

```

1  /* KSelection_QS.c */
2  #include <stdio.h>
3  #include <stdlib.h>
4
5  //选取一个序列中第k大的元素
6  //选中位数是k选取(一组有序的序列中选择第k个元素)算法的特例
7  //且选取中位数是k选取算法中时间最长的
8  //基于快速划分的k选取算法
9  int kSelection_QS(int *seq, int n, int k)
10 {
11     int lo = 0, hi = n - 1;
12     int tar = k - 1;
13     for (; lo < hi;)
14     {
15         int i = lo, j = hi;
16         int pivot = seq[lo];
17         while (i < j)
18         {
19             while ((i < j) && (pivot <= seq[j]))
20             {
21                 j --;
22             }
23             seq[i] = seq[j];
24             while ((i < j) && (pivot >= seq[i]))
25             {
26                 i ++;
27             }
28             seq[j] = seq[i];
29         }
30         seq[i] = pivot;
31         if (tar == i)
32         {
33             break;
34         }
35         else if (tar < i)
36         {
37             hi = i - 1;
38         }
39         else
40         {
41             lo = i + 1;
42         }
43     }
44     return seq[tar];
45 }
46
47 int main()
48 {
49     int n, k;
50     scanf("%d%d", &n, &k);
51     int *a = (int *)malloc(sizeof(int) * n);
52     int i = 0;
53     for (; i < n; i ++)
54     {
55         scanf("%d", &a[i]);
56     }
57     printf("%d\n", kSelection_QS(a, n, k));
58     free(a);
59     return 0;
60 }

```