Homework 5

100 Points

Loops and Files

Assignments & Grading:

A. 20Points – Find and fix errors: **`Hw5_A.cpp`**

B. 20Points – Introduction to files (fill in the blanks): **`Hw5_B.cpp`**

C. 60Points – **Guessing Game**: **`Hw5_C.cpp`** *// see below*

Run each program once and save the output at the end of the source file as a comment. Compress the source files and input/output files (if any) and upload the compressed file: 22A_LastName_FirstName_H5.zip

Project C: Guessing Game: This is a simple guessing game between a computer and a player. First, the computer prompts the player to enter his/her name then it generates a random number between 10 and 30. The player has up to five tries to guess the number. After each guess, the program displays messages such as "Congratulations Susan, you've guessed the number in 2 tries!", or "Sorry Susan, the random number was 28!" . Ask the player if s/he wants to play again (Y or y for *yes*, anything else for *no*) "Susan, would you like to play again?". When the current player decides to stop playing, ask if there is another player, and start all over again. This program also creates an output file named **`players.txt`** that contains the players' names and their game results. Write to the screen a welcome message, explaining what is the purpose of the program, and an end of the program another message that includes the name of the output file. Here is an example:

```
          *****************
        *** Guessing Game ***
          *****************
     This is a simple guessing game
     between a computer and a player.

Please enter your name: Mary Lou
Please guess a random number between 10 and 30: 20
    Too large! Try again: 15
    Too small! Try again: 18
    Too small! Try again: 19
Congratulations Mary Lou, you've guessed the number in 4 tries!

Mary Lou, would you like to play again? (Y/N): Y
Please guess a random number between 10 and 30: 20
Congratulations Mary Lou, you've guessed the number in 1 try!

Mary Lou, would you like to play again? (Y/N): Y
Please guess a random number between 10 and 30: 40
    40 is out of range (10 to 30). Too large! Try again: 20
    Too large! Try again: 20
    Too large! Try again: 5
    5  is out of range (10 to 30). Too small! Try again: 20
```

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```
Sorry Mary Lou, the random number was 16!

Mary Lou, would you like to play again? (Y/N): N

Is there another player? (Y/N): Y
Please enter your name: John
Please guess a random number between 10 and 30: 20
    Too large! Try again: 15
Congratulations John, you've guessed the number in 2 tries!

John, would you like to play again? (Y/N): Y
Please guess a random number between 10 and 30: 21
Congratulations John, you've guessed the number in 1 try!

John, would you like to play again? (Y/N): N

Is there another player? (Y/N): N

      Please check the output file "players.txt".

        ************************************
      ***   This is the end of the program   ***
        ************************************
```

The output file named **`players.txt`** will contains the players' names and their game results as shown below:

```
Mary Lou
Game 1: 19 - guessed in 4 tries
Game 2: 20 - guessed in 1 try
Game 3: 16 - not guessed

John
Game 1: 15 - guessed in 2 tries
Game 2: 21 - guessed in 1 try
```

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Guessing Game – pseudo-code

1. Display game instructions
2. Open an output file named **`players.txt`**
3. Loop (another player) // *do – while loop*
    a. Prompt the player to enter his/her name and read the name (such as Mary Lou)
    b. Write the name to the output file
    c. Loop (player's choice) // *do – while loop*
        i. Generate a random number between 10 and 30.
        ii. c = 1
        iii. guessed = false
        iv. Loop (c <= 5 && !guessed) // *while loop*
            1. Ask the player to guess the number
            2. Display displays messages such as: "Congratulations Mary Lou, you've guessed the number in 2 tries!", or "Sorry Mary Lou, the random number was 28!", or a hint, such as "Your guess is low! Try again", or "Your guess is high! Try again!"
            3. c++

            End loop
        v. Write the random number and the game results to the file
        vi. Ask the player if s/he wants to play again (Y or y for *yes*, anything else for *no*) "Mary Lou, would you like to play again?".

        End loop
    d. Ask if there is another player (Y or y for *yes*, anything else for *no*)

    End loop
4. Close the output file
5. Display the end of the program message and the name of the output file.