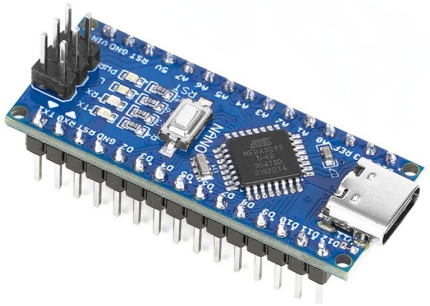
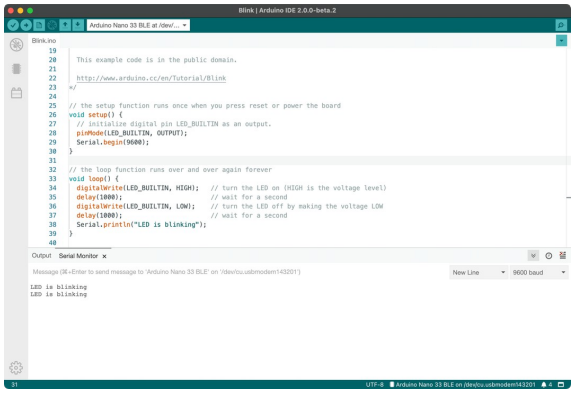
Lab 1: Introduction to Arduino





Lab goals

- Download and install Arduino IDE
- Copy and paste a basic program into Arduino IDE
- Learn to program your development board

Required hardware/software

- Arduino Nano (clone) development board
- USB cable
- Laptop running Windows 10 or Windows 11
- Arduino IDE

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Steps

1. Download and install Arduino IDE (v2.3.7) from the following link:
https://downloads.arduino.cc/arduino-ide/arduino-ide_latest_Windows_64bit.exe

2. Open the newly installed Arduino IDE.

3. Verify that ***Arduino AVR Boards by Arduino*** **(v1.8.6)** is installed via Boards Manager.
(*Tools > Board … > Board Manager*)

4. Select ***Arduino Nano*** board.
(*Tools > Board … > Arduino AVR Boards > Arduino Nano*)

5. Copy and paste the code found at the following URL into the Arduino IDE's text editor window (this is the main window in the Arduino IDE):
https://raw.githubusercontent.com/dandandrea/intro-microcontrollers-lab-001/refs/heads/main/intro-microcontrollers-lab-001.ino

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Steps (continued)

6. Save the “Arduino Sketch” (program) and name it ***intro-microcontrollers-lab-001***
(File > Save)

7. Connect your development board to your laptop via the included USB cable.

8. Select the COM port for your Arduino Nano board.
(Tools > Port)
If more than one choice of port available then use Windows Device Manager to identify COM port of device named “USB-Serial CH340”

9. Program your Arduino Nano board with the program displayed in Arduino IDE.
(Sketch > Upload)

10. Verify that the LED on your Arduino Nano board is now blinking (not to be confused with the always-on power LED).

11. Change values of LED_ON_DURATION_MILLISECONDS and LED_OFF_DURATION_MILLISECONDS, program your board, and observe the effects.