

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 and there are vast resources for it. [Learn more here.](#)

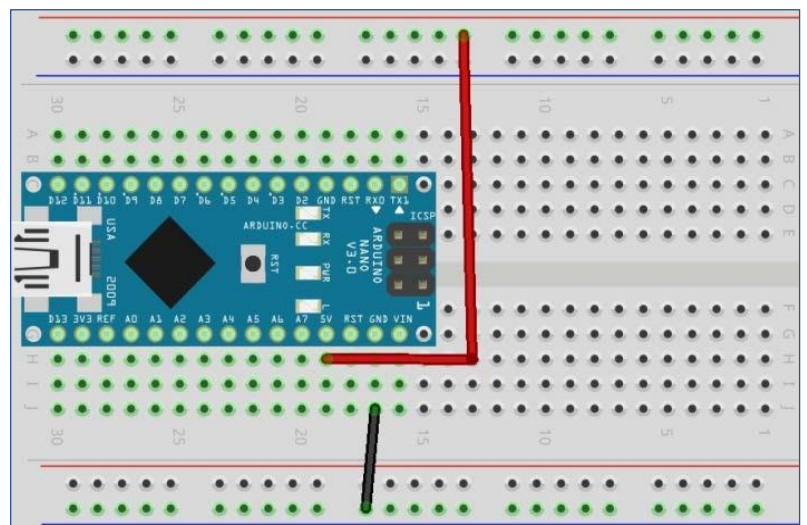
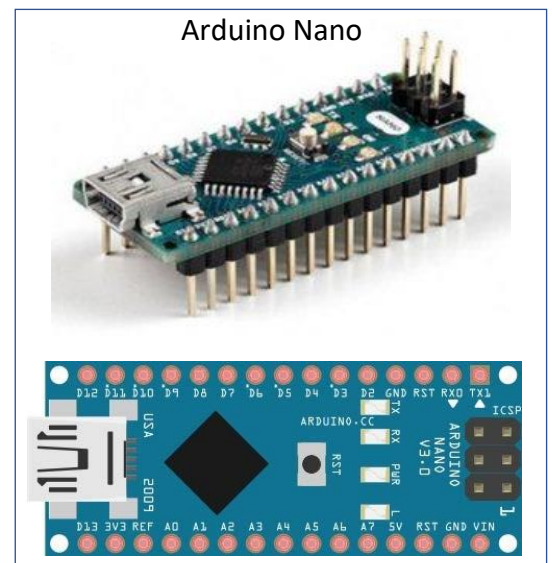
Arduino Boards

There are MANY different versions of Arduino microcontroller boards that can be used for projects, each one having its own advantages and disadvantages. We will be working with a board called the '**Arduino Nano**'. To see the many other boards that are available [follow this link](#).

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.

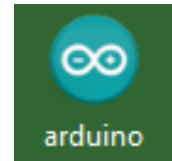
The **Digital pins** (RX-D0, TX-D1, D2-D13) can be configured to be either Digital Inputs (read a high or low voltage condition) or Outputs (produces a high or low voltage). The **Analog pins** (A0-A5) can read an input from 0 volts to 5 volts or can also be configured as Outputs. The Digital pins and Analog pins are the **ONLY** pins we will be dealing with in the labs for now.

When breadboarding, the pin labelled '5V' is the 5 volts output 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.



