Team: EAR

Members: Endrias, Arnold, Russ

                                                                                Module Design Exam 2

How for the model including rule violation, superimposed or intersecting ships, or ships extending beyond the grid, the way to keep track of the play state, were shots have been taken, their outcome, (hit or miss), the state of the individual ships, the overall game state, the display mechanism that the view will use during setup mode, for the offensive and defensive grid.

Data Design – describe stucutres

Architecture design information flow characteristics and mapping to program structure.

The views

The controller

Purpose: Make a game by the title Battleship that is played by two players. The game is played on two grids for each player – defensive and offensive -- and each grid has rows from A-J and columns from 1-10 which totals to 100 squares.

There are two modes to the game, setup mode and play mode. As the name implies, setup mode is where each player sets up their defensive board. In setup mode, each player places 5 ships in the defensive grid:

* + one aircraft carrier
  + one battleship
  + one cruiser
  + two destroyers

Each vessel is represented by contiguous blocks of set number of squares. They don’t intersect or overlap those of any other vessel in the defensive grid. The squares can be arranged vertically, horizontally, and diagonally in any direction.

The squares that represent each vessel are as follows:

* + aircraft carrier - 5 squares
  + battleship - 4 squares
  + cruiser - 3 squares
  + destroyer - 2 squares

In play mode, the players alternate turns, making “shots” at specific locations on the other player’s defensive board. For example, say its player one’s turn. Player one will make a shot at some square on their offensive board. The corresponding location on player two is checked for a vessel. There are 4 possible outcomes: the game is over if all the corresponding squares to all ships have been hit, just “hit” if there was a ship at that location but other squares corresponding to the ship haven’t been hit, “sunk” if all corresponding squares of the ship, or a miss if there wasn’t a hit. The outcome is marked on player two’s defensive board as well as player one’s offensive board. It is also possible for the outcome

In Play Mode, the players alternate turns, making "shots" at specific locations.   
For example, player one makes a "shot" at some location on the board, designated by a letter (A-J) and a number (1-10). The corresponding location on other player's (B's) defensive grid is checked for a vessel in that square. The outcome of the play is a "hit" or "miss" reported back to the player one. The return status of the "shot" is recorded on player one’s offensive grid. All "hits" are recorded on player two’s defensive grid. If the "hit" marks the final unmarked square for a vessel, the "hit" returns the status, including an indication of the vessel type which has been sunk: "hit, you sunk my \_\_\_\_\_." If player one’s "shot" was a "hit", player one’s turn continues, by taking another "shot". The turn continues as long as player one makes "hits". When player one’s "shot" is a "miss", player one’s turn is over and it’s player two’s turn. Player two then makes a "shot". As long as player two's "shots" are reported as "hits", player two’s turn continues.

* The game shall disallow making a "shot" at a location already played. That is, a player cannot make a shot at a location that has already been reported as a "miss" or "hit". Shots can’t be made outside of the board.
* When the offensive players shot is missed it’s the other players turn to shoot.
* The game terminates when all of the vessels for one player have been "sunk". The other player is declared the winner.