Course Name: Operating systems

LAB: 13

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Roll: DT-22045

PROGRAM:

FCFS:

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

int main() {
   int t[100], n, i, total = 0;
   float avg;

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

   printf("Enter the tracks to be traversed:\n");
   for (i = 0; i < n; i++) {
      scanf("%d", &t[i]);
   }

   for (i = 0; i < n - 1; i++) {
      total += abs(t[i + 1] - t[i]);
```

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    }

    avg = (float)total / (n - 1);

    printf("\nTrack Traversal and Head Movements:\n");
    for (i = 0; i < n - 1; i++) {
        printf("Move from %d to %d => %d\n", t[i], t[i + 1], abs(t[i + 1] - t[i]));
    }

    printf("\nTotal head movement = %d\n", total);
    printf("Average head movement = %.2f\n", avg);

    return 0;
}
```

SSTF:

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

int main() {
    int RQ[100], i, j, n, initial, totalHeadMovement = 0, count = 0, min, d, index;

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

    printf("Enter the request sequence:\n");
```

```
for (i = 0; i < n; i++) {
   scanf("%d", &RQ[i]);
}

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

while (count < n) {
   min = 10000;
   index = -1;

   for (i = 0; i < n; i++) {
      if (RQ[i] != -1) {
         d = abs(RQ[i] - initial);
         if (d < min) {
            min = d;
            index = i;
         }
      }
   }

   totalHeadMovement += min;
   printf("Move from %d to %d => %d\n", initial, RQ[index], min);
   initial = RQ[index];
   RQ[index] = -1; // Mark as visited
   count++;
```

```
    }

    printf("\nTotal head movement = %d\n", totalHeadMovement);

    return 0;
}
```

SCAN:

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

int main() {
    int i, j, n, head, size, temp;
    int arr[100], seek_count = 0;
    int left[100], right[100], l = 0, r = 0;
    printf("Enter the number of requests: ");
    scanf("%d", &n);

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

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

```
printf("Enter total disk size (e.g., 200): ");
scanf("%d", &size);

for (i = 0; i < n; i++) {
   if (arr[i] < head)
      left[l++] = arr[i];
   else
      right[r++] = arr[i];
}

// Sort left in descending
for (i = 0; i < l - 1; i++) {
   for (j = 0; j < l - i - 1; j++) {
      if (left[j] < left[j + 1]) {
         temp = left[j];
         left[j] = left[j + 1];
         left[j + 1] = temp;
      }
   }
}

// Sort right in ascending
for (i = 0; i < r - 1; i++) {
   for (j = 0; j < r - i - 1; j++) {
      if (right[j] > right[j + 1]) {
         temp = right[j];
```

```
            right[j] = right[j + 1];
            right[j + 1] = temp;
        }
    }
}

printf("\nSCAN Disk Scheduling (Moving towards 0 first):\n");

for (i = 0; i < l; i++) {
    printf("Move from %d to %d => %d\n", head, left[i], abs(head - left[i]));
    seek_count += abs(head - left[i]);
    head = left[i];
}

// After reaching 0, move to rightmost
if (l > 0) {
    seek_count += head; // move from current head to 0
    head = 0;
}

