OUTPUT

CASE 1 - FORWARD DIRECTION

SCAN ALGORITHM

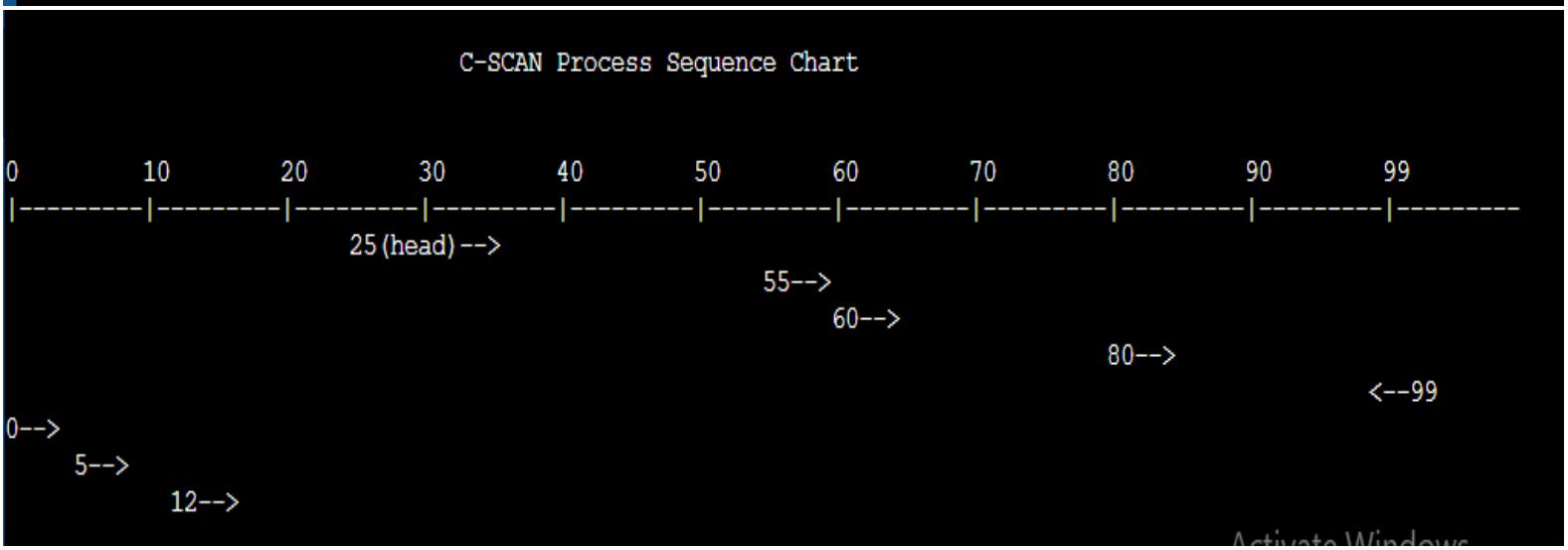
```
Enter no. of Total Cylinders : 100

Enter Previous Read-Write-Head Position : 10

Enter Current Read-Write-Head Position : 25

Enter no. of Requests : 5
Enter Process Name and Requests of Disk Queue :
A 12
B 80
C 55
D 5
E 60


Direction of Read-Write-Head : Forward direction.
```

```
                    ***** SCAN DISK SCHEDULING ALGORITHM *****


Seek Sequence for SCAN : 25 --> 55 --> 60 --> 80 --> 99 --> 12 --> 5
                         head --> [C] --> [E] --> [B] --> [-] --> [A] --> [D]

Seek time for SCAN : 168 units.

                                SCAN Scheduling Table


Step            Process         Move From       Move To         Distance        Direction
-------------------------------------------------------------------------------------------
 1              [C]             25              55              30              Forward
 2              [E]             55              60              5               Forward
 3              [B]             60              80              20              Forward
 4              [-]             80              99              19              Forward
 5              [A]             99              12              87              Backward
 6              [D]             12              5               7               Backward
                                                                 __________

                                                Seek Distance = 168 units.
                                                                 __________
```

```
                        SCAN Process Sequence Chart

0         10        20        30        40        50        60        70        80        90        99
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------
                    25(head)-->
                                                  55-->
                                                      60-->
                                                                80-->
                                                                                    <--99
                  <--12
     <--5
```

