

# Microcontroller Workshop

## Getting Started

### Driver and Arduino IDE Instructions

1. Download the right USB serial driver (CH430) for this microcontroller.
  - o Windows: <http://tinyurl.com/zgm2kvg>
  - o Mac: <http://tinyurl.com/z279a2d>
  - o Linux: <http://tinyurl.com/jj69jnu>
2. Download and install the Arduino IDE.
  - o Link: <https://www.arduino.cc/en/Main/Software>
3. Download and unzip the "blink" sketch: <http://tinyurl.com/gw6w9cz>
4. Construct (using the separate breadboard instructions) and plug in the breadboard into a USB port.
5. Open the Arduino IDE
6. Select File->Open then select the Blink sample you unzipped in step #3
7. Select Tools->Board->Arduino Nano
8. Select Tools->Port, then select the port the Nano uses. Under Windows, you'll probably only have one port, so just select that. (Step may be optional.)
9. Select Sketch->Upload. Wait a few seconds, hopefully if everything was done right your LED will blink!

## Resources

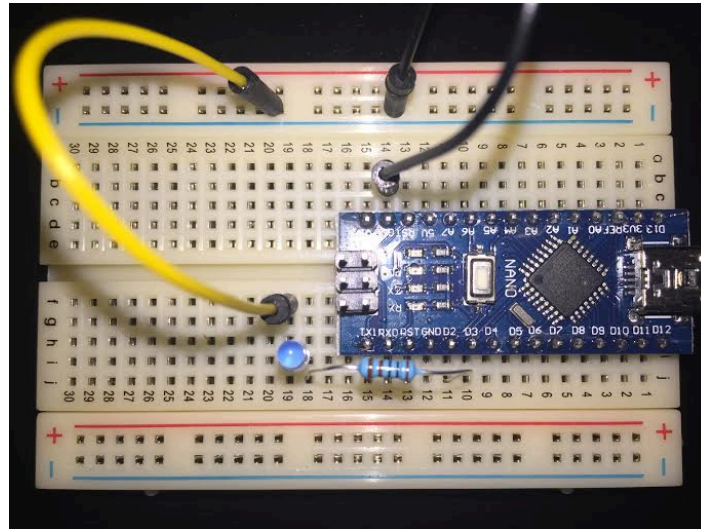
### Learning Resources

1. <http://www.ladyada.net/learn/arduino/>
2. <https://www.arduino.cc/en/Tutorial/HomePage>
3. <https://learn.adafruit.com/category/learn-arduino>

### Buy your own parts! Some suggestions:

1. Nano: <http://amzn.to/1rmvDGs>
2. Starter Electronics Kit: <http://amzn.to/20YY6xG>
4. Official Arduino Starter Kit: <http://amzn.to/22P57k9>

## Building A Basic Circuit



1. The white board with holes is the breadboard
2. The dark blue thing on top is the Arduino Nano clone. Make sure it's oriented to the left.
3. From the bag, grab two short wires (try for different colors)
4. From the bag, grab the colored LED. Note one lead is longer than the other.
5. Grab one of the 1K resistors from the bag. Look closely, you want the one with the colored bands "brown black black brown brown". (Not the one with the red band! That's 10K.)
6. Connect blue USB wire into the Nano. The other end goes into your computer's USB port, don't connect it yet though!
7. Carefully plug one of your wires into column 14 bottom (labeled GND on the Nano). Any of the holes are OK above the #14 (but on the bottom relative to the Nano). In the picture, the wire is black, but you don't need to use a black wire.
8. Plug the other end of this wire into somewhere on the blue "power rail" near the very bottom (below #14).
9. Plug in one side of the resistor into column 11 on the top. Plug the other end into column 18 on the top. The resistor should go left to right.
10. Now plug in the LED, with the long lead facing left. Plug the long lead into column 18 top, the other into column 19 top.
11. Now grab one more wire from the bag. Plug the wire into column 19 top, then plug the other end into the horizontal blue ground rail on the bottom of the board.
12. Double check your breadboard against the picture. Once you think it looks OK, you can plug it into your computer's USB port.

### Other ideas:

- Try hooking up multiple LEDs!
- Try adding a button that turns an LED on and off.
- Try making your code do fancy things! How about a game using LEDs and buttons? What about a binary counter (using eight LEDs and a button)? Get creative!