _______  _______
|   O   ||       ||       ||       ||       ||       ||       |
|_______||_______||_______||_______||_______||_______||_______|
 _______  _______  _______  _______  _______  _______  _______
|   O   ||       ||       ||       ||       ||       ||       |
|_______||_______||_______||_______||_______||_______||_______|
 _______  _______  _______  _______  _______  _______  _______
|   O   ||   @   ||   @   ||       ||   @   ||       ||       |
|_______||_______||_______||_______||_______||_______||_______|
player 1 drop where?
2
    1        2        3        4        5        6        7
 _______  _______  _______  _______  _______  _______  _______
|       ||       ||       ||       ||       ||       ||       |
|_______||_______||_______||_______||_______||_______||_______|
 _______  _______  _______  _______  _______  _______  _______
|       ||       ||       ||       ||       ||       ||       |
|_______||_______||_______||_______||_______||_______||_______|
 _______  _______  _______  _______  _______  _______  _______
|       ||       ||       ||       ||       ||       ||       |
|_______||_______||_______||_______||_______||_______||_______|
 _______  _______  _______  _______  _______  _______  _______
|   O   ||       ||       ||       ||       ||       ||       |
|_______||_______||_______||_______||_______||_______||_______|
 _______  _______  _______  _______  _______  _______  _______
|   O   ||   O   ||       ||       ||       ||       ||       |
|_______||_______||_______||_______||_______||_______||_______|
 _______  _______  _______  _______  _______  _______  _______
|   O   ||   @   ||   @   ||       ||   @   ||       ||       |
|_______||_______||_______||_______||_______||_______||_______|
player 2 drop where?
4
    1        2        3        4        5        6        7
 _______  _______  _______  _______  _______  _______  _______
|       ||       ||       ||       ||       ||       ||       |
|_______||_______||_______||_______||_______||_______||_______|
 _______  _______  _______  _______  _______  _______  _______
|       ||       ||       ||       ||       ||       ||       |
|_______||_______||_______||_______||_______||_______||_______|
 _______  _______  _______  _______  _______  _______  _______
|       ||       ||       ||       ||       ||       ||       |
|_______||_______||_______||_______||_______||_______||_______|
