COSC2436 hw3: Queue and stack

1. Introduction

In this assignment, you will work with a queue and stack to learn more about its use and functionality. There is a new game in the casino, and you are supposed to figure out who is losing the game. Every participant will ask for a number of red and black cards (the numbers should add up to 10). Then the dealer will stack some random black and red cards on top of each other. Participants form a queue and the dealer will deal them the stack of cards until they reach the number of cards that they asked in the beginning. if the element of the top of the stack changes, the participant will go to the end of the queue. After the stack ends, anyone who hasn't received the cards that they called for is a loser.

2. Input files

The input file will contain a list of credentials (ranging from 0 to 100).

- Each credential represents a participant and needs to be added to a queue.
- Each credential will have three attributes: Name, the number of Black cards they asked for, and the number of Red cards. Note: Name will always contain alphabet characters (a – z, A- Z), no spaces or special characters included. The numbers will be in the form of a double-digit number, the tens is the number of blacks and the ones is the number of Reds. The formatting of each credential is as follows:

  Name, xy

  Note that x+y is always equal to 10. x is the number of black cards and y is the number of red cards

- You can safely consider that all the inputs are in the correct format but it can be empty. In this case output: "No Game!".
- While reading the input, \n and \r should be removed before processing the string.

3. Command files

- Each line will have a number of cards and a letter indicating the color of the cards.

  For instance, the following is a valid command file:

  B10 (bottom of the stack)

  R7

  R9

  B3

  R1 (top of the stack)

- This file can empty
- You will have to store the data in a stack
- While reading the command, \n, and \r should be removed before processing the string.

4. Output files

- The output file should display the name of the losers in the order that they are in the queue.
- If there was no participant (empty input), return “No Game!”
- If there is no loser, return “No Loser!”
- Each name will be on its own line.

5. The Operations

- The dealer will give the person in the front of the queue the cards on the top of the stack.
- If **no one** needs the cards that are at the top of the stack, those cards are burned and the program starts using the next element of the stack. No one means you have to go over the queue once and make sure that everyone’s that color is 0. Make sure that the queue order does not change in this step.
- A participant will move to the end of the queue if the stack’s element changes. Like from the R7, 7 cards are already given and you will move to the next element which is B10.
- A participant will move to the end of the queue if they get all the cards of one color that they asked for.
- A participant is a winner if they get all the cards that they asked for from both colors.
- People who remain in the queue after the stack of cards ends are the losers.

6. Requirements

Homework is individual. Your homework will automatically be screened for code plagiarism against other students and code from external sources. Code that is copied from another student (for instance, renaming variables, changing for and while loops, changing indentation, etc. will be treated as copy) will be detected and result in ”0” in this homework. The limit is 50% similarity. Using structures and functions other than the ones that you are told (stack and queue) will have 100% penalty.

7. Turn in your homework

Homework 3 needs to be turned in to our Linux server, follow the link here https://rizk.netlify.app/courses/cosc2430/2_resources/

Make sure to create a folder under your root directory, name it “hw3” (case sensitive), and copy all your .cpp and .h file to this folder, “ArgumentManager.h” need to be included as well.

PS: This document may have typos, if you think something is illogical, please email TAs for confirmation.