These instructions were adapted from <u>Arduino: Installing</u> <u>Standard Firmata</u> which is licensed under <u>Attribution-</u> <u>NonCommercial-ShareAlike 2.5 Generic</u>

#### **Step 1: Download and Install Arduino Application**



# Download the Arduino Software



#### ARDUINO 1.6.4

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 <u>Getting Started</u> page for Installation instructions. Windows Installer Windows ZIP file for non admin install

Mac OS X 10.7 Lion or newer

Linux 32 bits Linux 64 bits

Release Notes Source Code Checksums



Your first step should be to download the Arduino application from <u>http://www.arduino.cc/en/Main/Software</u>. Be sure to choose the latest version and also the correct download for your computer and operating system.

Once the software has downloaded, you can install the application using the method appropriate for your system.

- For Mac OS X you will be downloading a ZIP file. Double-clicking on the ZIP should produce a single "Arduino" application file which you can then copy into your Applications folder.
- For Windows, you should download the .EXE containing a full Windows installer. Double clicking on the .EXE should start the installation.

• For Linux you will download a compressed TAR file. You can use the "tar" command to uncompress and unpack the application.

After installation, start the Arduino application. After the splash screen appears, the application should open up with a default program, called a "sketch", in the text editor. This is usually the "Blink" sketch.



**Step 2: Plug in Your Arduino Board** 

At this point you are ready to plug your Arduino board into your computer. Your board should have a USB cable to attach the board to the computer. Disconnect any wires that may be attached to your Arduino or LilyPad and plug the board into the computer. Depending upon your Arduino, the USB cable will plug directly into the board using a standard, mini, or micro USB plug.



### **Step 3: Choose Your Port and Board**



Once you have your Arduino board plugged into your computer, you need to tell the Arduino application how to find the board and what type of board it is.

First, in the Arduino application, go under the menu item Tools --> Port. There, you should see a list of available USB ports. Hopefully, if you have plugged in your Arduino, one of the ports should have the port number followed by the name of the board. Choose this menu item to select the correct USB port.

If you don't see your board listed under any of the ports, double check that the board is plugged into the computer. If you still don't see the correct port, then follow one of the detailed installation guides:

- For Windows, <u>http://www.arduino.cc/en/guide/windows</u>
- For Mac OS X, <u>http://www.arduino.cc/en/Guide/MacOSX</u>
- For Linux, <a href="http://playground.arduino.cc/Learning/Linux">http://playground.arduino.cc/Learning/Linux</a>

After you have chosen the port, go under the Tools --> Board menu item. Here you will see a list of supported Arduino and LilyPad boards. Choose the menu item that corresponds to your board. If you don't see your board listed, check the detailed instructions that came with your board. If your board came from a third-party manufacturer such as <u>SparkFun</u>, the instructions should tell you which board is "compatible".

## **Step 4: Upload the Standard Firmata Sketch**

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OC	Open	жo			
ve	Sketchbook	- <b>F</b>			
Blink	Examples		01.Basics	•	
1 /*	Close	жw	02.Digital		
2 B	Save	жs	03.Analog	•	
3 T	Save As	<mark></mark>	04.Communication	•	
5 T	Upload	жU	05.Control	•	
6 */	Upload Using Programmer	企業U	06.Sensors	•	
8 11	Base Setue	0 M D	07.Display		
9 //	Page Setup	10 HB	08.Strings		
10 int	Print	æР	09.USB	•	
11 int	speaker = 10;		10.StarterKit	•	
13 // 1	the setup routine runs once when y	ou press r	ArduinoISP		
14 void	setup() {	Dida			
15 // 16 pi	pinMode(led, OUTPUT);		Bridge		
17 pi	nMode(speaker, OUTPUT);		EEPROM		
18 }			Esplora		
19 70 // t	// the loop routine runs over and over again for woid loop() {		Ethernet		
Z1 void			Firmata		AllInputsFirmata
22 di	<pre>gitalWrite(led, HIGH); // turn</pre>	the LED on	GSM		AnalogFirmata
23 de 24 di	aitalWrite(led 10W): // turn	tor a sec	LiquidCrystal	•	EchoString
25 de	lay(1000); // wait	for a sec	Robot Control	•	OldStandardFirmata
26 }			SD	•	ServoFirmata
			Servo	•	SimpleAnalogFirmat
	e	_	SoftwareSerial	>	SimpleDigitalFirmata
			SPI	(	StandardFirmata
			Stepper	Z	and the second second
			TFT	•	A CONTRACTOR OF THE OWNER
			WiFi	•	
			Wire	•	
1		Arduin	IRremote	*	
		- Aller	Robot Motor	*	A CONTRACTOR
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Now we're ready to upload Standard Firmata to the Arduino.

In the Arduino application, open the sketch using File --> Examples --> Firmata --> Standard Firmata. You should see the "C" code appear for the Standard Firmata sketch. You don't need to understand any of the actual code to use Firmata, but if you'd like, feel free to scroll through and examine the code. Now, at the top of the text editor window, click the "Upload" button as shown in the picture above. At the bottom of the text editor window, you should see a small status window. This will report the progress as the code is compiled and then uploaded to the Arduino. While the code is being uploaded, you should see some very small LED lights (the Transmit (TX) and Receive (RX) lights) on your Arduino board blinking as the data is transferred.

When the process is completed, you should see the message "Done Uploading" in the status window at the bottom of the editor. If you see an error message, go on to the next step about "Troubleshooting." Otherwise, skip the next step.

#### **Step 5: Troubleshooting**



C
.ng all
of program storage space. Maximum is 30,720 bytes.
(42%) of dynamic memory, leaving 1,187 bytes for local variables. Maxim
.0: not in sync: resp≞0xf9
pt 2 of 10: not in sync: resp=0x02
pt 3 of 10: not in sync: resp=0x03
pt 4 of 10: not in sync: resp=0xf0
pt 5 of 10: not in sync: resp=0x79
pt 6 of 10: not in sync: resp=0x02
pt 7 of 10: not in sync: resp=0x03
<pre>pt 8 of 10: not in sync: resp=0x53</pre>
pt 9 of 10: not in sync: resp=0x00
npt 10 of 10: not in sync: resp=0x74
Arduino Duemilanove or Diecimila, ATmeg

There are usually two things that can go wrong.

First, if you get the message "Problem uploading to board" (as seen in the first picture above), this usually indicates that you have chosen the wrong USB port. Go back to the Tools --> Port menu item and see if there is a different USB port that you can try. Then click the "Upload" button.

Next, you may get a series of "not in sync" error messages (as seen in the second picture). This is almost always because you have chosen the wrong Arduino board. Go back to the Tools --> Board menu item and verify that your Arduino board matches the chosen menu item. Then click the "Upload" button again.

If you are still having problems, we recommend going to the Arduino websites mentioned in step 3. Instead of uploading the "Standard Firmata" sketch, you might try uploading the "Blink" sketch, which is much quicker to upload. Once you get the "Blink" sketch to upload, come back and try to upload "Standard Firmata" again