Homework #4

Complete By: **Monday, April 1st @ noon**
Submission: **submitted via Gradescope and Blackboard**

Connect Four

Write a modular Connect Four program in Python. Your design should factor in the possibility of extending the application in several ways. To name some possibilities of ways we might augment the program by replacing modules:
Model
> Resizable Board
> n-players
> Connect Three or Five
> Allowing for the duplication of boards for an AI to speculatively explore
> The ability to save and replay the history of a game

View
> ASCII – different board designs/spacing
> HTML
> Tkinter or other Graphical Display

Controller
> Enter Location as a single value
> Use mouse to click location
> Use mouse or keyboard to select buttons in a web page
> Arrows to highlight locations + enter/space to select a location
> Accept commands via packets over the network
> AI player replacing a human player

You do not need to implement any of these for this assignment, these are possibilities for future development you should be aware of as you design your application. Ways you can support this extensibility is by parameterizing your functions with defaults for the current configuration, or modularizing pieces of your application so they can be swapped out by replacing a single file or import statement. For this assignment only the basic game of Connect Four between two human players taking turns on the same machine with a basic console display representing the state of the board and moves entered on the keyboard.

Step 1: Class Entities

Build the skeleton of the Model. This includes a board supporting a 7 column by 6 row playing field.
Each location should be aware of whether or not it contains a game piece. You may wish to have the location be aware of the location below it, to determine whether a piece lands in that location or continues downward.
Pieces belong to either the Black player or Red player, and should be aware of their location.

The rules of the game are as follows. The two players are assigned the colors Black and Red. Each player is given 56 pieces of their color. The Red player plays first. On a player's turn they select a column to place a piece into.

The piece travels down the column until it either lands on top of another piece (settling in the row above that piece) or on the bottom row of the board. After placement, the board state is checked to see whether that player has won the game. If the piece placed forms a straight line of 4 pieces of the same color (horizontally, vertically, or along either diagonal) then that player wins. Otherwise the player's turn has ended and play proceeds with the other player's turn.

You may share the framework you set up to this point, including class names and function prototypes on Piazza. This application could be written without classes at all, as might show up in an introductory CS course, what makes this assignment interesting is producing a modular design.

Step 2: Implementing the Rule Set

The player should have a color. The player should also have a function chooseMove that returns a number of which column the player wishes to place their piece in.

The board should support a function makeMove that takes a number and a piece as a parameter, and then simulates the physics of the game by placing the piece into the numbered column and letting the piece drop to the lowest unoccupied position in that column. This function returns a boolean, true if the move is possible, false if the move is not possible, which would occur if the column is already filled with pieces. The board should also have a function checkIfWinner that takes a piece as a parameter and examines the board for a winning state containing that piece. You do not need to check the entire board for all possibilities, only the possibilities extending from the given piece.

Step 3: Building a playable game

For this assignment you will have a textual representation of the board printed to the console. The board is made up of vertical and horizontal lines, with vertical lines being represented by the | character, horizontal lines represented by the - character, and their cross represented by the + character. Represent a black piece on the board with a capital B. Represent a red piece with a capital R. To make input easier, label each column with the number the user would have to input to place a piece in that column at the bottom of the column, starting with 1 for the leftmost column.

You should be able to select how large you want the output to be, that is how much space each cell takes. For example, here are three sizes of locations.

```
0 spaces :   +-+      1 space      +---+          2 spaces      +-----+
             |B|                   | B |                        |  B  |
             +-+                   +---+                         +-----+
```

Input is done via the console as well. Each turn, the board should be displayed and then the program should state which turn of the game they are on and ask the user to select a column in which to place their piece. If the input is outside the board or in a column that is already full, notify the user and ask them to choose a new column. If the piece results in that player winning, inform the user that the game has ended and they have won. If the piece placed results in the whole board being filled, notify the user that the game has ended in a tie. If the game has ended then ask whether they wish to play again, which will set up a new game with an empty board, otherwise start the next player's turn.

