Assignment 5 – Heaps

Spring 2025

Due: Friday, April 4 11:59 pm

To-do

Download the base code *Heap* for the array implementation of Heaps that we covered in class from D2L. Using this base code complete the following tasks.

Task 1: Implement *heapifyDown()* function that bubbles down the replacement node after deletion.

Task 2: Implement *buildH()* function to build a max heap from an array.

Task 3: Implement *replace()* function to replace an existing value in the heap with a new one.

Task 4: Implement *heapSort()* function to sort.

* Extra-credit opportunity [+10 points] *

Implement **switchMinMax()** function to convert a Max heap into a Min heap and vice versa. Note that you'll also need to implement the helper function **heapifyDownMin()**.

Total Points (100)

- Code runs and works as expected – Task 1: 20 points
- Code runs and works as expected – Task 2: 25 points
- Code runs and works as expected - Task 3: 20 points
- Code runs and works as expected - Task 4: 25 points
- Proper commenting: 5 points
- Available on GitHub: 5 points

Deliverables:

- A zipped folder named A5 that contains all the files submitted to D2L dropbox

- C++ files and header files
- README.txt file
- A screenshot showing the functions work.
- Published to GitHub under the folder where you added me as a collaborator.