Code Reading:

Q1: it is $29, found in /kern/arch/mips/include/kern/regdefs.h

Q2: LAMEbus is the only supported bus, founded in /kern/arch/sys161/include/bus.h

Q3: Max CPU is 32, founded in kern/arch/sys161/include/maxcpus.h

Q4: every CPU HZ times a second, which is 10000 for A1

Q5: every CPU HZ times a second, which is 100 for other assignments

Q6: In /kern/lib/kprintf.c, we have “uint32_t dbflags = 0;” And this will control whether we can print DEBUG info.

Q7: Add #define DB_CATMOUSE 0x009 in lib.h

Q8: DEBUG(DB_ CATMOUSE, “Hello World\n”);

Q9: In DEBUG definition in lib.h, check the value of d and only allow the value of “DB_CATMOUSE” and “DB_THREADS”

Q10: cannot use DEBUG because “dbflags” is set to 0; cannot use kprintf because we have kprintf_lock for the kprintf, which is actually a lock.

Q11: Bitmap is a fixed-size array of bits. (Intended for storage management) and can be used to do byte operation on int. So if we have “struct* bitmap = bitmap_create(4)” then we can do byte operation on 4 by calling bitmap_mark(bitmap, index)

Q12: S_RUN, S_READY, S_ZOMBIE

Q13: when we exit the thread

Q14: wchan_sleep

Q15: It is used to check interrupt level

Q16: Try to use lock and increase/decrease test_value

Q17: -8235, 17891, -18997, -6021, -49160

Q18: The value can increase by the one process and stored in some register. But at the same time, the value can be decreased by another one and stored in some other register. Since there is no lock, when the value returns, it depends on which process returns at first and thus may get wrong values.

Q19: -3839, 7183, -4286, 2770, 1625

Q20: The final value decreases with more CPUs.