An example is as follows:
```
Turn 1: Player 1 (Black), choose your move: 15
Invalid move, outside board, try again: 1
Invalid move, Column is full, try again: 3
```

Here is what a sample output of the application might look like. User input is in bold.

```
Please choose the board spacing: 0
Type the column in which you wish to move.
+-+-+-+-+-+-+-+
+ | | | | | | |
+-+-+-+-+-+-+-+
+ | | | | | | |
+-+-+-+-+-+-+-+
+ | | | | | | |
+-+-+-+-+-+-+-+
+ | | | | | | |
+-+-+-+-+-+-+-+
+ | | | | | | |
+-+-+-+-+-+-+-+
+ | | | | | | |
+-+-+-+-+-+-+-+
 1 2 3 4 5 6 7

Turn 1: Player 1 (R), choose your move: 1


+-+-+-+-+-+-+-+
+ | | | | | | |
+-+-+-+-+-+-+-+
+ | | | | | | |
+-+-+-+-+-+-+-+
+ | | | | | | |
+-+-+-+-+-+-+-+
+ | | | | | | |
+-+-+-+-+-+-+-+
+ | | | | | | |
+-+-+-+-+-+-+-+
+R| | | | | | |
+-+-+-+-+-+-+-+
 1 2 3 4 5 6 7

Turn 2: Player 2 (B), choose your move: 3


+-+-+-+-+-+-+-+
+ | | | | | | |
+-+-+-+-+-+-+-+
+ | | | | | | |
+-+-+-+-+-+-+-+
+ | | | | | | |
+-+-+-+-+-+-+-+
+ | | | | | | |
+-+-+-+-+-+-+-+
+ | | | | | | |
+-+-+-+-+-+-+-+
+R| |B| | | | |
+-+-+-+-+-+-+-+
 1 2 3 4 5 6 7

Turn 3: Player 1 (R), choose your move: 1


+-+-+-+-+-+-+-+
+ | | | | | | |
+-+-+-+-+-+-+-+
+ | | | | | | |
```

```
+-+-+-+-+-+-+-+
+ | | | | | | |
+-+-+-+-+-+-+-+
+ | | | | | | |
+-+-+-+-+-+-+-+
+R| | | | | | |
+-+-+-+-+-+-+-+
+R| |B| | | | |
+-+-+-+-+-+-+-+
 1 2 3 4 5 6 7
```

Turn 4: Player 2 (B), choose your move: **4**

```
+-+-+-+-+-+-+-+
+ | | | | | | |
+-+-+-+-+-+-+-+
+ | | | | | | |
+-+-+-+-+-+-+-+
+ | | | | | | |
+-+-+-+-+-+-+-+
+ | | | | | | |
+-+-+-+-+-+-+-+
+R| | | | | | |
+-+-+-+-+-+-+-+
+R| |B|B| | | |
+-+-+-+-+-+-+-+
 1 2 3 4 5 6 7
```

Turn 5: Player 1 (R), choose your move: **1**

```
+-+-+-+-+-+-+-+
+ | | | | | | |
+-+-+-+-+-+-+-+
+ | | | | | | |
+-+-+-+-+-+-+-+
+ | | | | | | |
+-+-+-+-+-+-+-+
+R| | | | | | |
+-+-+-+-+-+-+-+
+R| | | | | | |
+-+-+-+-+-+-+-+
+R| |B|B| | | |
+-+-+-+-+-+-+-+
 1 2 3 4 5 6 7
```