 _______  _______  _______  _______  _______  _______  _______
|   O   ||       ||       ||       ||       ||       ||       |
|_______||_______||_______||_______||_______||_______||_______|
 _______  _______  _______  _______  _______  _______  _______
|   O   ||   O   ||       ||       ||       ||       ||       |
|_______||_______||_______||_______||_______||_______||_______|
 _______  _______  _______  _______  _______  _______  _______
|   O   ||   @   ||   @   ||   @   ||   @   ||       ||       |
|_______||_______||_______||_______||_______||_______||_______|
Player 2 WON!
Press ENTER to continue...
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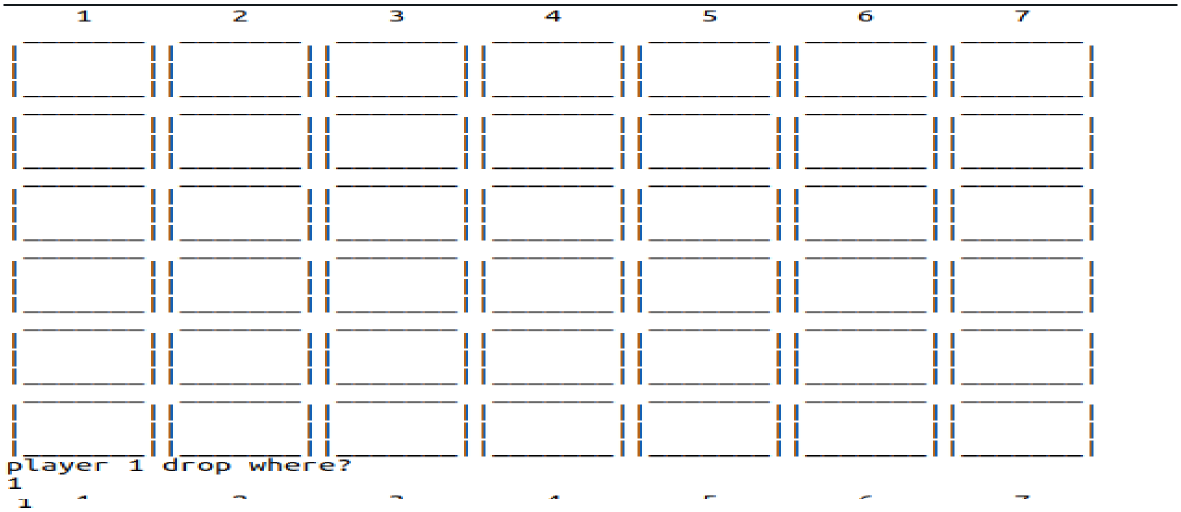
TEST CASES Vertical Win



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      1         2         3         4         5         6         7
  ________  ________  ________  ________  ________  ________  ________
 |        ||        ||        ||        ||        ||        ||        |
 |________||________||________||________||________||________||________|
  ________  ________  ________  ________  ________  ________  ________
 |        ||        ||        ||        ||        ||        ||        |
 |________||________||________||________||________||________||________|
  ________  ________  ________  ________  ________  ________  ________
 |        ||        ||        ||        ||        ||        ||        |
 |________||________||________||________||________||________||________|
  ________  ________  ________  ________  ________  ________  ________
 |        ||        ||        ||        ||        ||        ||        |
 |________||________||________||________||________||________||________|
  ________  ________  ________  ________  ________  ________  ________
 |        ||        ||        ||        ||        ||        ||        |
 |________||________||________||________||________||________||________|
  ________  ________  ________  ________  ________  ________  ________
 |        ||        ||        ||        ||        ||        ||        |
 |________||________||________||________||________||________||________|
player 1 drop where?
1
```

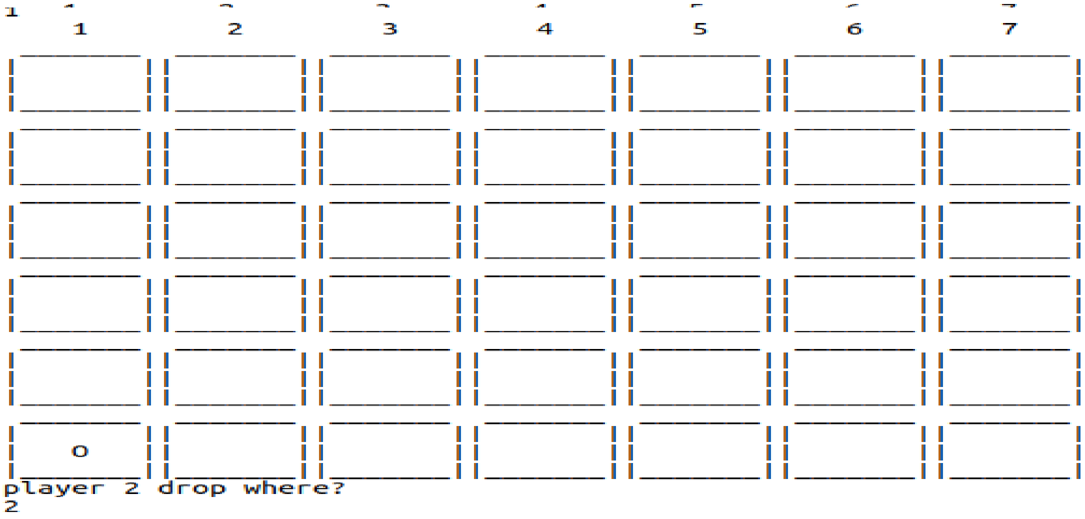

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      1         2         3         4         5         6         7
  ________  ________  ________  ________  ________  ________  ________
 |        ||        ||        ||        ||        ||        ||        |
 |________||________||________||________||________||________||________|
