CSC 3002 (Fall 2021) **Assignment 6**

Problem 1

(Exercise 16.12)

Use the algorithm from section 16.5 to implement the **PriorityQueue** class so that it uses a heap as its underlying representation. To eliminate some of the complexity, feel free to use a vector instead of a dynamic array.

Requirments & Hints:

You need to finish all **TODO** parts in *P1PriorityQueue.h*.

Problem 2

Part1: (Exercise 18.03)

Eliminate the recursion from the implementation of **depthFirstsearch** by using a stack to store the unexplored nodes. At the beginning of the algorithm, you simply push the starting node on the stack. Then, until the stack is empty, you repeat the following operations: 1. Pop the topmost node from the stack; 2. Visit that node; 3. Push its neighbors on the stack.

Part2: (Exercise 18.04)

Take your solution from the preceding exercise and replace the stack with a queue. Describe the traversal order implemented by the resulting code.

Requirments & Hints:

The implementation of *simplegraph* is provided. You need to finish all **TODO** parts in *P2Traverse.cpp*.

Requirements for Assignment

I've provided a project named **Assignment6.pro**. You need to write all **TODO** parts in the codes. The **AirlineGraph.txt** is located under *src* folder. Finally, please pack your whole project folder into a single .zip file, name it using your student ID (e.g. if your student ID is 123456, hereby the file should be named as 123456.zip), and then submit the .zip file via BB system.

Please note that, the teaching assistant may ask you to explain the meaning of your program, to ensure that the codes are indeed written by yourself. Please also note that we may check whether your program is too similar to your fellow students' code using BB.