

Assignment 5 Alternate Proposal: Battleship

Introduction

Battleship is a two-player game where each player places their ships on a grid and must find and destroy the ships that the other player placed. The placements of the ships are hidden from the other player. The grid is 10x10 and each player takes turns guessing a location on the grid. If a guessed grid location has part of the opponent's ship, the opponent indicates that it was a hit. Once each segment of a ship has been hit, the ship is sunk. The game ends when all of a player's battleships are sunk.

Description

The game will begin with the players placing their ships on the grid. There will be four ships:

- one 2-segment ship
- two 3-segment ships
- one 4-segment ship
- one 5-segment ship

The program will ask the player where to place each ship. The columns will be specified by letters (A - L) and the rows specified by integers (1 - 10). The program will also place the opponent's ships randomly (the opponent will be the computer).

Once the ships have been placed, the player will see two grids (each with columns and rows labeled) and be prompted to guess a grid location. If the location is invalid (because it is not a valid grid location or because it has already been guessed), the player will be asked again (and continually asked until they pick a valid location). The game will indicate whether it is a hit or miss. The computer will then make its guess (subject to the same rules for invalid locations that the human is subject to).

As the game goes on, the grids will be updated. One grid will be the player's board, showing their ship locations and where the computer has guessed. The other grid will show the player's guesses and where the hits have occurred. The game will end once one player no longer has any ships.

Topics Possibly Used

- Functions -- I will use functions to get valid grid locations from the user. I may also use functions to display the grid.
- Classes - A class will be created to represent a grid and will keep track of ship locations, hits, and misses.
- Exception handling - Used to determine whether user entered integers.
- Lists - to represent the grid

- Sets – to represent guesses