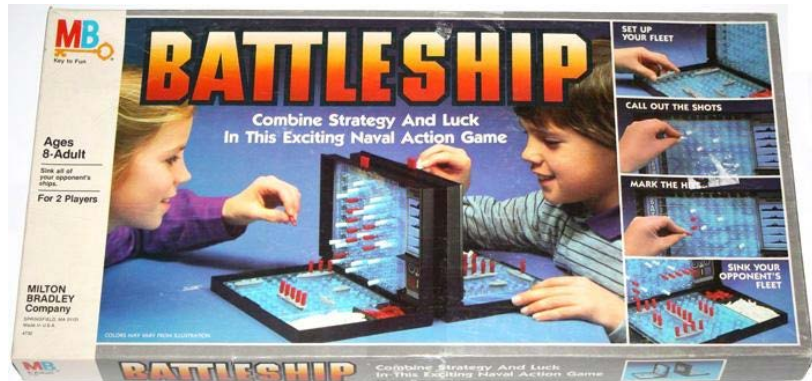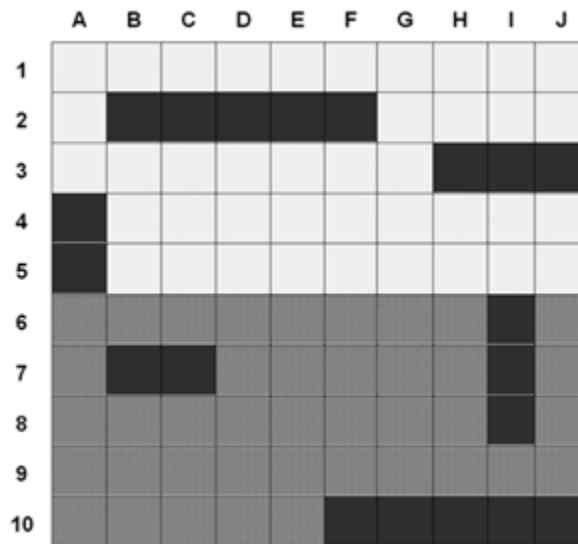# Battleship

Task: Develop and test a Python program that can play the game of battleship.

Battleship is a game involving ships at sea for each of two players.

The ships are located in a grid in which each column of the grid is identified by a letter, and each row by a number, as shown below.

The top half of the board contains the ships of player 1, and the bottom half the ships of player 2. The darkened areas indicate the size and location of ships. Each player starts with the same number and types of ships. The location of each player's ships is determined by the player. Players take turns taking a shot at the opponent's ships by "calling out" a particular grid location. For example, if player 1 calls out "C10," no ship would be hit in this example. If, however, they were to call out "G10," then player 2's ship (on the bottom half of the board) would be hit. Each player calls out "hit" or "miss" when they are shot at by the other player. When all grid locations of a given ship have been hit, the ship is sunk, and the opponent gets the number of points based on the ship's size (given below).

The number of grid locations that a given ship takes up indicates its type and point value. A typical set of ships is given below.

Type of Ship	Size of Ships
aircraft carrier	5
battleship	4
cruiser	3
submarine	3
destroyer	2

Develop and test a Python program that can play the game of battleship. The user should be able to select the skill level. The higher the skill level, the larger the grid that is created for play. All games start with exactly one of each type of ship for each player. The locations of the computer's ships will be randomly placed. The user, however, must be able to enter the location of each of their ships. The computer's shots into the opponent's grid area should be randomly generated.

Extension: Heuristic Play for the Game of Battleship

A heuristic is a general "rule of thumb" for solving a problem. Modify the Game of Battleship program from the previous problem so that the locations of the shots that the computer makes into the opponent's grid area are based on heuristics, rather than being randomly generated. Include an explanation of the heuristics developed.