**Project 2**

Title

**ASCII BattleShip!**

**An ASCII Battleship Simulation**

Course

**CSC-17A**

Section

**42636**

Due Date

**June 1, 2017**

Author

**Scott Parker**

# Introduction

BattleShip is a classic board game that has multiple layers of complexity. This simulation features 5 ships of varying sizes: BattleShip which takes 5 hits to sink, Destroyer which takes 4 hits to sink, Submarine which takes 3 hits to sink and a PT Boat which takes 2 hits to sink for a total of 14 hits to sink the entire fleet.

# Game Play and Rules

The game is played by first placing 5 ships into the ocean. The ocean is made up of a 2D array of 10 x 10 lines with each row and column representing an x,y coordinate pair.

After the first player places their ships then the second player (computer player) will place all available ships. Players then alternate guesses in an attempt to sink the other players fleet. The victory conditions occur when one player first scores 14 hits (sinks the entire enemy fleet).

The player is given the opportunity to save or exit the game at the end of each round, which if chosen as an option will send the game back to the initial loading screen.

# Development Summary

|  |  |
| --- | --- |
| Lines of Code | **~1026** |
| Dedicated Comment Lines | **~150** |
| Blank Lines (White space) | **~50** |
| Total Lines of Source Files | **800+** |

The project was completely coded from scratch. All of the code, headers files, functions, and features were 100% developed in-house without copying any external source code. The project took approximately 45 hours to develop over a 9 day period (not including documentation) not inclusive of the original BattleShip Project 1 upon which this project is based. Very limited characteristics were brought over from the original project.

## Comments on Development

Working with 2D arrays in a structure was a challenging objective and eventually I found no other way than to use literals as the size definitions for the arrays. It would have been easier to use dynamic arrays and the use of literals could have been avoided, however due to time constraints rewriting the entire project to accommodate this was not feasible while still completing the project on time and still implementing the new programming features required.

Saving and restoring games is a feature which was interesting to implement. The first aspect is the bones file which holds a list of valid save-game files. The second feature is the binary save file which uses the name of the save file. Duplicate file names overwrite existing files and the size of the bones file is dynamic string array managed and checked to avoid file-creep (excessive blank lines or non-existent files names added at the end or beginning of the file).

### Display Elements

Even though this is a text-based ASCII program the games does feature an extensive color element. It uses ANSI color codes and is known to work correctly on Windows 10 and Macintosh systems. The ANSI formatting is designed to mimic a dedicated video game window rather than being a simply being a text element in the console.

### New Features from added since Project 1

The main upgrade from Project 1 is the change of the map size to a 10 x 10 grid. This significantly reduces the number of turns needed to complete the game. As a result of this the cheat mode was removed and the computer no longer receives bonus free hits. The graphic and layout has also been significantly modified. The previous version featured two top-over-bottom maps which were quite large and unwieldy. The final version has two side-by-side maps which are much easier and intuitive to navigate as well as having a significantly more striking visual impact as evidenced by the screenshots below:

Project 1 Map Image



Project 2 Map Image



# Features

## Advanced Concepts Used

* Dynamic Arrays used in main.cpp Line 343
* 2-dimensional Arrays used in Map.h Line 20, 21
* Reading Binary Files used in main.cpp Line 436, 437
* Writing Binary Files used in main.cpp Line 396, 397
* Reading Text Files used in main.cpp Line 349, 420
* Custom Structures used in Map.h file
* Structures containing arrays used in Map.h file
* Passing structure into function used in main.cpp Line 61, 62
* Boolean functions used in main.cpp Line 34
* Classes used in Game.h, Guess.h
* Inheritance used in Game.h
* Operator Overloading operators overloaded in Game.cpp line 130, Guess.cpp line 39, 50
* Polymorphism used in AbsGame.h
* Templates used in val.h line 110, 123

## Current Issues

* To date there are still a few known unresolved issues with the project. Primarily these issues are:
  + Sometimes the ANSI formatting will change for unknown reasons.
  + Occasionally map data becomes corrupted (most frequently after changing OS systems and loading saved game files from the previous OS) and certain coordinate pairs return erroneous data (invalid choice for an ocean space).

# References

Extensive information was researched on Google.

The most valuable repositories of information was from:  
 [www.stackoverflow.com](http://www.stackoverflow.com)

[www.cplusplus.com](http://www.cplusplus.com)

# Code and Pseudocode

## Pseudocode

/\*

\* File: main.cpp

\* Author: Scott Parker

\* Created on May 20, 2017, 11:30 AM

\* Purpose: Battleship game Project 2

\* Notes: Revised version for Project 2 to include features from later

\* chapters

\*/

//System Libraries

#include <iostream>

#include <cctype>

#include <ctime>

#include <cstdlib>

#include <fstream>

using namespace std;

//User Libraries

#include "colors.h"

#include "val.h"

#include "Game.h"

#include "Map.h"

#include "Guess.h"

//Global Constants

//Such as PI, Vc, -> Math/Science values

//as well as conversions from one system of measurements to another

//Function Prototypes

//Start a new game

//Places the ships on the game board

//Check to see if ship can be put in location

//Place the computer ships

//Function to save the game

//Function to load a saved game

//Function to resume playing a saved game

//Executable code begins here! Always begins in Main

//Set random seed

//Declare Variables

//Game menu

//Output switch menu screen

//enter 1 to resume saved game

//enter 2 for a new game

//0 or unlisted number to exit

//Using template for data input and validation

//Switch to determine the Problem

//start a new game

//Function to load a saved game

//default option - exit menu

//show menu while choices all active

//Exit stage right! - This is the 'return 0' call

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* locTest \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