  ________  ________  ________  ________  ________  ________  ________
 |        ||        ||        ||        ||        ||        ||        |
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  ________  ________  ________  ________  ________  ________  ________
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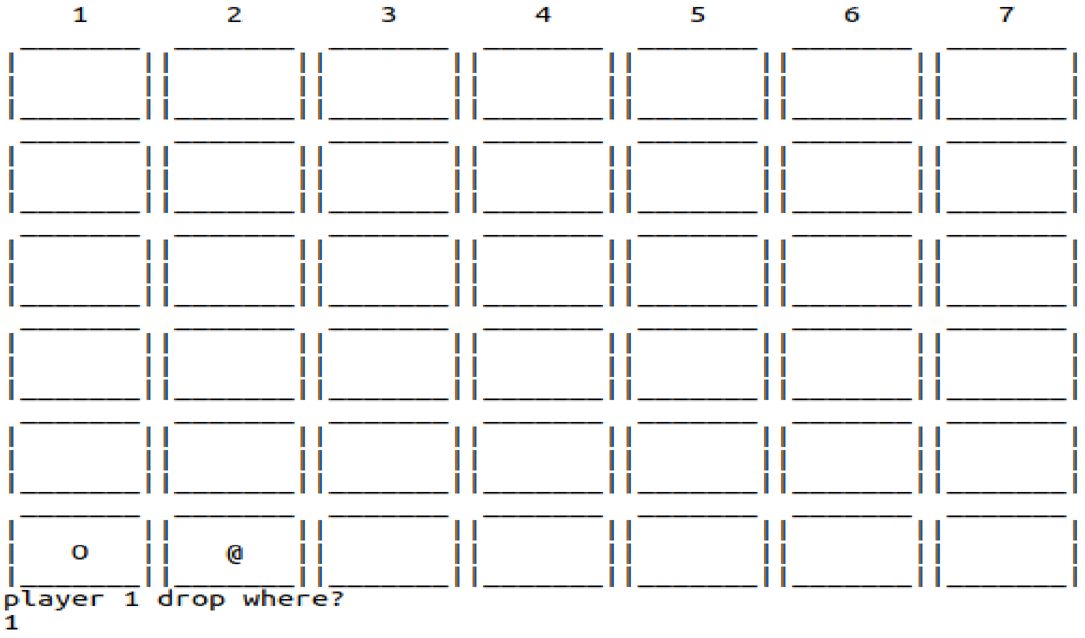
 |________||________||________||________||________||________||________|
  ________  ________  ________  ________  ________  ________  ________
 |        ||        ||        ||        ||        ||        ||        |
 |________||________||________||________||________||________||________|
  ________  ________  ________  ________  ________  ________  ________
 |        ||        ||        ||        ||        ||        ||        |
 |________||________||________||________||________||________||________|
  ________  ________  ________  ________  ________  ________  ________
 |    O   ||        ||        ||        ||        ||        ||        |
 |________||________||________||________||________||________||________|
player 2 drop where?
2
```



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      1         2         3         4         5         6         7
  ________  ________  ________  ________  ________  ________  ________
 |        ||        ||        ||        ||        ||        ||        |
 |________||________||________||________||________||________||________|
  ________  ________  ________  ________  ________  ________  ________
 |        ||        ||        ||        ||        ||        ||        |
 |________||________||________||________||________||________||________|
  ________  ________  ________  ________  ________  ________  ________
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  ________  ________  ________  ________  ________  ________  ________
 |        ||        ||        ||        ||        ||        ||        |
 |________||________||________||________||________||________||________|
  ________  ________  ________  ________  ________  ________  ________
 |        ||        ||        ||        ||        ||        ||        |
 |________||________||________||________||________||________||________|
  ________  ________  ________  ________  ________  ________  ________
 |    O   ||    @   ||        ||        ||        ||        ||        |
 |________||________||________||________||________||________||________|
player 1 drop where?
