

**Objective:**

Become familiar with how to trouble-shoot and debug C language programs on the Arduino Mega SBC using the Arduino development tools and library functions.

**Procedure:**

1. You should have installed the Arduino development tools for Lab04. Complete all of the steps in the PROBLEMS section of Chapter Three - 3.1 through 3.4 using both the standard Arduino library Blinky program and the ANSI C version of Blinky provided in Chapter 3.

2. Follow the guide in Chapter Four of the textbook *"Introduction to Embedded Systems: Using ANSI C and the Arduino Development Environment"* to implement the Arduino serial I/O library functions.

**NOTE:** You should download and install the "putty" serial terminal program on your laptop or lab PC if it is not already installed. The Arduino serial terminal program is difficult to use.

3. Chapter Four uses the Arduino Duemilanove SBC as an example. You will need to make slight changes for the Arduino Mega SBC.

NOTE: The Arduino Duemilanove uses the ATMEL Atmega328P microcontroller while the Arduino Mega uses the ATMEL ATmega2560 microcontroller. The 2560 is upwords compatible with the 328P processor. That is, it has the same special function registers for control of the timers, LEDs, serial ports, etc. The 2560, however, has more devices than the 328P. For example, the 328P has one serial port while the 2560 has four. We will discuss some of the differences in class.

4. After installing the Arduino serial I/O functions, complete all of the steps in the PROBLEMS section of Chapter Four - 4.1 through 4.7.

5. Details for the ATMEL microcontrollers are available in the ATMEL manuals which have been posted on webCampus in the Arduino References folder.

**NOTE: ALL programs written for this course need to be documented in a complete manner which will make sense to you if you need to go back and review the program a year or two from now. You need to include your NAME and a revision number on ALL programs as well.**