Turn 6: Player 2 (B), choose your move: **1**

```
+-+-+-+-+-+-+-+
+ | | | | | | |
+-+-+-+-+-+-+-+
+ | | | | | | |
+-+-+-+-+-+-+-+
+B| | | | | | |
+-+-+-+-+-+-+-+
+R| | | | | | |
+-+-+-+-+-+-+-+
+R| | | | | | |
+-+-+-+-+-+-+-+
+R| |B|B| | | |
```

```
+-+-+-+-+-+-+-+
 1 2 3 4 5 6 7

Turn 7: Player 1 (R), choose your move: 1

+-+-+-+-+-+-+-+
+ | | | | | | |
+-+-+-+-+-+-+-+
+R| | | | | | |
+-+-+-+-+-+-+-+
+B| | | | | | |
+-+-+-+-+-+-+-+
+R| | | | | | |
+-+-+-+-+-+-+-+
+R| | | | | | |
+-+-+-+-+-+-+-+
+R| |B|B| | | |
+-+-+-+-+-+-+-+
 1 2 3 4 5 6 7

Turn 8: Player 2 (B), choose your move: 5

+-+-+-+-+-+-+-+
+ | | | | | | |
+-+-+-+-+-+-+-+
+R| | | | | | |
+-+-+-+-+-+-+-+
+B| | | | | | |
+-+-+-+-+-+-+-+
+R| | | | | | |
+-+-+-+-+-+-+-+
+R| | | | | | |
+-+-+-+-+-+-+-+
+R| |B|B|B| | |
+-+-+-+-+-+-+-+
 1 2 3 4 5 6 7

Turn 9: Player 1 (R), choose your move: 1

+-+-+-+-+-+-+-+
+R| | | | | | |
+-+-+-+-+-+-+-+
+R| | | | | | |
+-+-+-+-+-+-+-+
+B| | | | | | |
+-+-+-+-+-+-+-+
+R| | | | | | |
+-+-+-+-+-+-+-+
+R| | | | | | |
+-+-+-+-+-+-+-+
+R| |B|B|B| | |
+-+-+-+-+-+-+-+
 1 2 3 4 5 6 7

Turn 10: Player 2 (B), choose your move: 1
Invalid move, column 1 is full, try again:
Turn 10: Player 2 (B), choose your move: 6

+-+-+-+-+-+-+-+
```

```
+R| | | | | | |
+-+-+-+-+-+-+-+
+R| | | | | | |
+-+-+-+-+-+-+-+
+B| | | | | | |
+-+-+-+-+-+-+-+
+R| | | | | | |
+-+-+-+-+-+-+-+
+R| | | | | | |
+-+-+-+-+-+-+-+
+R| |B|B|B|B| |
+-+-+-+-+-+-+-+
 1 2 3 4 5 6 7

Player 2 Wins!  Play again? (y/n): n
Goodbye!

------------------------------------------------------------
```

50% of the grade will be based on design. Here are some suggestions of features of design we will be looking for:
You should design your solution in such a way to prepare for future iterations of the game changing out the input method, graphical display, or even rule set for the game. Add comments to your modular decomposition to highlight which pieces of your modules are private and which define the API that the modules you would swap out would need to implement in order for the application to continue to function. Practice tight cohesion and loose coupling when designing your modules and be sure to define the contact points where modules are joined together (the interface for each module). It may help to submit a class diagram alongside your code to help identify the elements of the interface your classes define.
This application will be a console application in either Python, "compiled" and run at the command line. The name of the file containing your "main" function should be {your netid}HW04.py.
When finished, submit a zip containing all your source file(s) in a folder called {your netid} at the base directory of the zip (put your files into a folder, then zip that folder) to Gradescope AND Blackboard.

```
Please choose the board spacing: -1
Invalid size, choose again: 0
+-+-+-+-+-+-+-+
| | | | | | | | |
+-+-+-+-+-+-+-+
| | | | | | | | |
+-+-+-+-+-+-+-+
| | | | | | | | |
+-+-+-+-+-+-+-+
| | | | | | | | |
+-+-+-+-+-+-+-+
| | | | | | | | |
+-+-+-+-+-+-+-+
| | | | | | | | |
+-+-+-+-+-+-+-+
| | | | | | | | |
+-+-+-+-+-+-+-+

Turn 1: Player 1 (R), choose your move: 4

+-+-+-+-+-+-+-+
| | | | | | | | |
+-+-+-+-+-+-+-+
| | | | | | | | |
+-+-+-+-+-+-+-+
| | | | | | | | |
+-+-+-+-+-+-+-+
| | | | | | | | |
+-+-+-+-+-+-+-+
| | | | | | | | |
+-+-+-+-+-+-+-+
| | | |R| | | |
+-+-+-+-+-+-+-+

Turn 2: Player 2 (B), choose your move: 4

+-+-+-+-+-+-+-+
| | | | | | | | |
+-+-+-+-+-+-+-+
| | | | | | | | |
+-+-+-+-+-+-+-+
| | | | | | | | |
+-+-+-+-+-+-+-+
| | | | | | | | |
+-+-+-+-+-+-+-+
| | | |B| | | |
+-+-+-+-+-+-+-+
| | | |R| | | |
+-+-+-+-+-+-+-+

Turn 3: Player 1 (R), choose your move: 5
```

```
+-+-+-+-+-+-+-+
| | | | | | | |
+-+-+-+-+-+-+-+
| | | | | | | |
+-+-+-+-+-+-+-+
| | | | | | | |
+-+-+-+-+-+-+-+
| | | | | | | |
+-+-+-+-+-+-+-+
| | | |B| | | |
+-+-+-+-+-+-+-+
| | | |R|R| | |
+-+-+-+-+-+-+-+
```

