1. Consider figure 3.2 on p. 103 of the text (also on the Process States in the OS slide from class). Give at least 2 examples of events that would cause a process to transition:
   a. from running to ready.
   b. from running to waiting.

2. Notice that figure 3.2 does not contain a transition from the ready state to the waiting state. Explain why this transition is not included.

3. Some operating systems will suspend processes that have been in the waiting state for a long time by copying their memory contents to disk.
   a. Explain why it might make sense for an operating system to suspend such processes.
   b. Redraw figure 3.2 to include a suspended state. Label and give a brief explanation for each new transition that you add.

4. From the perspective of a program, making a sleep system call causes the program to pause for a specified amount of time and then resume right where it left off. Describe in detail how a sleep system call could be implemented from the operating system perspective.

5. Operating System Concepts Chapter 3, #3.9. In addition draw a process tree illustrating all of the processes and their relationship to each other. When drawing the process tree, assume the original process has PID 0 and that new processes are given PIDs in succession (e.g. 1, 2, 3, ...).

6. Operating System Concepts Chapter 3, #3.10. (Give and clearly label the output generated by lines A, B, C and D as your answer for this question.)

7. Operating System Concepts Chapter 3, #3.13

8. Discuss the relative advantages and disadvantages of the message passing, shared memory and pipes approaches to IPC.