//234567890123456789012345678901234567890123456789012345678901234567890123456789

//000000001111111111222222222233333333334444444444555555555566666666667777777777

//\*\* Purpose: //Returns true if location is bad

//\*\* Inputs: column, row, size of ship, verticle or horiz, player object

//\*\* Outputs: return true if a bad location is encountered

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

bool locTest(int putRow, int putCol, int size, char verHor, Game &p) {

//check orientation

//Check to see if off map for vertical placement

//Loop through size to check placement for overlap

//Check to see if off map for horizontal placement

//Loop through size to check placement for overlap

//return OK or not

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* putShip \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

//234567890123456789012345678901234567890123456789012345678901234567890123456789

//000000001111111111222222222233333333334444444444555555555566666666667777777777

//\*\* Purpose: //function to place human player's ships

//\*\* Inputs: Game p1 (player 1)

//\*\* Outputs: none - will only manipulate the classes

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

//output the map to see current ship placement

//loop through the ships

//repeat until ship placement is valid

//Check to see if ship can go here

//place the ship

//show ship placement

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* putComp \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

//234567890123456789012345678901234567890123456789012345678901234567890123456789

//000000001111111111222222222233333333334444444444555555555566666666667777777777

//\*\* Purpose: //function to place computer's ships

//\*\* Inputs: Game p2 (player 2)

//\*\* Outputs: none - will only manipulate the classes

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

//place computer ships on board

//repeat until ship successful placed

//test to see if ship successfully placed

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* newBord \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

//234567890123456789012345678901234567890123456789012345678901234567890123456789

//000000001111111111222222222233333333334444444444555555555566666666667777777777

//\*\* Purpose: //function to start a new game (new board)

//\*\* Inputs: Game p1 (player 1), Game p2 (player 2)

//\*\* Outputs: none - will only manipulate the classes

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

//reset player 1 to defaults

//reset player 2 to defaults

//place human player ships

//Keep going to play game until end, exit or save

//Enter guess

//repeat until acceptable guess

//Computer gets final shot even if all ships sank

//Continue, save, or exit

//function to save the game

//exit without saving

//Game lost or won due to fleet sank

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* conBord \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

//234567890123456789012345678901234567890123456789012345678901234567890123456789

//000000001111111111222222222233333333334444444444555555555566666666667777777777

//\*\* Purpose: //function to resume a saved game (continue board)

//\*\* Inputs: Game p1 (player 1), Game p2 (player 2)

//\*\* Outputs: none - will only manipulate the classes

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

//load a saved game

//Keep going to play game until end, exit or save

//Repeat until valid guess entered

//update maps

//Computer gets final shot even if all ships sank

//Continue, save, or exit

//function to save the game

//exit without saving

//Game lost or won due to fleet sank

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* savGame \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

//234567890123456789012345678901234567890123456789012345678901234567890123456789

//000000001111111111222222222233333333334444444444555555555566666666667777777777

//\*\* Purpose: //Function to save the game

//\*\* Inputs: Game p1, Game p2;

//\*\* Outputs: none

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

void savGame(Game p1, Game p2) {

//hold file names from bones file. also used as temp to hold names while counting lines

//array of strings to hold file names

//count variable and temp variable

//create filestream object

//open bones file in input mode

//output error if file unable to open

//otherwise

//find the number of lines in the file

//get file line, increment to next line

//increment counter of the number of lines

//close file

//create dynamic array to hold bones file data

//open bones file in input mode

//output error if file fails to open

//otherwise

//loop through file line by line

//get file line, increment to next array element

//close file

//loop through array line by line

//display array element if not empty line

//enter the name of new savefile

//open bones file in output mode

//output error message if file fails to open

//otherwise

//loop through array line by line

//if line is not blank

//output array element as line in file

//close file

//clean up memory and delete dynamic array

//open binary file in output mode to save game data

//write player 1 ship data to file

//write player 1 guess data to file

//close file

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* lodGame \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

//234567890123456789012345678901234567890123456789012345678901234567890123456789

//000000001111111111222222222233333333334444444444555555555566666666667777777777

//\*\* Purpose: //Function to load a saved game

//\*\* Inputs: Game &p1, Game &p2

//\*\* Outputs: none

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

//hold file names from bones file. also used as temp to hold names while counting lines

//create filestream object

//reset player 1 to defaults

//reset player 2 to defaults

//open bones file in input mode

//output error if file did not open correctly

//loop through file line by line

//get file line, increment to next line

//output text from that line in file

//close file

//enter name of savefile to open

//open binary file name provided

//randomly place player 1 ships

//randomly place player 2 ships

//read in binary file data to populate game array data

//read file to fill player 1 ship data

//read file to fill player 1 guess data

/\*

\* File: Guess.h

\* Author: scott\_r\_parker

\*

\* Created on May 24, 2017, 4:54 PM

\*/

#ifndef GUESS\_H

#define GUESS\_H

#include <iostream>

using namespace std;

// Forward Declaration

// Function Prototypes for Overloaded Stream Operators

class Guess{

//private data members

//public methods

//set the row value manually

//set the column value manually

//return the row guess

//Return the column guess

// Friends

//ostream overload

//istream overload

#endif /\* GUESS\_H \*/

/\*

\* File: Player.h

\* Author: scott\_r\_parker

\*

\* Created on April 13, 2017, 2:36 PM

\*/

#ifndef MAP\_H

#define MAP\_H

//Map to keep track of guesses (hits and misses)

//Map to keep track of player's ships (undamaged, placements, and hit)

#endif /\* MAP\_H \*/

/\*

\* File: val.h

\* Author: scott\_r\_parker

\*

\* Created on May 22, 2017, 6:57 PM

\*/

/\* //input and validation functions.\*/

#ifndef VAL\_H

#define VAL\_H

#include <iostream>

#include <cctype>

using namespace std;

//create namespace

//input and validate character (char) data.

