1. When your program is running, what is the operating system doing?

2. The term “System Call” can mean two different things, depending on whether we are talking about hardware or software. What is the physical mechanism used by a program to execute a system call? What is a system call used for?
3. Define the terms “Context” and “Context Switch.” Explain how a context switch occurs between two processes A and B. You should assume that process A is waiting for I/O just before the context switch occurs.
4. One type of threading model is the *one-to-many* model. What are the other two? Describe the differences between the three models.
5. What is the difference between the LINUX fork system call and the LINUX clone system call?

6. Explain the concept of processor states. What are privileged instructions, and why are they needed?
7. Assume that you are creating a solution for the bounded buffer problem. Show the code for the Sender. (You may assume that the three shared variables are $A$, $In$, and $Out$, and that $In$ and $Out$ are both initialized to zero.) The size of the buffer is 25.

8. Same as for question 7, but this time show the code for the receiver.