Practical 6

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Implement Randomized Select.

Code

```
#include<iostream>
#include<cstdlib>
using namespace std;
void inputArray(int A[], int n){
 cout<<"Enter the elements in Array: ";
    for(int i=0;i<n;i++){
      cin>>A[i];
    }
}

 int random_Partition(int A[], int p, int r){

  int pivotIndx = p+rand()%(r-p+1);
  int pivot = A[pivotIndx];
  swap(A[pivotIndx],A[r]);
  pivotIndx = r;
  int i = p-1;

  for(int j =p; j<=r-1;j++){
    if(A[j]<= pivot){
        i++;
        swap(A[i],A[j]);
    }
  }

  swap(A[i+1],A[pivotIndx]);
  return i+1;
 }

 int random_Select(int A[], int p, int r, int k){
  if(p==r)
    return A[p];
  if(p<r){
    int q = random_Partition(A,p,r);
```

```
    int i = q-p+1;

    if(i==k)
        return A[q];
    else if (k<i)
        return random_Select(A,p,q-1,k);
    else
        return random_Select(A,q+1,r,k-i);
 }
}

int main(){
    int A[100];
    int n;
    cout<<"Enter value of n:";
    cin>>n;
    inputArray(A,n);

  int k;
  cout<<"Enter the value of k: ";
  cin>>k;
  int location = random_Select(A,0,4,k);
  cout<<"Kth Smallest number is : "<< location;
  return 0;
}
```

Output

```
Enter value of n:5
Enter the elements in Array: 2 7 10 12 13
Enter the value of k: 2
Kth Smallest number is : 7
Process returned 0 (0x0)   execution time : 11.688 s
Press any key to continue.
```