Sabancı University

Faculty of Engineering and Natural Sciences
CS204 Advanced Programming
Spring 2024

Homework 5 – A modified Connect Four game with object sharing

Due: 15/05/2024, Wednesday 21:00

PLEASE NOTE:

Your program should be a robust one such that you have to consider all relevant programmer mistakes and extreme cases; you are expected to take actions accordingly!

You can NOT collaborate with your friends and discuss solutions. You have to write down the code on your own. Plagiarism will not be tolerated!

Introduction

In this homework, you are asked to implement a simple board game using the *object sharing* concept of C++. The main function, which includes the game implementation using classes, is given to you. You are expected to write two classes: *Board* class and *Player* class. We are going to explain these classes in more details in the following sections. Before that, we start with a general description of the game.

The Game

The game is a modified version of the well-known two-player game called Connect-4 game. In our version, called *Rotated Connect-N* game, the game board is a dynamic character matrix (of `char` type). The board matrix is a square one, meaning that there are same amount of rows and columns; this dimension is input by the user during execution. The game is played by two players in turns and each player has game pieces, which are represented as characters in the program. Initially, each player is given a character ('X' and 'O') to represent his/her game pieces on the game board.

Before starting the game, we input the board size (dimension) and, *N*, which is the necessary length of the line that the players need to form in order to win the game. The board is of square shape, that means it has the same amount of the rows and columns; what we mean by the size of the board is this value.

After the game starts, players take turns. At each turn, each player has 2 options to perform. They can either (i) put a piece to the board or (ii) turn the board clockwise.

If a player opts to put a piece to the board, first he/she inputs a column index. After that, his/her piece is dropped through that column and is placed due to gravity; i.e. is placed just above the topmost piece in that column. If the player opts to turn the board clockwise, then the board is turned 90° toward right and rows become columns. As a consequence, after rotation, all pieces in all columns drop down as if there was gravity.

Whenever a player manages to create a line that contains *N* of his/her pieces horizontally, vertically or diagonally, he/she wins the game. In the case that the board becomes full of pieces and no one created a line with *N* pieces, then it is draw. As a special case, it is possible that both players win at the same time after turning the board; in this case, the game ends with a draw as well.

Here is a sample iteration of the game, which may help to illustrate the gameplay. The game begins with an empty board as shown below in Fig. 1. Let us assume that p1 and p2 are playing, and p1 uses 'O' character as her game piece and p2 uses 'X' character. An empty cell is represented via '-' character. The board size was entered as 4 and necessary length to win the game, *N*, was entered as 3. The column indices start with 0 from left (leftmost column is the 0^{th} one, rightmost column is 3^{rd} one in this example).

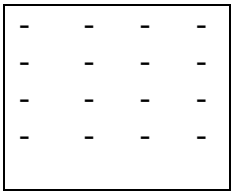

Fig 1. Initial State of the Board of size 4 (4 rows and 4 columns)

Let us also assume that p1 starts first and opts to place a piece. p1 can choose any column on the board, that means an integer in the interval [0, 3]. If p1 chooses column 2, the next state of the game board will be as follows (Fig. 2).

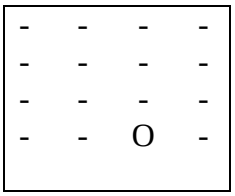

Fig 2. After p1 plays by selecting column 2

Then it will be p2's turn. If p2 decides to place a piece and chooses column 2 again, his/her piece will drop down at the top of the p1's piece. The board becomes as in Fig. 3.

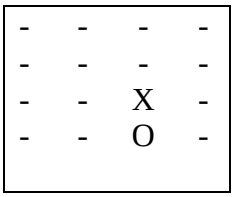

Fig 3.After p2's turn (selecting column 2 to play)

In the next turn, if p1 chooses to place a piece on column 0, the board becomes as follows (Fig. 4).

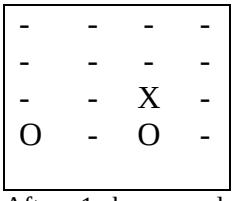

Fig 4.After p1 chooses column 0

Suppose in the next turn, p2 opts to turn the board clockwise. In Fig. 5, the board is shown just after turning. In Fig. 6, the gravity is applied to the board and the turn of p2 is completed.