for (i = 0; i < r; i++) {
    printf("Move from %d to %d => %d\n", head, right[i], abs(head - right[i]));
    seek_count += abs(head - right[i]);
    head = right[i];
}
```

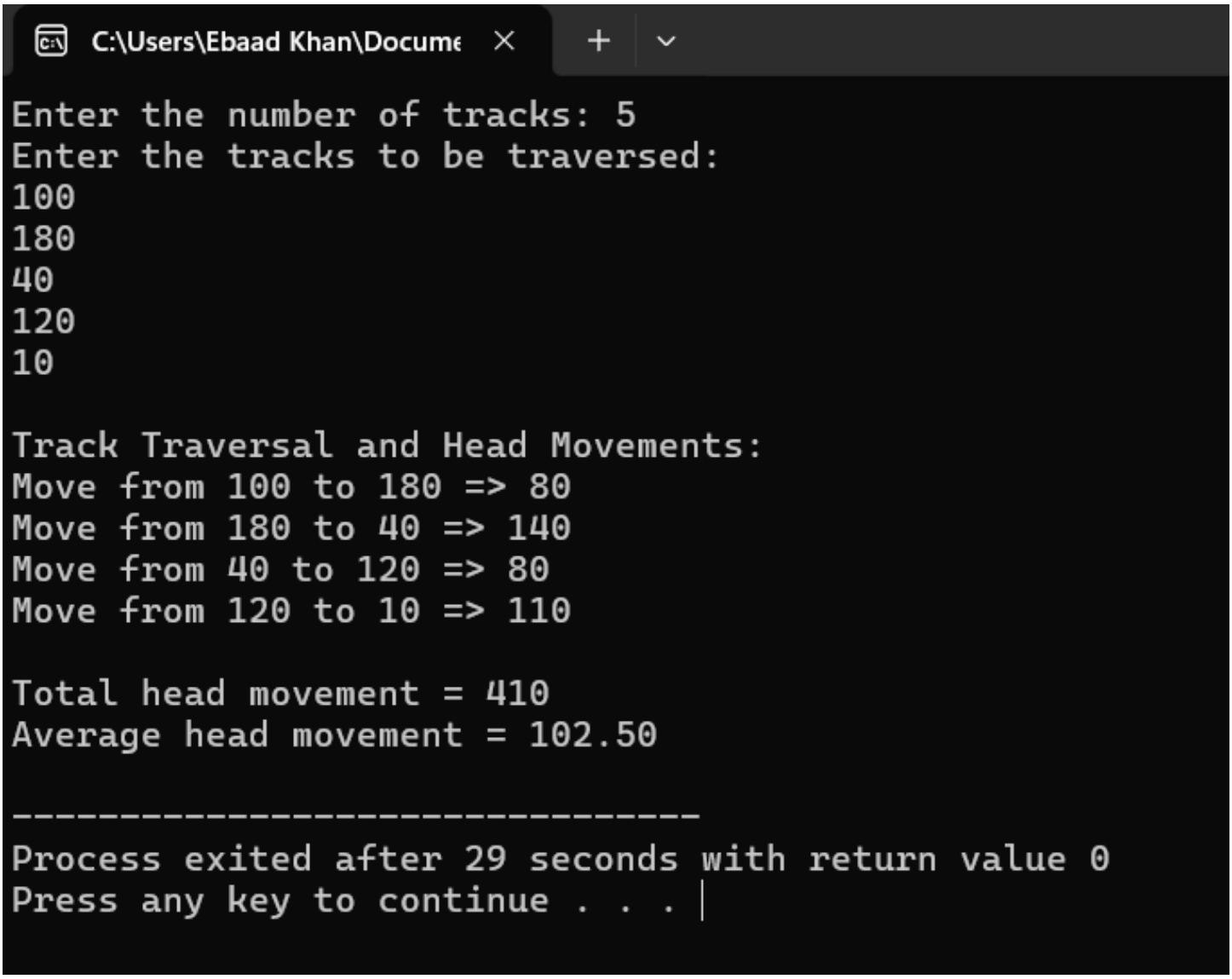
```
    printf("\nTotal head movement = %d\n", seek_count);


    return 0;

