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**Roll** **no**.: 03

**Assignment no.: 08:** Implement the C program for Disk Scheduling Algorithms: SSTF, SCAN, C-Look considering the initial head position moving away from the spindle.

**CODE**:

1. **SCAN:**

#include<stdio.h>

int absoluteValue(int);

void main()

{

int queue[25],n,headposition,i,j,k,seek=0, maxrange,

difference,temp,queue1[20],queue2[20],temp1=0,temp2=0;

float averageSeekTime;

printf("Enter the maximum range of Disk: ");

scanf("%d",&maxrange);

printf("Enter the number of queue requests: ");

scanf("%d",&n);

printf("Enter the initial head position: ");

scanf("%d",&headposition);

printf("Enter the disk positions to be read(queue): ");

for(i=1;i<=n;i++)

{

scanf("%d",&temp);

if(temp>headposition)

{

queue1[temp1]=temp;

temp1++;

}

else

{

queue2[temp2]=temp;

temp2++;

}

}

for(i=0;i<temp1-1;i++)

{

for(j=i+1;j<temp1;j++)

{

if(queue1[i]>queue1[j])

{

temp=queue1[i];

queue1[i]=queue1[j];

queue1[j]=temp;

}

}

}

//SORTING array queue2[] in descending order

for(i=0;i<temp2-1;i++)

{

for(j=i+1;j<temp2;j++)

{

if(queue2[i]<queue2[j])

{

temp=queue2[i];

queue2[i]=queue2[j];

queue2[j]=temp;

}

}

}

//Copying first array queue1[] into queue[]

for(i=1,j=0;j<temp1;i++,j++)

{

queue[i]=queue1[j];

}

queue[i]=maxrange;

for(i=temp1+2,j=0;j<temp2;i++,j++)

{

queue[i]=queue2[j];

}

queue[i]=0;

queue[0]=headposition;

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

{

difference = absoluteValue(queue[j+1]-queue[j]);

seek = seek + difference;

printf("Disk head moves from position %d to %d with Seek %d \n", queue[j], queue[j+1], difference);

}

averageSeekTime = seek/(float)n;

printf("Total Seek Time= %d\n", seek);

printf("Average Seek Time= %f\n", averageSeekTime);

}

int absoluteValue(int x)

{

if(x>0)

{

return x;

}

else

{

return x\*-1;

}

}

**OUTPUT:**

Enter the maximum range of Disk: 200

Enter the number of queue requests: 7

Enter the initial head position: 50

Enter the disk positions to be read(queue): 82 170 43 140 24 16 190

Disk head moves from position 50 to 82 with Seek 32

Disk head moves from position 82 to 140 with Seek 58

Disk head moves from position 140 to 170 with Seek 30

Disk head moves from position 170 to 190 with Seek 20

Disk head moves from position 190 to 200 with Seek 10

Disk head moves from position 200 to 43 with Seek 157

Disk head moves from position 43 to 24 with Seek 19

Disk head moves from position 24 to 16 with Seek 8

Disk head moves from position 16 to 0 with Seek 16

Total Seek Time= 350

Average Seek Time= 50.000000

1. **SSTF:**

#include <stdio.h>

#include <stdlib.h>

#include <math.h>

int main() {

  int queue[100], queue2[100], q\_size, head, seek=0, temp;

  float avg;

  printf("%s\n", "-----SSTF Disk Scheduling Algorithm-----");

  printf("%s\n", "Enter the size of the queue");

  scanf("%d", &q\_size);

  printf("%s\n", "Enter queue elements");

  for(int i=0; i<q\_size; i++){

    scanf("%d",&queue[i]);

  }

  printf("%s\n","Enter initial head position");

  scanf("%d", &head);

  for(int i=0; i<q\_size; i++){

    queue2[i] = abs(head-queue[i]);

  }

  for(int i=0; i<q\_size; i++){

      for(int j=i+1; j<q\_size;j++){

        if(queue2[i]>queue2[j]){

            temp = queue2[i];

            queue2[i]=queue[j];

            queue2[j]=temp;

            temp=queue[i];

            queue[i]=queue[j];

            queue[j]=temp;

        }

    }

  }

  for(int i=1; i<q\_size; i++){

    seek = seek+abs(head-queue[i]);

    head = queue[i];

  }

  printf("\nTotal seek time is %d\t",seek);

  avg = seek/(float)q\_size;

  printf("\nAverage seek time is %f\t", avg);

  return 0;

}

**OUTPUT:**

-----SSTF Disk Scheduling Algorithm-----

Enter the size of the queue

5

Enter queue elements

98 183 37 122 14

Enter initial head position

53

Total seek time is 236

Average seek time is 47.200001

1. **C-LOOK:**

#include <stdio.h>

#include <stdlib.h>

#include <math.h>

int main() {

  int queue[100], queue2[100], q\_size, head, seek=0, temp;

  float avg;

  printf("%s\n", "-----SSTF Disk Scheduling Algorithm-----");

  printf("%s\n", "Enter the size of the queue");

  scanf("%d", &q\_size);

  printf("%s\n", "Enter queue elements");

  for(int i=0; i<q\_size; i++){

    scanf("%d",&queue[i]);

  }

  printf("%s\n","Enter initial head position");

  scanf("%d", &head);

  for(int i=0; i<q\_size; i++){

    queue2[i] = abs(head-queue[i]);

  }

  for(int i=0; i<q\_size; i++){

      for(int j=i+1; j<q\_size;j++){

        if(queue2[i]>queue2[j]){

            temp = queue2[i];

            queue2[i]=queue[j];

            queue2[j]=temp;

            temp=queue[i];

            queue[i]=queue[j];

            queue[j]=temp;

        }

    }

  }

  for(int i=1; i<q\_size; i++){

    seek = seek+abs(head-queue[i]);

    head = queue[i];

  }

  printf("\nTotal seek time is %d\t",seek);

  avg = seek/(float)q\_size;

  printf("\nAverage seek time is %f\t", avg);

  return 0;

}

**OUTPUT:**

-----SSTF Disk Scheduling Algorithm-----

Enter the size of the queue

5

Enter queue elements

82 170 43 140 24

Enter initial head position

50

Total seek time is 258

Average seek time is 51.600000