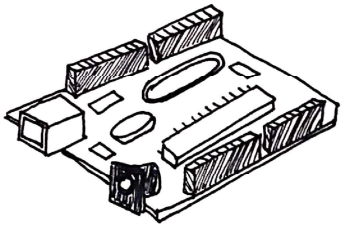
INTRODUCTION TO A

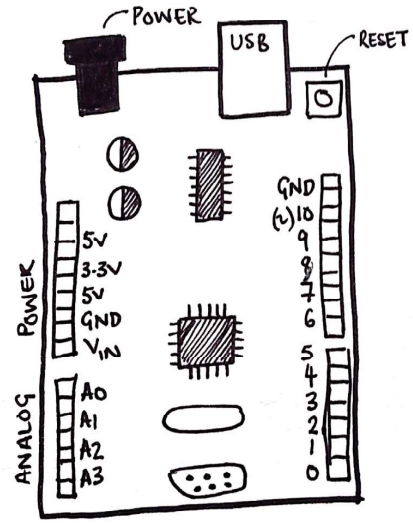
WHAT IS AN ARDUINO?



Arduino is an open-source hardware and software. The hardware is a board with a microcontroller, as shown in the illustration. It can take an input (such as a signal from a sensor) and create an output (such as make a motor turn or an LED flash). The board works with Arduino IDE software, which allows you to create the code that controls your board, the inputs it reads and the outputs it creates.

HOW TO USE AN ARDUINO

When looking at an Arduino board, there are many different ports. The illustration shows a top down image of the board. The ports are where components can be connected such as sensors or actuators, usually using jumper cables and a breadboard.
Each port has a label next to it. On the left there are ports related to power, including ground (GND) and different voltages (5V, 3.3V, VIN). Under these there are the analog ports (all starting with A; A0, A1..) These are used for components which give an analog signal such as a potentiometer. On the right, there are numbered ports which can be used for other components such as an LED. In addition, the numbered ports with a (~) mean that they can be used with Pulse Width Modulation components, such as a servo motor.
It is with these numbers that you can define which port your component is connected to in your code.



SETUP ARDUINO ON YOUR COMPUTER

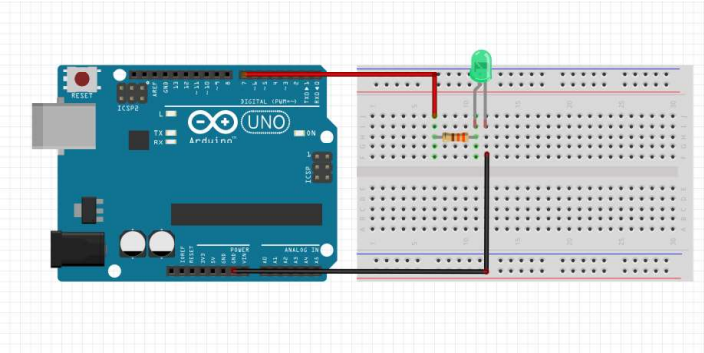
To be able to use the Arduino Board, download the free Arduino IDE software from the Arduino website. This provides a programme where you can write the code to be uploaded onto the board. When using the Arduino IDE, make sure you have all the necessary libraries downloaded for the code you are trying to run, and that it is connected to the correct COM port to which your Arduino is connected. For more detailed information on this, check out this instructables:

WWW.INSTRUCTABLES.COM/INTRO-TO-ARDUINO

ARDUINO

ARDUINO ACTIVITIES FOR BEGINNERS

Here are a few great starting activities for Arduino Beginners. With Arduino, it's best to start very simple and to really understand what's going on. This way, it is easier to build up to more complicated circuits. These are three activities we always start with to give a good introduction to how to make a circuit and code work. Make sure to look through the code before running it, to be able to understand what's happening. Check out the Coding Dictionary on page 72 for additional information.



FLASHING LED

The best place to start: run an example code already provided by Arduino, which can make an LED flash.

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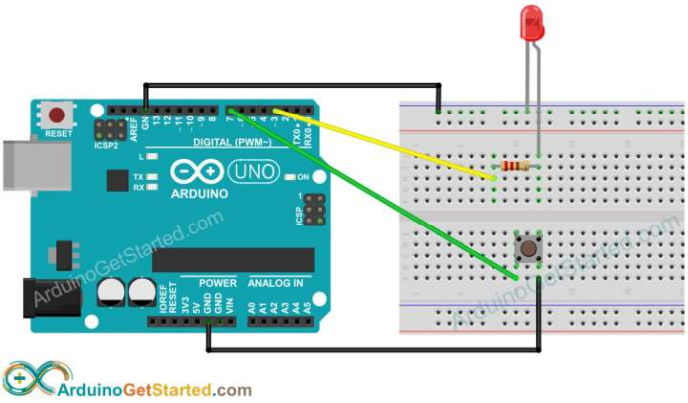
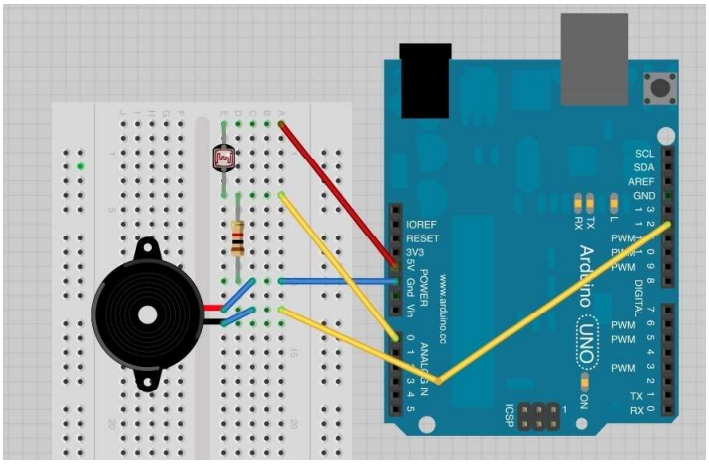


BUTTON CONTROLLED LED

Now include a new component - a button. Write the code so that the LED lights up when the button is pressed.

HTTPS://ARDUINOGETSTARTED.COM/TUTORIALS/ARDUINO-



THEREMIN

Now change your input and outputs. Include a photosensor for the input and a buzzer to create sound as the output. The code causes the sound to vary with different amounts of light.

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