

1. Go through the steps that must take place in a context switch. Make sure that you give the conditions under which a context switch could actually occur. Give two scenarios, one that is the result of a program action, one that is not.
2. Define the term "System Call." Give a list of the various system calls that could be performed by a program.
3. Explain the concept of memory protection, and why it is needed.
4. What kinds of things get saved in a PCB? Why do I need a PCB in the first place?
5. What are the three types of threading? How do they differ from one another.
6. When I use pthreads, what is the only way to switch from one thread to another?
7. What is a mutex variable, and what is it used for?
8. What is a condition variable, and what is it used for?
9. Explain the difference between the fork and the clone system calls.
10. How does a new process get created?
11. When your program is running, what is the OS doing?
12. Given the following processes and burst times, give a gantt chart for each, compute the average wait time, the average turn-around time, and the average response time for the three algorithms, shortest remaining time first, first come first served, and round robin with a quantum of 3.

Process	Burst Time	Arrival Time
P1	12	1
P2	2	2
P3	2	3
P4	7	7
P5	1	8