

Assignment - 04

(Week - 5)

Question 1:

Write a java program by using the following HeapSort Pseudocodes. Your program should include a test function which generates 5 random unordered arrays of length 20 and calls the heapsort function with these generated arrays as parameter A.

HeapSort Pseudocodes

```
Heapsort(A) {  
    BuildHeap(A)  
    for i <- length(A) downto 2 {  
        exchange A[1] <-> A[i]  
        heapsize <- heapsize -1  
        Heapify(A, 1)  
    }  
}
```

```
BuildHeap(A) {  
    heapsize <- length(A)  
    for i <- floor( length/2 ) downto 1  
        Heapify(A, i)  
}
```

```
Heapify(A, i) {  
    le <- left(i)  
    ri <- right(i)  
    if (le<=heapsize) and (A[le]>A[i])  
        largest <- le  
    else  
        largest <- i  
    if (ri<=heapsize) and (A[ri]>A[largest])  
        largest <- ri  
    if (largest != i) {  
        exchange A[i] <-> A[largest]  
        Heapify(A, largest)  
    }  
}
```