C – SCAN ALGORITHM

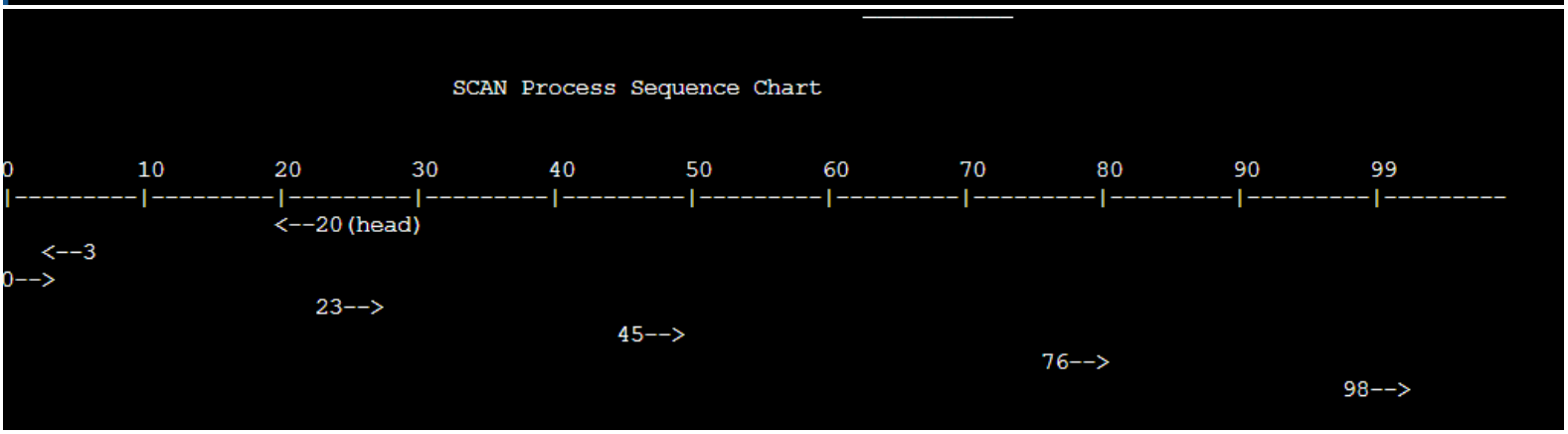
```
                    ***** C-SCAN DISK SCHEDULING ALGORITHM *****


Seek Sequence for C-SCAN : 25 --> 55 --> 60 --> 80 --> 99 --> 0 --> 5 --> 12
                        head --> [C] --> [E] --> [B] --> [-] --> [-] --> [D] --> [A]

Seek time for C-SCAN : 86 units.

                                C-SCAN Scheduling Table


Step            Process         Move From       Move To         Distance        Direction
-------------------------------------------------------------------------------------------
 1              [C]             25              55              30              Forward
 2              [E]             55              60              5               Forward
 3              [B]             60              80              20              Forward
 4              [-]             80              99              19              Forward
 5              [-]             99              0               0               jump
 6              [D]             0               5               5               Forward
 7              [A]             5               12              7               Forward
                                                                 __________

                                                Seek Distance = 86 units.
                                                                 __________
```