//Up to 4 inputs, each input is an acceptable value for the return value

//of the function...

//choose letter from LOW to HIGH

//enter a char (up to 5 valid choices)

//input and validate a signed int

//first input is minimum value, 2nd input is max value

//Overloaded (no arguments) only validates input TYPE

//long long int for low/high range

#endif /\* VAL\_H \*/

## Source Code

/\*

\* File: main.cpp

\* Author: Scott Parker

\* Created on May 20, 2017, 11:30 AM

\* Purpose: Battleship game Project 2

\* Notes: Revised version for Project 2 to include features from later

\* chapters

\*/

//System Libraries

#include <iostream>

#include <cctype>

#include <ctime>

#include <cstdlib>

#include <fstream>

using namespace std;

//User Libraries

#include "colors.h"

#include "val.h"

#include "Game.h"

#include "Map.h"

#include "Guess.h"

//Global Constants

//Such as PI, Vc, -> Math/Science values

//as well as conversions from one system of measurements to another

//Function Prototypes

void newBord(Game &, Game &); //Start a new game

void putShip(Game &); //Places the ships on the game board

bool locTest(int, int, int, char, Game &); //Check to see if ship can be put in location

void putComp(Game &); //Place the computer ships

void savGame(Game, Game); //Function to save the game

void lodGame(Game &, Game &); //Function to load a saved game

void conBord(Game &, Game &); //Function to resume playing a saved game

//Executable code begins here! Always begins in Main

int main(int argc, char\*\* argv) {

//Set random seed

srand(static\_cast<unsigned int>(time(0)));

//Declare Variables

int choice=0;

Game p1; //Player 1

Game p2; //Player 1

//Game menu

do{

//Output switch menu screen

cout<<"Choose from the list <non-numeric data will be ignored>"<<endl;

cout<<"Enter 1 to resume a saved game"<<endl; //enter 1 to resume saved game

cout<<"Enter 2 to start a new game"<<endl; //enter 2 for a new game

cout<<"Enter 0 (zero) or a number not listed to exit."<<endl; //0 or unlisted number to exit

choice=val::inNum(choice); //Using template for data input and validation

//Switch to determine the Problem

switch(choice){

case 2:{newBord(p1, p2);break;} //start a new game

case 1:{conBord(p1, p2);break;} //Function to load a saved game

default:

cout<<"You are exiting the game"<<endl; //default option - exit menu

}

}while(choice>=1&&choice<=2); //show menu while choices all active

//Exit stage right! - This is the 'return 0' call

return 0;

}

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* locTest \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

//234567890123456789012345678901234567890123456789012345678901234567890123456789

//000000001111111111222222222233333333334444444444555555555566666666667777777777

//\*\* Purpose: //Returns true if location is bad

//\*\* Inputs: column, row, size of ship, verticle or horiz, player object

//\*\* Outputs: return true if a bad location is encountered

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

bool locTest(int putRow, int putCol, int size, char verHor, Game &p) {

bool retVal=true;

if (verHor=='v' || verHor=='V') {

if (putRow+size>10) {

cout<<"Ship is off the world!"<<endl;

retVal=true;

} else {

cout<<"Rows within range for vertical placement."<<endl;

cout<<"Checking overlap!"<<endl;

for (int i=0;i<size;i++) {

if (p.getShip(putRow+i, putCol)=='~') {

retVal=false;

} else {

retVal=true;

cout<<"Ship collision!"<<endl;

break;

}

}

}

} else {

if (putCol+size>10) {

cout<<"Ship is off the world!"<<endl;

retVal=true;

} else {

cout<<"Rows within range for horizontal placement."<<endl;

cout<<"Checking overlap!"<<endl;

for (int i=0;i<size;i++) {

if (p.getShip(putRow, putCol+i)=='~') {

retVal=false;

} else {

retVal=true;

cout<<"Ship collision!"<<endl;

break;

}

}

}

}

return retVal;

}

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* putShip \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

//234567890123456789012345678901234567890123456789012345678901234567890123456789

//000000001111111111222222222233333333334444444444555555555566666666667777777777

//\*\* Purpose: //function to place human player's ships

//\*\* Inputs: Game p1 (player 1)

//\*\* Outputs: none - will only manipulate the classes

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

void putShip(Game &p) {

int putRow=0, putCol=0;

char verHor='\0';

cout<<p<<endl;

cout<<"Player 1, place your ships!"<<endl;

for (int i=5;i>=2;i--) {

cout<<"Place your ";

if (i==5) cout<<"Battleship!"<<endl;

else if (i==4) cout<<"Destroyer!"<<endl;

else if (i==3) cout<<"Submarine!"<<endl;

else cout<<"PT Boat!"<<endl;

bool badLoc=true;

while (badLoc) {

cout<<"Choose the row to place the bow of the ship: "<<endl;

char tmprow=val::inAlpha('A', 'J');

tmprow=toupper(tmprow);

putRow=tmprow-65;

cout<<"choose the column to place the bow of the ship: "<<endl;

putCol=val::inNum(putRow, 0, 9);

cout<<"Enter V to place Vertially or H to place Horizontally!"<<endl;

verHor=val::inChar('v', 'V', 'h', 'H');

verHor=toupper(verHor);

badLoc=locTest(putRow, putCol, i, verHor, p);

}

p.setShip(putRow, putCol, i, verHor);

cout<<p<<endl;

}

}

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* putComp \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

