Score:_____   -   Name:_____

ECE 3055 Quiz - April 14, 2004

1. If you have a thread named, *Big_Thread,* already created in Java, what Java statement would normally be used in the parent process to tell the OS to begin the execution of this thread?

    Big_Thread.start();

2. List and briefly describe the two main approaches that can be used to support interprocess communication with message passing using API kernel calls.

Direct Communication – processes must name the other process that receives the message.

Indirect Communication – processes share a named mailbox to exchange messages.

3. Explain the significance of each of the operations in the statement below from the bounded-buffer or producer-consumer process example. Where would the statement normally be used?

    in = (in + 1) % BUFFER_SIZE;   **(Java statement example from book)**

in marks the location to insert a new item in the shared buffer array. +1 moves to the next location. The mod operation (%) forces the buffer to wrap around back to start when the pointer moves past the end of the buffer array.

It would be used in the producer process when it places a new item in the buffer array.

4. Which scheduling algorithm is most commonly used to provide the best response time for a large number of interactive user processes in a timesharing system like Prism?

Round Robin

5. What are the requirements for a solution to the critical section problem? Briefly, explain each requirement.

Mutual Exclusion - If process Pi is executing in its critical section, then no other processes can be executing in their critical sections

Progress - If no process is executing in its critical section and there exist some processes that wish to enter their critical section, then the selection of the processes that will enter the critical section next cannot be postponed indefinitely

Bounded Waiting - A bound must exist on the number of times that other processes are allowed to enter their critical sections after a process has made a request to enter its critical section and before that request is granted