

Rabot™ Programming Guide

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Step 1. Install Arduino Programming Environment

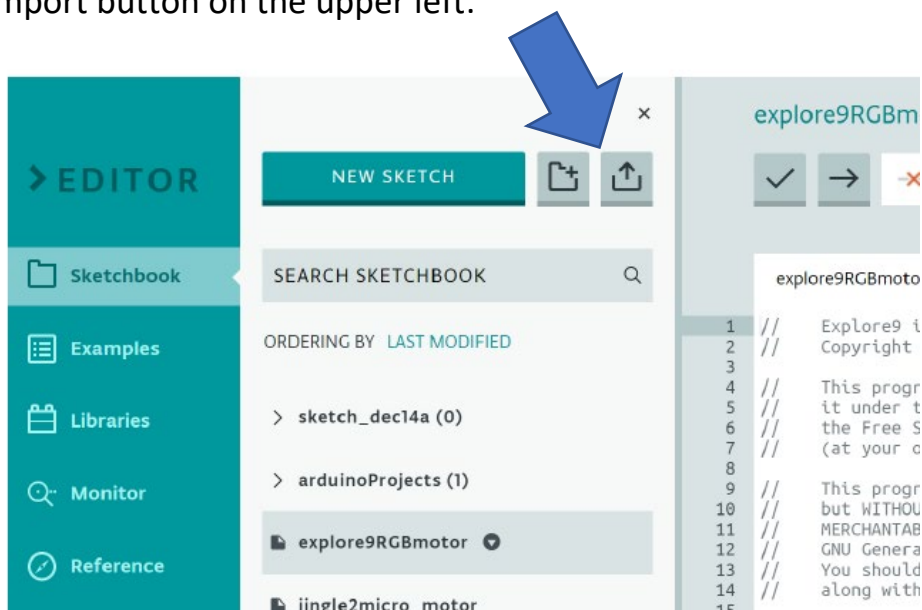
If you're already set up for programming Arduinos, skip to Step 2. If you're new to programming Arduinos, set up your computer as described in <https://www.arduino.cc/en/Guide> . Integrated Development Environments (IDEs) are available online, or can be downloaded and installed on your computer. The IDEs run on a variety of platforms, including Windows, Mac, Linux, and Chromebook.

Step 2. Download the latest version of Explore

Download the latest version of the Explore program for your Rabot from <https://www.rabotify.com/example-arduino-code> or [here](#) (the last link may require logging in on a free Dropbox account). This will be a compressed zip file of the form exploreX.zip. (On the Arduino, programs are called “sketches.”)

Step 3. Import to the Arduino IDE

If you are using the online IDE, import the zip file (do not unzip) by clicking the import button on the upper left:

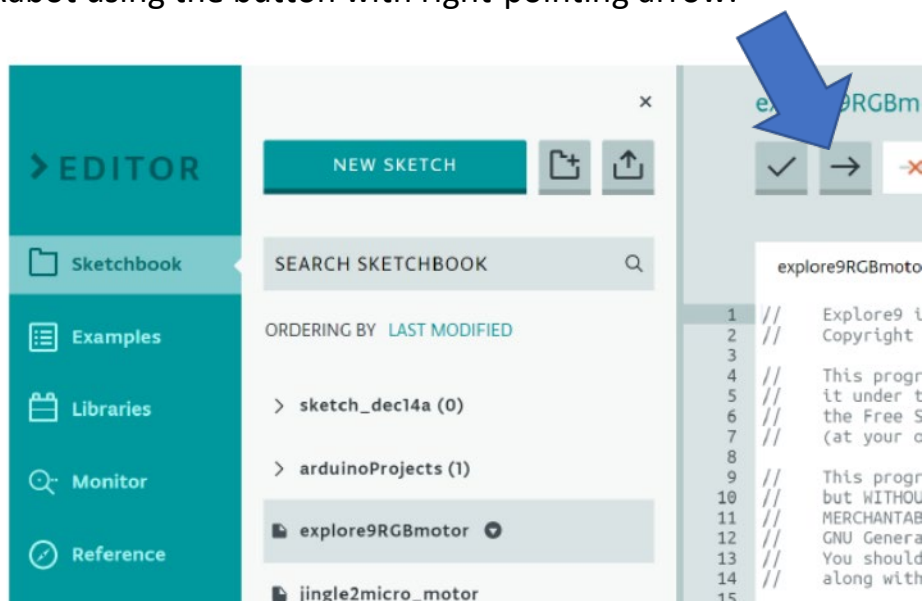


Follow the instructions on the windows to locate and select the exploreX.zip file. The Explore sketch will now be displayed on the right portion of the window.

If you are using the IDE on your computer, you will need to first extract the compressed zip file. On a PC, you can do this by right-clicking on the file name and selecting “Extract all.” From the IDE, click the “file” pull-down menu on the upper left, and select “open...” In the window that opens, navigate to the extracted folder and select the file with the suffix “ino”, for example, exploreX.ino. and click “open”. This should open the main sketch on the right portion of the window.

Step 4. Connect your Rabot and upload the sketch

Connect the supplied USB cable from your computer to the USB connector on the rear side of the Rabot shield. Make sure the Rabot is placed on the programming stand so it will not roll away when the program starts to execute! Upload to your Rabot using the button with right-pointing arrow:



The LEDs on the Arduino should blink, and when the upload is complete the Rabot will start running the program!

Step 5. Adjust the Offsets

If your Rabot does not exactly face forward, or if it pulls to the right or left instead of going straight, you may need to adjust the offsets:

```
40 #define M1 A1 // motor bridge input 1A (right motor)
41
42 // Adjust these two offsets as needed to make the robot look forward and go straight
43
44 int azbias = -12; // offset in degrees for azimuth servo. Negative values offset in the CW direction (viewed from above)
45 int offset = -25; // motor speed offset. More negative makes it turn to the right
46
```

Change these offsets in the direction needed correct the alignment of the face or to straighten the path, and upload again to the Rabot. You may need to iterate a time or two to get the alignment just where you want it.

Step 6. Create your own Sketch!

The Explore sketch is commented to help you understand each section. The sketch also has examples of how to control the wheel motors, the head servos, the ultrasonic range sensor, the beeper, and the RGB LED. You can use these examples to create your own sketch, limited only by your imagination!