

Quiz #1 Solutions
COMP 3000B: Operating Systems
January 23, 2007

1. System calls must be used (directly or indirectly) to:
 - (a) increase the size of a process's memory heap
 - (b) read a file
 - (c) create a window on the screen
 - (d) **All of the above**
2. An OS that is based upon a microkernel architecture will typically:
 - (a) **have most device drivers and filesystem code run within separate userspace processes**
 - (b) have most OS code run in CPU supervisor mode
 - (c) support loadable kernel modules (modules loaded to run in CPU supervisor mode)
 - (d) All of the above
3. A typical executing application is best described as a:
 - (a) kernel
 - (b) **process**
 - (c) thread
 - (d) system call
4. Pipelining...
 - (a) ...involves dividing machine instructions into smaller units of work.
 - (b) ...allows modern CPUs to execute more than one instruction in parallel.
 - (c) ...slows down context switches and increases interrupt latency.
 - (d) **All of the above**
5. DMA...
 - (a) ... stands for "direct memory access."
 - (b) ... can be slower than programmed I/O.
 - (c) ... is used extensively by current desktop computers.
 - (d) **All of the above.**
6. "Zombie" processes are caused by:
 - (a) An execve of a non-existent program
 - (b) **A failure to wait for terminating processes**
 - (c) A fork when system resources are low
 - (d) All of the above
7. When a regular process is running on a single-CPU system, all of the following are true **except**:
 - (a) The kernel is not running.
 - (b) Disks can be writing data to memory.
 - (c) The CPU will generate an exception (software interrupt) if certain addresses are accessed.
 - (d) **The CPU is in supervisor mode.**
8. A batch system shares CPU resources by executing programs one at a time, with each running to completion. Compared with a time-sharing OS system, batch operating systems:
 - (a) make more efficient use of CPU resources (i.e. less is wasted in overhead)
 - (b) are easier to implement
 - (c) are used today on mainframe systems
 - (d) **All of the above**