



CODE in
the **SCHOOLS**

ARDUINO



Materials Needed to Complete the Projects in this Chapter



Blinking LED

- Arduino Board
- Breadboard
- 330 Ohm Resistor
- 3 Short Jumper Wires
- LED
- USB Cable
- Computer with Arduino Software Installed
- Goggles

RGB LED

- Arduino Board
- RGB LED
- 3 220 Ohm Resistors
- Jumper Wires
- USB Cable
- Computer with Arduino Software Installed
- Goggles

Using Buttons

- Arduino Board
- Breadboard
- 330 Ohm Resistor
- Button
- Wires
- LED
- USB Cable
- Computer with Arduino Software Installed
- Goggles

Arduino Traffic Light

- Arduino Board
- Breadboard
- 1 Red LED
- 1 Yellow LED
- 1 Green LED
- 3 100 Ohm Resistors
- 4 Jumper Wires
- USB Cable
- Computer with Arduino Software Installed
- Goggles

DC Motor and Fan

- Arduino Board
- Breadboard
- DC Motor and Fan
- Transistor
- Diode
- 2.2k Ohm Resistor
- Jumper Wires
- USB Cable
- Computer with Arduino Software Installed
- Goggles

Introduction to Arduino

Safety and Procedures:

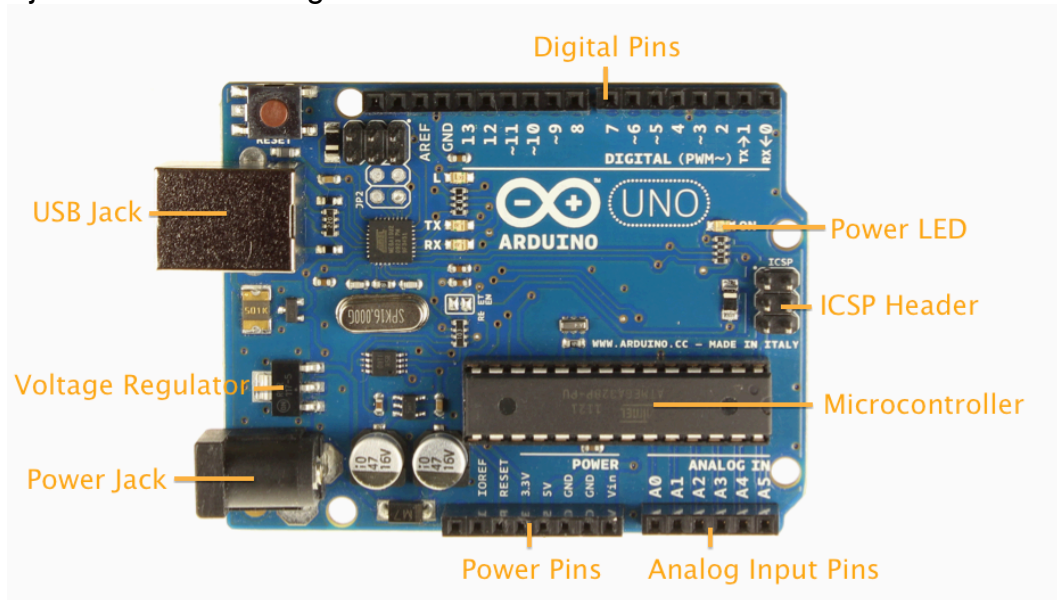
Throughout this chapter, there are many projects that can be used to teach students about programmable circuits and allow students to create programmable circuits of their own. Before beginning any of the projects in this chapter, please teach students:

- 5) That they should ALWAYS wear safety goggles while building circuits and handling electrical components.
- 6) The proper way to use and handle wire cutters and other electrical equipment. These are useful tools but can be harmful if used incorrectly.
- 7) The danger of electric shocks and how to avoid shocks while using batteries and other electrical components.
- 8) What creates a short circuit and what can happen if a short circuit is connected to a power source.

Reminding students of a few basic safety procedures before beginning any of the projects in this chapter can prevent accidents and provide more fun for everyone.

The Arduino Board:

The Arduino is a microcontroller that allows you to create projects that interact with the outside world. A microcontroller contains memory, a mini processor and has a method of programming. In this chapter, all projects are made using the Arduino Uno board as shown below:



Downloading the Arduino Software:

In order to program your Arduino, you will have to download the Arduino software. The Arduino software is open-sourced and there are versions available for Windows, Mac and Linux. At the time that this guide was written, the most current version of the software is Arduino 1.0.6, with an Arduino 1.5.8 in Beta testing. Make sure to download the software onto a computer before beginning any of the projects in this guide. You can find your free download at: <http://arduino.cc/en/main/software> .