SSN COLLEGE OF ENGINEERING, KALAVAKKAM
(An Autonomous Institution, Affiliated to Anna University, Chennai)
SSN College of Engineering

Department of Computer Science and Engineering

UCS1411 – Operating Systems Laboratory

II Year CSE - A Section (IV Semester)

Academic Year 2019-20

Exercise – 3- CPU Scheduling Algorithms-I

Lab Exercise 3 Implementation of CPU Scheduling Policies: FCFS and SJF (Non-preemptive and Preemptive)

Objective:

Develop a menu driven C program to implement the CPU Scheduling Algorithms FCFS and SJF

Sample Learning Outcome:

1. Implement the various CPU scheduling algorithms like FCFS and SJF (P and NP)
2. Calculate the waiting time, response time and turn around time for various scheduling algorithms
3. Based on criteria, identify the best scheduling policy

Best Practices:

1. Algorithm design
2. Naming convention – for file names, variables
3. Comment usage at proper places
4. Prompt messages during reading input and displaying output
5. Error handling mechanisms for input like burst time, starting time,
6. Incremental program development
7. Modularity
8. All possible test cases in output

Algorithm:

1. Read the following
    a. Number of processes
    b. Process IDs
    c. Arrival time for each process
    d. Burst Time for each process
2. Design a menu with FCFS and SJF options
3. Upon selection of menu option apply the corresponding algorithm.
4. Compute the Turnaround Time, Average waiting Time for each of the algorithm.
5. Tabularize the results.
6. Display the Gantt Chart.

Sample Input & Output:

CPU SCHEDULING ALGORITHMS

1. FCFS
2. SJF
3. EXIT

Enter your option: 1

FCFS CPU SCHEDULER

Number of Processes: 5

Process ID: P1

Arrival Time: 0

Burst Time: 4

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Process ID: P5

Arrival Time: 6

Burst Time: 3

Output:

Process ID	Arrival Time	Burst Time	Turnaround Time	Waiting Time
P1	0	4	***	***
***	***	***	***	***
***				
***				
		Average	***	***

Want to Continue (Y/N): Y

CPU SCHEDULING ALGORITHMS

1. FCFS

2. SJF

3. EXIT

Enter your option: 2

SJF CPU SCHEDULER

a. Non preemptive SJF

b. Pre emptive SJF

Enter your option: a

Number of Processes: 5

Process ID: P1

Arrival Time: 0

Burst Time: 4

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Process ID: P5

Arrival Time: 6

Burst Time: 3

Output:

Process ID	Arrival Time	Burst Time	Turnaround Time	Waiting Time
***	***	***	***	***
***	***	***	***	***
***				
***				
		Average	***	***