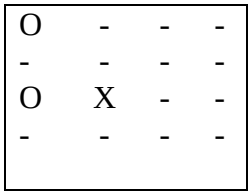

Fig 5. First, board is rotated 90 degrees clockwise.

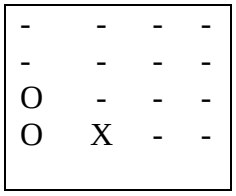

Fig 6. Then, pieces drop down within their corresponding columns.

In the next turn, p1 opts to place a piece on column 0. The game is finished as p1 has 3 game pieces in a line.

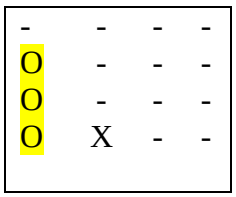

Fig 7. The final state of the board if p1 selects column 0

In these illustrations, only valid moves are exemplified. Of course, the players may attempt to make an invalid move such as

- attempting to put a piece on a column which is out of index.
- attempting to put a piece on a non-empty column.

Program Flow

First, the user of the program enters the size (dimension) of the board. Board size must be in the range of [4, 10]. If the user enters an integer that is not in this range, he/she must reenter the board size until correct value has been entered. After entering a valid board size, the user is asked to enter *N*, the necessary length of the connection for a user to form in order to win. This value must be between [3, board size] and if incorrect value is entered, the user reenters until the correct one is input. Then, the game starts and each player takes his/her turn. At each turn, each player first enters his/her option for the action; put piece OR turn board clockwise. If the player chooses to turn the board, then the board turns clockwise and then all pieces drops down according to gravity. If the player chooses to put a piece, then he/she must enter a valid column index and his/her piece is dropped in through that column. If invalid column index is entered (i.e. full column OR index out of [0, board size -1] range), the player reenters until the correct one is entered.

Player continue to play one by one until one of them wins or the game ends with a draw (no place for the pieces or both players win simultaneously).

All integer inputs are assumed to be entered as integers; if you enter a non-integer, the program may get into an infinite loop. Thus, please do not enter non-integer inputs.

Actually this gameplay logic has been partially implemented in main and it is provided to you in the homework package. It is partial because the main program uses two classes that you are going to implement. These classes are explained below.

The `Board` Class

The `Board` class will be used to create and manipulate a board on which the game will be played. A board is represented by a dynamic matrix, which is a private data member of the class. The matrix will be a square matrix and will be created dynamically with the given size (dimension). You can define this private data member of type `char**` .Other than this, you will also keep the number of row/column of the square matrix (i.e. its size) and *N* values as the private data.

Now, we will give the constructor and some of the public member function explanations of the `Board` class.

Constructor: Constructor will take 2 integer values as parameters: size of the board, and necessary length of pieces needed to win the game (i.e. *N*). Then, the constructor should dynamically create the matrix with the given size and initialize it by assigning '-' character to every cell. To repeat, the matrix must be created dynamically and stored in the heap.

Destructor: Destructor will deallocate all the dynamic memory.

print_board: The print_board function does not take any parameters and does not return anything. It only displays the current state of the board. You need to display the game board exactly as in the sample runs.

put_piece: This function basically adds a game piece on the board. It takes one `char` and one `int` parameter, and returns a Boolean value. The integer parameter specifies the column index of the board through which the piece will be dropped. The character parameter specifies the symbol of the player's game piece. You need to perform range check for the column value. Moreover, you need to make sure that the column has enough space to drop a piece in. This function is supposed to return *true* if the piece is successfully dropped through the column of the board. Otherwise, it returns *false*.

turn_board_clockwise: This function does not take any parameters and does not return anything. It will rotate the board 90 degrees clockwise. After the rotation, the game pieces will automatically drop down as if there is gravity.

get_game_status: This function is used to check whether the game is over or not, and also it checks the winner, if any. This function takes no parameters. It returns a char value that represents the game piece of the winner, if there is a single winner. If there is draw, meaning that all of the cells are full, but no one has won, or both players win at the same time, then the

function will return char value 'D' for draw. If the game is not over, then this function returns dash '-' character.