CASE 2 – BACKWARD DIRECION SCAN ALGORITHM

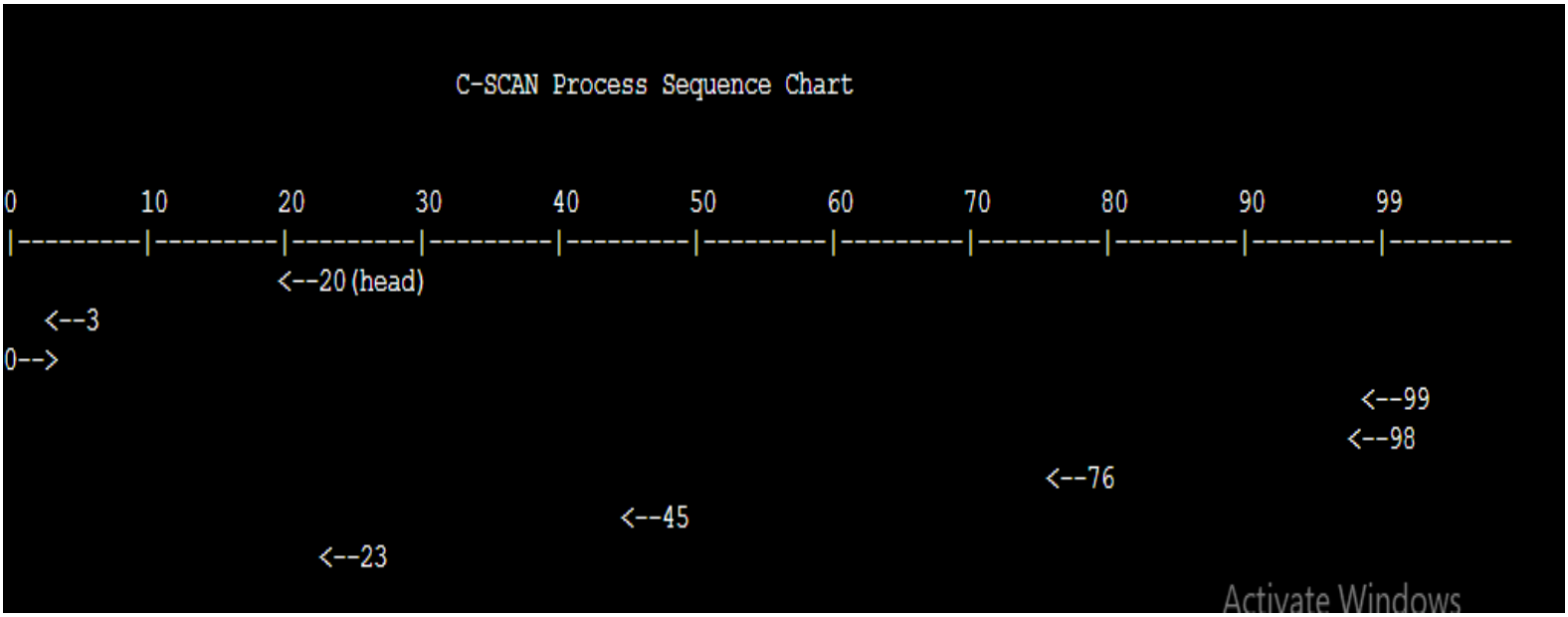
```
Enter no. of Total Cylinders : 100

Enter Previous Read-Write-Head Position : 36

Enter Current Read-Write-Head Position : 20

Enter no. of Requests : 5
Enter Process Name and Requests of Disk Queue :
A 98
B 23
C 76
D 45
E 3


Direction of Read-Write-Head : Backward direction.
```

```
                    ***** SCAN DISK SCHEDULING ALGORITHM *****


Seek Sequence for SCAN : 20 --> 3 --> 0 --> 23 --> 45 --> 76 --> 98
                         head --> [E] --> [-] --> [B] --> [D] --> [C] --> [A]

Seek time for SCAN : 118 units.

                              SCAN Scheduling Table


Step            Process         Move From       Move To         Distance        Direction
-------------------------------------------------------------------------------------------
 1              [E]             20              3               17              Backward
 2              [-]             3               0               3               Backward
 3              [B]             0               23              23              Forward
 4              [D]             23              45              22              Forward
 5              [C]             45              76              31              Forward
 6              [A]             76              98              22              Forward
                                                                 __________

                                                  Seek Distance = 118 units.
                                                                 __________
```



C – SCAN ALGORITHM

```
                    ***** C-SCAN DISK SCHEDULING ALGORITHM *****


Seek Sequence for C-SCAN : 20 --> 3 --> 0 --> 99 --> 98 --> 76 --> 45 --> 23
                        head --> [E] --> [-] --> [-] --> [A] --> [C] --> [D] --> [B]

Seek time for C-SCAN : 96 units.

                                C-SCAN Scheduling Table


Step            Process         Move From       Move To         Distance        Direction
-------------------------------------------------------------------------------------------
 1              [E]             20              3               17              Backward
 2              [-]             3               0               3               Backward
 3              [-]             0               99              0               jump
 4              [A]             99              98              1               Backward
 5              [C]             98              76              22              Backward
 6              [D]             76              45              31              Backward
 7              [B]             45              23              22              Backward
                                                                 __________

                                                Seek Distance = 96 units.
                                                                 __________
```

CASE 3 – FIRST AND LAST TRACKS ARE REQUESTED

```
Enter no. of Total Cylinders : 200

Enter Previous Read-Write-Head Position : 20

Enter Current Read-Write-Head Position : 40

Enter no. of Requests : 5
Enter Process Name and Requests of Disk Queue :
A 123
B 80
C 0
D 150
E 199


Direction of Read-Write-Head : Forward direction.
```

```
                    ***** SCAN DISK SCHEDULING ALGORITHM *****


Seek Sequence for SCAN : 40 --> 80 --> 123 --> 150 --> 199 --> 0
                         head --> [B] --> [A] --> [D] --> [E] --> [C]

Seek time for SCAN : 358 units.

                                SCAN Scheduling Table


Step            Process         Move From       Move To         Distance        Direction
-------------------------------------------------------------------------------------------
 1              [B]             40              80              40              Forward
 2              [A]             80              123             43              Forward
 3              [D]             123             150             27              Forward
 4              [E]             150             199             49              Forward
 5              [C]             199             0               199             Backward
                                                                _____________

                                                  Seek Distance = 358 units.
                                                                _____________
```

```
                          SCAN Process Sequence Chart

0         20        40        60        80        100       120       140       160       180       199
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------
                    40(head)-->
                                        80-->
                                                  123-->
                                                            150-->
                                                                                        <--199
<--0
```

