Homework 3

Homework 3 - Tic-Tac-Toe

Attached Files: main.cpp (1.767 KB)
symbol.cpp (956 B)
symbol.h (542 B)
tic.h (1.049 KB)

CS 172 - Homework 3 - Tic-Tac-Toe

Programming Assignment (50pts)

In this assignment, you will make a Tic-Tac-Toe game in C++. You will be provided with starting code. Your task is to complete the tBoard object which controls the game mechanics. The customer (in this case your Professors) have already determined what the user interface should look like. You need to make a class that completes the game.

One of the goals of this project is to simulate how a team project would work in a company. You have no control over how the input/output with the user works. That has already been decided. You just need to figure out how to implement the back end to make design work.

Inputs:

- Both Players enter their names so that the game can refer to them and declare a winner.
- Moves are entered as two integers with a space between them on the same line. The first is the row number. The second is the column number. For example, 0 2 means row 0 column 2 should be marked.

Outputs:

- Which symbol is assigned to each user is displayed.
- After each move is entered the board is redrawn to show the move took place. **The board must be drawn EXACTLY as shown in the sample run below.**
- If a players move was invalid, then they may attempt another move (see next section).

Error Checking:

- If a user makes an illegal move (either space already taken or out of range) the move should fail and the user should be asked for another move, etc.., until a valid move is selected.

Game Mechanics:

- The game only allows legal moves.
- A winner should be declared immediately after the winning move is made.
- A tie should be declared after the final move is made.
- Full Rules of Tic-Tac-Toe can be found https://en.wikipedia.org/wiki/Tic-tac-toe

Programming Assignment:

You are provided with the following code. You may not change any of these files.

- main.cpp - Handles printing output and getting input
- symbol.cpp - Gives and Enum for the three symbols possible in spaces (blank, X, O)
- symbol.h - H File for Enum

You are given an incomplete tic.h file. It includes the methods that are required by the main.cpp file.

You must complete the Tic-Tac-Toe program by implementing tic.cpp and completing tic.h. You may add new methods and attibutes to the class, but you may not change any of the methods given. You cannot change main.cpp, so any method used there must work as expected.

What to Submit:

- main.cpp - Main Game Program
- tic.h - Header for Game
- tic.cpp - Implementation for Game
- symbol.cpp - Enum for Symbols
- symbol.h - Header for Symbols
- System Manual - See Instructions : https://www.cs.drexel.edu/~mcs171/Sp15/notes/01.5_documentation/titleslide.html?CurrentSlide=0

Submit as a single .zip file in the format <drexelID>_HW3.zip

Grading

We are going to run a bunch of different test runs. Therefore we suggest you yourself do a lot of different tests to feel confident that your code works properly in all cases.

- Proper submission and compiles out-of-the-box 5pts
- Program Construction (all instructions above are followed and code logical flow is correct) 30pts
- Internal Documentation 5pts
- Code follows good style guidelines 5pts
- External Documentation 5pts

Example Game

```
Hello! Welcome to Tic-Tac-Toe
What is the name of the player going first (X)?
Mark
Mark is X
What is the name of the player going second (O)?
Ted
Ted is O
   |  0  |  1  |  2  |
   +-----------------+
 0 |     |     |     |
   +-----------------+
 1 |     |     |     |
   +-----------------+
 2 |     |     |     |
   +-----------------+
Mark enter space to place X as ROW COL then press enter
0 0
Move Successful.
   |  0  |  1  |  2  |
   +-----------------+
 0 |  X  |     |     |
   +-----------------+
 1 |     |     |     |
   +-----------------+
 2 |     |     |     |
   +-----------------+
Ted enter space to place O as ROW COL then press enter
1 1
Move Successful.
   |  0  |  1  |  2  |
   +-----------------+
 0 |  X  |     |     |
   +-----------------+
 1 |     |  O  |     |
   +-----------------+
 2 |     |     |     |
   +-----------------+
Mark enter space to place X as ROW COL then press enter
0 2
```

```
Move Successful.
   |  0  |  1  |  2  |
   +-----------------+
 0 |  X  |     |  X  |
   +-----------------+
 1 |     |  O  |     |
   +-----------------+
 2 |     |     |     |
   +-----------------+
Ted enter space to place O as ROW COL then press enter
0 0
Move Failed, try again.
   |  0  |  1  |  2  |
   +-----------------+
 0 |  X  |     |  X  |
   +-----------------+
 1 |     |  O  |     |
   +-----------------+
 2 |     |     |     |
   +-----------------+
Ted enter space to place O as ROW COL then press enter
0 1
Move Successful.
   |  0  |  1  |  2  |
   +-----------------+
 0 |  X  |  O  |  X  |
   +-----------------+
 1 |     |  O  |     |
   +-----------------+
 2 |     |     |     |
   +-----------------+
Mark enter space to place X as ROW COL then press enter
2 1
Move Successful.
   |  0  |  1  |  2  |
   +-----------------+
 0 |  X  |  O  |  X  |
   +-----------------+
 1 |     |  O  |     |
   +-----------------+
 2 |     |  X  |     |
   +-----------------+
Ted enter space to place O as ROW COL then press enter
1 0
```

```
Move Successful.
   |  0  |  1  |  2  |
   +-----------------+
 0 |  X  |  O  |  X  |
   +-----------------+
 1 |  O  |  O  |     |
   +-----------------+
 2 |     |  X  |     |
   +-----------------+
Mark enter space to place X as ROW COL then press enter
1 2
Move Successful.
   |  0  |  1  |  2  |
   +-----------------+
 0 |  X  |  O  |  X  |
   +-----------------+
 1 |  O  |  O  |  X  |
   +-----------------+
 2 |     |  X  |     |
   +-----------------+
Ted enter space to place O as ROW COL then press enter
2 2
Move Successful.
   |  0  |  1  |  2  |
   +-----------------+
 0 |  X  |  O  |  X  |
   +-----------------+
 1 |  O  |  O  |  X  |
   +-----------------+
 2 |     |  X  |  O  |
   +-----------------+
Mark enter space to place X as ROW COL then press enter
2 0
Move Successful.
Game Over
   |  0  |  1  |  2  |
   +-----------------+
 0 |  X  |  O  |  X  |
   +-----------------+
 1 |  O  |  O  |  X  |
   +-----------------+
 2 |  X  |  X  |  O  |
   +-----------------+
TIE: Everyone Wins
```