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1. The register 29 is used for the stack pointer (sp) in OS/161. This information was found in: cs350-os151/os161-1.99/kern/arch/mips/include/kern/regdefs.h on line 69.

2. OS/161 supports LAMEbus. This information was found in sys161/include/bus.h on line 53.

3. The maximum number of CPUs that can be configured is 32. This information was found in sys161/include/maxcpus.h on line 42.

4. Since opt_synchprobs is true for assignment 1 the kernel's hardlock() function will be invoked 10000 per second.

5. Since opt_synchprobs is false for all other assignments the kernel's hardlock() function will be invoked 100 per second.

6. You can toggle whether debug messages are printed or not at runtime by setting the value of dbflags with the debugger. This information was found in kern/include/lib.h starting at line 102.

7. In kern/include/lib.h you would have to define DB_CATMOUSE under the bit flags for DEBUG(), and ensure that it has its own unique bit flag.

8. Debug(DB_CATMOUSE, "Hello World\n").

9. You would change the value dbflags to the result of the logical OR of the bit flags for DB_CATMOUSE and DB_THREADS.

10. You cannot use kprintf in lock_acquire, because kprintf creates a lock when it is called. You cannot use the debugging statements in lock_acquire because the debugging statements use kprintf.

11. A bitmap is a fixed-size array of bits, it is used for storage management. For example, using a bitmap for a file system.

12. The states a thread can be in are: run, ready, sleep, and zombie.

13. Zombie threads are cleaned up when the exorcise function is called.

14. wchan_sleep() is the function that puts threads to sleep.

15. curthread is the structure representing the current thread on the cpu. Found in cpu.h.

16. This test forks the current thread 8 times, each time adding value to the test value. Then it will repeat this process a second time, but instead decrementing the test value with sub_thread. It will then decrement the semaphore, and print whether the test value matches the start value.

17. Value of test_value = -8555 should be 0.
    Value of test_value = -12219 should be 0.
    Value of test_value = 386should be 0.
    Value of test_value = -2130 should be 0.
    Value of test_value = -25071 should be 0.

18.

19. Value of test_value = 3631should be 0.
    Value of test_value = 7840 should be 0.
    Value of test_value = -6330should be 0.
    Value of test_value = -3437 should be 0.
    Value of test_value = 2808 should be 0.