**Unit 5 Programming Project**

Battleship

Battleship is a guessing game for two players. It is known worldwide as a pencil and paper game which dates from World War I. It was published by various companies as a pad-and-pencil game in the 1930s, and was released as a plastic board game by Milton Bradley in 1967. The purpose of the game is to destroy the opposing player's battleships, and ends with a fight to the death.

The game is played on four grids, two for each player. The grids are typically square and the individual squares in the grid are identified by letter and number. On one grid the player arranges ships and records the shots by the opponent. On the other grid the player records their own shots.

Before play begins, each player secretly arranges their ships on their primary grid. Each ship occupies a number of consecutive squares on the grid, arranged either horizontally or vertically. The number of squares for each ship is determined by the type of the ship. The ships cannot overlap (i.e., only one ship can occupy any given square in the grid). The types and numbers of ships allowed are the same for each player. These may vary depending on the rules.

After the ships have been positioned, the game proceeds in a series of rounds. In each round, each player takes a turn to announce a target square in the opponent's grid which is to be shot at. The opponent announces whether or not the square is occupied by a ship, and if it is a "miss", the player marks their primary grid with a white peg; if a "hit" they mark this on their own primary grid with a red peg. The attacking player notes the hit or miss on their own "tracking" grid with the appropriate color peg (red for "hit", white for "miss"), in order to build up a picture of the opponent's fleet. After the player gets a hit the player continues shooting until the player gets a miss.

When all of the squares of a ship have been hit, the ship is sunk, and the ship's owner announces this (e.g. "You sank my battleship!"). If all of a player's ships have been sunk, the game is over and their opponent wins.

For the unit 5 programming project, we will work on implementing a simple version of the battleship game. If you have never played battleship before, please try playing one of the online versions before starting the project as understanding the logic behind the game is critical for implementing the project code. An online version : <https://battleship-game.org/en/>

# Board.java

The Board.java class will be responsible for holding information about the current state of the board and making transactions on individual locaitons of the board. A new board should look like this:

|  |
| --- |
| **1 2 3 4 5 6 7 8**  **a · · · · · · · ·**  **b · · · · · · · ·**  **c · · · · · · · ·**  **d · · · · · · · ·**  **e · · · · · · · ·**  **f · · · · · · · ·**  **g · · · · · · · ·**  **h · · · · · · · ·** |

To make the **·**’s you should read into Unicode characters

To help you plan out your program, please list out your class variables (+ their meanings) and your methods (+ descriptions of functions and dependencies on other methods).

**Complete this and get it signed off on before starting to program!**

## Class Variable (type + name)

## Class Methods (full method header + description)

<page for more methods to list out>

# Battleship.java

The Battleship.java class will be responsible for setting up the game (and applicable boards), playing the game and determining the winner.

## Class Variable (type + name)

## Class Methods (full method header + description)

<page for more methods to list out>