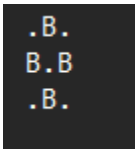
**Foundations of Computer Science Lab 8**

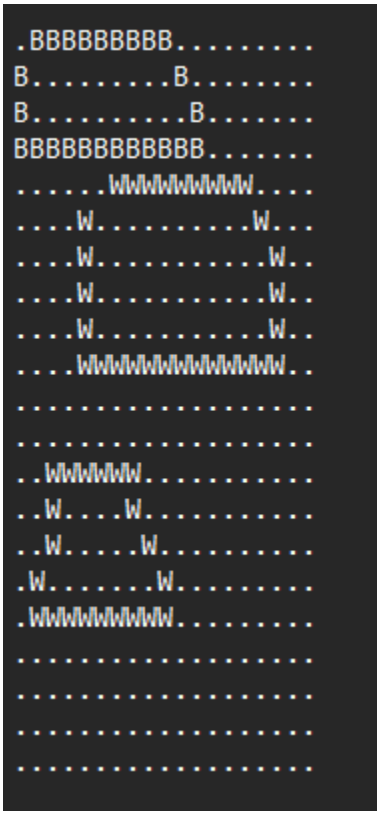
**Board Game Scoring**

You just ran a tournament for the popular board game Go, which is the Japanese/Korean equivalent of chess. Unfortunately, we ran out of paper to print match slips, so in order to decide who won, we need to write a program that can score any Go board.

Go is played on a 19x19 board, where each player places a White (W) or Black (B) stone. In this case, we are using perimeter scoring which is a much easier way to score the game. The score is determined by the total area enclosed by the perimeter of our pieces. For example,




Is 1 point as the middle space is enclosed by four Black Pieces. A completed Game may look like this

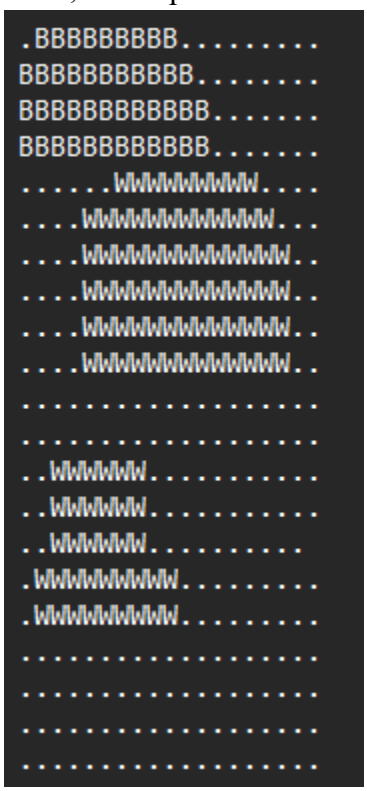



In this case, White wins with a score of 62 versus Black's 19.

**Lab Details**

You are to group up in teams of 3 or 4, with one file submission on BlackBaud. **This Lab may be too difficult to accomplish individually.**

1. You are to write three functions.
    a. loadBoard(filename)
        i. This function will load a board from .txt file into your python code
    b. printBoard(board)
        i. Print the board within the style of the example given above.
    c. scoreGame(board)
        i. This is a **RECURSIVE FUNCTION** that will fill in the territories surrounded by pieces of a single color, then return a list with two elements with the scores
            1. [white,blace]
        ii. Then, it will print a board with filled territories. For example:




        iii. After all of this, the program should print out who won. In this case, white is the winner.

**Test Cases**

I will provide Test Cases in a .txt for you to try with their corresponding winners.

1. Test Case 1:
    a. White wins, 7-6
2. Test Case 2:
    a. White Wins, 62-19
3. Test Case 3:
    a. No Winner, Tie
4. Test Case 4:
    a. White Wins, 160-120
5. Test Case 5:
    a. Black Wins, 3-0

Your project will be scored based on if it can pass whatever Board I throw at it, so therefore you should not hardcode your board into the program and your scoring should not be determined by the dimensions of the board.

**Lab 8 is due April 16 and will constitute a large portion of the grade. This lab will effectively test your skills on everything you have learned over the year, including**

- **2D-Lists**
- **String Manipulation**
- **File Input**
- **Recursion**
- **Looping Statements**
- **If-Then-Else Logic**
- **Variables and Their Data Types**