1
```

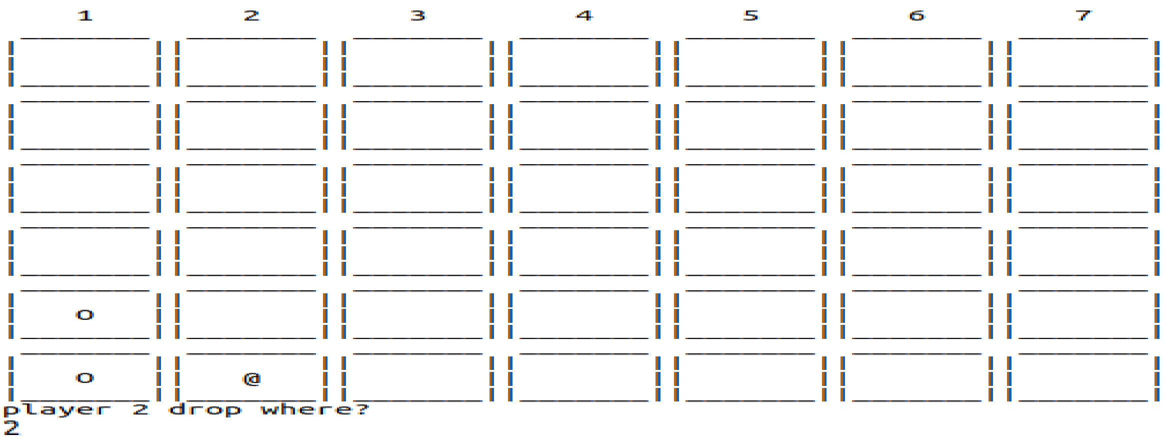

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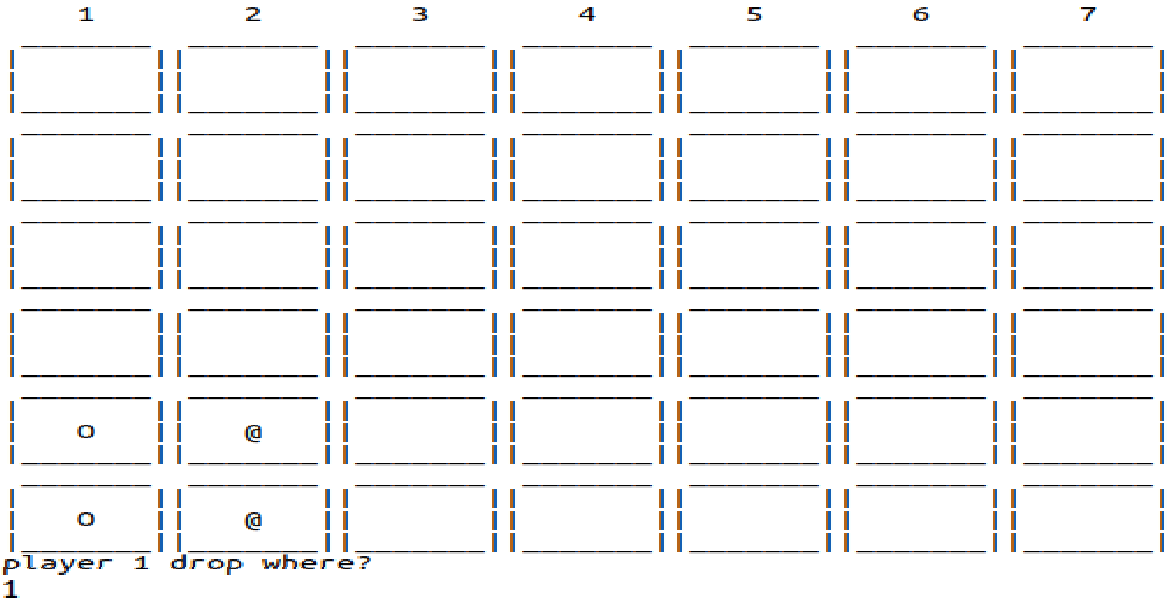
    1         2         3         4         5         6         7
 ________  ________  ________  ________  ________  ________  ________
|________||________||________||________||________||________||________|
 ________  ________  ________  ________  ________  ________  ________
|________||________||________||________||________||________||________|
 ________  ________  ________  ________  ________  ________  ________
|________||________||________||________||________||________||________|
 ________  ________  ________  ________  ________  ________  ________
|________||________||________||________||________||________||________|
 ________  ________  ________  ________  ________  ________  ________
|   O    ||        ||        ||        ||        ||        ||        |
|________||________||________||________||________||________||________|
 ________  ________  ________  ________  ________  ________  ________
|   O    ||   @    ||        ||        ||        ||        ||        |
|________||________||________||________||________||________||________|
player 2 drop where?