//234567890123456789012345678901234567890123456789012345678901234567890123456789

//000000001111111111222222222233333333334444444444555555555566666666667777777777

//\*\* Purpose: //function to place computer's ships

//\*\* Inputs: Game p2 (player 2)

//\*\* Outputs: none - will only manipulate the classes

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

void putComp(Game &p) {

int putRow=0, putCol=0;

char verHor='\0';

for (int i=5;i>=2;i--) {

cout<<"Placing computer's ";

if (i==5) cout<<"Battleship!"<<endl;

else if (i==4) cout<<"Destroyer!"<<endl;

else if (i==3) cout<<"Submarine!"<<endl;

else cout<<"PT Boat!"<<endl;

bool badLoc=true;

while (badLoc) {

putRow=rand()%10;

putCol=rand()%10;

if (rand()%2==0) {

verHor='V';

} else {

verHor='H';

}

badLoc=locTest(putRow, putCol, i, verHor, p);

badLoc?cout<<"Oops! Trying again!"<<endl:cout<<"Ship Placed!"<<endl;

}

p.setShip(putRow, putCol, i, verHor);

}

}

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* newBord \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

//234567890123456789012345678901234567890123456789012345678901234567890123456789

//000000001111111111222222222233333333334444444444555555555566666666667777777777

//\*\* Purpose: //function to start a new game (new board)

//\*\* Inputs: Game p1 (player 1), Game p2 (player 2)

//\*\* Outputs: none - will only manipulate the classes

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

void newBord(Game &p1, Game &p2) {

char chooser;

Guess fire;

p1.mapClr(); //reset player 1 to defaults

p2.mapClr(); //reset player 2 to defaults

putShip(p1); //place human player ships

cout<<"Placing computer ships..."<<endl;

putComp(p2);

cout<<"Starting game..."<<endl;

while (p1.gameOn() && p2.gameOn()) { //Keep going to play game until end, exit or save

cout<<"Your Maps"<<endl;

cout<<p1<<endl;

do {

cout<<"Player 1, enter your coordinates: "<<endl;

cin>>fire;

p2.okShot(fire);

if (!p2.getShot()) {

cout<<"Invalid! Try different coordinates!"<<endl;

}

} while (!p2.getShot());

p1.setMap(fire, p2.getShip(fire.getRow(), fire.getCol()));

cout<<"You "<<p1.getLast()<<endl;

if (p1.getHits()==14) {

cout<<"Computer taking final shot!"<<endl;

} else {

cout<<"Computer taking a shot!"<<endl;

}

do {

int tmpRow=rand()%10;

int tmpCol=rand()%10;

fire.setRow(tmpRow);

fire.setCol(tmpCol);

p1.okShot(fire);

} while (!p1.getShot());

p2.setMap(fire, p1.getShip(fire.getRow(), fire.getCol()));

cout<<"The computer's shot was a "<<p2.getLast()<<endl;

cout<<"(C)ontinue, (S)ave, or e(X)it? "<<endl;

chooser=val::inChar('c', 'C', 's', 'S', 'X');

chooser=toupper(chooser);

if (chooser=='S') {

cout<<"Enter requested data to save the game"<<endl;

savGame(p1, p2); //function to save the game

p1.setPlay(chooser);

} else if (chooser=='X') {

cout<<"Exiting without saving!"<<endl;

p1.setPlay(chooser);

}

if (p1.getHits()==14) {

cout<<"You have sank all of the enemy ships!"<<endl;

p1.setPlay('X');

}

else if (p2.getHits()==14) {

cout<<"The enemy sank all of your ships!"<<endl;

p2.setPlay('X');

}

}

}

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* conBord \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

//234567890123456789012345678901234567890123456789012345678901234567890123456789

//000000001111111111222222222233333333334444444444555555555566666666667777777777

//\*\* Purpose: //function to resume a saved game (continue board)

//\*\* Inputs: Game p1 (player 1), Game p2 (player 2)

//\*\* Outputs: none - will only manipulate the classes

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

void conBord(Game &p1, Game &p2) {

char chooser;

Guess fire;

lodGame(p1, p2); //load a saved game

while (p1.gameOn() && p2.gameOn()) { //Keep going to play game until end, exit or save

cout<<"Your Maps"<<endl;

cout<<p1<<endl;

do {

cout<<"Player 1, enter your coordinates: "<<endl;

cin>>fire;

p2.okShot(fire);

if (!p2.getShot()) {

cout<<"Invalid! Try different coordinates!"<<endl;

}

} while (!p2.getShot());

p1.setMap(fire, p2.getShip(fire.getRow(), fire.getCol()));

cout<<"You "<<p1.getLast()<<endl;

if (p1.getHits()==14) {

cout<<"Computer taking final shot!"<<endl;

} else {

cout<<"Computer taking a shot!"<<endl;

}

do {

int tmpRow=rand()%10;

int tmpCol=rand()%10;

fire.setRow(tmpRow);

fire.setCol(tmpCol);

p1.okShot(fire);

} while (!p1.getShot());

p2.setMap(fire, p1.getShip(fire.getRow(), fire.getCol()));

cout<<"The computer's shot was a "<<p2.getLast()<<endl;

cout<<"(C)ontinue, (S)ave, or e(X)it? "<<endl;

chooser=val::inChar('c', 'C', 's', 'S', 'X');

chooser=toupper(chooser);

if (chooser=='S') {

cout<<"Enter requested data to save the game"<<endl;

savGame(p1, p2); //function to save the game

p1.setPlay(chooser);

} else if (chooser=='X') {

cout<<"Exiting without saving!"<<endl;

p1.setPlay(chooser);