Turn 4: Player 2 (B), choose your move: **3**

```
+-+-+-+-+-+-+-+
| | | | | | | |
+-+-+-+-+-+-+-+
| | | | | | | |
+-+-+-+-+-+-+-+
| | | | | | | |
+-+-+-+-+-+-+-+
| | | | | | | |
+-+-+-+-+-+-+-+
| | | |B| | | |
+-+-+-+-+-+-+-+
| | |B|R|R| | |
+-+-+-+-+-+-+-+
```

Turn 5: Player 1 (R), choose your move: **2**

```
+-+-+-+-+-+-+-+
| | | | | | | |
+-+-+-+-+-+-+-+
| | | | | | | |
+-+-+-+-+-+-+-+
| | | | | | | |
+-+-+-+-+-+-+-+
| | | | | | | |
+-+-+-+-+-+-+-+
| | | |B| | | |
+-+-+-+-+-+-+-+
| |R|B|R|R| | |
+-+-+-+-+-+-+-+
```

Turn 6: Player 2 (B), choose your move: **3**

```
+-+-+-+-+-+-+-+
| | | | | | | |
+-+-+-+-+-+-+-+
| | | | | | | |
```

```
+-+-+-+-+-+-+-+
| | | | | | | |
+-+-+-+-+-+-+-+
| | | | | | | |
+-+-+-+-+-+-+-+
| | |B|B| | | |
+-+-+-+-+-+-+-+
| |R|B|R|R| | |
+-+-+-+-+-+-+-+
```

Turn 7: Player 1 (R), choose your move: **4**

```
+-+-+-+-+-+-+-+
| | | | | | | |
+-+-+-+-+-+-+-+
| | | | | | | |
+-+-+-+-+-+-+-+
| | | | | | | |
+-+-+-+-+-+-+-+
| | | |R| | | |
+-+-+-+-+-+-+-+
| | |B|B| | | |
+-+-+-+-+-+-+-+
| |R|B|R|R| | |
+-+-+-+-+-+-+-+
```

Turn 8: Player 2 (B), choose your move: **5**

```
+-+-+-+-+-+-+-+
| | | | | | | |
+-+-+-+-+-+-+-+
| | | | | | | |
+-+-+-+-+-+-+-+
| | | | | | | |
+-+-+-+-+-+-+-+
| | | |R| | | |
+-+-+-+-+-+-+-+
| | |B|B|B| | |
+-+-+-+-+-+-+-+
| |R|B|R|R| | |
+-+-+-+-+-+-+-+
```

Turn 9: Player 1 (R), choose your move: **2**

```
+-+-+-+-+-+-+-+
| | | | | | | |
+-+-+-+-+-+-+-+
| | | | | | | |
+-+-+-+-+-+-+-+
| | | | | | | |
+-+-+-+-+-+-+-+
| | | |R| | | |
```

```
+-+-+-+-+-+-+
| |R|B|B|B| | |
+-+-+-+-+-+-+
| |R|B|R|R| | |
+-+-+-+-+-+-+
```

