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// Intel 8253/8254/82C54 Programmable Interval Timer (PIT).
// Only used on uniprocessors;
// SMP machines use the local APIC timer.

#include "types.h"
#include "defs.h"
#include "traps.h"
#include "x86.h"

#define IO_TIMER1      0x040      // 8253 Timer #1

// Frequency of all three count-down timers;
// (TIMER_FREQ/freq) is the appropriate count
// to generate a frequency of freq Hz.

#define TIMER_FREQ      1193182
#define TIMER_DIV(x)    ((TIMER_FREQ+(x)/2)/(x))

#define TIMER_MODE      (IO_TIMER1 + 3) // timer mode port
#define TIMER_SEL0      0x00      // select counter 0
#define TIMER_RATEGEN    0x04      // mode 2, rate generator
#define TIMER_16BIT      0x30      // r/w counter 16 bits, LSB first

void
timerinit(void)
{
    // Interrupt 100 times/sec.
    outb(TIMER_MODE, TIMER_SEL0 | TIMER_RATEGEN | TIMER_16BIT);
    outb(IO_TIMER1, TIMER_DIV(100) % 256);
    outb(IO_TIMER1, TIMER_DIV(100) / 256);
    picenable(IRQ_TIMER);
}

```