Some of the above functions are explicitly used in the game implementation given to you in main.cpp. However, some of them are not directly used in main.cpp; but they need to be used by the `Player` class member functions. Since the use of friend functions and friend classes are **not** allowed in this homework, in the implementation of the `Player` class, you will need to use them to manipulate the shared board object. You are free to add more private utility functions to the `Board` class in order to help the implementation of it, but no extra functions can be used in the `Player` class (i.e. no extra public member functions).

We did not ask for implementing copy constructor and assignment (=) operator for the `Board` class since they have not been used in main. However, if you want to use them within the class implementation, you can implement them appropriately. Here please remark that if you implicitly or explicitly use copy constructor or assignment without implementing them, compiler provided versions are used. Since they make shallow copy, you end up in trouble.

The `Player` Class

The `Player` class will be used to manage the players of the game. There will be two players playing on the same board in a game. Thus, player objects must share a `Board` object using *object sharing* concept and principles of C++ as we have seen in the lectures. We have seen two different methods for object sharing in the course; due to our main function implementation, which is provided to you, you must use the reference variable method.

The `Player` class should keep its game piece in a `char` type of private data member. Now, we will give constructor and member function explanations of the `Player` class.

Constructor: The constructor of the `Player` class takes two parameters, which are the `Board` object that will be played on and the game piece character of the player. These parameters are used to initialize the corresponding private data members.

put: It takes one integer parameter representing the column number of the matrix on which a game piece should be put. You have to utilize put_piece member function of the `Board` class here. You do not need to perform any checks since all the checks are done in the `Board`'s put_piece function. This function returns a Boolean value. The function should return *true* if the piece is placed successfully on the game board; otherwise, it should return *false*.

turn_board: This function does not take any parameters and does not return anything. It turns the board clockwise. You have to utilize turn_board_clockwise function of the `Board` class here.

is_winner: This function does not take any parameters. It will return *true* if the player has won the game; it returns *false* otherwise. You have to use get_game_status function of the `Board` class in this implementation.

get_symbol: This function does not take any parameters and returns the player's game piece character.

Ne extra functions can be added.

Using Object Sharing Principles and Object Oriented Design

In your program, the *Board* object must be shared by the *Player* objects. For this object sharing, you have to employ the method that uses reference variables.

It should be clear that you will write two classes for `Board` and `Player`. You need to analyze the requirements carefully and make a good object-oriented design for these classes. In this context, you have to determine the data members and design/implement member functions of each class correctly. We will evaluate your object oriented design as well. Moreover, you are not allowed to use friend class or friend functions in your design (i.e. you are not allowed to use the `friend` keyword anywhere in your code). Our aim by this restriction is not to make your life miserable, but to enforce you to proper object oriented design and implementation.

Provided main cpp file, and the requested class implementations

In this homework, main.cpp file is given to you within this homework package and we will test your codes with this main function with different inputs. The cpp file contains the game implementation by using related class functions. In this homework, our aim is to reinforce object oriented design capabilities; thus, we did not want you to deal with the class usage, but focus on their design and implementation. Please examine this provided file in order to understand how the classes are used and how the game is played. You are not allowed to make any modifications in main. All class related functions, definitions and declarations must be implemented in class header and implementation files named as `Board.h`, `Board.cpp`, `Player.h`, and `Player.cpp`.

Submission Rules, etc.

You will submit four files: `Board.h`, `Board.cpp`, `Player.h`, and `Player.cpp` files. **`Board.cpp` file's content will be copied and pasted into the "Answer" area** of CodeRunner as in other assignments. **However, you will upload `Board.h`, `Player.h`**, and **`Player.cpp` files as attachment** to your submission in the relevant assignment submission page on SUCourse+.

The file names that you will upload must definitely be **`Board.h`, `Player.h`**, and **`Player.cpp`**; otherwise it does not work. Moreover, you will not upload the provided main.cpp file; we have already put it there.

Other submission, grading, programming and plagiarism related rules are basically the same as the previous assignments; thus we do not repeat them here.

Good Luck!
Batuhan Kertmen, Albert Levi

Sample Runs

Sample runs are given below, but these are not comprehensive, therefore you must consider **all possible cases** to get a full mark. User inputs are shown in **bold**.