}

if (p1.getHits()==14) {

cout<<"You have sank all of the enemy ships!"<<endl;

p1.setPlay('X');

}

else if (p2.getHits()==14) {

cout<<"The enemy sank all of your ships!"<<endl;

p2.setPlay('X');

}

}

}

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* savGame \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

//234567890123456789012345678901234567890123456789012345678901234567890123456789

//000000001111111111222222222233333333334444444444555555555566666666667777777777

//\*\* Purpose: //Function to save the game

//\*\* Inputs: Game p1, Game p2;

//\*\* Outputs: none

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

void savGame(Game p1, Game p2) {

string line=""; //hold file names from bones file. also used as temp to hold names while counting lines

string \*gName=nullptr; //array of strings to hold file names

int count=0, temp=0; //count variable and temp variable

fstream fil; //create filestream object

fil.open ("bones.txt", ios::in); //open bones file in input mode

if (fil.fail()){ //output error if file unable to open

cout<<"ERROR! Unable to open BONES file!"<<endl;

cout<<BLUE<<BGGREEN<<"Creating BONES file!"<<RESET<<endl;

fil.clear();

fil.open ("bones.txt", ios::out);

fil.close();

fil.open("bones.txt", ios::in);

} else { //otherwise

while (fil){ //find the number of lines in the file

getline(fil, line); //get file line, increment to next line

count++; //increment counter of the number of lines

}

}

fil.close(); //close file

if (count<2) count=2;

gName=new string [count]; //create dynamic array to hold bones file data

fil.open ("bones.txt", ios::in); //open bones file in input mode

if (fil.fail()){ //output error if file fails to open

cout<<"ERROR! Unable to open bones file!"<<endl;

} else { //otherwise

for (int i=0;i<count;i++){ //loop through file line by line

getline(fil, gName[i]); //get file line, increment to next array element

}

}

fil.close(); //close file

cout<<"Current Save Files"<<endl;

for (int i=0;i<count;i++) { //loop through array line by line

if (gName[i]!=""){ //display array element if not empty line

cout<<"Save file name: "<<gName[i]<<endl;

}

}

cout<<BOLDRED<<"WARNING! Duplicate names will overwrite!"<<RESET<<endl;

cout<<BOLDRED<<"WARNING! Only enter alphanumeric characters!"<<RESET<<endl;

cout<<"Enter the game name to save: "<<endl;

cin.ignore(256, '\n');

getline(cin, line); //enter the name of new savefile

temp=0;

while (gName[temp]!=line && temp<count){

temp++;

if (temp == count-1) {

gName[temp]=line;

}

}

if (temp<count-1){

cout<<"file "<<line<<" overwritten!"<<endl;

}

cout<<"file names in array"<<endl;

for (int i=0;i<count;i++){

cout<<gName[i]<<endl;

}

fil.open("bones.txt", ios::out); //open bones file in output mode

if (fil.fail()) { //output error message if file fails to open

cout<<"ERROR! Unable to open bones file!"<<endl;

} else { //otherwise

for (int i=0;i<count;i++){ //loop through array line by line

if (gName[i]!=""){ //if line is not blank

fil<<gName[i]<<endl; //output array element as line in file

}

}

}

fil.close(); //close file

delete [] gName; //clean up memory and delete dynamic array

cout<<"Saving Game Data!"<<endl;

fil.open(line+".bin", ios::out | ios::binary); //open binary file in output mode to save game data

fil.write(reinterpret\_cast<char \*>(&p1), sizeof(Game)); //write player 1 ship data to file

fil.write(reinterpret\_cast<char \*>(&p2), sizeof(Game)); //write player 1 guess data to file

fil.close(); //close file

}

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* lodGame \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

//234567890123456789012345678901234567890123456789012345678901234567890123456789

//000000001111111111222222222233333333334444444444555555555566666666667777777777

//\*\* Purpose: //Function to load a saved game

//\*\* Inputs: Game &p1, Game &p2

//\*\* Outputs: none

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

void lodGame(Game &p1, Game &p2){

string line=""; //hold file names from bones file. also used as temp to hold names while counting lines

fstream fil; //create filestream object

p1.mapClr(); //reset player 1 to defaults

p2.mapClr(); //reset player 2 to defaults

cout<<endl;

fil.open ("bones.txt", ios::in); //open bones file in input mode

if (fil.fail()){ //output error if file did not open correctly

cout<<"ERROR! Unable to open BONES file!"<<endl;

} else {

cout<<"List of \*Savefiles\*: "<<endl;

while (fil){ //loop through file line by line

getline(fil, line); //get file line, increment to next line

cout<<"\*"<<line<<"\*"<<endl; //output text from that line in file

}

}

fil.close(); //close file

cout<<"Enter name of game to load: <Do not include \* characters>"<<endl;

cin.ignore(256, '\n');

getline (cin, line); //enter name of savefile to open

fil.open(line+".bin", ios::in | ios::binary); //open binary file name provided

if (fil.fail()){

cout<<"ERROR! Unable to open file!"<<endl;

cout<<"Randomly creating new game state!"<<endl;

putComp(p1); //randomly place player 1 ships

putComp(p2); //randomly place player 2 ships

} else { //read in binary file data to populate game array data

fil.read(reinterpret\_cast<char \*>(&p1), sizeof(Game)); //read file to fill player 1 ship data

fil.read(reinterpret\_cast<char \*>(&p2), sizeof(Game)); //read file to fill player 1 guess data

fil.close();

}

p1.setPlay('C');

p2.setPlay('C');

}

/\*

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/\*

\* File: AbsGame.h

\* Author: rcc

\*

\* Created on May 24, 2017, 2:42 PM

\*/

#ifndef ABSGAME\_H

#define ABSGAME\_H

class AbsGame{

public:

virtual char getShip()=0;

virtual char getGues()=0;

virtual short getTurn()=0;

virtual short getHits()=0;

