Battleship Game

Minh Durbin

101820610

10/30/2018

This program asks the user to place 5 ships on a 10x10 grid. It first asks the user whether they would like the ship to be placed horizontal or vertical, followed by the x(a-j) and y(1-10) coordinates of each ship. After placements have been done, the computer randomly guess the x and y coordinates of the players placement ship. The program will display X for miss and O for hit. Then it will ask the player to guess the computer's placement ships. The program will display X for miss and O for hit. Each the player and the computer will have their own grid to keep track for hits/misses. This keeps going until either party hits all ship placements. Then the program will display message "you win" or "you lose".

This program consists of 3 grid in a class called Person. The first grid is called placement grid for placing ships for player and computer. The second grid is called shot grid for comparing values guessed to values in placement grid. The third grid is called check grid to place X or O for hit or miss for player and computer. The Person class is base class and Computer class is child class. The Computer class inherits all 3 grids from the Person class.

Key Algorithm

The first key algorithm is for placement grid. By default the ships' positions will move to the right for horizontal and down for vertical, starting at the entered coordinates for each ship. For horizontal, if the size of the ship will extend outside the grid, then move the ship's positions to the left starting at the entered coordinates. For vertical, if the size of the ship will extend outside the grid, then move the ship's positions up starting at the entered coordinates.

The second algorithm is for check grid. Each time a player guess a coordinate, an integer of 1 will be placed in the shot grid. If the guessed coordinates in the shot grid(1) match that of the placement grid's coordinates(1), then place a O in the check grid at the guessed coordinates, else place an X.

The third algorithm is checking for the winner. By default, the ships' positions are placed with an integer 1 in the placement grid. Whenever a player correctly guessed the ships coordinates, the guessed coordinates will equal to 0 in the opponent's placement grid at the guessed coordinates. The program will check for the sum of each player's placement grid for each turn. If the sum is 0 for the computer's placement grid, then the player wins. If the sum is 0 for the player's placement grid, then the computer wins.

Makefile in debug folder.

Successfully compiled and ran in CLion as well as csegrid.