Operating Systems

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Project Structure

- The project Contains run.sh which is the shell script to run the commands
- The “src” folder which contains all .c files
- The “includes” folder which contains all the .h files

How to run

Step 1: Give user permission for executing run.sh files

chmod +x run.sh

Step 2: In terminal type this command to execute your Program

./run.sh Assign3 -algo rr -quant 20 -inp input.txt

Output:

The output gives all the waiting times for each process for each CPU burst time meaning for executing that particular burst time how much time it has waited and gives the all the other output like average waiting, turnaround time and so on.

First In First Out (fifo):

```
srikar@srikar-HP-14s:~/Desktop/Semester_5/OS/Assigments/21MCME19_Week3_OS$ ./run.sh Assign3 -algo fifo -inp input.txt
Compilation successful. Running your_program...

The Waiting times of Process are:
Process ID: 3
Priority: 2
Waiting Times: [0.010107, 0.251251]
Process ID: 4
Priority: 3
Waiting Times: [0.030165, 0.251410]
Process ID: 2
Priority: 1
Waiting Times: [0.010085, 0.281080, 0.231900]
Process ID: 1
Priority: 1
Waiting Times: [0.000004, 0.080261, 0.241134, 0.312020]
Process ID: 5
Priority: 2
Waiting Times: [0.091143, 0.181183]

Output is:(Note that all values are in seconds)

Input file Name: input.txt
CPU Scheduling Algorithm: fifo
CPU utilization: 49.141381 Percent
Throughput: 8.472652 process per millisecond
Avg. Turnaround time: 0.062465 s
Avg. Waiting time in the R Queue: 0.054465 s
```

Shortest Job First (sjf):

```
srikar@srikar-HP-14s:~/Desktop/Semester_5/OS/Assigments/21MCME19_Week3_OS$ ./run.sh Assign3 -algo sjf -inp input.txt
Compilation successful. Running your_program...

The Waiting times of Process are:
Process ID: 2
Priority: 1
Waiting Times: [0.010214, 0.090267, 0.133807]
Process ID: 1
Priority: 1
Waiting Times: [0.000053, 0.090369, 0.113480, 0.191098]
Process ID: 3
Priority: 2
Waiting Times: [0.050349, 0.141225]
Process ID: 4
Priority: 3
Waiting Times: [0.070555, 0.141241]
Process ID: 5
Priority: 2
Waiting Times: [0.040566, 0.070663]

Output is:(Note that all values are in seconds)

Input file Name: input.txt
CPU Scheduling Algorithm: sjf
CPU utilization: 49.340706 Percent
Throughput: 8.507018 process per millisecond
Avg. Turnaround time: 0.030246 s
Avg. Waiting time in the R Queue: 0.022246 s
```

Priority Queue (pr):

```
srikar@srikar-HP-14s:~/Desktop/Semester_5/OS/Assigments/21MCME19_Week3_OS$ ./run.sh Assign3 -algo pr -inp input.txt
Compilation successful. Running your_program...

The Waiting times of Process are:
Process ID: 2
Priority: 1
Waiting Times: [0.010200, 0.090269, 0.131097]
Process ID: 1
Priority: 1
Waiting Times: [0.000005, 0.090410, 0.110736, 0.191313]
Process ID: 3
Priority: 2
Waiting Times: [0.050564, 0.140958]
Process ID: 4
Priority: 3
Waiting Times: [0.070765, 0.140846]
Process ID: 5
Priority: 2
Waiting Times: [0.000014, 0.070587]

Output is:(Note that all values are in seconds)

Input file Name: input.txt
CPU Scheduling Algorithm: pr
CPU utilization: 49.631868 Percent
Throughput: 8.557219 process per millisecond
Avg. Turnaround time: 0.022120 s
Avg. Waiting time in the R Queue: 0.014120 s
```

Round Robin(rr):

```
srikar@srikar-HP-14s:~/Desktop/Semester_5/OS/Assigments/21MCME19_Week3_OS$ ./run.sh Assign3 -algo rr -quant 20 -inp input.
txt
Compilation successful. Running your_program...

The Waiting times of Process are:
Process ID: 2
Priority: 1
Waiting Times: [0.000000, 0.000000, 0.000000]
Process ID: 1
Priority: 1
Waiting Times: [0.000003, 0.050384, 0.060282, 0.252525]
Process ID: 3
Priority: 2
Waiting Times: [0.040191, 0.192214]
Process ID: 4
Priority: 3
Waiting Times: [0.060415, 0.192215]
Process ID: 5
Priority: 2
Waiting Times: [0.000010, 0.192207]

Output is:(Note that all values are in seconds)

Input file Name: input.txt
CPU Scheduling Algorithm: rr
CPU utilization: 49.164103 Percent
Throughput: 10.687826 process per millisecond
Avg. Turnaround time: 0.046443 s
Avg. Waiting time in the R Queue: 0.038443 s
```

My Scheduling Algorithm Round Robin + Shortest Time(mySched):

```
srikar@srikar-HP-14s:~/Desktop/Semester_5/OS/Assigments/21MCME19_Week3_OS$ ./run.sh Assign3 -algo mySched -quant 20 -inp i
nput.txt
Compilation successful. Running your_program...

The Waiting times of Process are:
Process ID: 2
Priority: 1
Waiting Times: [0.000000, 0.000000, 0.000000]
Process ID: 3
Priority: 2
Waiting Times: [0.010082, 0.120685]
Process ID: 1
Priority: 1
Waiting Times: [0.011790, 0.060718, 0.122338, 0.161971]
Process ID: 4
Priority: 3
Waiting Times: [0.000028, 0.040690]
Process ID: 5
Priority: 2
Waiting Times: [0.000109, 0.040120]

Output is:(Note that all values are in seconds)

Input file Name: input.txt
CPU Scheduling Algorithm: mySched
CPU utilization: 49.308502 Percent
Throughput: 10.719240 process per millisecond
Avg. Turnaround time: 0.016046 s
Avg. Waiting time in the R Queue: 0.008046 s
```

END