**Analysis and Design of Algorithms**

**Semester III**, Year **2021-22**

**Lab - 4**  Date : 18-10-2021

Name: E. Sai Manoj MIS. No: 112015044 Branch: CSE

**AIM:**

1. Create an array by reading the inputs from file ’numbers.txt’ and find kth smallest element in an array.

**Question 1:**

**Pseudo Code:**

Input values

Create a heap

Build a max-heap A of the first k-elements

For each element after kth element, compare with root of the max-heap A

If element < root:

Make the element root and call heapify for A

Else:

Ignore it

Finally, the root of the A is the kth smallest element.

START

def kthSmallest(int A, int n, int K): # A is array(list) of numbers

buildMaxHeap(A[0:K]) # build max heap for elements from 0 to k

for(i = K to n - 1):

if A[i] < A[0]:

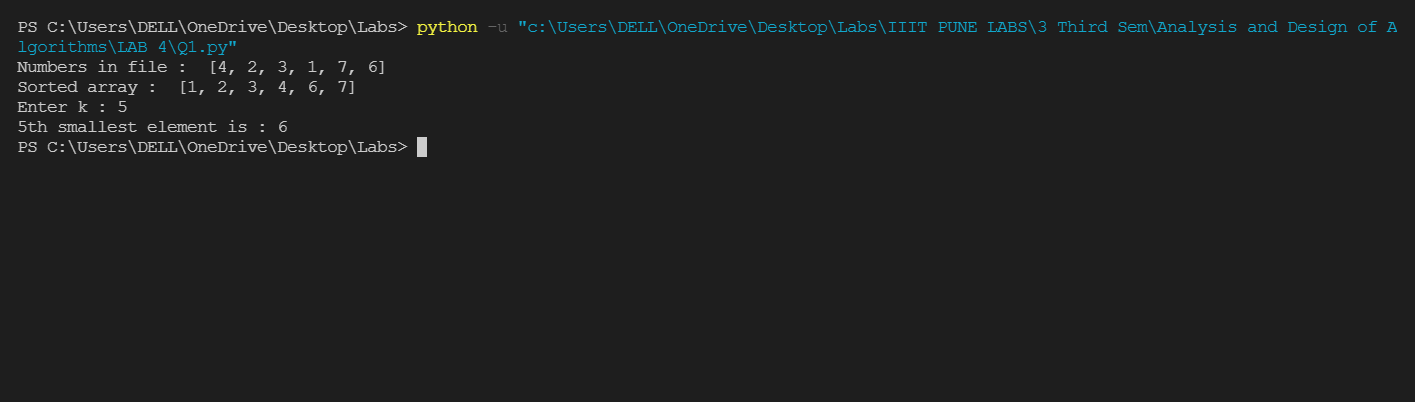
A[0] = A[i]

heapify(A, 0)

return A[0]

END

**Output:**

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