**Com 251**

**Assignment 7**

**Group 8** (Tarun, Arnav, Prabhjot)

1.

A screen shot of a computer program

Description automatically generated

2.

(a). the largest key will be stored at the root i.e., index [0] (max heap)

(b). the third smallest key will be stored at either child of the rood i.e., index [1] or index [2] (mean heap)

3.

(a). to execute **selection sort** algorithm, you must select the smallest element of the array and swap it with the first element of the unsorted array.

Here are the steps:

(22, 15, 36, 44, 10, 3, 9, 13, 29, 25)

(3, 15, 36, 44, 10, 22, 9, 13, 29, 25)

(3, 9, 36, 44, 10, 22, 15, 13, 29, 25)

(3, 9, 10, 44, 36, 22, 15, 13, 29, 25)

(3, 9, 10, 13, 36, 22, 15, 44, 29, 25)

(3, 9, 10, 13, 15, 22, 36, 44, 29, 25)

(3, 9, 10, 13, 15, 22, 25, 44, 29, 36)

(3, 9, 10, 13, 15, 22, 25, 44, 29, 36)

(3, 9, 10, 13, 15, 22, 25, 29, 44, 36)

(3, 9, 10, 13, 15, 22, 25, 29, 36, 44)

(b). to execute **insertion sort,** we select the element at index [1] and compare it with the element left to it and swap if it is bigger, keep on doing with rest of the elements in the array.

Here are the steps:

(22, 15, 36, 44, 10, 3, 9, 13, 29, 25)

(15, 22, 36, 44, 10, 3, 9, 13, 29, 25)

(15, 22, 36, 44, 10, 3, 9, 13, 29, 25)

(10, 15, 22, 36, 44, 3, 9, 13, 29, 25)

(3, 10, 15, 22, 36, 44, 9, 13, 29, 25)

(3, 9, 10, 15, 22, 36, 44, 13, 29, 25)

(3, 9, 10, 13, 15, 22, 36, 44, 29, 25)

(3, 9, 10, 13, 15, 22, 29, 36, 44, 25)

(3, 9, 10, 13, 15, 22, 25, 29, 36, 44)