};

#endif /\* ABSGAME\_H \*/

/\*

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/\*

\* File: colors.h

\* Author: scott\_r\_parker

\*

\* Created on April 10, 2017, 8:57 PM

\*/

#ifndef COLORS\_H

#define COLORS\_H

#define RESET "\033[0m"

#define BLACK "\033[30m" /\* Black \*/

#define RED "\033[31m" /\* Red \*/

#define GREEN "\033[32m" /\* Green \*/

#define YELLOW "\033[33m" /\* Yellow \*/

#define BLUE "\033[34m" /\* Blue \*/

#define MAGENTA "\033[35m" /\* Magenta \*/

#define CYAN "\033[36m" /\* Cyan \*/

#define WHITE "\033[37m" /\* White \*/

#define BOLDBLACK "\033[1m\033[30m" /\* Bold Black \*/

#define BOLDRED "\033[1m\033[31m" /\* Bold Red \*/

#define BOLDGREEN "\033[1m\033[32m" /\* Bold Green \*/

#define BOLDYELLOW "\033[1m\033[33m" /\* Bold Yellow \*/

#define BOLDBLUE "\033[1m\033[34m" /\* Bold Blue \*/

#define BOLDMAGENTA "\033[1m\033[35m" /\* Bold Magenta \*/

#define BOLDCYAN "\033[1m\033[36m" /\* Bold Cyan \*/

#define BOLDWHITE "\033[1m\033[37m" /\* Bold White \*/

#define INVERSE "\033[7m" /\* Swap Bacground and Text colors \*/

#define UNDERLINE "\033[4m" /\* Underline Single \*/

#define BGBLACK "\033[40m" /\* BLACK Background \*/

#define BGRED "\033[41m" /\* RED Background \*/

#define BGGREEN "\033[42m" /\* GREEN Background \*/

#define BGYELLOW "\033[43m" /\* YELLOW Background \*/

#define BGBLUE "\033[44m" /\* BLUE Background \*/

#define BGMAGENTA "\033[45m" /\* MAGENTA Background \*/

#define BGCYAN "\033[46m" /\* CYAN Background \*/

#define BGWHITE "\033[47m" /\* WHITE Background \*/

#endif /\* COLORS\_H \*/

/\*

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/\*

\* File: val.h

\* Author: scott\_r\_parker

\*

\* Created on May 22, 2017, 6:57 PM

\*/

/\* //input and validate character (char) data.

//Up to 5 inputs, each input is an acceptable value for the return value

//of the function...

char inChar(char inA='\0', char inB='\0', char inC='\0', char inD='\0', char inE='\0')

\*

\*

\*/

#ifndef VAL\_H

#define VAL\_H

#include <iostream>

#include <cctype>

using namespace std;

namespace val {

//input and validate character (char) data.

//Up to 4 inputs, each input is an acceptable value for the return value

//of the function...

char inAlpha() {

char choice='\0';

cin>>choice;

while (cin.fail() || !isalpha(choice)) {

cout<<"Enter an alphabetical character only!"<<endl;

cin.clear();

cin.ignore(256, '\n');

cin>>choice;

}

return choice;

}

char inAlpha(char low, char high) {

char choice='\0';

cin>>choice;

while (cin.fail() || !isalpha(choice) || (toupper(choice)<low || toupper(choice)>high)) {

cout<<"Enter a letter from "<<low<<" to "<<high<<"!"<<endl;

cin.clear();

cin.ignore(256, '\n');

cin>>choice;

}

return choice;

}

char inChar(char inA='\0', char inB='\0', char inC='\0', char inD='\0', char inE='\0') {

char choice='\0';

cin >> choice;

if (inA=='\0' && inB=='\0' && inC=='\0' && inD=='\0' && inE=='\0') {

while (cin.fail()) {

cout<<"Invalid input! Enter an ASCII character!"<<endl;

cin.clear();

cin.ignore(256, '\n');

cin>>choice;

}

} else if (inB=='\0' && inC=='\0' && inD=='\0' && inE=='\0'){

while (cin.fail() || choice!=inA) {

cout<<"Invalid input! Valid entry is: "<<inA<<endl;

cin.clear();

cin.ignore(256, '\n');

cin>>choice;

}

} else if (inC=='\0' && inD=='\0' && inE=='\0'){

while (cin.fail() || (choice!=inA && choice!=inB)) {

cout<<"Invalid input! Valid entries are: "<<inA<<", "<<inB<<endl;

cin.clear();

cin.ignore(256, '\n');

cin>>choice;

}

} else if (inD=='\0' && inE=='\0'){

while (cin.fail() || (choice!=inA && choice!=inB && choice!=inC)) {

cout<<"Invalid input! Valid entries are: "<<inA<<", "<<inB<<", "<<inC<<endl;

cin.clear();

cin.ignore(256, '\n');

cin>>choice;

}

} else if (inE=='\0'){

while (cin.fail() || (choice!=inA && choice!=inB && choice!=inC && choice!=inD)) {

cout<<"Invalid input! Valid entries are: "<<inA<<", "<<inB<<", "<<inC<<", "<<inD<<endl;

cin.clear();

cin.ignore(256, '\n');

cin>>choice;

}

} else {

while (cin.fail() || (choice!=inA && choice!=inB && choice!=inC && choice!=inD && choice!=inE)) {

cout<<"Invalid input! Valid entries are: "<<inA<<", "<<inB<<", "<<inC<<", "<<inD<<", "<<inE<<endl;

cin.clear();

cin.ignore(256, '\n');

cin>>choice;