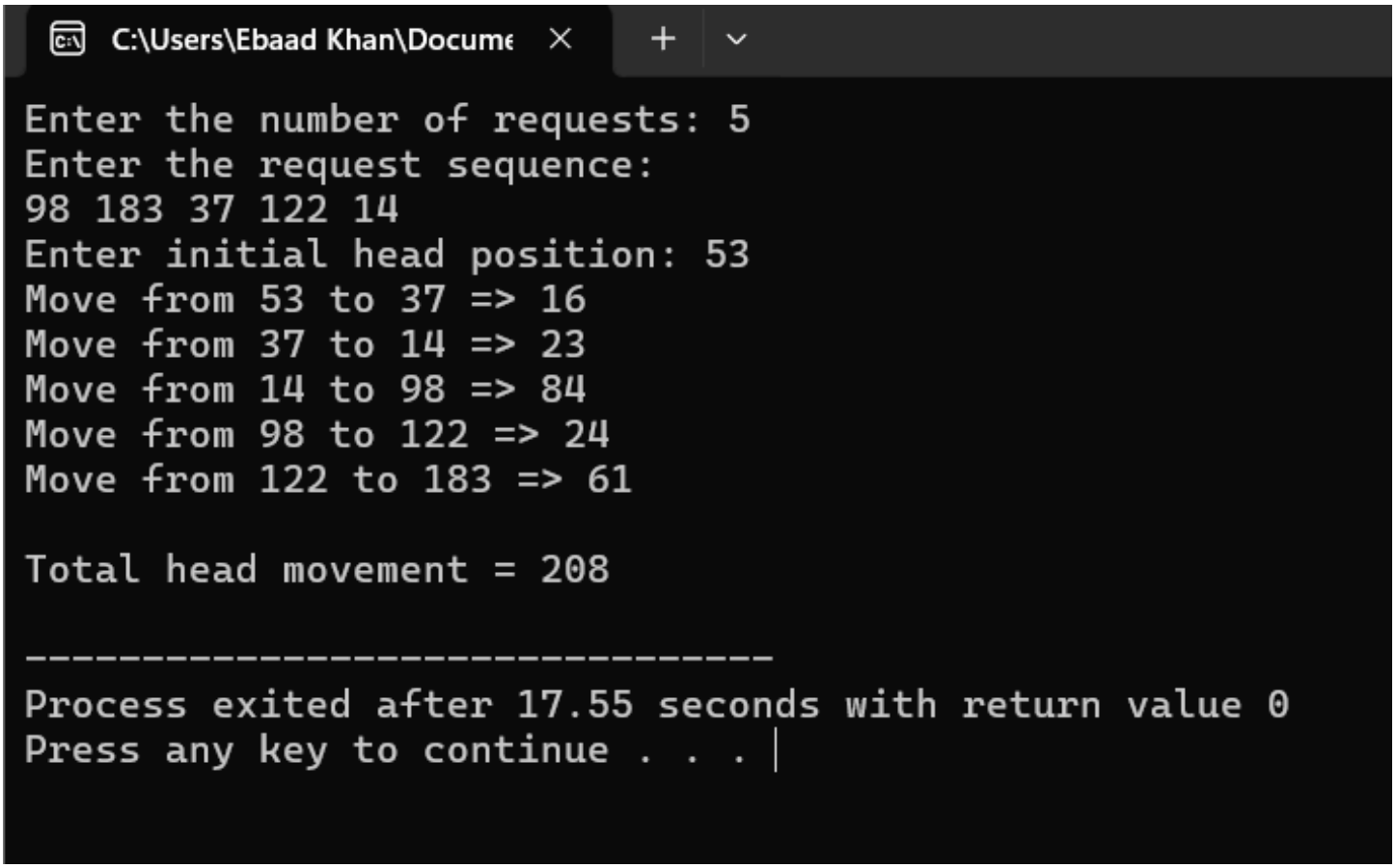
}
```

OUTPUT:

FCFS:

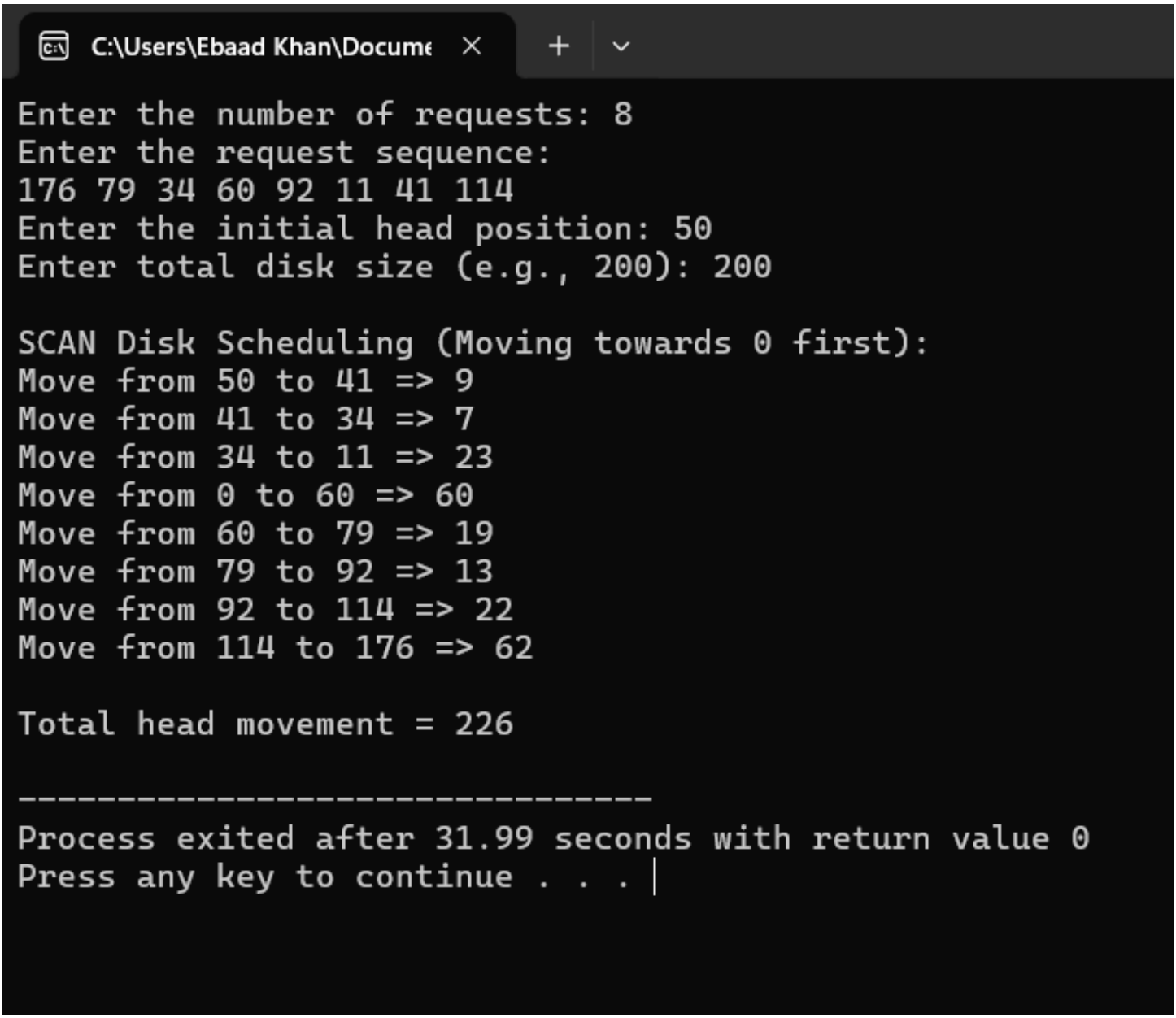


SSTF:


C:\Users\Ebaad Khan\Docume
Enter the number of requests: 5
Enter the request sequence:
98 183 37 122 14
Enter initial head position: 53
Move from 53 to 37 => 16
Move from 37 to 14 => 23
Move from 14 to 98 => 84
Move from 98 to 122 => 24
Move from 122 to 183 => 61
Total head movement = 208

Process exited after 17.55 seconds with return value 0
Press any key to continue . . .

SCAN:


C:\Users\Ebaad Khan\Docume
Enter the number of requests: 8
Enter the request sequence:
176 79 34 60 92 11 41 114
Enter the initial head position: 50
Enter total disk size (e.g., 200): 200
SCAN Disk Scheduling (Moving towards 0 first):
Move from 50 to 41 => 9
Move from 41 to 34 => 7
Move from 34 to 11 => 23
Move from 0 to 60 => 60
Move from 60 to 79 => 19
Move from 79 to 92 => 13
Move from 92 to 114 => 22
Move from 114 to 176 => 62
Total head movement = 226
Process exited after 31.99 seconds with return value 0
Press any key to continue . . .