

1. [6 pt] What is the difference between an interrupt and an exception? Give one example of each.
2. [8 pt] Why do we need two modes of execution (kernel and user) in an operating system, even though some of the kernel functions run in user mode?
3. [8 pt] Is it possible to have two separate system calls with the same name in Unix? Why will someone want to do that? If it can be done, how will you do it? If it cannot be done, why not?

4. [6 pt] How can you change a program without changing its process? How can you change a process keeping the same program?
5. [10 pt] How does the solution for critical section problem for multiple processes (Algorithm 4 in lecture notes) ensure that the protocol for the solution is satisfied? Show the application on each of the three elements in our protocol. Does it guarantee a solution for bounded wait, or does it provide a solution by laws of randomness?

6. [6 pt] Event counters always start at zero and they always increase in value. Can you suggest a way that will avoid the overflow of event counters?

7. [6 pt] Give an example to show the difference between synchronized and asynchronous communication by message passing.