}

}

return choice;

}

//input and validate a signed int

//first input is minimum value, 2nd input is max value

//Overloaded (no arguments) only validates input TYPE

template <class T>

T inNum(T type, long long int low, long long int high) { //long long int for low/high range

T x=type; //determines the datatype to use (useful for ranges)

cin >> x;

while (cin.fail() || x<low || x>high) {

cout<<"Invalid input! Enter number from "<<low<<" to "<<high<<"!"<<endl;

cin.clear();

cin.ignore(256, '\n');

cin>>x;

}

return x;

}

template <class T>

T inNum(T type) {

T x=type;

cin>>x;

while (cin.fail()) {

cout<<"Invalid input!"<<endl;

cin.clear();

cin.ignore(256, '\n');

cin>>x;

}

return x;

}

}

#endif /\* VAL\_H \*/

/\*

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/\*

\* File: Player.h

\* Author: scott\_r\_parker

\*

\* Created on April 13, 2017, 2:36 PM

\*/

#ifndef MAP\_H

#define MAP\_H

struct Map{

short hits;

short guesses;

char guess[10][10]={}; //Map to keep track of guesses (hits and misses)

char ship[10][10]={}; //Map to keep track of player's ships (undamaged, placements, and hit)

};

#endif /\* MAP\_H \*/

/\*

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/\*

\* File: AbsGame.h

\* Author: rcc

\*

\* Created on May 24, 2017, 2:42 PM

\*/

#ifndef ABSGAME\_H

#define ABSGAME\_H

class AbsGame{

public:

virtual char getShip()=0;

virtual char getGues()=0;

virtual short getTurn()=0;

virtual short getHits()=0;

};

#endif /\* ABSGAME\_H \*/

/\*

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/\*

\* File: Game.h

\* Author: Scott Parker

\*

\* Created on May 24, 2017, 2:46 PM

\*/

#ifndef GAME\_H

#define GAME\_H

#include "AbsGame.h"

#include "Map.h"

#include "Guess.h"

class Game; // Forward Declaration

// Function Prototypes for Overloaded Stream Operators

ostream &operator << (ostream &, const Game &);

//All the elements for a game of battleship... 2 maps for each player

// the number of hits and number of total shots fired

class Game {

private:

Map player; //Player map data

const int cols=10;

const int rows=10;

string lstShot;

bool playing;

bool shot;

protected:

public:

Game();

virtual ~Game();

string getLast(); //return lstShot

void setPlay(char); //set status of playing...

void mapClr(); //Reset entire game state to empty

void okShot(Guess); //check to see if shot is hit or miss

void setMap(Guess, char); //Update map after a valid shot

void setShip(int, int, int, char); //Place ships on map

char getShip(int, int) const; //display map data for coordinates

char getGues(int, int) const; //display map data for coordinates

short getTurn() const; //Display total number of guesses

short getHits() const; //Display number of hits

bool gameOn() const; //return status of playing... if true game in progress, false to exit

bool getShot() const; //return value of shot

// Friends

friend ostream &operator << (ostream &, const Game &);

};

#endif /\* GAME\_H \*/

/\*

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/\*

\* File: Game.cpp

\* Author: Scott Parker

\*

\* Created on May 24, 2017, 2:46 PM

\*/

#include "Game.h"

#include "colors.h"

Game::Game() { //initialize game to all ocean spaces

for (int i=0;i<rows;i++){

for (int j=0;j<cols;j++){

player.guess[i][j]='~';

player.ship[i][j]='~';

}

player.guesses=0;

player.hits=0;

playing=true;

shot=false;

lstShot="No Shots! ";

}

}

Game::~Game() {

}

void Game::mapClr() { //reset to default status

for (int i=0;i<rows;i++){

for (int j=0;j<cols;j++){

player.guess[i][j]='~';

player.ship[i][j]='~';

}

player.guesses=0;

player.hits=0;

playing=true;

shot=false;

lstShot="No Shots! ";

}

}

string Game::getLast() { //return value of lstShot (last shot) text results

return lstShot;

}

bool Game::gameOn() const { //return value of playing... if false then game ends

return playing;

}

bool Game::getShot() const { //return value of playing... if false then game ends

return shot;

}

char Game::getShip(int col, int row) const { //return map value for listed coordinate

return player.ship[col][row];

}

char Game::getGues(int col, int row) const { //return map value for listed coordinate

return player.guess[col][row];

}

short Game::getTurn() const { //return the total number of guesses

return player.guesses;

}

short Game::getHits() const { //return the number of hits

return player.hits;

}

void Game::setMap(Guess shot, char dat) { //update the map after a valid shot

if (dat=='o') {

player.guess[shot.getRow()][shot.getCol()]='M';

lstShot="MISS! ";

player.guesses++;

} else {

player.guess[shot.getRow()][shot.getCol()]=dat;

lstShot="HIT! ";

player.guesses++;

player.hits++;

}

}

void Game::setPlay(char choice) { //Set the boolean value of playing

bool retVal=false;

if (choice=='C') {

retVal=true;

} else retVal=false;

playing=retVal;

}

void Game::okShot(Guess fire) { //Check to see if shot is valid (hit, miss, on map, not duplicate)

bool tmpShot=false;

if (player.ship[fire.getRow()][fire.getCol()]=='S') {

tmpShot=true;

player.ship[fire.getRow()][fire.getCol()]='H';

} else if (player.ship[fire.getRow()][fire.getCol()]=='~') {

tmpShot=true;

player.ship[fire.getRow()][fire.getCol()]='o';

} else {

tmpShot=false;

}

shot=tmpShot;

