Quiz #2 Solutions
COMP 3000B: Operating Systems
February 6, 2007

1. When choosing whether to implement a device driver as a block or a serial device, which of the following information about the new device is **most** relevant?

    (a) **The same data is likely to be read multiple times.**

    (b) The device returns data in fixed-sized chunks.

    (c) The device is fast.

    (d) The device is attached by USB.

2. When a web browser requests a web page, it is performing a type of inter-process communication. This communication is best described as:

    (a) **message passing**

    (b) shared memory IPC

    (c) semaphore-based synchronization

    (d) None of the above

3. Disabled interrupts are effective at enforcing mutual exclusion in which of the following contexts?

    (a) an OS kernel on a a symmetric multiprocessor (SMP) system

    (b) an OS kernel on a cluster of networked computers

    (c) **an OS kernel on a single processor system**

    (d) a web-based distributed application

4. "Elevator" scheduling is used by:

    (a) Ethernet cards

    (b) Flash drive controllers

    (c) **Hard disk controllers**

    (d) Operating system CPU schedulers

5. Which of the following is an example of a bounded-buffer producer consumer problem?

    (a) **UNIX pipes, e.g. the command "ls | more"**

    (b) two threads sharing access to `struct foo`

    (c) browsing and buying a plane ticket online

    (d) All of the above

6. Processors have memory management hardware primarily to:

    (a) increase the amount of physical memory available to the processor.

    (b) accelerate physical memory access.

    (c) **accelerate virtual address space computations.**

    (d) improve security.

7. Monitors:

    (a) use condition variables for synchronization

    (b) prevent multiple threads from executing monitor code at the same time

    (c) hide mutual exclusion details from calling routines

    (d) **all of the above**

8. Producer/consumer programs use mutual exclusion mechanisms (semaphores, monitors, etc.) to:

    (a) slow down consumers that run faster than producers

    (b) slow down producers that run faster than consumers

    (c) prevent the shared queue from becoming corrupted

    (d) **all of the above**