This assignment should be completed by Wednesday, February 23rd. **Note: there is nothing to hand in for this assignment.** In this homework assignment, you will explore:

- C501 Timers/Counters
- C501 Interrupt System
- Final Project

The assigned reading will be available on the course web site in PDF format.

2. What is the purpose of the TR0 and TR1 bits in the TCON register?
3. Given an 11.0592 MHz CPU clock, what is the maximum time you can measure using a single continuously running C501 8-bit timer without the timer rolling over from FFh to 00h?
5. What is the difference between a level triggered interrupt and an edge triggered interrupt?
6. Suppose the IE register contains 85h, the TCON register contains 05h, and the IP register contains 01h.
   (a) What happens if pin INT0* goes low, followed 12 microseconds later by pin INT1*?
   (b) What happens if pin INT1* goes low, followed 12 microseconds later by pin INT0*?
7. Some processors have an NMI (non-maskable interrupt) pin. Why is this type of interrupt important in embedded systems? Note that the 8051 does not have an NMI.
8. Brainstorm some ideas for your final project. Give some thought about whether you want to work alone or on a team. Each person in the class will need to discuss their initial ideas for a minute or two during class on 3/02, in preparation for the final project preliminary design review (PDR) on 3/16.

Now is a good time to start ordering long lead-time parts which you will need for your final project work next month. Don't wait, as it can sometimes take several weeks to get parts. Be sure to order through-hole parts, unless surface mount components are all that are available. If using surface mount parts, have a plan for building your own PCB or obtaining small adapter boards that convert surface mount components into through hole components.

**Do not use surface mount parts which are designed exclusively for solder reflow ovens - packages such as LGAs have all their connections underneath the chip, and you cannot solder underneath the package with a soldering iron.**

When choosing ICs for your final project, make sure you choose chips that have good data sheets and application notes. Poor documentation can result in project failure.