

Homework No.2

Due Date: April 16, 2009 at the end of the class

A late turn-in will not be accepted

- 1) Describe the actions a kernel takes to context switch between processes. (10% each)
- 2) List 5 Unix IPC mechanisms (10%)
- 3) What advantage is there in using shared memory vs. message queue? (10 %)
- 4) What are two differences between user-level threads and kernel-level threads? Under what circumstances is one type better than the other? (10% each)
- 5) What resources are used when a thread is created? How do they differ from those used when a process is created? (10% each)
- 6) Define the difference between preemptive and nonpreemptive scheduling. State why strict nonpreemptive scheduling is unlikely to be used in a computer center. (10% each)
- 7) (30% each)

Consider the following set of processes, with the length of the CPU-burst time given in milliseconds:

<u>Process</u>	<u>Burst Time</u>	<u>Priority</u>
P_1	10	3
P_2	1	1
P_3	2	3
P_4	1	4
P_5	5	2

The processes are assumed to have arrived in the order P_1, P_2, P_3, P_4, P_5 , all at time 0.

- a. Draw four Gantt charts illustrating the execution of these processes using FCFS, SJF, a nonpreemptive priority (a smaller priority number implies a higher priority), and RR (quantum = 1) scheduling.
- b. What is the turnaround time of each process for each of the scheduling algorithms in part a?
- c. What is the waiting time of each process for each of the scheduling algorithms in part a?
- d. Which of the schedules in part a results in the minimal average waiting time (over all processes)?

- 8) What advantage is there in having different time-quantum sizes on different levels of a multilevel queuing system? (10% each)