

CSC 3002 (Spring 2022) Assignment 6

Problem 1 (Exercise 16.13)

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:

Please finish the file *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)

Finish the implementation of **BreadthFirstSearch**. Take your solution from the preceding exercise and replace the stack with a **queue**.

Requirments:

Please finish the file *P2Traverse.cpp* according to the file *P2Traverse.h*. Note that, in the implementation of **DepthFirstSearch**, you **must** use stack. The students using recursion will get zero point.

Requirements for Assignment

We have provided a project named as *AS6-ID.pro*. Firstly, please replace the *ID* with your student ID in both **.pro file and the project folder name**. (e.g. if your student ID is 123456, hereby the file should be named as *AS6_123456*),

You should finish *P1PriorityQueue.h* and *P2Traverse.cpp* according to the problem requirements. The resources and test files are provided under **res** folder. You can use them with relative path directly after you compile the whole project. Finally, pack your **whole project files into a single .zip file**, and 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.

Please refer to the BB system for the assignment deadline. For each day of late submission, you will obtain late penalty in the assignment marks.

Reminder: Please switch your input language to English before interacting in Stanford console. Or, you will get no response.