



Lab # 7

*Collaboration is encouraged. You may discuss the problems with other students, but you must **write up your own solutions**, including all your C programs, by yourself. If you submit identical or nearly identical solutions to someone else, this will be considered a violation of the code on academic honesty.*

In this lab, you'll get acquainted with the Arduino micro controller. It will be a gentle introduction. You'll need both the Arduino kit as well as the "Arduino Projects Book" as a reference. I won't attempt to give a tutorial here, since the book does it so well.

1. Complete Project 01 in the "Arduino Projects Book."
2. Complete Project 11 in the "Arduino Projects Book."
3. Complete the following project. Assemble a circuit with four buttons.
 - (a) When the first button is pressed, it should read a three-digit binary number according to what combination of the other buttons are pressed (down is 1, up is 0). Call this number n . Have it display the number in decimal on the LCD.
 - (b) When the first button is released and pressed again, it should read another three-digit binary number. Call this number k . Have it display the number in decimal on the LCD.
 - (c) Have it display the number of combinations of k out of n objects,

$$\binom{n}{k} = \frac{n!}{k!(n-k)!}$$