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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:

```
PS C:\Users\DELL\OneDrive\Desktop\Labs> python -u "c:\Users\DELL\OneDrive\Desktop\Labs\IIIT PUNE LABS\3 Third Sem\Analysis and Design of A
lgorithms\LAB 4\Q1.py"
Numbers in file :  [4, 2, 3, 1, 7, 6]
Sorted array :  [1, 2, 3, 4, 6, 7]
Enter k : 5
5th smallest element is : 6
PS C:\Users\DELL\OneDrive\Desktop\Labs>
```