LAB 13

Course: CT-353-Operating Systems

Department: BCIT (Specialisation in Data Science)

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FCFS

```
LAB 13 (FCFS).cpp
      #include <stdio.h>
      #include <comio.h>
4 int main() {
5
           int t[20], n, i, j, tohm[20], tot = 0;
           float avhm;
6
7
8
            clrscr();
           printf("Enter the number of tracks: ");
9
           scanf("%d", &n);
10
11
           printf("Enter the tracks to be traversed:\n");
12
13 -
           for (i = 2; i < n + 2; i++) {
14
               scanf("%d", &t[i]);
15
16
           for (i = 1; i < n + 1; i++) {
   tohm[i] = t[i + 1] - t[i];</pre>
17 🖃
18
19
               if (tohm[i] < 0)
20
                   tohm[i] = -tohm[i];
21
22
           for (i = 1; i < n + 1; i++)
23
24
              tot += tohm[i];
25
           avhm = (float)tot / n;
26
27
           printf("Tracks traversed\tDifference between tracks\n");
28
           for (i = 1; i < n + 1; i++) {
    printf("%d\t\t\t%d\n", t[i], tohm[i]);</pre>
29 🖃
30
31
32
33
           printf("\nAverage header movements: %f", avhm);
34
           getch();
35
           return 0;
36
37
```

```
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Enter the number of tracks: 5
Enter the tracks to be traversed:
45
30
70
10
20
Tracks traversed
                          Difference between tracks
                          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
      #include <stdio.h>
 2
      #include <stdlib.h>
4 - int main() {
          int RQ[100], i, n, TotalHeadMovement = 0, initial, count = 0;
 6
          printf("Enter the number of Requests: ");
 7
 8
          scanf("%d", &n);
9
          printf("Enter the Requests sequence:\n");
10
          for (i = 0; i < n; i++)
11
              scanf("%d", &RQ[i]);
12
13
          printf("Enter initial head position: ");
14
15
          scanf("%d", &initial);
16
          // Logic for SSTF disk scheduling
17
18 -
          while (count != n) {
19
              int min = 1000, d, index = -1;
20
              for (i = 0; i < n; i++) {
21 -
                  d = abs(RQ[i] - initial);
22
23
                  if (min > d) {
24
                      min = d;
25
                      index = i;
26
27
28
29
              TotalHeadMovement += min;
30
              initial = RQ[index];
              RQ[index] = 1000; // Mark as visited (Large number)
31
32
              count++;
33
34
          printf("Total head movement is %d\n", TotalHeadMovement);
35
          return 0;
36
37
38
```

SCAN

```
LAB 13 (FCFS).cpp LAB 13 (SSTF)cpp.cpp LAB 13 (SCAN).cpp
      #include <stdio.h>
      #include <comio.h>
2
3
4 - int main() {
          int t[20], d[20], h, i, j, n, temp, k, atr[20], sum = 0;
6
7
           clrscr();
          printf("Enter the number of tracks to be traversed: ");
8
          scanf("%d", &n);
9
10
          printf("Enter the position of head: ");
11
12
          scanf("%d", &h);
13
          t[0] = 0; // assuming starting track 0
14
15
          t[1] = h;
16
          printf("Enter the tracks:\n");
17
18 -
          for (i = 2; i < n + 2; i++) {
              scanf("%d", &t[i]);
19
20
21
22
          // Bubble sort to sort the tracks array
23 -
          for (i = 0; i < n + 2; i++) {
24 -
              for (j = 0; j < (n + 2) - i - 1; j++) {
25 -
                  if (t[j] > t[j + 1]) {
26
                      temp = t[j];
27
                      t[j] = t[j + 1];
28
                      t[j + 1] = temp;
29
30
31
32
33
          // Find the index of the head position
34 -
          for (i = 0; i < n + 2; i++) {
35 -
              if (t[i] == h) {
                  j = i;
36
                  k = i;
37
38
                  break;
39
40
41
42
          int p = 0;
          // Move towards the start (0)
43
          while (t[j] != 0) {
44 —
45
              atr[p] = t[j];
46
              j--;
47
              p++;
                                                                               Activ
48
49
          atr[p] = t[j]; // add 0
                                                                               Go to
50
          D++;
```

```
LAB 13 (FCFS).cpp LAB 13 (SSTF)cpp.cpp LAB 13 (SCAN).cpp
      #include <stdio.h>
1
      #include <comio.h>
2
3
4 int main() {
          int t[20], d[20], h, i, j, n, temp, k, atr[20], sum = 0;
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            clrscr();
          printf("Enter the number of tracks to be traversed: ");
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          scanf("%d", &n);
10
          printf("Enter the position of head: ");
11
12
          scanf("%d", &h);
13
14
          t[0] = 0; // assuming starting track 0
15
          t[1] = h;
16
17
          printf("Enter the tracks:\n");
          for (i = 2; i < n + 2; i++) {
18 -
             scanf("%d", &t[i]);
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20
21
          // Bubble sort to sort the tracks array
22
          for (i = 0; i < n + 2; i++) {
23 -
              for (j = 0; j < (n + 2) - i - 1; j++) {
24 -
                  if (t[j] > t[j + 1]) {
25 —
                      temp = t[j];
26
27
                      t[j] = t[j + 1];
28
                      t[j + 1] = temp;
29
30
31
32
33
          // Find the index of the head position
          for (i = 0; i < n + 2; i++) {
34 -
              if (t[i] == h) {
35 -
36
                  j = i;
37
                  k = i;
38
                  break;
39
40
41
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          int p = 0;
43
          // Move towards the start (0)
44 -
          while (t[j] != 0) {
45
              atr[p] = t[j];
46
              j--;
47
              p++;
                                                                              Activ
48
49
          atr[p] = t[j]; // add 0
                                                                              Go to
50
          p++;
```

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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