Turn 10: Player 2 (B), choose your move: **2**

```
+-+-+-+-+-+-+
| | | | | | | |
+-+-+-+-+-+-+
| | | | | | | |
+-+-+-+-+-+-+
| | | | | | | |
+-+-+-+-+-+-+
| |B| |R| | | |
+-+-+-+-+-+-+
| |R|B|B|B| | |
+-+-+-+-+-+-+
| |R|B|R|R| | |
+-+-+-+-+-+-+
```

Turn 11: Player 1 (R), choose your move: **7**

```
+-+-+-+-+-+-+
| | | | | | | |
+-+-+-+-+-+-+
| | | | | | | |
+-+-+-+-+-+-+
| | | | | | | |
+-+-+-+-+-+-+
| |B| |R| | | |
+-+-+-+-+-+-+
| |R|B|B|B| | |
+-+-+-+-+-+-+
| |R|B|R|R| |R|
+-+-+-+-+-+-+
```

Turn 12: Player 2 (B), choose your move: **6**

```
+-+-+-+-+-+-+
| | | | | | | |
+-+-+-+-+-+-+
| | | | | | | |
+-+-+-+-+-+-+
| | | | | | | |
+-+-+-+-+-+-+
| |B| |R| | | |
+-+-+-+-+-+-+
| |R|B|B|B| | |
+-+-+-+-+-+-+
| |R|B|R|R|B|R|
```

```
+-+-+-+-+-+-+-+
```

Turn 13: Player 1 (R), choose your move: **6**

```
+-+-+-+-+-+-+-+
| | | | | | | |
+-+-+-+-+-+-+-+
| | | | | | | |
+-+-+-+-+-+-+-+
| | | | | | | |
+-+-+-+-+-+-+-+
| |B| |R| | | |
+-+-+-+-+-+-+-+
| |R|B|B|B|R| |
+-+-+-+-+-+-+-+
| |R|B|R|R|B|R|
+-+-+-+-+-+-+-+
```

Turn 14: Player 2 (B), choose your move: **5**

```
+-+-+-+-+-+-+-+
| | | | | | | |
+-+-+-+-+-+-+-+
| | | | | | | |
+-+-+-+-+-+-+-+
| | | | | | | |
+-+-+-+-+-+-+-+
| |B| |R|B| | |
+-+-+-+-+-+-+-+
| |R|B|B|B|R| |
+-+-+-+-+-+-+-+
| |R|B|R|R|B|R|
+-+-+-+-+-+-+-+
```

Turn 15: Player 1 (R), choose your move: **5**

```
+-+-+-+-+-+-+-+
| | | | | | | |
+-+-+-+-+-+-+-+
| | | | | | | |
+-+-+-+-+-+-+-+
| | | | |R| | |
+-+-+-+-+-+-+-+
| |B| |R|B| | |
+-+-+-+-+-+-+-+
| |R|B|B|B|R| |
+-+-+-+-+-+-+-+
| |R|B|R|R|B|R|
+-+-+-+-+-+-+-+
```

Turn 16: Player 2 (B), choose your move: **4**

```
+-+-+-+-+-+-+-+-+
| | | | | | | | |
+-+-+-+-+-+-+-+-+
| | | | | | | | |
+-+-+-+-+-+-+-+-+
| | | |B|R| | |
+-+-+-+-+-+-+-+-+
| |B| |R|B| | |
+-+-+-+-+-+-+-+-+
| |R|B|B|B|R| |
+-+-+-+-+-+-+-+-+
| |R|B|R|R|B|R|
+-+-+-+-+-+-+-+-+
```

Turn 17: Player 1 (R), choose your move: **2**

```
+-+-+-+-+-+-+-+-+
| | | | | | | | |
+-+-+-+-+-+-+-+-+
| | | | | | | | |
+-+-+-+-+-+-+-+-+
| |R| |B|R| | |
+-+-+-+-+-+-+-+-+
| |B| |R|B| | |
+-+-+-+-+-+-+-+-+
| |R|B|B|B|R| |
+-+-+-+-+-+-+-+-+
| |R|B|R|R|B|R|
+-+-+-+-+-+-+-+-+
```