C-SCAN ALGORITHM

```
                    ***** C-SCAN DISK SCHEDULING ALGORITHM *****


Seek Sequence for C-SCAN : 40 --> 80 --> 123 --> 150 --> 199 --> 0
                        head --> [B] --> [A] --> [D] --> [E] --> [C]

Seek time for C-SCAN : 159 units.

                                C-SCAN Scheduling Table


Step            Process         Move From       Move To         Distance        Direction
-------------------------------------------------------------------------------------------
 1              [B]             40              80              40              Forward
 2              [A]             80              123             43              Forward
 3              [D]             123             150             27              Forward
 4              [E]             150             199             49              Forward
 5              [C]             199             0               0               Backward(jump)
                                                                 __________

                                                   Seek Distance = 159 units.
                                                                 __________
```

```
                        C-SCAN Process Sequence Chart


0         20        40        60        80        100       120       140       160       180       199
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------
                    40(head)-->
                                        80-->
                                                            123-->
                                                                      150-->
                                                                                          <--199
<--0
```

CASE 4 – HEAD TRACK IS REQUESTED

```
Enter no. of Total Cylinders : 500

Enter Previous Read-Write-Head Position : 300

Enter Current Read-Write-Head Position : 400

Enter no. of Requests : 4
Enter Process Name and Requests of Disk Queue :
P 200
Q 400
R 100
S 350


Direction of Read-Write-Head : Forward direction.
```

```
                    ***** SCAN DISK SCHEDULING ALGORITHM *****


Seek Sequence for SCAN : 400 --> 400 --> 499 --> 350 --> 200 --> 100
                         head --> [Q] --> [-] --> [S] --> [P] --> [R]

Seek time for SCAN : 498 units.

                              SCAN Scheduling Table


Step            Process         Move From       Move To         Distance        Direction
-------------------------------------------------------------------------------------------
 1              [Q]             400             400             0               same
 2              [-]             400             499             99              Forward
 3              [S]             499             350             149             Backward
 4              [P]             350             200             150             Backward
 5              [R]             200             100             100             Backward
                                                                 __________

                                                 Seek Distance = 498 units.
                                                 __________
```

```
                        SCAN Process Sequence Chart


0       50      100     150     200     250     300     350     400     450     499
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------
                                                        400--(head)
                                                        400-->
                                                                                <--499
                                                                        <--350
                                                <--200
                                <--100
```

C – SCAN ALGORITHM

```
                    ***** C-SCAN DISK SCHEDULING ALGORITHM *****


Seek Sequence for C-SCAN : 400 --> 400 --> 499 --> 0 --> 100 --> 200 --> 350
                           head --> [Q] --> [-] --> [-] --> [R] --> [P] --> [S]

Seek time for C-SCAN : 449 units.

                                C-SCAN Scheduling Table


Step              Process         Move From       Move To         Distance        Direction
-------------------------------------------------------------------------------------------
 1                [Q]             400             400             0               same
 2                [-]             400             499             99              Forward
 3                [-]             499             0               0               jump
 4                [R]             0               100             100             Forward
 5                [P]             100             200             100             Forward
 6                [S]             200             350             150             Forward
                                                                   __________

                                                  Seek Distance = 449 units.
                                                                   __________
```



```
                          C-SCAN Process Sequence Chart


0         50        100       150       200       250       300       350       400       450       499
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------
                                                                      400--(head)
                                                                      400-->
                                                                                                <--499
0-->
                    100-->
                              200-->
                                                            350-->
```

