

Homework #1

Your Name: _____

Your Email: _____

Due Date: Thursday, April 9, 2009, Beginning of class

*Please write your answers directly on this sheet.
Hand in the hardcopy.
Staple all pages together.*

Textbook Reading Assignment

Pages 1-117 by Tuesday, April 7, 2009 (Chapter 1, Beginning of chapter 2)

Pages 117-168 by Tuesday, April 14, 2009 (Rest of chapter 2)

1. What is “multiprogramming”?

2. What does the “system call” machine instruction do? (In class, I refer to this as the “syscall” instruction; it is also often called the “trap” instruction.)

3. What does MMU stand for? What does it do?

4. What does DMA stand for? Describe this.

5. Imagine that an operating system starts an I/O operation. Describe “busy-waiting”.

6. Imagine that an operating system starts an I/O operation. Assume that an interrupt occurs on completion of the I/O. Describe what happens when the interrupt occurs and is processed.

7. Briefly describe the following Unix system calls
pid = fork ()

s = execve (filename, ...)

exit (status)

pid = waitpid (pid, &statusLoc, ...)

8. In a UNIX file system, every file has a unique number that describes it. What is this number called?

9. Each directory in UNIX is a file; what is in that file?

10. The IBM operating system called VM/370 provided a number of “virtual machines.” What does this mean?

11. Name and briefly describes the 3 possible states a process can be in at any moment. (At least as discussed in the textbook; other models may have more complexity.)

12. What is a “Process Control Block” and what info would be kept in it.

13. What is a “thread”?

14. By default, how many threads does a process usually have?

15. What is a critical region?

16. Are critical sections and critical regions the same or different?

17. In any solution to the problem of critical regions, four conditions should hold. What are they?

18. A semaphore is like a counter and will be implemented using an integer variable. Why is it not okay for the user of a semaphore to access the semaphore's count?
