CS 211 Data Structures and Algorithms Lab
Autumn, 2022

Assignment no.	6
Objective	To implement Priority Queue and Heapsort
Total marks	No grading (Practice assignment)

The objective of this assignment is to implement ***Priority Queue and Heapsort using max-heaps.***

Command-line argument:

Your program should receive a file (input file) as a command line argument.

Input file:

- The input file will be a text file where each line will be of any of the following format: *insert <number>, maximum, extract-max, increase-key <index> <number>, sort.*
- Here <number> represents any non-negative integer.

Output file:

The output must be in a file named ***'heap.txt'***. Every line in the input file must have a corresponding output line in heap.txt. The details are given below.

Command	**Meaning**	**Output**
insert <number>	Insert <number> to the priority queue	<number> inserted
maximum	Find the maximum in the priority queue	<maximum number> / <empty-line> (if the priority queue is empty)
extract-max	Find and remove the maximum from the priority queue	<maximum number> / <empty-line> (if the priority queue is empty)
increase-key <index> <number>	Make the key at <index> as <number> if <number> is at least greater than the current value at <index>. Note that	Key at <index> changed to <number> / <number> is less than the current key at <index>

	the index ranges from 0 to heap-size - 1	
sort	Do a heapsort on the elements in the priority queue. Note that you don’t have to build a max-heap here. Further, the heap should not be disturbed. So, you may take a copy of the heap and do the heapsort on it.	Elements in the priority queue in ascending order. Two values are separated by a single space. Blank line if no elements.