2
```



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    1         2         3         4         5         6         7
 ________  ________  ________  ________  ________  ________  ________
|        ||        ||        ||        ||        ||        ||        |
|________||________||________||________||________||________||________|
 ________  ________  ________  ________  ________  ________  ________
|        ||        ||        ||        ||        ||        ||        |
|________||________||________||________||________||________||________|
 ________  ________  ________  ________  ________  ________  ________
|        ||        ||        ||        ||        ||        ||        |
|________||________||________||________||________||________||________|
 ________  ________  ________  ________  ________  ________  ________
|        ||        ||        ||        ||        ||        ||        |
|________||________||________||________||________||________||________|
 ________  ________  ________  ________  ________  ________  ________
|   O    ||   @    ||        ||        ||        ||        ||        |
|________||________||________||________||________||________||________|
 ________  ________  ________  ________  ________  ________  ________
|   O    ||   @    ||        ||        ||        ||        ||        |
|________||________||________||________||________||________||________|
player 1 drop where?
1
```

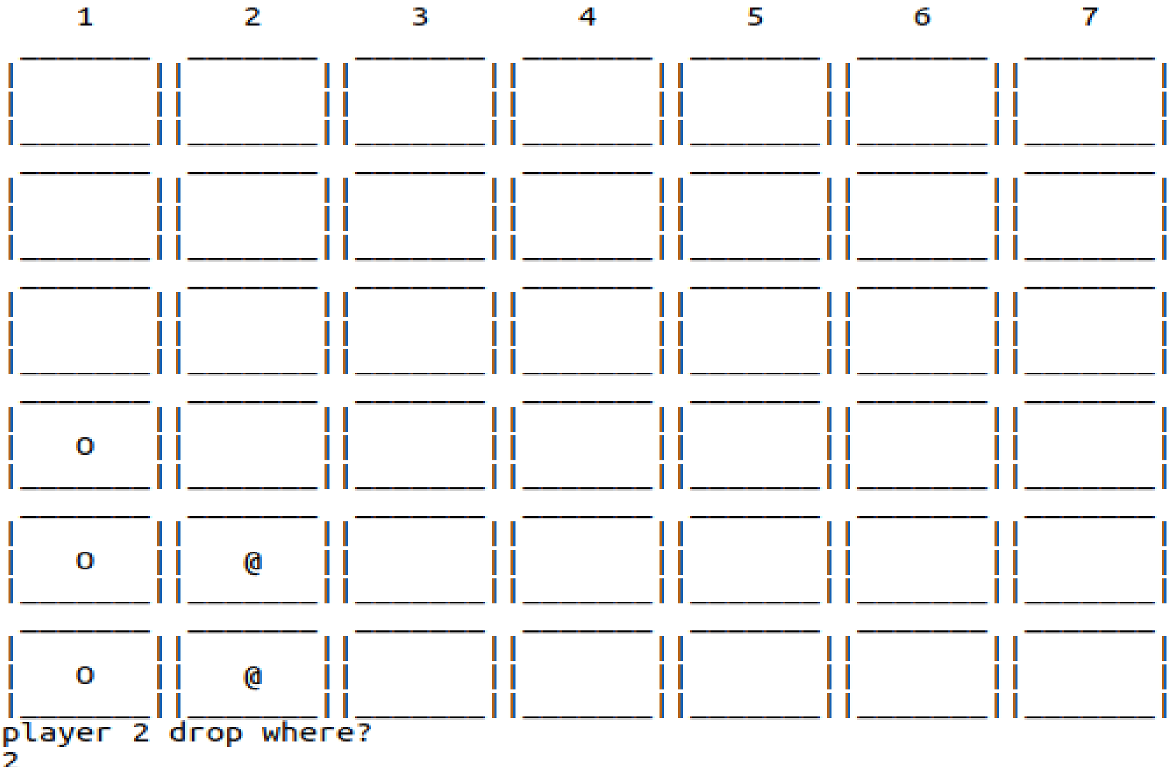

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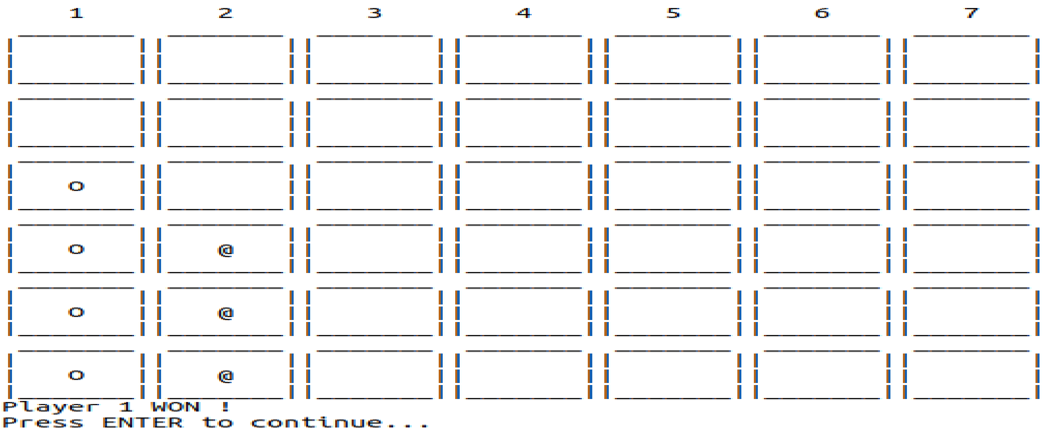
    1         2         3         4         5         6         7
 ________  ________  ________  ________  ________  ________  ________
|        ||        ||        ||        ||        ||        ||        |
|________||________||________||________||________||________||________|
 ________  ________  ________  ________  ________  ________  ________
|        ||        ||        ||        ||        ||        ||        |
|________||________||________||________||________||________||________|
