LAB 13

Course: CT-353-Operating Systems

Department: BCIT (Specialisation in Data Science)

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FCFS

LAB 13 (FCFS).cpp

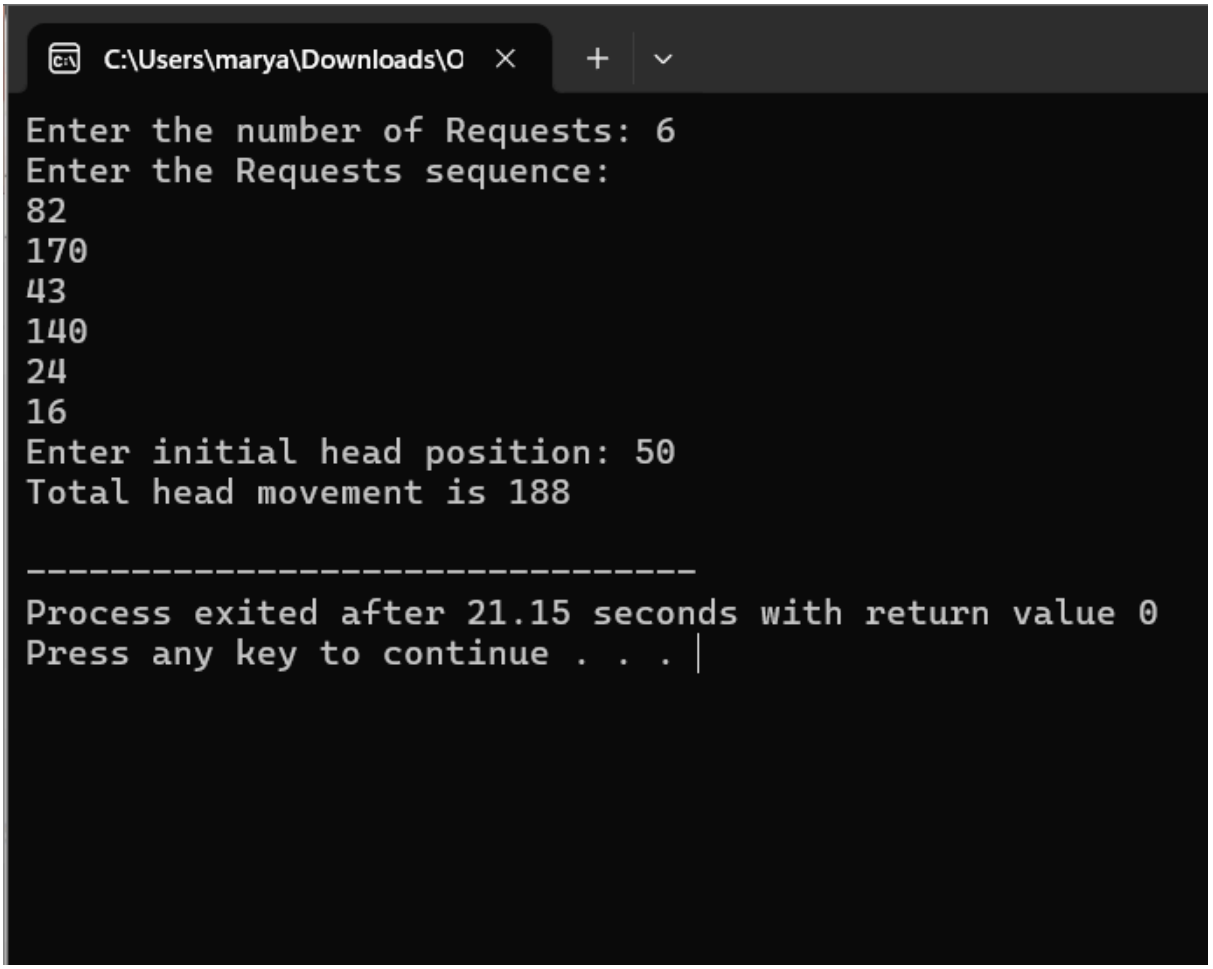
```c
#include <stdio.h>
#include <conio.h>

int main() {
    int t[20], n, i, j, tohm[20], tot = 0;
    float avhm;

//    clrscr();
    printf("Enter the number of tracks: ");
    scanf("%d", &n);

    printf("Enter the tracks to be traversed:\n");
    for (i = 2; i < n + 2; i++) {
        scanf("%d", &t[i]);
    }

    for (i = 1; i < n + 1; i++) {
        tohm[i] = t[i + 1] - t[i];
        if (tohm[i] < 0)
            tohm[i] = -tohm[i];
    }

    for (i = 1; i < n + 1; i++)
        tot += tohm[i];

    avhm = (float)tot / n;

    printf("Tracks traversed\tDifference between tracks\n");
    for (i = 1; i < n + 1; i++) {
        printf("%d\t\t\t%d\n", t[i], tohm[i]);
    }

    printf("\nAverage header movements: %f", avhm);
    getch();
    return 0;
}
```

```
C:\Users\marya\Downloads\O
Enter the number of tracks: 5
Enter the tracks to be traversed:
45
30
70
10
20
Tracks traversed        Difference between tracks
0                       45
45                      15
30                      40
70                      60
10                      10

Average header movements: 34.000000
```

