I Want to Arduino!

Arduino for your Layout - Part 2

By Chris Heili

An absolute beginners guide to getting started with Arduino.
Where do I start? What do I need? Where do I buy it?
Get the answers to these questions as I will walk you through the steps
needed to begin your Arduino experience.

Now you're getting Technical

In the last clinic we kept it basic, but now we're going to get more technical as we learn how to get started with Arduino.

We'll approach this from a Day 1 beginners standpoint.

I promise I won't get too technical.

Remember....*I'm not an electrical engineer* ☺

Three Main Ingredients

1. An Arduino

2. USB A to USB B Cable

3. Arduino IDE Software installed on your PC.

1st You Need To Buy an Arduino

- Captain Obvious

I "Heili" recommend getting a starter kit. Otherwise you'll have nothing to experiment with and your Arduino will become a paperweight.

This is the kit I started with.

I bought it on eBay for about $35 last year.

Important items to look for: Breadboard, Jumper Wires, Servo, Stepper Motor, Stepper Motor Control Board, Assortment of LEDs and Resistors, Push Button Switches, USB Cable and of course…..an UNO R3!

Cheap Chinese Sources: eBay, Amazon, Banggood, AliExpress, Alibaba

Quality US Sources: Arduino, Adafruit, Sparkfun and more.

Infrared Phototransistor
Ball Switch
Infrared Sender
Infrared Receiver
SS8050 Transistor
5516 LDR Photo Resistor
5mm RGB LED
5X Color Switch
10X 3mm LED (Green)
10X 3mm LED (Red)
10X 3mm LED (Yellow)
1k Rotary Potentiometer
Infrared Remote
Arduino Protoshield
Uno R3
Mini Bread Board for Protoshield
10k Rotary Potentiometer
100k Rotary Potentiometer
USB Cable for Uno R3 Board
Pin Header for Uno R3
Sound Sensor
300 ohm Resistors
CPU Speed @ 2454
CPU Loading @ 0%
Stepper Motor
Stepper Motor Control
Arduino Display
1 Channel Relay
1K ohm Resistors
Servo Motor
10 ohm Resistors
3X Dupont Cables
Servo Motor Horns
9V Batter Holder
40 Pin Header
Segment Digital Tube
Joy Stick for Arduino
74HC595 IC
RTC
Active Buzzer
Passive Buzzer
Distance Sensor
Digital Temp Sensor
L Shape 40 Pin Header
8X8 Dot Matrix Digital Tube
RFID Pin Headers
RFID Keychain Card
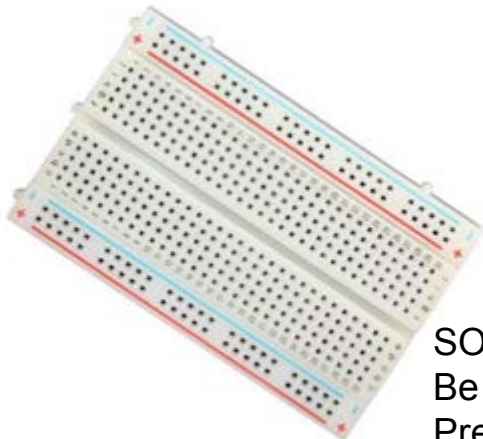RFID Reader and Writer
RFID Standard S50 blank card

USB-A
"Normal" USB

This end plugs into your PC.

USB-B
A more "squarish" end.

This end plugs into your
Arduino UNO.

Other Arduinos may require
something
Different.

SOLDLESS BREAD BOARD
Be sure you buy at least 1.
Preferably more! Was not included in
my kit so I had to buy separately.

2nd USB Cable

You will need this USB cable
to upload your program from
your PC to your Arduino.

This USB cable will also
provide 5 Volts of power to
your Arduino to power most
projects.

Once your program is loaded
you can also unplug from
your PC and power the
Arduino from a different
source.

TIP!

Check out your stash of old
printers. These were
commonly used to connect
your printer to your PC.