Turn 18: Player 2 (B), choose your move: **5**

```
+-+-+-+-+-+-+-+-+
| | | | | | | | |
+-+-+-+-+-+-+-+-+
| | | | |B| | |
+-+-+-+-+-+-+-+-+
| |R| |B|R| | |
+-+-+-+-+-+-+-+-+
| |B| |R|B| | |
+-+-+-+-+-+-+-+-+
| |R|B|B|B|R| |
+-+-+-+-+-+-+-+-+
| |R|B|R|R|B|R|
+-+-+-+-+-+-+-+-+
```

Turn 19: Player 1 (R), choose your move: **7**

```
+-+-+-+-+-+-+-+-+
| | | | | | | | |
+-+-+-+-+-+-+-+-+
| | | | |B| | |
```

```
+-+-+-+-+-+-+-+
| |R| |B|R| | |
+-+-+-+-+-+-+-+
| |B| |R|B| | |
+-+-+-+-+-+-+-+
| |R|B|B|B|R|R|
+-+-+-+-+-+-+-+
| |R|B|R|R|B|R|
+-+-+-+-+-+-+-+
```

Turn 20: Player 2 (B), choose your move: **7**

```
+-+-+-+-+-+-+-+
| | | | | | | |
+-+-+-+-+-+-+-+
| | | | |B| | |
+-+-+-+-+-+-+-+
| |R| |B|R| | |
+-+-+-+-+-+-+-+
| |B| |R|B| |B|
+-+-+-+-+-+-+-+
| |R|B|B|B|R|R|
+-+-+-+-+-+-+-+
| |R|B|R|R|B|R|
+-+-+-+-+-+-+-+
```

Turn 21: Player 1 (R), choose your move: **1**

```
+-+-+-+-+-+-+-+
| | | | | | | |
+-+-+-+-+-+-+-+
| | | | |B| | |
+-+-+-+-+-+-+-+
| |R| |B|R| | |
+-+-+-+-+-+-+-+
| |B| |R|B| |B|
+-+-+-+-+-+-+-+
| |R|B|B|B|R|R|
+-+-+-+-+-+-+-+
|R|R|B|R|R|B|R|
+-+-+-+-+-+-+-+
```

Turn 22: Player 2 (B), choose your move: **1**

```
+-+-+-+-+-+-+-+
| | | | | | | |
+-+-+-+-+-+-+-+
| | | | |B| | |
+-+-+-+-+-+-+-+
| |R| |B|R| | |
+-+-+-+-+-+-+-+
| |B| |R|B| |B|
```

```
+-+-+-+-+-+-+-+
|B|R|B|B|B|R|R|
+-+-+-+-+-+-+-+
|R|R|B|R|R|B|R|
+-+-+-+-+-+-+-+
```

Turn 23: Player 1 (R), choose your move: **7**

```
+-+-+-+-+-+-+-+
| | | | | | | |
+-+-+-+-+-+-+-+
| | | | |B| | |
+-+-+-+-+-+-+-+
| |R| |B|R| |R|
+-+-+-+-+-+-+-+
| |B| |R|B| |B|
+-+-+-+-+-+-+-+
|B|R|B|B|B|R|R|
+-+-+-+-+-+-+-+
|R|R|B|R|R|B|R|
+-+-+-+-+-+-+-+
```

Turn 24: Player 2 (B), choose your move: **4**

```
+-+-+-+-+-+-+-+
| | | | | | | |
+-+-+-+-+-+-+-+
| | | |B|B| | |
+-+-+-+-+-+-+-+
| |R| |B|R| |R|
+-+-+-+-+-+-+-+
| |B| |R|B| |B|
+-+-+-+-+-+-+-+
|B|R|B|B|B|R|R|
+-+-+-+-+-+-+-+
|R|R|B|R|R|B|R|
+-+-+-+-+-+-+-+
```