}

//Edit map data to place a ship.

void Game::setShip(int row, int col, int size, char verHor) {

if (verHor=='v' || verHor=='V') {

for (int i=0;i<size;i++) {

player.ship[row+i][col]='S';

}

} else {

for (int i=0;i<size;i++) {

player.ship[row][col+i]='S';

}

}

}

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

// Overloaded << operator. Gives cout the ability to \*

// directly display FeetInches objects. \*

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

ostream &operator<<(ostream &strm, const Game &obj)

{

strm << BGBLACK << WHITE << "Legend: " << BGBLUE << CYAN << "~" << RESET << BGBLACK << WHITE

<< " OCEAN " << BGRED << YELLOW << "H" << RESET << BGBLACK << WHITE << " HIT "

<< BGWHITE << MAGENTA << "M" << RESET << BGBLACK << WHITE << " MISS " << endl;

strm << BGBLACK << UNDERLINE << " " << WHITE << "S" << " SHIP " << RESET << UNDERLINE << BGWHITE << MAGENTA

<< "o" << RESET << UNDERLINE << BGBLACK << WHITE << " ENEMY GUESS " << RESET << endl;

strm << BGBLACK << GREEN << " GUESSES SHIPS " << endl;

strm << BGBLACK << WHITE << " " << UNDERLINE << "0123456789" << RESET << BGBLACK << WHITE

<< " " << UNDERLINE "0123456789" << RESET << BGBLACK << WHITE << " " << RESET << endl;

for (int i=0;i<10;i++) { //display the maps and score data

strm << BGBLACK << WHITE << static\_cast<char>(i+65) << ": ";

for (int j=0;j<10;j++) {

if (obj.player.guess[i][j]=='~') {

strm << BGBLUE << CYAN << obj.player.guess[i][j] << RESET;

} else if (obj.player.guess[i][j]=='H') {

strm << BGRED << YELLOW << obj.player.guess[i][j] << RESET;

} else if (obj.player.guess[i][j]=='M') {

strm << BGWHITE << MAGENTA << obj.player.guess[i][j] << RESET;

} else {

strm << BGBLACK << WHITE << obj.player.guess[i][j] << RESET;

}

}

strm << BGBLACK << WHITE << " " << BGBLACK << WHITE << static\_cast<char>(i+65) << ": ";

for (int j=0;j<10;j++) {

if (obj.player.ship[i][j]=='~') {

strm << BGBLUE << CYAN << obj.player.ship[i][j] << RESET;

} else if (obj.player.ship[i][j]=='H') {

strm << BGRED << YELLOW << obj.player.ship[i][j] << RESET;

} else if (obj.player.ship[i][j]=='o') {

strm << BGWHITE << MAGENTA << obj.player.ship[i][j] << RESET;

} else {

strm << BGBLACK << WHITE << obj.player.ship[i][j] << RESET;

}

}

strm << BGBLACK << " "<< '\n';

}

strm << BGBLACK << WHITE << " HITS: " << obj.player.hits << " " << "SHOTS: "

<< obj.player.guesses << " " << "Last: " << obj.lstShot << RESET;

return strm;

}

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/\*

\* File: Guess.h

\* Author: scott\_r\_parker

\*

\* Created on May 24, 2017, 4:54 PM

\*/

#ifndef GUESS\_H

#define GUESS\_H

#include <iostream>

using namespace std;

class Guess; // Forward Declaration

// Function Prototypes for Overloaded Stream Operators

ostream &operator << (ostream &, const Guess &);

istream &operator >> (istream &, Guess &);

class Guess{

private:

int targRow=11;

int targCol=11;

public:

Guess();

void setRow(int); //set the row value manually

void setCol(int); //set the column value manually

int getRow(); //return the row guess

int getCol(); //Return the column guess

// Friends

friend ostream &operator << (ostream &, const Guess &);

friend istream &operator >> (istream &, Guess &);

};

#endif /\* GUESS\_H \*/

/\*

\* File: Guess.cpp

\* Author: Scott Parker

\*

\* Created on May 24, 2017, 2:46 PM

\*/

#include <cctype>

#include "Guess.h"

Guess::Guess() {

targRow=-1;

targCol=-1;

}

void Guess::setRow(int a) {

targRow=a;

}

void Guess::setCol(int a) {

targCol=a;

}

int Guess::getCol() {

return targCol;

}

int Guess::getRow() {

return targRow;

}

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

// Overloaded << operator. Gives cout the ability to \*

// directly display FeetInches objects. \*

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

ostream &operator<<(ostream &strm, const Guess &obj)

{

strm << obj.targRow << ", " << obj.targCol;

return strm;

}

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

// Overloaded >> operator. Gives cin the ability to \*

// store user input directly into FeetInches objects. \*

//\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

istream &operator >> (istream &strm, Guess &obj)

{

char temp='\0';

// Prompt the user for the vertical axis (row)

cout << "Enter target Row (A-J): ";

strm >> temp;

temp=toupper(temp);

while (cin.fail() || !isalpha(temp) || (temp<65 || temp>74)) {

cout<<"Enter target Row A-J only! ";

cin.clear();

cin.ignore(256, '\n');

strm >> temp;

temp=toupper(temp);

}

int conTemp=0;

conTemp=temp-65; //convert character to int

obj.targRow=conTemp;

// Prompt the user for the horizontal axis (column)

cout << "Enter target Column (0-9): ";

strm >> obj.targCol;

while (cin.fail() || obj.targCol<0 || obj.targCol>9) {

cout<<"Enter target Column 0-9 only! ";

cin.clear();

cin.ignore(256, '\n');

strm >> obj.targCol;

}

return strm;

}