 ________  ________  ________  ________  ________  ________  ________
|        ||        ||        ||        ||        ||        ||        |
|________||________||________||________||________||________||________|
 ________  ________  ________  ________  ________  ________  ________
|   O    ||        ||        ||        ||        ||        ||        |
|________||________||________||________||________||________||________|
 ________  ________  ________  ________  ________  ________  ________
|   O    ||   @    ||        ||        ||        ||        ||        |
|________||________||________||________||________||________||________|
 ________  ________  ________  ________  ________  ________  ________
|   O    ||   @    ||        ||        ||        ||        ||        |
|________||________||________||________||________||________||________|
player 2 drop where?
2
```



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    1        2        3        4        5        6        7
 _______  _______  _______  _______  _______  _______  _______
|       ||       ||       ||       ||       ||       ||       |
|_______||_______||_______||_______||_______||_______||_______|
 _______  _______  _______  _______  _______  _______  _______
|       ||       ||       ||       ||       ||       ||       |
|_______||_______||_______||_______||_______||_______||_______|
 _______  _______  _______  _______  _______  _______  _______
|   o   ||       ||       ||       ||       ||       ||       |
|_______||_______||_______||_______||_______||_______||_______|
 _______  _______  _______  _______  _______  _______  _______
|   o   ||   @   ||       ||       ||       ||       ||       |
|_______||_______||_______||_______||_______||_______||_______|
 _______  _______  _______  _______  _______  _______  _______
|   o   ||   @   ||       ||       ||       ||       ||       |
|_______||_______||_______||_______||_______||_______||_______|
 _______  _______  _______  _______  _______  _______  _______
|   o   ||   @   ||       ||       ||       ||       ||       |
|_______||_______||_______||_______||_______||_______||_______|
Player 1 WON !
Press ENTER to continue...