Turn 25: Player 1 (R), choose your move: **2**

```
+-+-+-+-+-+-+-+
| | | | | | | |
+-+-+-+-+-+-+-+
| |R| |B|B| | |
+-+-+-+-+-+-+-+
| |R| |B|R| |R|
+-+-+-+-+-+-+-+
| |B| |R|B| |B|
+-+-+-+-+-+-+-+
|B|R|B|B|B|R|R|
+-+-+-+-+-+-+-+
|R|R|B|R|R|B|R|
```

```
+-+-+-+-+-+-+-+
```

Turn 26: Player 2 (B), choose your move: **4**

```
+-+-+-+-+-+-+-+
| | | |B| | | |
+-+-+-+-+-+-+-+
| |R| |B|B| | |
+-+-+-+-+-+-+-+
| |R| |B|R| |R|
+-+-+-+-+-+-+-+
| |B| |R|B| |B|
+-+-+-+-+-+-+-+
|B|R|B|B|B|R|R|
+-+-+-+-+-+-+-+
|R|R|B|R|R|B|R|
+-+-+-+-+-+-+-+
```

Turn 27: Player 1 (R), choose your move: **4**
Invalid move, Column 4 is full, try again: **8**
Invalid move, outside board, try again: **0**
Invalid move, outside board, try again: **2**

```
+-+-+-+-+-+-+-+
| |R| |B| | | |
+-+-+-+-+-+-+-+
| |R| |B|B| | |
+-+-+-+-+-+-+-+
| |R| |B|R| |R|
+-+-+-+-+-+-+-+
| |B| |R|B| |B|
+-+-+-+-+-+-+-+
|B|R|B|B|B|R|R|
+-+-+-+-+-+-+-+
|R|R|B|R|R|B|R|
+-+-+-+-+-+-+-+
```

Turn 28: Player 2 (B), choose your move: **5**

```
+-+-+-+-+-+-+-+
| |R| |B|B| | |
+-+-+-+-+-+-+-+
| |R| |B|B| | |
+-+-+-+-+-+-+-+
| |R| |B|R| |R|
+-+-+-+-+-+-+-+
| |B| |R|B| |B|
+-+-+-+-+-+-+-+
|B|R|B|B|B|R|R|
+-+-+-+-+-+-+-+
|R|R|B|R|R|B|R|
+-+-+-+-+-+-+-+
```

Turn 29: Player 1 (R), choose your move: **7**

```
+-+-+-+-+-+-+-+
| |R| |B|B| | |
+-+-+-+-+-+-+-+
| |R| |B|B| |R|
+-+-+-+-+-+-+-+
| |R| |B|R| |R|
+-+-+-+-+-+-+-+
| |B| |R|B| |B|
+-+-+-+-+-+-+-+
|B|R|B|B|B|R|R|
+-+-+-+-+-+-+-+
|R|R|B|R|R|B|R|
+-+-+-+-+-+-+-+
```

Turn 30: Player 2 (B), choose your move: **7**

```
+-+-+-+-+-+-+-+
| |R| |B|B| |B|
+-+-+-+-+-+-+-+
| |R| |B|B| |R|
+-+-+-+-+-+-+-+
| |R| |B|R| |R|
+-+-+-+-+-+-+-+
| |B| |R|B| |B|
+-+-+-+-+-+-+-+
|B|R|B|B|B|R|R|
+-+-+-+-+-+-+-+
|R|R|B|R|R|B|R|
+-+-+-+-+-+-+-+
```

Turn 31: Player 1 (R), choose your move: **1**

```
+-+-+-+-+-+-+-+
| |R| |B|B| |B|
+-+-+-+-+-+-+-+
| |R| |B|B| |R|
+-+-+-+-+-+-+-+
| |R| |B|R| |R|
+-+-+-+-+-+-+-+
|R|B| |R|B| |B|
+-+-+-+-+-+-+-+
|B|R|B|B|B|R|R|
+-+-+-+-+-+-+-+
|R|R|B|R|R|B|R|
+-+-+-+-+-+-+-+
```