We configured CodeRunner to test these sample runs for you (as visible test cases). However, there also are some hidden test cases that would affect your grade. We will not disclose the hidden test cases before the grading has been completed.

We do **not** recommend you to copy and paste the prompts and messages from this document since some hidden control characters and non-standard characters might cause problems in CodeRunner.

Sample Run 1

```
Please enter board size
4
Please enter connected piece count necessary to win
3

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----

It is O's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
0

----
----
----
O---

It is X's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
1

----
----
----
OX--

It is O's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
0

----
----
O---
OX--

It is X's turn.
1 - Place a piece to the board
```

```
2 - Turn the board clockwise
1
Write column number you want to put your piece in
1

----
----
OX--
OX--

It is O's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
0

----
O---
OX--
OX--

Congratulations! Player O, you have won! Player X had no chance of defeating you!
```

Sample Run 2

```
Please enter board size
4
Please enter connected piece count necessary to win
3

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----
----
----

It is O's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
-1
You can not place a piece to column -1. Invalid column index or full
Write column number you want to put your piece in
0

----
----
----
O---

It is X's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
4
You can not place a piece to column 4. Invalid column index or full
Write column number you want to put your piece in
1

----
----
----
OX--
```

```
It is O's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
0

----
----
O---
OX--

It is X's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
1

----
----
OX--
OX--

It is O's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
0

----
O---
OX--
OX--

Congratulations! Player O, you have won! Player X had no chance of defeating you!
```

Sample Run 3

```
Please enter board size
4
Please enter connected piece count necessary to win
3

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----
----
----

It is O's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
0

----
----
----
O---

It is X's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
```

```
Write column number you want to put your piece in
0

----
----
X---
O---

It is O's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
0

----
O---
X---
O---

It is X's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
0

X---
O---
X---
O---

It is O's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
0
You can not place a piece to column 0. Invalid column index or full
Write column number you want to put your piece in
1

X---
O---
X---
OO--

It is X's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
1

X---
O---
XX--
OO--

It is O's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
2

X---
O---
```

```
XX--
OOO-

Congratulations! Player O, you have won! Player X had no chance of defeating you!
```

Sample Run 4

```
Please enter board size
6
Please enter connected piece count necessary to win
6

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It is O's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
0

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------
------
------
------
O-----

It is X's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
0

------
------
------
------
X-----
O-----

It is O's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
1

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------
------
------
X-----
OO----

It is X's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
```

1

```
------
------
------
------
XX----
OO----
```

It is O's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
2

```
------
------
------
------
XX----
OOO---
```

It is X's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
2

```
------
------
------
------
XXX---
OOO---
```

It is O's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
3

```
------
------
------
------
XXX---
OOOO--
```

It is X's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
3

```
------
------
------
------
XXXX--
OOOO--
```

It is O's turn.
1 - Place a piece to the board
2 - Turn the board clockwise

1
Write column number you want to put your piece in
4

```
------
------
------
------
XXXX--
OOOOO-
```

It is X's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
4

```
------
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------
------
XXXXX-
OOOOO-
```

It is O's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
0

```
------
------
------
O-----
XXXXX-
OOOOO-
```

It is X's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
5

```
------
------
------
O-----
XXXXX-
OOOOOX
```

It is O's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
1

```
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OO----
XXXXX-
OOOOOX
```

It is X's turn.

```
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
5

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------
------
OO----
XXXXXX
OOOOOX

Congratulations! Player X, you have won! Player O had no chance of defeating you!
```

Sample Run 5

```
Please enter board size
5
Please enter connected piece count necessary to win
3

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It is O's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
0

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O----

It is X's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
1

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-----
-----
OX---

It is O's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
1

-----
-----
-----
-O---
OX---
```

```
It is X's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
2

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-----
-----
-O---
OXX--

It is O's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
3

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-----
-----
-O---
OXXO-

It is X's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
2

-----
-----
-----
-OX--
OXXO-

It is O's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
2

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-----
--O--
-OX--
OXXO-

Congratulations! Player O, you have won! Player X had no chance of defeating you!
```

