

CSCI 1060U - Laboratory #10

A Queue Class in C++

Lab Due: Sunday, Dec. 6, 2020 at 11:59pm (Canvas)

Introduction

This lab will focus on creating a queue class to store data and perform basic data analysis. We have already covered a Stack class during lectures and your teaching assistant will explain the difference between a Stack and a Queue at the start of your lab. Your teaching assistant will also review the class declaration for a Queue.

Activity #1

In C++ create a Node struct containing a string (element_name) as well as a node pointer (Node* next). Create a Queue class with the following public functions:

- Constructor (with no parameters) – creates an empty queue.
- Deconstructor – deletes the queue.
- isEmpty – checks if the queue is empty.
- Enqueue – Adds a new Node to the Queue. The new Node should be added to the back of the queue.
- PriorityEnqueue - Adds a new Node to the front of the Queue.
[BONUS (2 Marks): If there are already priority nodes in the Queue the new Node is added at the back of the priority nodes]
- Dequeue – deletes a Node from the Queue. The Node deleted should be from the front of the queue (and it should return the element_name of the deleted Node)
- toString – returns a string containing the contents of the Queue from the back Node to the front Node. For example:

[Yoda] -> [R2D2] -> [Solo]

The class should also contain the following private member variables:

- Node* front – a pointer to the front of the Queue
- Node *back – a pointer to the back of the Queue

You should submit your source file (.cpp) for Activity #1 through the lab drop box in Canvas.

NOTE: **This is an individual lab and all source code must be written independently.**