**Experiment No: 10**

**Aim:** Write a program in C to do disk scheduling - FCFS, SCAN, C-SCAN

**Theory:** **Disk scheduling**is done by operating systems to schedule I/O requests arriving for the disk. Disk scheduling is also known as I/O scheduling.

Disk scheduling is important because: 

* Multiple I/O requests may arrive by different processes and only one I/O request can be served at a time by the disk controller. Thus other I/O requests need to wait in the waiting queue and need to be scheduled.
* Two or more request may be far from each other so can result in greater disk arm movement.
* Hard drives are one of the slowest parts of the computer system and thus need to be accessed in an efficient manner.

There are many Disk Scheduling Algorithms but before discussing them let’s have a quick look at some of the important terms: 

* **Seek Time:** Seek time is the time taken to locate the disk arm to a specified track where the data is to be read or write. So the disk scheduling algorithm that gives minimum average seek time is better.
* **Rotational Latency:** Rotational Latency is the time taken by the desired sector of disk to rotate into a position so that it can access the read/write heads. So the disk scheduling algorithm that gives minimum rotational latency is better.
* **Transfer Time:** Transfer time is the time to transfer the data. It depends on the rotating speed of the disk and number of bytes to be transferred.

**Disk Scheduling Algorithms**

**FCFS:**FCFS is the simplest of all the Disk Scheduling Algorithms. In FCFS, the requests are addressed in the order they arrive in the disk queue.

**SSTF:** In SSTF (Shortest Seek Time First), requests having shortest seek time are executed first. So, the seek time of every request is calculated in advance in the queue and then they are scheduled according to their calculated seek time. As a result, the request near the disk arm will get executed first. SSTF is certainly an improvement over FCFS as it decreases the average response time and increases the throughput of system.

**SCAN:**In SCAN algorithm the disk arm moves into a particular direction and services the requests coming in its path and after reaching the end of disk, it reverses its direction and again services the request arriving in its path. So, this algorithm works as an elevator and hence also known as **elevator algorithm.**As a result, the requests at the midrange are serviced more and those arriving behind the disk arm will have to wait.

**Program:**

#include<stdio.h>

#include<stdlib.h>

int main()

{

int RQ[100],i,n,TotalHeadMoment=0,initial;

printf("Enter the number of Requests\n");

scanf("%d",&n);

printf("Enter the Requests sequence\n");

for(i=0;i<n;i++)

scanf("%d",&RQ[i]);

printf("Enter initial head position\n");

scanf("%d",&initial);

// logic for FCFS disk scheduling

for(i=0;i<n;i++)

{

TotalHeadMoment=TotalHeadMoment+abs(RQ[i]-initial);

initial=RQ[i];

}

printf("Total head moment is %d",TotalHeadMoment);

return 0;

}

**Output:**

Enter the number of Requests

8

Enter the Requests sequence

24

45

67

87

90

120

180

160

Enter initial head position

50

Total head moment is 202

**Conclusion:** In this experiment we have successfully implemented FCFS (First Come First Serve) Disk Scheduling algorithm.