**SCAN**

#include <stdio.h>  
#include <stdlib.h>  
#include <string.h>  
  
#define MAX\_SIZE 100  
  
int comp(const void \*l, const void \*n) {  
   return (\*(int\*)l - \*(int\*)n);  
}  
  
void SCAN(int arr[], int size, int head, char\* dn) {  
   int seek\_num = 0;  
   int dt, cur\_track;  
   int leftside[MAX\_SIZE], rightside[MAX\_SIZE];  
   int seek\_seq[MAX\_SIZE + 3];  
   int m\_scan = 0, s\_scan = 0;  
   if (strcmp(dn, "leftside") == 0)  
      leftside[m\_scan++] = 0;  
   else if (strcmp(dn, "rightside") == 0)  
      rightside[s\_scan++] = MAX\_SIZE - 1;  
   for (int p\_s = 0; p\_s < size; p\_s++) {  
      if (arr[p\_s] < head)  
         leftside[m\_scan++] = arr[p\_s];  
      if (arr[p\_s] > head)  
         rightside[s\_scan++] = arr[p\_s];  
   }  
   qsort(leftside, m\_scan, sizeof(int), comp);  
   qsort(rightside, s\_scan, sizeof(int), comp);  
   int go = 2;  
   int ind = 0;  
   while (go--) {  
      if (strcmp(dn, "leftside") == 0) {  
         for (int p\_s = m\_scan - 1; p\_s >= 0; p\_s--) {  
            cur\_track = leftside[p\_s];  
            seek\_seq[ind++] = cur\_track;  
            dt = abs(cur\_track - head);  
            seek\_num += dt;  
            head = cur\_track;  
        }  
        dn = "rightside";  
      }  
      else if (strcmp(dn, "rightside") == 0) {  
         for (int p\_s = 0; p\_s < s\_scan; p\_s++) {  
            cur\_track = rightside[p\_s];  
            seek\_seq[ind++] = cur\_track;  
            dt = abs(cur\_track - head);  
            seek\_num += dt;  
            head = cur\_track;  
         }  
         dn = "leftside";  
      }  
   }  
   printf("Num of seek process = %d\n", seek\_num);  
   printf("Sequence is: ");  
   for (int p\_s = 0; p\_s < ind; p\_s++) {  
      printf("%d ", seek\_seq[p\_s]);  
   }  
   printf("\n");  
}  
  
int main() {  
   int size, head;  
   char dn[20];  
  
   printf("Enter the number of elements in the disk queue: ");  
   scanf("%d", &size);  
  
   if (size > MAX\_SIZE) {  
      printf("Size exceeds maximum limit (%d).\n", MAX\_SIZE);  
      return 1;  
   }  
  
   int arr[MAX\_SIZE];  
   printf("Enter the disk queue elements:\n");  
   for (int i = 0; i < size; i++) {  
      scanf("%d", &arr[i]);  
   }  
  
   printf("Enter the initial head position: ");  
   scanf("%d", &head);  
  
   printf("Enter the direction (leftside/rightside): ");  
   scanf("%s", dn);  
  
   SCAN(arr, size, head, dn);  
   return 0;  
}  
/\*Input:-  
Enter the number of elements in the disk queue: 10  
Enter the disk queue elements:  
126 90 14 50 25 42 51 78 102 100  
Enter the initial head position: 42  
Enter the direction (leftside/rightside): leftside  
  
Output:-  
Num of seek process = 236  
Sequence is: 42 25 14 0 50 51 78 90 100 102 126  
\*/