Homework No.1
CSC 345

1. The issue of resource utilization shows up in different forms in different types of operating systems. List what resources must be managed carefully in the following settings: (10%)
a. Sever systems
b. Desktops connected to servers
c. Tablet

2. Run ps with –u option and show what is your current terminal type, the pid of ps command and parent pid of it. (10%)

3. Enter the following commands and report your observation. (10%)
a. who and tty
b. tput clear
c. id
d. ps
e. echo $$

4. List five services provided by an operating system. Explain how each provides convenience to the users. Explain also in which cases it would be impossible for user-level programs to provide these services and how they are protected.(10%)

5) explain mechanisms that OS and hardware provides to ensure system resources and instructions are protected. (10%)

6) Describe the actions a kernel takes to context switch between processes. (10%)

7) (40 %, 10% each)
Consider the following set of processes, with the length of the CPU-burst time given in milliseconds:

Process	Burst Time	Priority
*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)?