Introduction to Arduino
(Getting started)

Introduction

An Arduino is a microprocessor that can be easily programmed to take a variety of different inputs (sensors, switches) and then control a variety of different outputs (lights, motors, displays, etc). The Arduino programming language is open source off the internet and there are vast resources for it.

Arduino Uno/Boarduino/Nano?

There are different versions of Arduino boards that can be used, which each one having its advantages and disadvantages. The three versions that we have in this class are the Arduino Uno, Boarduino and the Arduino Nano. To get you started you will be using the **ARDUINO NANO**.

The ARDUINO NANO is a small circuit board that easily plugs into a breadboard so that you can quickly breadboard a circuit and then program it to do what you want. The ARDUINO NANO has a lot of different features that will be explored, but to keep it simple for now, you will only use certain inputs and outputs.

On the right, you will see all three type of boards (UNO, Boarduino, NANO). The Digital pins (RX-D0, TX-D1, D2-D13) can be configured to be either Digital Inputs (read a high or low voltage condition) or Outputs (produces a high or low voltage). The Analog pins (A0-A5) can read an input from 0 volts to 5 volts or can also be configured as Outputs. The Digital pins and Analog pin are the ONLY pins we will be dealing with in the labs for now.

The diagram below shows the different pins. When breadboarding, the 5V Pin (VCC pin on Boarduino) is the 5 volts out that connects to the "Red" Positive Rail on the breadboard and the GND pin (negative) connects to the "Blue" Negative Rail on your breadboard as shown below.
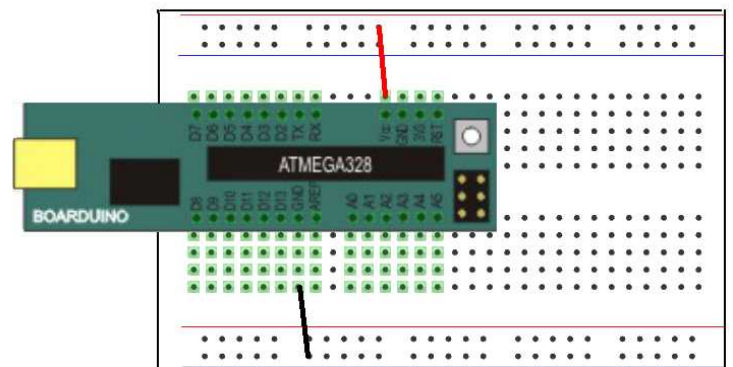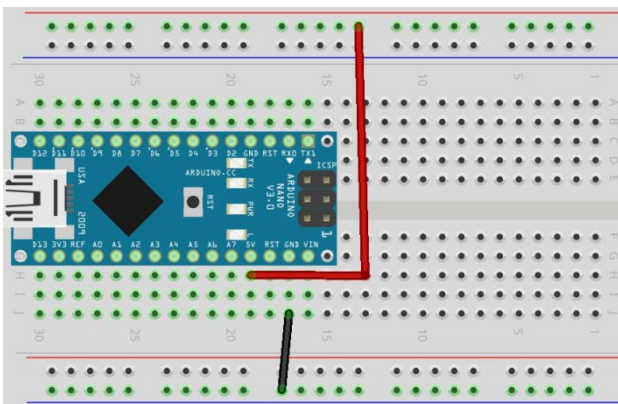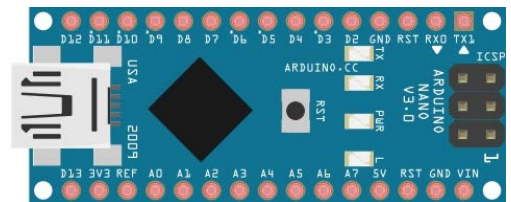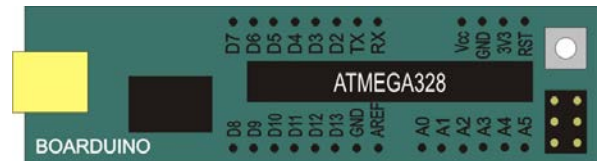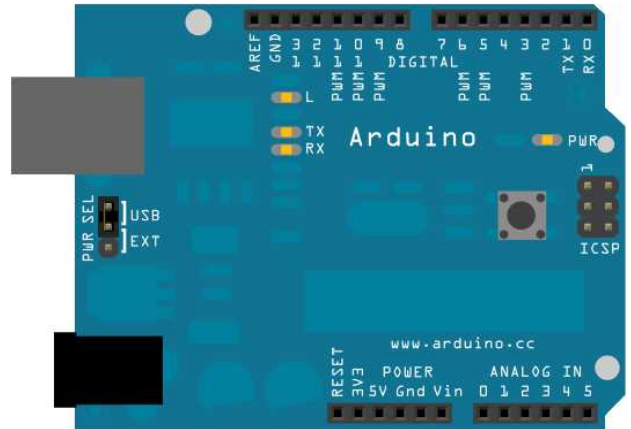
Arduino Programming Software and Resources

The Arduino programming environment software in freeware and is installed on the classroom computers. The software and website for Arduino are very well laid out for learning. For this reason, some of the labs you will complete will require you to go to the internet and use the "Learning" resources off the Arduino website (https://www.arduino.cc/en/Tutorial/BuiltInExamples) in conjunction with the software. All example programming code off the "Learning" page on the Arduino website is also conveniently located in the programming software under the "File" drop-down menu, then "Examples".