```
db@Ubuntu-VirtualBox:~/Simulation_CPU_scheduler-$ make
g++ -c *.cpp
g++ *.o -o sim
db@Ubuntu-VirtualBox:~/Simulation_CPU_scheduler-$ ./sim
First come first serve

Total time required is 147843 time units
The cpu utilization is 100%

Shortest job first

Total time required is 151884 time units
The cpu utilization is 97.3394%

Shortest remaining time next

Total time required is 153698 time units
The cpu utilization is 96.1906%

Round Robin with time quantum 10

Total time required is 148248 time units
The cpu utilization is 99.7268%

db@Ubuntu-VirtualBox:~/Simulation_CPU_scheduler-$ ./sim -x
First come first serve

Total time required is 151061 time units
The cpu utilization is 99.8093%

Shortest job first

Total time required is 155517 time units
The cpu utilization is 96.9335%

Shortest remaining time next

Total time required is 155491 time units
The cpu utilization is 96.9497%

Round Robin with time quantum 10

Total time required is 223008 time units
The cpu utilization is 99.9552%

db@Ubuntu-VirtualBox:~/Simulation_CPU_scheduler-$ ./sim fcfs -v
First come first serve
Number of processes and overheads 50 5
```

```
Time 144893: Process 9: A cpu burst finished.
Time 144893: Process 9: running -> waitQ.
Time 144893: Process 2: readyQ -> running.
Time 145073: Process 8: waitQ -> readyQ.

Time 145297: Process 2: A cpu burst finished.
Time 145297: Process 2: running -> waitQ.
Time 145297: Process 4: readyQ -> running.
Time 145609: Process 9: waitQ -> readyQ.
Time 145782: Process 2: waitQ -> readyQ.

Time 145794: Process 4: A cpu burst finished.
Time 145794: Process 4: is complete.
Time 145794: Process 20: readyQ -> running.

Time 145924: Process 20: A cpu burst finished.
Time 145924: Process 20: running -> waitQ.
Time 145924: Process 33: readyQ -> running.

Time 146320: Process 33: A cpu burst finished.
Time 146320: Process 33: is complete.
Time 146320: Process 8: readyQ -> running.

Time 146441: Process 8: A cpu burst finished.
Time 146441: Process 8: is complete.
Time 146441: Process 9: readyQ -> running.
Time 146837: Process 20: waitQ -> readyQ.

Time 146891: Process 9: A cpu burst finished.
Time 146891: Process 9: running -> waitQ.
Time 146891: Process 2: readyQ -> running.
Time 147179: Process 9: waitQ -> readyQ.

Time 147321: Process 2: A cpu burst finished.
Time 147321: Process 2: is complete.
Time 147321: Process 20: readyQ -> running.

Time 147346: Process 20: A cpu burst finished.
Time 147346: Process 20: is complete.
Time 147346: Process 9: readyQ -> running.

Time 147843: Process 9: A cpu burst finished.
Time 147843: Process 9: is complete.
Total time required is 147843 time units
The cpu utilization is 100%

db@Ubuntu-VirtualBox:~/Simulation_CPU_scheduler-$
```

```
db@Ubuntu-VirtualBox:~/Simulation_CPU_scheduler-$ ./sim sjf -d srtn
Shortest job first

Process 1 :
arrival time: 6
I/O time: 2279 units
service time: 1106 units
turnaround time: 21151 units
finish time: 21157 units

Process 2 :
arrival time: 35
I/O time: 12822 units
service time: 6635 units
turnaround time: 59318 units
finish time: 59353 units

Process 3 :
arrival time: 75
I/O time: 1106 units
service time: 756 units
turnaround time: 31711 units
finish time: 31786 units

Process 4 :
arrival time: 64
I/O time: 11421 units
service time: 5148 units
turnaround time: 136337 units
finish time: 136401 units

Process 5 :
arrival time: 4
I/O time: 3989 units
service time: 1504 units
turnaround time: 47389 units
finish time: 47393 units

Process 6 :
arrival time: 48
I/O time: 7464 units
service time: 3881 units
turnaround time: 81157 units
finish time: 81205 units

Process 7 :
arrival time: 4
```

turnaround time: 68957 units
finish time: 69035 units

Process 49 :
arrival time: 0
I/O time: 3597 units
service time: 1548 units
turnaround time: 15793 units
finish time: 15793 units

Process 50 :
arrival time: 116
I/O time: 7168 units
service time: 3788 units
turnaround time: 90558 units
finish time: 90674 units

Total time required is 151884 time units
The cpu utilization is 97.3394%

Shortest remaining time next

Process 1 :
arrival time: 6
I/O time: 2279 units
service time: 1106 units
turnaround time: 21151 units
finish time: 21157 units

Process 2 :
arrival time: 35
I/O time: 12822 units
service time: 6635 units
turnaround time: 59771 units
finish time: 59806 units

Process 3 :
arrival time: 75
I/O time: 1106 units
service time: 756 units
turnaround time: 31289 units
finish time: 31364 units

Process 4 :
arrival time: 64
I/O time: 11421 units
service time: 5148 units
turnaround time: 139691 units

```
finish time: 44350 units

Process 45 :
arrival time: 23
I/O time: 6891 units
service time: 3425 units
turnaround time: 89720 units
finish time: 89743 units

Process 46 :
arrival time: 16
I/O time: 8141 units
service time: 3511 units
turnaround time: 51593 units
finish time: 51609 units

Process 47 :
arrival time: 9
I/O time: 0 units
service time: 103 units
turnaround time: 649 units
finish time: 658 units

Process 48 :
arrival time: 78
I/O time: 5341 units
service time: 1773 units
turnaround time: 68304 units
finish time: 68382 units

Process 49 :
arrival time: 0
I/O time: 3597 units
service time: 1548 units
turnaround time: 18678 units
finish time: 18678 units

Process 50 :
arrival time: 116
I/O time: 7168 units
service time: 3788 units
turnaround time: 89426 units
finish time: 89542 units

Total time required is 153698 time units
The cpu utilization is 96.1906%
db@Ubuntu-VirtualBox:~/Simulation_CPU_scheduler-$
```