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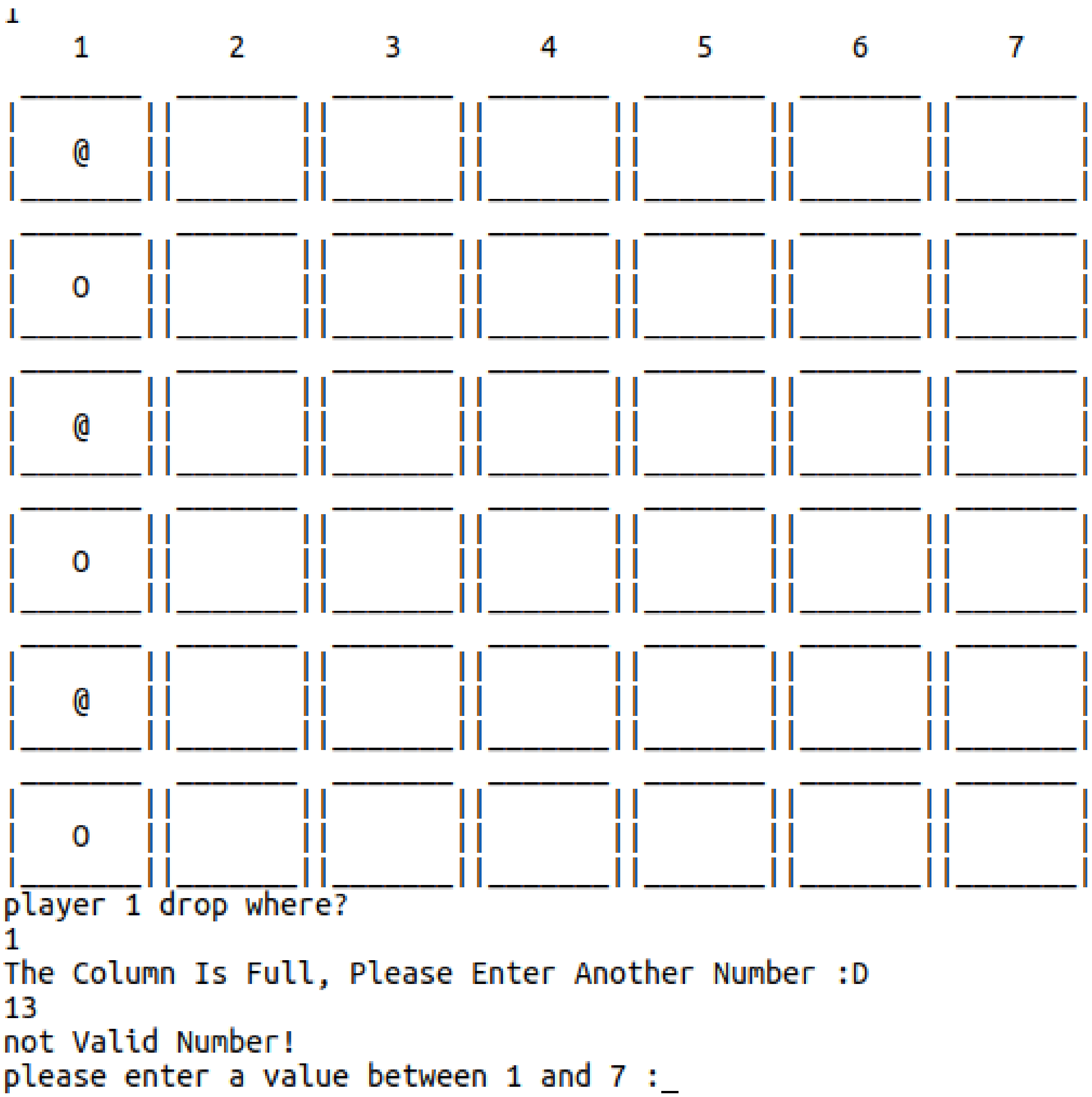
Test Case With Non-Valid Input



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1
    1        2        3        4        5        6        7
 _______  _______  _______  _______  _______  _______  _______
|       ||       ||       ||       ||       ||       ||       |
|   @   ||       ||       ||       ||       ||       ||       |
|_______||_______||_______||_______||_______||_______||_______|
 _______  _______  _______  _______  _______  _______  _______
|       ||       ||       ||       ||       ||       ||       |
|   O   ||       ||       ||       ||       ||       ||       |
|_______||_______||_______||_______||_______||_______||_______|
 _______  _______  _______  _______  _______  _______  _______
|       ||       ||       ||       ||       ||       ||       |
|   @   ||       ||       ||       ||       ||       ||       |
|_______||_______||_______||_______||_______||_______||_______|
 _______  _______  _______  _______  _______  _______  _______
|       ||       ||       ||       ||       ||       ||       |
|   O   ||       ||       ||       ||       ||       ||       |
|_______||_______||_______||_______||_______||_______||_______|
 _______  _______  _______  _______  _______  _______  _______
|       ||       ||       ||       ||       ||       ||       |
|   @   ||       ||       ||       ||       ||       ||       |
|_______||_______||_______||_______||_______||_______||_______|
 _______  _______  _______  _______  _______  _______  _______
|       ||       ||       ||       ||       ||       ||       |
|   O   ||       ||       ||       ||       ||       ||       |
|_______||_______||_______||_______||_______||_______||_______|
player 1 drop where?
1
The Column Is Full, Please Enter Another Number :D
13
not Valid Number!
please enter a value between 1 and 7 :_
```