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Assignment 5 - Proof of xv6 Time-Slicing Schedule Model

1. main() in main.c calls lapicinint() on line 23. It also calls ioapicinit() so the kernel functions on uniprocessors as well.

   ASSUMPTION: Assuming every processor starts executing code in this function, as the comment states.
2. lapicinit() programs the timer interrupt to fire every so often on IRQ 0 on line 68 in lapic.c.
3. main() in main.c calls mpmain() on line 37, which calls idtinit() from trap.c, which then calls lidt() in x86.h with the interrupt descriptor table as an argument, loading the interrupt table with those created in tvinit().
4. The lapic eventually delivers a timer interrupt to each core.
5. The processor hardware saves and swaps registers to enter kernel mode (if necessary). It then loads the %eip and %cs values from the relevant IDT entry, pushes the interrupt number, and jumps to alltraps in trapasm.S.

   ASSUMPTION: The code in vectors.S causes the hardware to jump to alltraps.
6. Alltraps builds a trap frame and calls the C trap() function.
7. Timer interrupts fall to the case in line 50 of trap, which calls wakeup.
8. Wakeup calls wakeup1.
9. Wakeup 1 scans the process table and wakes a sleeping process. This process will likely be another process, but could be our own.
10. Operations 4 - 9 will continually repeat on every processor, forming a time-slicing system. QED