Department of Computer Science and Engineering
MIDTERM EXAMINATION Spring 2019
CSE321: Operating Systems

Total Marks: 60   **Time Allowed: 1 Hour**

[Answer ANY 3 Questions. Understanding the question is a part of the exam.]

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1. a) What are differences between multiprogramming, multiprocessing and multitasking?   [6]

    b) What is PCB? Mention its attributes. What are the differences between short-term scheduler and long-term scheduler?   [2+4]

    c) Draw Gantt chart, avg. waiting time and number of context switch using Preemptive Priority scheduling algorithm. [low number will be the highere priority]   [4+3+1]

Process	Arrival Time (s)	Burst Time(s)	Priority
P1	0	21	4
P2	8	18	5
P3	5	10	1
P4	8	23	3
P5	20	13	2

2. a) Draw the process state diagram. What is the difference between program and process?   [3+2]

    b) What OS's Do? What are the differences between single thread and multithreaded process?   [2+3]

    c) For Peterson's problem below conditions will applied.   [10]

    1. Each statement will take 2ms to complete.
    2. For process P0: i=0,j=1; and for process P1: i=1,j=0.
    3. Context switching will occur after 4ms.
    4. In critical section area carried only 3 statements.
    5. In remainder section area carried only 2 statements.

Information common to both processes:

    turn=0;
    flag[0]=FALSE;
    flag[1]=FALSE;

Complete the following table:

Note: Must consider the above conditions and information.

Process P0	Process P1
i=0,j=1;	i=1,j=0;

a) What are the methods used for IPC? Explain those. [2+4]

b) Given the following table draw Gantt chart and calculate avg. waiting time, avg. turnaround time, avg. response time for round robin scheduling algorithm with time quantum 50. [5+9]

Process	Burst Time	Arrival Time
P1	120	0
P2	102	135
P3	65	200
P4	148	300

4. a) "Multilevel feedback queue prevents starvation" - how? [3]

b) What is critical section? What are the requirements for a solution to the critical section problem? Explain those in brief. [1+6]

c) Given the following table draw Gantt chart and calculate, waiting time, throughput for preemptive Shortest-Remaining-Job scheduling algorithm. [4+4+2]

Process	Arrival time(s)	Burst time(s)	Priority
P1	0	8	1
P2	3	6	1
P3	7	17	1
P4	9	3	1
P5	10	20	1
P6	13	3	1
P7	15	12	1
P8	20	7	1