# BattleShip Design Coding Question - 4

## Requirements

Code up the design for playing the BattleShip Game (https://en.wikipedia.org/wiki/Battleship\_(game))

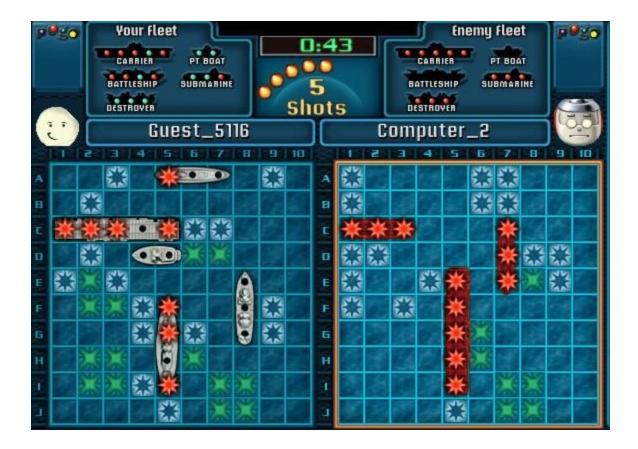
- 1. We will be looking for the Low-Level Design including good class structure, entities and how they interact, good abstraction, good separation of concerns, etc
- 2. You will need to code the "Game Loop".
- 3. You don't need to bother with the code that "draws" the game or UI interactions, you can mock the function for eg. "drawBoard(List<Ship> ships)" and assume it draws the board with the ships on it. You can also assume a "takeInput(Player player)" function that gets the play that the current player wishes to make.
  - a. Bonus: Take the input from the console. For eg. player can say "Fire C5" and you fire a missile at C5 or "Draw Board" and you print the current state of the board to the player.
- 4. You can choose any language, however, it needs to be a runnable code.

## **Assumptions**

Please make the required assumptions, for instance, players can only join before the game starts, but MAKE SURE YOU LIST THEM IN A README FILE along with the code.

### Rules of the Game

- 1. Each Person has two boards, one where he places his own ships, one where he tracks the missiles he has fired. Each board is of size 10x10
- 2. Each person can place 5 ships on his board
  - a. Carrier of length 5
  - b. Battleship of length 4
  - c. Cruiser of length 3
  - d. Submarine of length 3
  - e. Destroyer of length 2
- 3. Players take a turn to fire missiles at the opposing player. If the missile hits a ship, then the opposing player informs the initial mover of a *hit*, else he says it's a *miss*. If all the spots on a ship are hit, then ship is sunk.
- 4. The first player to sink all 5 ships of the opposing player wins the game.



#### This is the view of one player

- 1. Left-hand side is the ships as placed by the player. Red spots represent where the enemy successfully struck the player's ships.
- 2. White/Green spots are where the enemy player missed.
- 3. The right-hand side is where the player has launched missiles against the enemy.
- 4. The player has sunk 3 of the enemy ship.

## Additional Requirements

1. You don't need to code this up, but explain how will you extend your design to allow people to play over the network (p2p without having a central server).