Sample Run 6

```
Please enter board size
10
Please enter connected piece count necessary to win
3

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It is O's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
0

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O---------

It is X's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
2

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O-X-------

It is O's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
0

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O---------
O-X-------

It is X's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
0
```

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X---------
O---------
O-X-------

It is O's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
1

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X---------
O---------
OOX-------

It is X's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
1

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----------
X---------
OX--------
OOX-------

Congratulations! Player X, you have won! Player O had no chance of defeating you!
```

Sample Run 7

```
Please enter board size
5
Please enter connected piece count necessary to win
4

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It is O's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
```

0

```
-----
-----
-----
-----
O----
```

It is X's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
2

```
-----
-----
-----
-----
O----
```

It is O's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
2

```
-----
-----
-----
-----
O-O--
```

It is X's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
0

```
-----
-----
-----
X----
O-O--
```

It is O's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
0

```
-----
-----
O----
X----
O-O--
```

It is X's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
2

```
-----
-----
-----
O----
OXO--
```

```
It is O's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
1

-----
-----
-----
OO---
OXO--

It is X's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
1

-----
-----
-X---
OO---
OXO--

It is O's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
0

-----
-----
OX---
OO---
OXO--

It is X's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
0

-----
X----
OX---
OO---
OXO--

It is O's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
2

-----
X----
OX---
OOO--
OXO--

It is X's turn.
1 - Place a piece to the board
```

```
2 - Turn the board clockwise
1
Write column number you want to put your piece in
1

-----
XX---
OX---
OOO--
OXO--

It is O's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
3

-----
XX---
OX---
OOO--
OXOO-

It is X's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
3

-----
XX---
OX---
OOOX-
OXOO-

It is O's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
2

-----
OO---
XO---
OOOX-
OXXX-

It is X's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
4

-----
OO---
XO---
OOOX-
OXXXX

Congratulations! Player X, you have won! Player O had no chance of defeating you!
```

Sample Run 8

```
Please enter board size
5
Please enter connected piece count necessary to win
3

-----
-----
-----
-----
-----

It is O's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
0

-----
-----
-----
-----
O----

It is X's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
0

-----
-----
-----
X----
O----

It is O's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
1

-----
-----
-----
X----
OO---

It is X's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
0

-----
-----
X----
X----
OO---

It is O's turn.
1 - Place a piece to the board
```

```
2 - Turn the board clockwise
1
Write column number you want to put your piece in
3

-----
-----
X----
X----
OO-O-

It is X's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
3

-----
-----
X----
X--X-
OO-O-

It is O's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
4

-----
-----
X----
X--X-
OO-OO

It is X's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
2

-----
O----
O----
OX---
OXX--

Congratulations! Player O, you have won! Player X had no chance of defeating you!
```

Sample Run 9

```
Please enter board size
4
Please enter connected piece count necessary to win
4

----
----
----
----

It is O's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
```

```
Write column number you want to put your piece in
0

----
----
----
O---

It is X's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
0

----
----
X---
O---

It is O's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
1

----
----
X---
OO--

It is X's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
1

----
----
XX--
OO--

It is O's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
0

----
O---
XX--
OO--

It is X's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
2

----
O---
XX--
OOX-
```

```
It is O's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
1

----
OO--
XX--
OOX-

It is X's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
3

----
OO--
XX--
OOXX

It is O's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
2

----
OO--
XXO-
OOXX

It is X's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
0

X---
OO--
XXO-
OOXX

It is O's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
3

X---
OO--
XXOO
OOXX

It is X's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
2

X---
```

```
OOX-
XXOO
OOXX

It is O's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
2

X-O-
OOX-
XXOO
OOXX

It is X's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
3

X-O-
OOXX
XXOO
OOXX

It is O's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
3

X-OO
OOXX
XXOO
OOXX

It is X's turn.
1 - Place a piece to the board
2 - Turn the board clockwise
1
Write column number you want to put your piece in
0
You can not place a piece to column 0. Invalid column index or full
Write column number you want to put your piece in
5
You can not place a piece to column 5. Invalid column index or full
Write column number you want to put your piece in
-1
You can not place a piece to column -1. Invalid column index or full
Write column number you want to put your piece in
1

XXOO
OOXX
XXOO
OOXX

It is a draw!
```