README

This is a 2 player version of Battleship with a Single Player option against AI coded for Project 2 of EECS 448 in Unreal Engine Blueprints. It will run in the Unreal Engine designer and also as a stand alone game executable on PC.

Requirements:

1. 2 - Player mode should be working as per Project 1 specifications.
2. In addition to playing against a human, you will create an Artificial Intelligence (AI) opponent to play against. Requirements for the AI are:
   1. Three difficulty levels:
      1. Easy: It just fires randomly every turn.
      2. Medium: It fires randomly until it hits a ship then fires in orthogonally adjacent spaces to find other hits until a ship is sunk.
      3. Hard: Cheater, cheater pumpkin eater! This mode knows where all your ships are and lands a hit every turn.
   2. Setup: all AI difficulty levels place their ships randomly (in legal placement).
3. Custom Addition:
   1. Your team must decide upon a new addition to the game (Sound Effects).

How the project works is as follows:

1. Game Setup
   1. Board size
      1. 10x10
   2. Number of ships (per player)
      1. Given by user
      2. Minimum of 1 and a maximum of 6
   3. Types of ships
      1. This will be based on the amount of ships chosen.
      2. If a total of 1 ship is chosen, then each player gets a single 1x1 ship
      3. If a total of 2 ships is chosen, then each player gets a 1x1 and a 1x2 ship
      4. This continues up to 6, where each player will a 1x1, 1x2, 1x3, 1x4, and a 1x6 ship
   4. Ship placement
      1. After the amount of ships is chosen, players are able to drag and place the ships on their board, using the spacebar to change orientation as they like.
2. Running the game
   1. To run the game without installing Unreal Engine:
      1. Go to the folder cloned from the github repository, and into the BattleShip folder. In this folder, select StandaloneGame, then select WindowsNoEditor and run the executable file [EECS448\_Project1 -> BattleShip -> StandaloneGame -> WindowsNoEditor -> BattleShip.exe]
   2. To run the game in Unreal Engine Editor:
      1. Open the Unreal Engine Project File you will find in the BattleShip folder inside EECS448\_Project1 [EECS448\_Project1 -> BattleShip -> BattleShip.uproject]. On the first time running it, that may not work if Unreal Engine is not set to recognize .uproject files. If that is the case, simply open the file from the Unreal Engine Editor.
   3. To play in normal 2-player mode:
      1. Run the game once and select “Start Game”, and select the number of ships you would like to play with. Select “Host Mode” to host a new game.
      2. Run the game again and this time select “Join Hosted Game” and soon you will be connected to the game.
      3. Now place your ships and enjoy playing the game!
   4. To play as a Single Player against an AI:
      1. Run the game once and select “Start Game”, and select the number of ships you would like to play with. Select “Single Player” and choose the difficulty level you would like. Each difficulty level is explained above in the requirements section.
      2. Now place your ships and enjoy playing the game!
3. Playing the Game
   1. Each player will have 2 boards. A ship board and a shot board.
   2. Taking turns, players will pick a space on the opponent's board to "fire" at.
   3. If the player hits a ship, they will see the space on the shot board turn yellow with fire. If they miss, the space will turn yellow without fire.
   4. They will be able to hear a “hit” sound when the opponent fires and their ship will catch on fire on the space that it is hit at. If the opponent misses, the board space will turn yellow and they will hear a “miss” sound.
   5. After each shot, it is the opponent's turn.
4. Destroying a ship
   1. Once a ship has been hit in every space it occupies, it is sunk.
   2. For example, if the 1x3 ship occupies the space B3, B4, and B5.
   3. Once the opponent has shot those three spaces, that ship is sunk.
   4. You will see the size of ships sunk on the left side of the case, under the turn signaling.
5. Game End
   1. Once a player has sunk all of the opponent's ships, they immediately win.