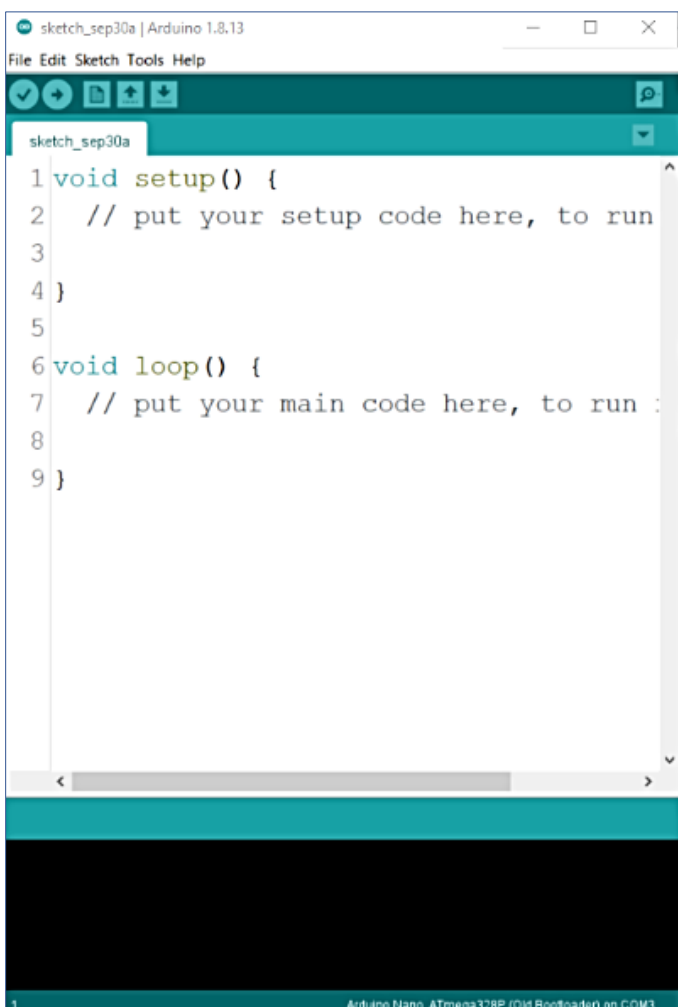
Arduino Programming Software and Resources

The Arduino programming environment software is freeware and is installed on the classroom computers. You can search for the program or look for the shortcut on your computer's desktop.

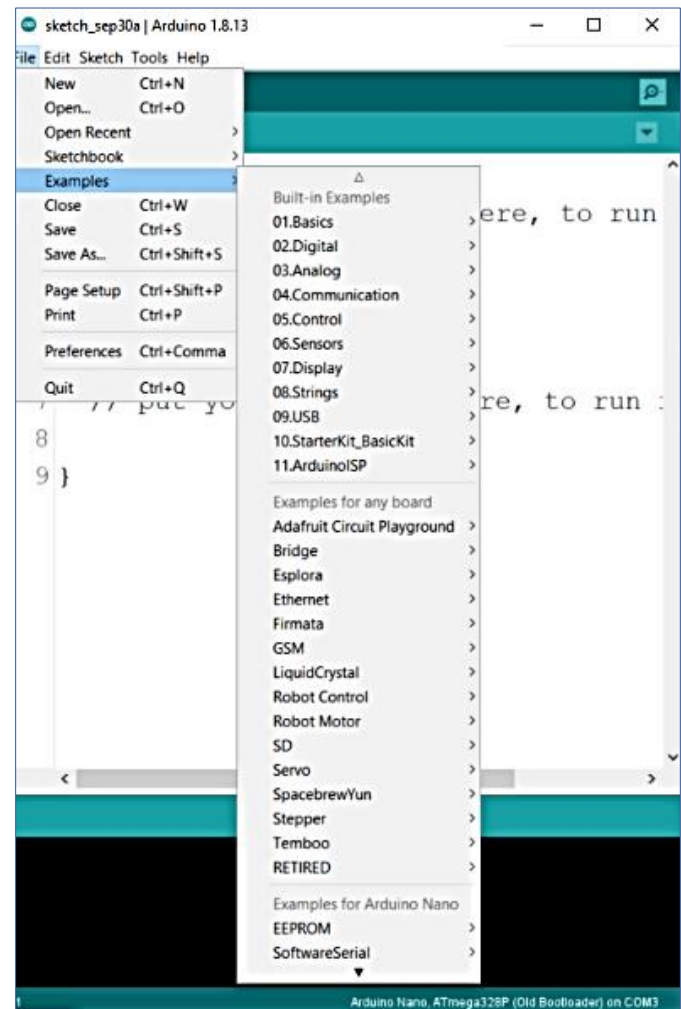


Both the software and website for Arduino are very well laid out for learning. Some of the labs you will complete will require you to go to Arduino's official website and use the "Learning" resources found there (<https://www.arduino.cc/en/Tutorial/BuiltInExamples>), in conjunction with the programming software.

Conveniently, all example programming code found on Arduino's "Learning" pages is also conveniently located in the programming software under the "File" drop-down menu, under "Examples".



Arduino Programming Environment



'Examples' location

Community

Lastly, it is worth mentioning that the Arduino community is massive. If you are working on a project, planning a project, or just curious, it is worth looking into. The 'official' community can be accessed under the 'Community' tab on the official community website (<https://www.arduino.cc/>). Many other unofficial communities exist as well. Project and project ideas abound, as do the resources to help you get these done!