Download the Arduino IDE

ARDUINO 1.8.5

The open-source Arduino Software (IDE) makes it easy to write code and upload it to the board. It runs on Windows, Mac OS X, and Linux. The environment is written in Java and based on Processing and other open-source software.
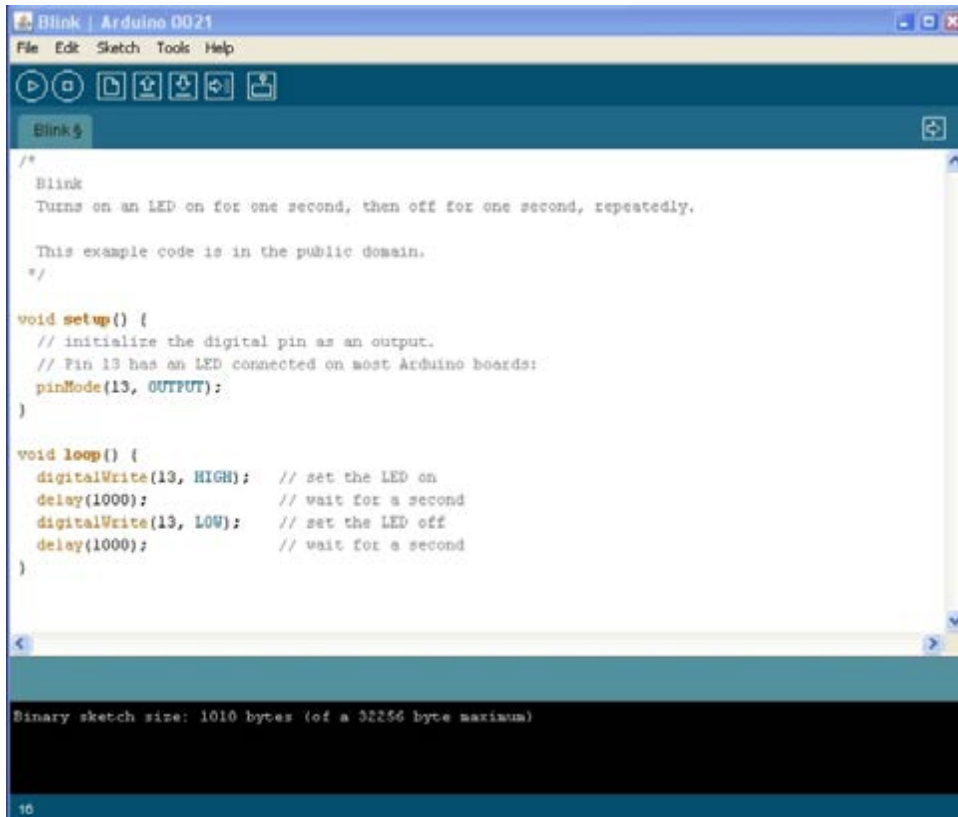This software can be used with any Arduino board. Refer to the Getting Started page for installation instructions.

Windows Installer
Windows ZIP file for non admin install

Windows app Get ⊞

Mac OS X 10.7 Lion or newer

Linux 32 bits
Linux 64 bits
Linux ARM

Release Notes
Source Code
Checksums (sha512)

3ʳᵈ Arduino IDE

The Arduino IDE is the software used to write and upload the code to your Arduino.   These programs are called "Sketches".

You can download this from the Arduino website.

https://www.arduino.cc

Key Words in Arduino Speak

HARWARE

- PIN
  - Digital Pin
  - Analog Pin
- VCC (power)
  - 5V
  - 3.3
- GROUND
- SHIELD

SOFTWARE

- IDE
- SKETCH
- LIBRARY
- CURLY BRACKET
- VOID SETUP
- VOID LOOP

Putting it All Together

Download and Install Arduino IDE

Connect PC and Arduino with USB cable

Open Arduino IDE.

Load "BLINK" sketch from Examples

Set Com Port

Upload Sketch

In a few moments, an LED on the Arduino will blink on and off.

There you go ! You're just loaded and ran your first sketch. Now it's time to start hooking up some hardware and trying out some of the other examples.

USES FOR MODEL RAILROADING

COMMON USES
- Basic Signaling
- Servo Driven Turnouts
- Building Lighting
- Crossing Gates and/or Flashers
- Turntable Drive
- Block Detection
- Speedometer

ADVANCES USES
- DCC Command Station
- DIY Decoders
- Automation
- CTC Signaling
- Animation

THANK YOU!

I sincerely hopes this helps you "head down the rabbit hole" and get started in the wonderful world of Arduino.

If you get stuck or need some advice, shoot me an email. But please have a little patience if I don't respond right away. I usually pretty busy and don't get to my emails as often as I should.

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