SSTF

LAB 13 (FCFS).cpp | LAB 13 (SSTF)cpp.cpp | LAB 13 (SCAN).cpp

```c
#include <stdio.h>
#include <stdlib.h>

int main() {
    int RQ[100], i, n, TotalHeadMovement = 0, initial, count = 0;

    printf("Enter the number of Requests: ");
    scanf("%d", &n);

    printf("Enter the Requests sequence:\n");
    for (i = 0; i < n; i++)
        scanf("%d", &RQ[i]);

    printf("Enter initial head position: ");
    scanf("%d", &initial);

    // Logic for SSTF disk scheduling
    while (count != n) {
        int min = 1000, d, index = -1;

        for (i = 0; i < n; i++) {
            d = abs(RQ[i] - initial);
            if (min > d) {
                min = d;
                index = i;
            }
        }

        TotalHeadMovement += min;
        initial = RQ[index];
        RQ[index] = 1000;  // Mark as visited (large number)
        count++;
    }

    printf("Total head movement is %d\n", TotalHeadMovement);
    return 0;
}
```


C:\Users\marya\Downloads\O
Enter the number of Requests: 6
Enter the Requests sequence:
82
170
43
140
24
16
Enter initial head position: 50
Total head movement is 188

Process exited after 21.15 seconds with return value 0
Press any key to continue . . .

