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Question 13 (a)

Write a program to implement the FCFS elevator disk scheduling algorithm. The program should give detail about each disk movement from starting head position (input from the user) and calculate average head movement.

Code :

```
#include<stdio.h>
#include<math.h>
using namespace std;
int main()
{
int n,head,i,j,k,seek=0,max,diff;
float avg;
printf("Enter the max range of disk\n");
scanf("%d",&max);
printf("Enter the size of queue request\n");
scanf("%d",&n);
int queue[n+1];
printf("Enter the queue of disk positions to be read\n");
for(i=1;i<=n;i++) {
    scanf("%d",&queue[i]);
}
printf("Enter the initial head position\n");
scanf("%d",&head);
queue[0]=head;
printf("Disk head moves from \t to \t with seek\n" );
for(j=0;j<=n-1;j++)
{
diff=abs(queue[j+1]-queue[j]);
seek+=diff;
printf("%d \t\t %d \t %d\n",queue[j],queue[j+1],diff);
}
printf("Total seek time is %d\n",seek);
avg=seek/(float)n;
printf("Average seek time is %f\n",avg);
return 0;
}
```

Output :

```
Enter the max range of disk
199
Enter the size of queue request
8
Enter the queue of disk positions to be read
14 34 56 77 86 34 97 150
```

```
Enter the initial head position
54
Disk head moves from     to      with seek
54               14      40
14               34      20
34               56      22
56               77      21
77               86      9
86               34      52
34               97      63
97               150     53
Total seek time is 280
Average seek time is 35.000000
```

Question 13 (b)

Write a program to implement the SSTF elevator disk scheduling algorithm. The program should give detail about each disk movement from starting head position (input from the user) and calculate average head movement.

Code :

```
#include<stdio.h>
#include<math.h>
using namespace std;
int main()
{
int n,head,i,j,k,curr,seek=0,max,diff,complete;
float avg;
printf("Enter the max range of disk\n");
scanf("%d",&max);
printf("Enter the size of queue request\n");
scanf("%d",&n);
complete=n;
int queue[n];
printf("Enter the queue of disk positions to be read\n");
for(i=0;i<n;i++)
scanf("%d",&queue[i]);
printf("Enter the initial head position\n");
scanf("%d",&head);
curr=head;
printf("Disk head movmes from \t to \t with seek\n" );
while(complete-->0)
{
int index=-1;
int min = max+1;
for(int j =0;j<n;j++){
if(queue[j]!=-1)
{
int mn = abs(curr-queue[j]);
if(mn<min)
```

```
{
min = mn;
index = j;
}
}
}
diff=abs(curr-queue[index]);seek+=diff;
printf("%d \t\t %d \t %d\n",curr,queue[index],diff);
curr=queue[index];
queue[index]=-1;
}
printf("Total seek time is %d\n",seek);
avg=seek/(float)n;
printf("Average seek time is %f\n",avg);
return 0;
}
```

Output :

```
Enter the max range of disk
199
Enter the size of queue request
8
Enter the queue of disk positions to be read
14 34 56 77 86 34 97 150
Enter the initial head position
54
Disk head movmes from    to      with seek
54               56      2
56               77      21
77               86      9
86               97      11
97               150     53
150              34      116
34               34      0
34               14      20
Total seek time is 232
Average seek time is 29.000000
```