**User document**

1. Users need to run the program on VSC or their terminal
2. Type computer or me. if you want to start from the computer’s turn, then type computer. if you want to start from your turn, then type me.
3. type x and y to coordinate where you want to place your stone. (you can check it visually in the console)
4. Until you win, the computer wins or will be drawn, continue to play as 3.
5. the result is printed on the console

**Programmer documentation**

the main algorithm that I used is in the method counts, that is breath first search. (x, y, stone).

This method counts the largest length of the consecutive lines of the same color’s stones which includes the stones in the coordinate (x, y)

First, set the count\_num as 1.

Check all of the directions (up, right up, left up, right, left, down, right down, left down) one by one, and if the same color’s stone is consecutively placed, implement count\_num += 1.

If consecutiveness stopped before the length 5, compared to the value of max\_num.

If it is bigger than max\_num, replace the value of max\_num.

Reset count\_num as 1.

After checking all directions, return the longest length of the consecutive lines of stones.

This algorithm is used

1. when the computer decides where to place its stones
2. after the player places the stone, it is used if there is consecutive same color’s stones’ line with length 5 or greater (if it is so, the game will be finished)

test data is used for testing your program if works well; they should nicely cover all program behaviour

**Test case**

For the Error

1. at the start  
   - type other than ‘me’ or ‘computer’
2. when you put the stones  
   - type the coordinate which is not in the board (ex. (0, 0) or (9, 9))  
   - type the coordinate which doesn’t have the neighbor

- type the coordinate which already has some stones

Starter selection

1. type ‘me’, then start from your turn
2. type ‘ computer’, then start from the computer’s turn

Result and basic work of the code

1. please continue to play until you win, then it prints the result
2. please continue to play until the computer wins, then it prints the result
3. please continue to play until the board will be filled with the stones, then it prints the results