



SpinWheel Initial Setup

We're so excited that you are ready to use your SpinWheel! This page begins the process of setting you up to create new and exciting programs on your SpinWheel! If you haven't already done so, please complete steps found in the Quick Start Page that came with your device.

Setting Up the Arduino Software

Much of the joy of the SpinWheel comes from your ability to change it and make it do whatever you wish! The rest of the guide will walk you through adding a new animation to your SpinWheel. Do not worry if you find this part challenging, learning new things can be confusing at first. If you get stuck, check out the troubleshooting guide and don't be afraid to experiment. While feeling confused is normal, it will get easier as you go!

In order to write new animations for the SpinWheel, you will need a way to reprogram the computer on the SpinWheel. We use the Arduino programming language to communicate with the SpinWheel.

1. Start by installing the Arduino software on your computer, which you can download for free from arduino.cc/en/Main/Software#download. For step by step help, Arduino has provided instructions for each operating system at arduino.cc/en/Guide.

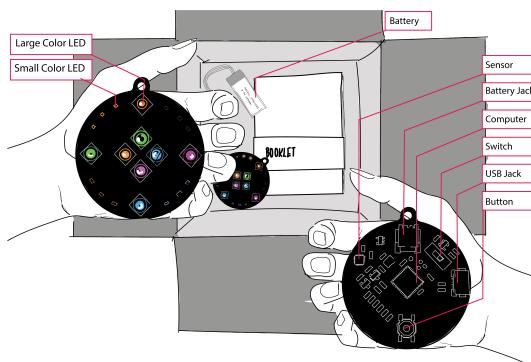
Once the software is installed, we have to configure it to communicate with the SpinWheel.

2. Plug your SpinWheel into your computer with a micro USB cable and flip the switch to the position labeled "USB".

3. Open the Arduino software.

4. Open the **Tools** menu and go to **Port**. You will see a list of serial ports on your computer; select the port that corresponds to the SpinWheel.

If there are multiple ports and you are unsure which one to use, simply unplug the SpinWheel and see which serial port disappears when you do so. This port corresponds to your SpinWheel's serial port. If you do not see a port appear/disappear, you may need to try a different micro USB cable. We have more tips about this in the troubleshooting guide.



Use **Tools** → **Port** and **Tools** → **Board** to pick the port corresponding to the SpinWheel and the "Leonardo" board type.

5. Go back to the Tools menu and select **Tools** → **Board**. Select Arduino Leonardo as the board (a.k.a. processor), so that the software knows which "dialect" to use to talk to the SpinWheel. (Computer languages have dialects just like human languages!)

Properly selecting the board and port are essential for the Arduino software to communicate with the SpinWheel. If you are unable to upload code to the SpinWheel in the next section, double check that the switch is set to "USB" and that you have the correct board and port selected.

Installing the SpinWheel libraries

1. To get the first set of example programs you can run on the SpinWheel, download our SpinWearables Arduino Library using **Sketch** → **Include Library** → **Manage Libraries...**
2. In the search bar of the Library Manager, search for **SpinWearables** and then click **Install**.
3. You will be automatically prompted to install two other required libraries (NeoPixel for controlling the LEDs and ICM 20948 for reading the motion sensor).



Installing Arduino libraries

You will need to install both of these to use the SpinWheel.

Running a program on the SpinWheel

To test that your SpinWheel is working properly, you can install a new program, or sketch, from the example files to animate your SpinWheel.

1. Choose a file to install by opening **File** → **Examples** → **SpinWearables** and picking one of the examples. For instance, pick **BlinkingFirmware**. This will open a new window with the code.
2. Upload the code to your SpinWheel by pressing the upload button (the arrow at the top).



Upload programs to your SpinWheel using the **Upload** button (highlighted in white).

Now your SpinWheel will have the new colorful blinking pattern (from **BlinkingFirmware**) you just uploaded. If you get an error here, then check out the troubleshooting guide for help on some common problems.

Feel free to open any of the other SpinWheel sketches and upload them onto the device. Do not worry about understanding what the code does, you

will learn more about this language in future lessons. We encourage you to experiment with these examples! If you want to save any changes, you will be prompted to save the sketch in a new location (can be anywhere on your computer). The original file will always be available to open again.

Uploading a new sketch to your SpinWheel will overwrite the preloaded sketch that came on it. If you want your SpinWheel to have the sketch that it came with, simply open the **SpinWheelStockFirmware** example and upload it.

In future SpinWheel activities, you will be writing new sketches to animate the SpinWheel. To transfer a sketch from your computer to your SpinWheel, simply connect your SpinWheel to your computer, change the switch to "USB", open the code of your new sketch in the Arduino software and press the upload button.

Congratulations!

You are now ready to continue with the rest of the SpinWheel activities!

This SpinWheel Field Guide contains some hands-on adventures and reference material. This material is found in expanded versions online, along with many more activities for you to enjoy. We highly recommend that you make use of both. In addition, the online version contains virtual SpinWheels that allow you to test and experiment with your code and see what the result might look like before uploading to your real SpinWheel! Check them out in the next activity, "Basic Structure of a Program"