CASE 5 – INVALID TRACK REQUESTED

```
Enter no. of Total Cylinders : 100

Enter Previous Read-Write-Head Position : 50

Enter Current Read-Write-Head Position : 25

Enter no. of Requests : 5
Enter Process Name and Requests of Disk Queue :
A 20
B 45
C 100
Invalid Cylinder: 100 is outside disk bound range - [0 to 99].Request Ignored
Enter correct request
C -1
Invalid Cylinder: -1 is outside disk bound range - [0 to 99].Request Ignored
Enter correct request
D 80
E 60
F 200
Invalid Cylinder: 200 is outside disk bound range - [0 to 99].Request Ignored
Enter correct request
G 24


Direction of Read-Write-Head : Backward direction.
```

```
                    ***** SCAN DISK SCHEDULING ALGORITHM *****


Seek Sequence for SCAN : 25 --> 24 --> 20 --> 0 --> 45 --> 60 --> 80
                         head --> [G] --> [A] --> [-] --> [B] --> [E] --> [D]

Seek time for SCAN : 105 units.

                                SCAN Scheduling Table


Step            Process         Move From       Move To         Distance        Direction
-------------------------------------------------------------------------------------------
 1              [G]             25              24              1               Backward
 2              [A]             24              20              4               Backward
 3              [-]             20              0               20              Backward
 4              [B]             0               45              45              Forward
 5              [E]             45              60              15              Forward
 6              [D]             60              80              20              Forward
                                                                ____________

                                                  Seek Distance = 105 units.
                                                                ____________
```

```
                          SCAN Process Sequence Chart

0         10        20        30        40        50        60        70        80        90        99
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
                        <--25 (head)
                      <--24
                    <--20
0-->
                                        45-->
                                                  60-->
                                                            80-->
```

C – SCAN ALGORITHM

```
                    ***** C-SCAN DISK SCHEDULING ALGORITHM *****


Seek Sequence for C-SCAN : 25 --> 24 --> 20 --> 0 --> 99 --> 80 --> 60 --> 45
                    head --> [G] --> [A] --> [-] --> [-] --> [D] --> [E] --> [B]

Seek time for C-SCAN : 79 units.

                              C-SCAN Scheduling Table


Step            Process         Move From       Move To         Distance        Direction
-------------------------------------------------------------------------------------------
 1              [G]             25              24              1               Backward
 2              [A]             24              20              4               Backward
 3              [-]             20              0               20              Backward
 4              [-]             0               99              0               jump
 5              [D]             99              80              19              Backward
 6              [E]             80              60              20              Backward
 7              [B]             60              45              15              Backward
                                                                 __________

                                                Seek Distance = 79 units.
                                                                 __________
```



```
                    C-SCAN Process Sequence Chart


0         10        20        30        40        50        60        70        80        90        99
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------
                    <--25 (head)
                   <--24
                  <--20
0-->
                                                                                          <--99
                                                                                <--80
                                                                      <--60
                                                            <--45
```

CASE 6 – TWO PROCESSES REQUEST SAME TRACK

```
Enter no. of Total Cylinders : 100

Enter Previous Read-Write-Head Position : 10

Enter Current Read-Write-Head Position : 3

Enter no. of Requests : 3
Enter Process Name and Requests of Disk Queue :
A 19
B 19
C 40


Direction of Read-Write-Head : Backward direction.
```

```
                    ***** SCAN DISK SCHEDULING ALGORITHM *****


Seek Sequence for SCAN : 3 --> 0 --> 19 --> 19 --> 40
                         head --> [-] --> [A, B] --> [A, B] --> [C]

Seek time for SCAN : 43 units.

                                SCAN Scheduling Table


Step            Process         Move From       Move To         Distance        Direction
-------------------------------------------------------------------------------------------
 1              [-]             3               0               3               Backward
 2              [A, B]                  0               19              19              Forward
 3              [A, B]                  19              19              0               same
 4              [C]             19              40              21              Forward
                                                                 __________

                                                  Seek Distance = 43 units.
                                                                 __________
```

```
                          SCAN Process Sequence Chart


0         10        20        30        40        50        60        70        80        90        99
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------
   <--3 (head)
0-->
                  19--
                  19-->
                                      40-->
```

C – SCAN ALGORITHM

```
                    ***** C-SCAN DISK SCHEDULING ALGORITHM *****


Seek Sequence for C-SCAN : 3 --> 0 --> 99 --> 40 --> 19 --> 19
                        head --> [-] --> [-] --> [C] --> [A, B] --> [A, B]

Seek time for C-SCAN : 83 units.

                                C-SCAN Scheduling Table


Step            Process         Move From       Move To         Distance        Direction
-------------------------------------------------------------------------------------------
 1              [-]             3               0               3               Backward
 2              [-]             0               99              0               jump
 3              [C]             99              40              59              Backward
 4              [A, B]                  40              19              21              Backward
 5              [A, B]                  19              19              0               same
                                                                 __________

                                                Seek Distance = 83 units.
                                                                 __________
```

```
                        C-SCAN Process Sequence Chart


0       10      20      30      40      50      60      70      80      90      99
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------
   <--3 (head)
0-->
                                                                              <--99
                                <--40
              19--
              19--
```