Vidya Jyothi Institute of Technology

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Role Play Activity

Subject : Design and Analysis of Algorithms

Date:28/1/2020

Topic: Quick Sort

Participants: 18911A0563,572,575,581,586,569,590,5B3,5A9,19915A0509

Content:

Divide: Rearrange the elements and split arrays into two sub-arrays and an element in between search that each element in left sub array is less than or equal to the average element and each element in the right sub- array is larger than the middle element.

Conquer: Recursively, sort two sub arrays.

Combine: Combine the already sorted array.

Algorithm:

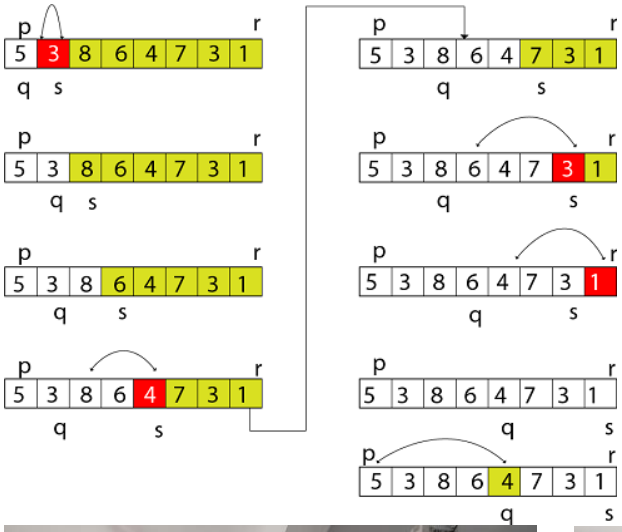
```
1.  QUICKSORT (array A, int m, int n)
2.   1 if (n > m)
3.   2 then
4.   3 i ← a random index from [m,n]
5.   4 swap A [i] with A[m]
6.   5 o ← PARTITION (A, m, n)
7.   6 QUICKSORT (A, m, o - 1)
8.   7 QUICKSORT (A, o + 1, n)
```

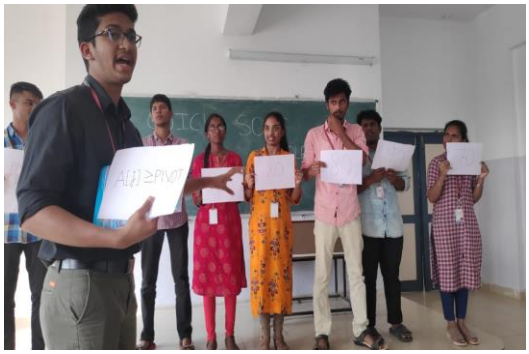
Partition Algorithm:

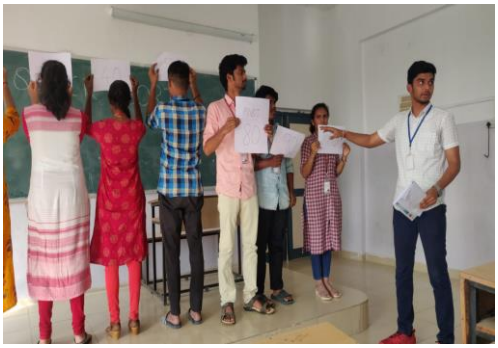
Partition algorithm rearranges the sub arrays in a place.

```
1.  PARTITION (array A, int m, int n)
2.   1 x ← A[m]
3.   2 o ← m
4.   3 for p ← m + 1 to n
5.   4 do if (A[p] < x)
6.   5 then o ← o + 1
7.   6 swap A[o] with A[p]
8.   7 swap A[m] with A[o]
9.   8 return o
```

Figure: shows the execution trace partition algorithm







(Faculty Incharge) **(CSE-HOD)**