

**Task:**

In this project you are required to write C++ code for traditional paper and pencil game of ConnectFour.

You are required to write two algorithms, one for player 1, and one for player 2 for the Connect Four game. Your code should not ask for any user input through terminal. Inputs should be given by a .txt file, named player1 blue.txt for player 1 and player2 red.txt for player 2. You may use the terminal for testing purposes only

**Background:**

Connect Four is a simple game that requires two players to participate. The game begins on an empty vertical quadrilateral board with the dimensions of at least  $6 \times 7$ . Each player is assigned to a colour, typically Red, "R" and Blue, "B". Each player takes a turn to slide a chip of their colour into any column on the board of their choice. Each time a chip is slid into a column, it falls to the bottom row of the board, shown in Figures 1 and 2. If there is a chip at the bottom of the row, then the new chip will be placed in the row above the existing chip in the same column. All chips move vertically in the downward direction of the board. The objective of each player is to create a sequence of 4 chips of their colour on the vertical board, whilst simultaneously preventing the other player from a sequence of their own. The sequence of the 4 chips (of the same colour) can be found in three directions: horizontal, vertical and diagonal. The first player to achieve a sequence wins the game and the game ends. If no sequence is achieved by either player, the game should continue until the board is complete (filled with playing chips)

**Example:**

## Input Format

The player files, `player1_blue.txt` and `player2_red.txt` contains the list of moves each player will make during the game. An example of an input file for `player1_blue.txt` is shown below. The **number of rows in the player files can vary from game to game**. Each value in a row represents the column indices that the player will place their game chip in. Remember that each player place their game chips in alternating rounds. `player1_blue.txt`

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

```
3
2
4
3
5
4
5
```

The input file, `input.txt` contains a list of board sizes, which will be used to test your code. Note that each line is for a different board size. An example of the input file is shown below. For the first line in `input.txt`, it indicates that board has 8 rows and 9 columns. Therefore in this example, your game should play 3 games on board sizes of 8 x 9, 6 x 7, and 9 x 7.

`input.txt`

```
1
2
3
```

```
8 9
6 7
9 7
```

## Output Data

Your program is required to produce an output file named `gameResults.txt`. This file must contain the following:

1. Size of the board for the current game
2. The move made by each player, along with the player that made the corresponding move
3. The winner of the game
4. The format of the output file for the game is given below, where a clear example of the game described above for a board of size 3 is illustrated.

```
1 size 8 x 9
2 ...
3
4 size 6 x 7
5 -----
6 .....
7 .....
8 ....R.
9 ...RRB
10 ..BBBB
11 RRBRR
12 -----
13 Player1_blue: 3, 2, 4, 3, 5, 4, 5
14 Player2_red: 0, 1, 5, 3, 2, 4, 4
15 Winner: Player2_red
16
17 size 9 x 7
18 ...
```

Note that the values given are the columns of the board, where '0' is C0 which is the far left side of the board.