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Practical : 8

Statement : [Implement the C program for Disk Scheduling Algorithms: SSTF, SCAN, C-Look considering the initial head position moving away from the spindle.](https://drive.google.com/file/d/1SBvwSjxSwaVnZ8crAN65kbknW9fa7Z40/view?usp=sharing)

#include <stdio.h>

#include <stdlib.h>

int SSTF();

int SCAN();

int CLOOK();

int main(){

int ch, YN = 1, i, l, f;

char F[10], s[25];

for (i = 0; i < f; i++){

F[i] = -1;

}

do{

//system("clear");

printf("\n\n\t\*\*\*\*\*\*\*\*\*\*\* MENU \*\*\*\*\*\*\*\*\*\*\*");

printf("\n\n\t1:SSTF\n\n\t2:SCAN\n\n\t3:CLOOK\n\n\t4:EXIT");

printf("\n\n\tEnter your choice: ");

scanf("%d", &ch);

switch (ch){

case 1:

for (i = 0; i < f; i++){

F[i] = -1;

}

SSTF();

break;

case 2:

for (i = 0; i < f; i++){

F[i] = -1;

}

SCAN();

break;

case 3:

for (i = 0; i < f; i++){

F[i] = -1;

}

CLOOK();

break;

case 4:

exit(0);

}

printf("\n\n\tDo u want to continue IF YES PRESS 1\n\n\tIF NO PRESS 0: ");

scanf("%d", &YN);

}

while (YN == 1);

return (0);

}

//SSTF Algorithm

int SSTF(){

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

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);

while (count != n){

int min = 1000, d, index;

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

d = abs(RQ[i] - initial);

if (min > d){

min = d;

index = i;

}

}

TotalHeadMoment = TotalHeadMoment + min;

initial = RQ[index];

RQ[index] = 1000;

count++;

}

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

return 0;

}

//SCAN Algorithm

int SCAN(){

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

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);

printf("Enter total disk size\n");

scanf("%d", &size);

printf("Enter the head movement direction for high 1 and for low 0\n");

scanf("%d", &move);

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

for (j = 0; j < n - i - 1; j++){

if (RQ[j] > RQ[j + 1]){

int temp;

temp = RQ[j];

RQ[j] = RQ[j + 1];

RQ[j + 1] = temp;

}

}

}

int index;

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

if (initial < RQ[i]){

index = i;

break;

}

}

if (move == 1){

for (i = index; i < n; i++){

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

initial = RQ[i];

}

TotalHeadMoment = TotalHeadMoment + abs(size - RQ[i - 1] - 1);

initial = size - 1;

for (i = index - 1; i >= 0; i--){

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

initial = RQ[i];

}

}

else{

for (i = index - 1; i >= 0; i--) {

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

initial = RQ[i];

}

TotalHeadMoment = TotalHeadMoment + abs(RQ[i + 1] - 0);

initial = 0;

for (i = index; i < n; i++){

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

initial = RQ[i];

}

}

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

return 0;

}

//C-LOOK Algorithm

int CLOOK(){

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

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);

printf("Enter total disk size\n");

scanf("%d", &size);

printf("Enter the head movement direction for high 1 and for low 0\n");

scanf("%d", &move);

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

for (j = 0; j < n - i - 1; j++){

if (RQ[j] > RQ[j + 1]){

int temp;

temp = RQ[j];

RQ[j] = RQ[j + 1]; RQ[j + 1] = temp;

}

}

}

int index;

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

if (initial < RQ[i]){

index = i;

break;

}

}

if (move == 1){

for (i = index; i < n; i++){

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

initial = RQ[i];

}

for (i = 0; i < index; i++){

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

initial = RQ[i];

}

}

else{

for (i = index - 1; i >= 0; i--){

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

initial = RQ[i];

}

for (i = n - 1; i >= index; i--){

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

initial = RQ[i];

}

}

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

return 0;

}

Output :-

[Saru1594@localhost 8]$ ./a.out

\*\*\*\*\*\*\*\*\*\*\* MENU \*\*\*\*\*\*\*\*\*\*\*

1:SSTF

2:SCAN

3:CLOOK

4:EXIT

Enter your choice: 1

Enter the number of Requests

7

Enter the Requests sequence

82

170

43

140

24

16

190

Enter initial head position

50

Total head movement is 208

Do u want to continue IF YES PRESS 1

IF NO PRESS 0: 1

\*\*\*\*\*\*\*\*\*\*\* MENU \*\*\*\*\*\*\*\*\*\*\*

1:SSTF

2:SCAN

3:CLOOK

4:EXIT

Enter your choice: 2

Enter the number of Requests

7

Enter the Requests sequence

82

170

43

140

24

16

190

Enter initial head position

50

Enter total disk size

200

Enter the head movement direction for high 1 and for low 0

1

Total head movement is 332

Do u want to continue IF YES PRESS 1

IF NO PRESS 0: 1

\*\*\*\*\*\*\*\*\*\*\* MENU \*\*\*\*\*\*\*\*\*\*\*

1:SSTF

2:SCAN

3:CLOOK

4:EXIT

Enter your choice: 3

Enter the number of Requests

7

Enter the Requests sequence

82

170

43

140

24

16

190

Enter initial head position

50

Enter total disk size

200

Enter the head movement direction for high 1 and for low 0

1

Total head movement is 341

Do u want to continue IF YES PRESS 1

IF NO PRESS 0: 0