

DSA_College\kth_smallest_element_array.cpp

```
1  #include<iostream>
2  using namespace std ;
3
4  int partition(int* arr,int s, int e)
5  {
6      int st = s ;
7      int end = e ;
8      int pivot = arr[s] ;
9
10     while(st<=end)
11     {
12         while(arr[st] <= pivot)
13         {
14             st++ ;
15         }
16
17         while(arr[end] > pivot)
18         {
19             end-- ;
20         }
21
22         if(st<end)
23         {
24             swap(arr[st],arr[end]) ;
25         }
26     }
27     swap(arr[s],arr[end]) ;
28     return end ;
29 }
30
31 // hmare pass list of random numbers hogi. hame btana hai ki iss random list ka kth smallest
32 // element konsa hai
33 int kSmallest(int arr[], int s, int e, int k)
34 {
35     if(s<=e)
36     {
37         int p = partition(arr,s,e) ;
38         if(p == k-1)
39         {
40             return arr[p] ;
41         }
42         if(k-1 > p)
43         {
44             return kSmallest(arr,p+1,e,k) ;
45         }
46         else{
47             return kSmallest(arr,s,p-1,k) ;
48         }
49     }
50     return -1 ;
51 }
```

```
52 int main()
53 {
54     int arr[] = {11,12,13,14,15,16,17} ;
55     int n = sizeof(arr)/sizeof(arr[0]) ;
56     int k = 3 ;
57     int ans = kSmallest(arr,0,n-1,k) ;
58     if (ans != -1)
59     {
60         cout << "The " << k << " smallest element is: " << ans << endl;
61     }
62     else
63     {
64         cout << "Invalid k value." << endl;
65     }
66
67     return 0 ;
68 }
```