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ROLL NO: DT-22030
SUBJECT: OPERATING SYSTEM
CODE: CT-353
DATA SCIENCE
THIRD YEAR

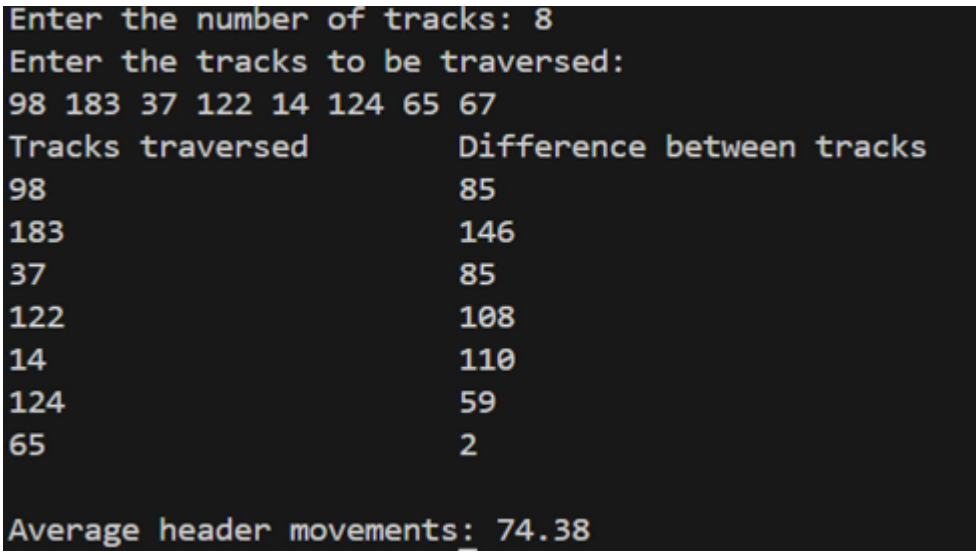
OS LAB: 13

a) FCFS:

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

int main() {
    int t[20], n, i, 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 = 1; i <= n + 1; i++) {
        scanf("%d", &t[i]);
    }

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

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

    avhm = (float)tot / n;

    printf("\nTracks traversed\tDifference between tracks\n");
```

```
    for (i = 1; i <= n; i++) {
        printf("%d\t\t\t%d\n", t[i], tohm[i]);
    }

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

OUTPUT:



b) SSTF:

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

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

    // Logic for SSTF disk scheduling
    // Loop will execute until all requests are processed
    while (count != n) {
        int min = 1000, d, index = -1;

        for (i = 0; i < n; i++) {
            d = abs(RQ[i] - initial);
            if (RQ[i] != 1000 && min > d) {  // Ignore already processed requests marked
as 1000
                min = d;
                index = i;
            }
        }

        TotalHeadMovement += min;
        initial = RQ[index];
        RQ[index] = 1000;  // Mark this request as processed
        count++;
    }

    printf("Total head movement is %d\n", TotalHeadMovement);

    return 0;
}
```

```
Enter the number of Requests: 8
Enter the Request sequence:
98 183 37 122 14 124 65 67
Enter initial head position: 53
Total head movement is 236
```

c) SCAN:

```
#include <stdio.h>

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

    // clrscr(); // Usually used in Turbo C; comment out if not supported

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

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

    t[0] = 0;
    t[1] = h;

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

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

    p = 0;
```

```
    // Copy elements from head down to 0 into atr[]
    while (t[j] != 0) {
        atr[p] = t[j];
        j--;
        p++;
    }
    atr[p] = t[j]; // Add 0
    // Copy remaining elements from head upwards into atr[]
    for (p = k + 1; p < n + 2; p++, k++)
        atr[p] = t[k + 1];

    // Calculate total movements
    sum = 0;
    for (j = 0; j < n + 1; j++) {
        if (atr[j] > atr[j + 1])
            d[j] = atr[j] - atr[j + 1];
        else
            d[j] = atr[j + 1] - atr[j];
        sum += d[j];
    }

    printf("\nAverage header movements: %f\n", (float)sum / n);

    // getch(); // Comment out if not supported

    return 0;
}
```

```
Enter the number of tracks to be traversed: 8
Enter the position of head: 53
Enter the track numbers:
98 183 37 122 14 124 65 67

Average header movements: 29.50
```