Turn 32: Player 2 (B), choose your move: **3**

```
+-+-+-+-+-+-+-+
```

```
| |R| |B|B| |B|
+-+-+-+-+-+-+-+
| |R| |B|B| |R|
+-+-+-+-+-+-+-+
| |R| |B|R| |R|
+-+-+-+-+-+-+-+
|R|B|B|R|B| |B|
+-+-+-+-+-+-+-+
|B|R|B|B|B|R|R|
+-+-+-+-+-+-+-+
|R|R|B|R|R|B|R|
+-+-+-+-+-+-+-+
```

Turn 33: Player 1 (R), choose your move: **3**

```
+-+-+-+-+-+-+-+
| |R| |B|B| |B|
+-+-+-+-+-+-+-+
| |R| |B|B| |R|
+-+-+-+-+-+-+-+
| |R|R|B|R| |R|
+-+-+-+-+-+-+-+
|R|B|B|R|B| |B|
+-+-+-+-+-+-+-+
|B|R|B|B|B|R|R|
+-+-+-+-+-+-+-+
|R|R|B|R|R|B|R|
+-+-+-+-+-+-+-+
```

Turn 34: Player 2 (B), choose your move: **3**

```
+-+-+-+-+-+-+-+
| |R| |B|B| |B|
+-+-+-+-+-+-+-+
| |R|B|B|B| |R|
+-+-+-+-+-+-+-+
| |R|R|B|R| |R|
+-+-+-+-+-+-+-+
|R|B|B|R|B| |B|
+-+-+-+-+-+-+-+
|B|R|B|B|B|R|R|
+-+-+-+-+-+-+-+
|R|R|B|R|R|B|R|
+-+-+-+-+-+-+-+
```

Turn 35: Player 1 (R), choose your move: **3**

```
+-+-+-+-+-+-+-+
| |R|R|B|B| |B|
+-+-+-+-+-+-+-+
| |R|B|B|B| |R|
+-+-+-+-+-+-+-+
```

```
| |R|R|B|R| |R|
+-+-+-+-+-+-+-+
|R|B|B|R|B| |B|
+-+-+-+-+-+-+-+
|B|R|B|B|B|R|R|
+-+-+-+-+-+-+-+
|R|R|B|R|R|B|R|
+-+-+-+-+-+-+-+
```

Turn 36: Player 2 (B), choose your move: **6**

```
+-+-+-+-+-+-+-+
| |R|R|B|B| |B|
+-+-+-+-+-+-+-+
| |R|B|B|B| |R|
+-+-+-+-+-+-+-+
| |R|R|B|R| |R|
+-+-+-+-+-+-+-+
|R|B|B|R|B|B|B|
+-+-+-+-+-+-+-+
|B|R|B|B|B|R|R|
+-+-+-+-+-+-+-+
|R|R|B|R|R|B|R|
+-+-+-+-+-+-+-+
```

Turn 37: Player 1 (R), choose your move: **6**

```
+-+-+-+-+-+-+-+
| |R|R|B|B| |B|
+-+-+-+-+-+-+-+
| |R|B|B|B| |R|
+-+-+-+-+-+-+-+
| |R|R|B|R|R|R|
+-+-+-+-+-+-+-+
|R|B|B|R|B|B|B|
+-+-+-+-+-+-+-+
|B|R|B|B|B|R|R|
+-+-+-+-+-+-+-+
|R|R|B|R|R|B|R|
+-+-+-+-+-+-+-+
```

Turn 38: Player 2 (B), choose your move: **6**

```
+-+-+-+-+-+-+-+
| |R|R|B|B| |B|
+-+-+-+-+-+-+-+
| |R|B|B|B|B|R|
+-+-+-+-+-+-+-+
| |R|R|B|R|R|R|
+-+-+-+-+-+-+-+
|R|B|B|R|B|B|B|
+-+-+-+-+-+-+-+
```

```
|B|R|B|B|B|R|R|
+-+-+-+-+-+-+-+
|R|R|B|R|R|B|R|
+-+-+-+-+-+-+-+

Player 2 Wins!  Play again? (y/n): n
Goodbye!
```