



Department of Electrical and Software Engineering
Schulich School of Engineering

ENSF 694 - Principles of Software Development II
Summer 2023

Lab 8 – July 26, 2023

Topic: Heaps, Heapsort

- All codes must be complete and compile without any errors.
- The codes should work for not only the given sample inputs but also any inputs of the same data types.
- **Submission: github link of the codes in the d2l dropbox 'Lab#08_Jul26' and push your code in the github classroom repository**
 - Go to this link - <https://classroom.github.com/a/jRQV1s7g>
 - Refresh and accept the Lab8 link
 - Clone the repository and then push your code
 - Then submit the github link to the d2l dropbox 'Lab#08_Jul26'

Lab Tasks

15 marks =

05 marks for input-output format +

05 marks for implementing heapsort with max heap +

05 marks for implementing heapsort with min heap.

Q1.

1. Implement the heapsort algorithm on the same input array using both Max Heap and Min Heap logics.
2. Use integer array for your implementation.
3. Take the number of nodes and input array from the user.
4. Show both max heap and min heap arrays of the original array.
5. Show both max heap sorted array (ascending order) and min heap sorted array (descending order) on the original array.

Sample Run of the Code:

Enter number of nodes:

10

Enter the nodes:

4

1

3

2

16

9

10

14

8

7

Input nodes: [4, 1, 3, 2, 16, 9, 10, 14, 8, 7]

Max Heap: [16, 14, 10, 8, 7, 9, 3, 2, 4, 1]

Min Heap: [1, 2, 3, 4, 7, 9, 10, 14, 8, 16]

Sorted Array with Max Heap: [1, 2, 3, 4, 7, 8, 9, 10, 14, 16]

Sorted Array with Min Heap: [16, 14, 10, 9, 8, 7, 4, 3, 2, 1]