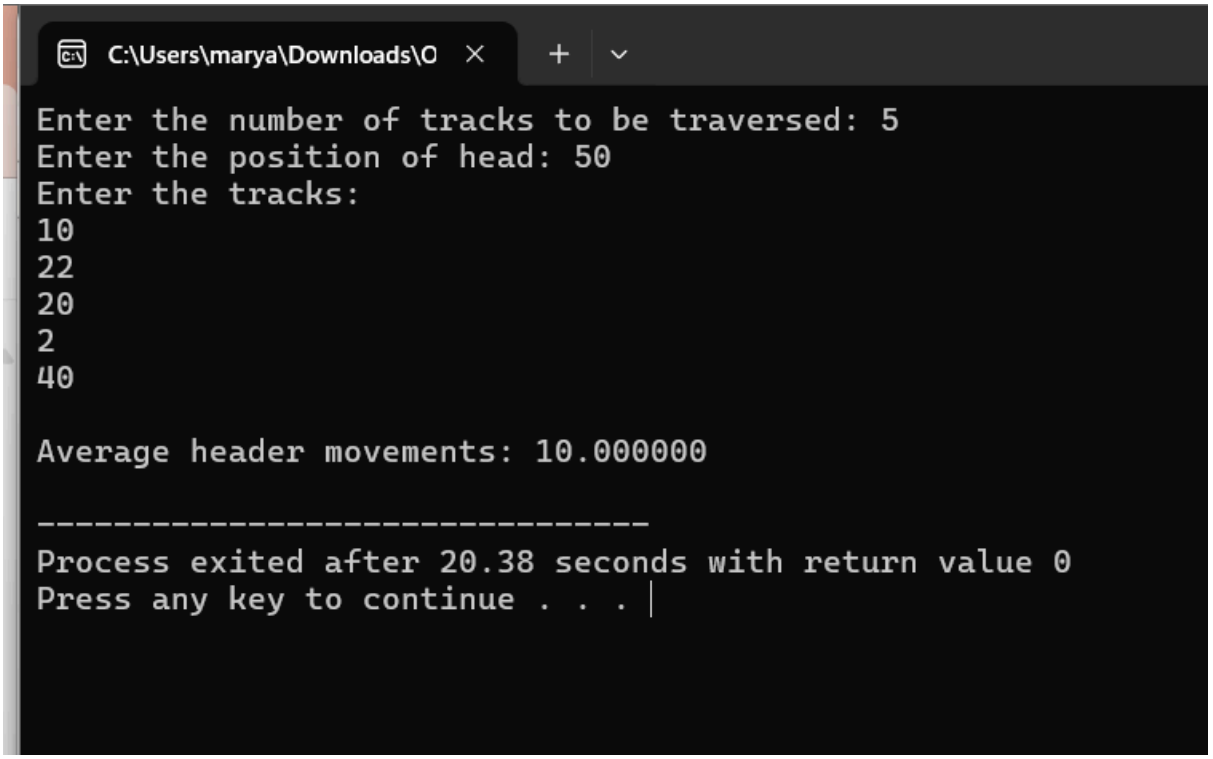
SCAN

LAB 13 (FCFS).cpp | LAB 13 (SSTF)cpp.cpp | LAB 13 (SCAN).cpp

```c
#include <stdio.h>
#include <conio.h>

int main() {
    int t[20], d[20], h, i, j, n, temp, k, atr[20], sum = 0;

//    clrscr();
    printf("Enter the number of tracks to be traversed: ");
    scanf("%d", &n);

    printf("Enter the position of head: ");
    scanf("%d", &h);

    t[0] = 0;  // assuming starting track 0
    t[1] = h;

    printf("Enter the tracks:\n");
    for (i = 2; i < n + 2; i++) {
        scanf("%d", &t[i]);
    }

    // Bubble sort to sort the tracks array
    for (i = 0; i < n + 2; i++) {
        for (j = 0; j < (n + 2) - i - 1; j++) {
            if (t[j] > t[j + 1]) {
                temp = t[j];
                t[j] = t[j + 1];
                t[j + 1] = temp;
            }
        }
    }

    // Find the index of the head position
    for (i = 0; i < n + 2; i++) {
        if (t[i] == h) {
            j = i;
            k = i;
            break;
        }
    }

    int p = 0;
    // Move towards the start (0)
    while (t[j] != 0) {
        atr[p] = t[j];
        j--;
        p++;
    }
    atr[p] = t[j];  // add 0
    p++;
```

LAB 13 (FCFS).cpp | LAB 13 (SSTF)cpp.cpp | LAB 13 (SCAN).cpp

```c
#include <stdio.h>
#include <conio.h>

int main() {
    int t[20], d[20], h, i, j, n, temp, k, atr[20], sum = 0;

//    clrscr();
    printf("Enter the number of tracks to be traversed: ");
    scanf("%d", &n);

    printf("Enter the position of head: ");
    scanf("%d", &h);

    t[0] = 0;  // assuming starting track 0
    t[1] = h;

    printf("Enter the tracks:\n");
    for (i = 2; i < n + 2; i++) {
        scanf("%d", &t[i]);
    }

    // Bubble sort to sort the tracks array
    for (i = 0; i < n + 2; i++) {
        for (j = 0; j < (n + 2) - i - 1; j++) {
            if (t[j] > t[j + 1]) {
                temp = t[j];
                t[j] = t[j + 1];
                t[j + 1] = temp;
            }
        }
    }

    // Find the index of the head position
    for (i = 0; i < n + 2; i++) {
        if (t[i] == h) {
            j = i;
            k = i;
            break;
        }
    }

    int p = 0;
    // Move towards the start (0)
    while (t[j] != 0) {
        atr[p] = t[j];
        j--;
        p++;
    }
    atr[p] = t[j];  // add 0
    p++;
```


C:\Users\marya\Downloads\O
Enter the number of tracks to be traversed: 5
Enter the position of head: 50
Enter the tracks:
10
22
20
2
40
Average header movements: 10.000000

Process exited after 20.38 seconds with return value 0
Press any key to continue . . .