

## **Practical -4**

**Aim:-**

**Implement program for randomized version of quick sort**

### **Randomized Quick Sort:**

**CODE:**

```
#include<stdio.h>
#include<math.h>
void quicksort(int *ar,int start,int end);
int divide(int *ar,int start,int end,int pivot);
```

```
int main(){
    int a[] = {33,24,90,39,16};
    int n = sizeof(a) / sizeof(a[0]);
```

```
    quicksort(a,0,n-1);
    for(int i=0;i<n;i++)
        printf(" %d ",a[i]);
}
```

```
void quicksort(int *ar,int start,int end){
    if(start < end) {

        int pivot = start;
        pivot = rand() % (end - start) + start ;
        pivot = divide(ar,start,end,pivot);
        quicksort(ar,start,pivot-1);
        quicksort (ar,pivot+1,end);
    }
}
```

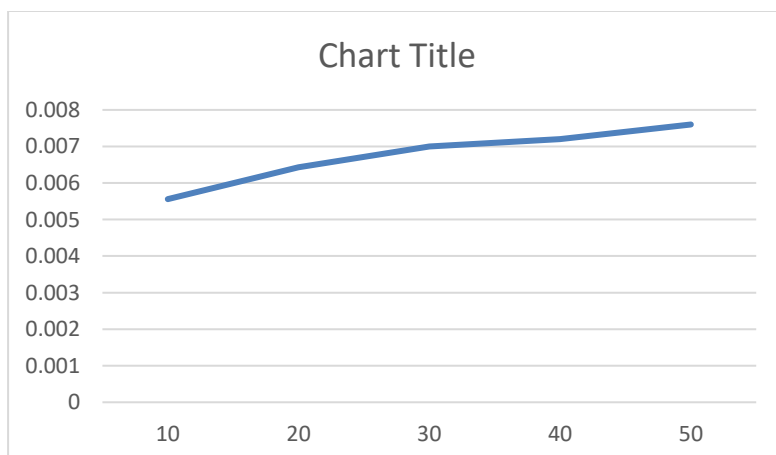
```
int divide(int *ar,int start,int end,int pivot){
    int temp,next,next1;
    temp =ar[pivot];
    ar[pivot]=ar[start];
```

## DESIGN AND ANALYSIS OF ALGORITHM

```
ar[start]=temp;
pivot =start;
next =start+1;
while(next<=end){
    if(ar[next]>ar[pivot]){
        temp = ar[next];
        next1 = next;
        while(next1 !=pivot+1){
            ar[next1]=ar[next1-1];
            next1--;
        }
        ar[next1]=ar[pivot];
        ar[pivot]=temp;
        pivot++;
    }
    next++;
}
return pivot;
}
```

### OUTPUT:

No	Randomized
10	0.005559
20	0.006433
30	0.007000
40	0.007199
50	0.007601



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