Megamark Processing 3.0 Setup Guide

Processing is a flexible software sketchbook and a language for learning how to code within the context of the visual arts. There are tens of thousands of students, artists, designers, researchers, and hobbyists who use Processing for learning and prototyping.

At its core, the Choitek Megamark has an Arduino Mega 2560 microcontroller, which can be controlled by issuing serial commands via USB cable connected to a Mac, Windows, or Linux laptop computer running Processing scripts. This tutorial will show you how to set up core Processing software to work with the Choitek Megamark Robot Platform.

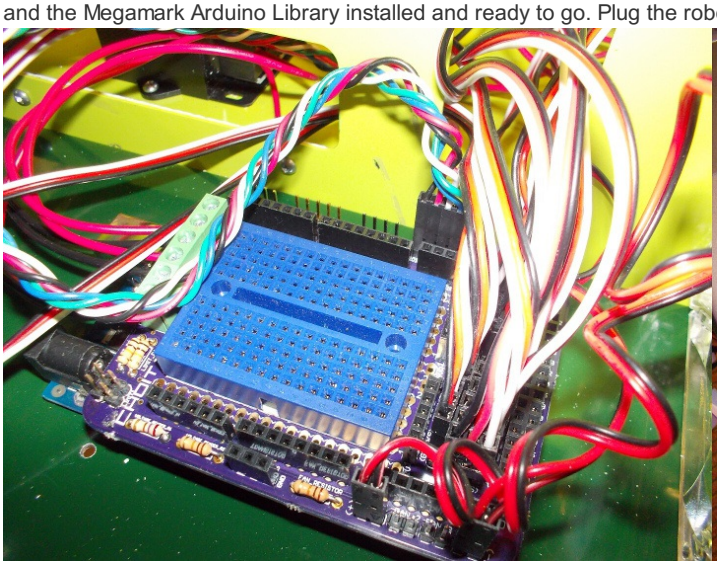
Downloading and Installing Processing 3.0

Step 1: First, install Processing 3.0 from the official Processing website for your chosen operation system.

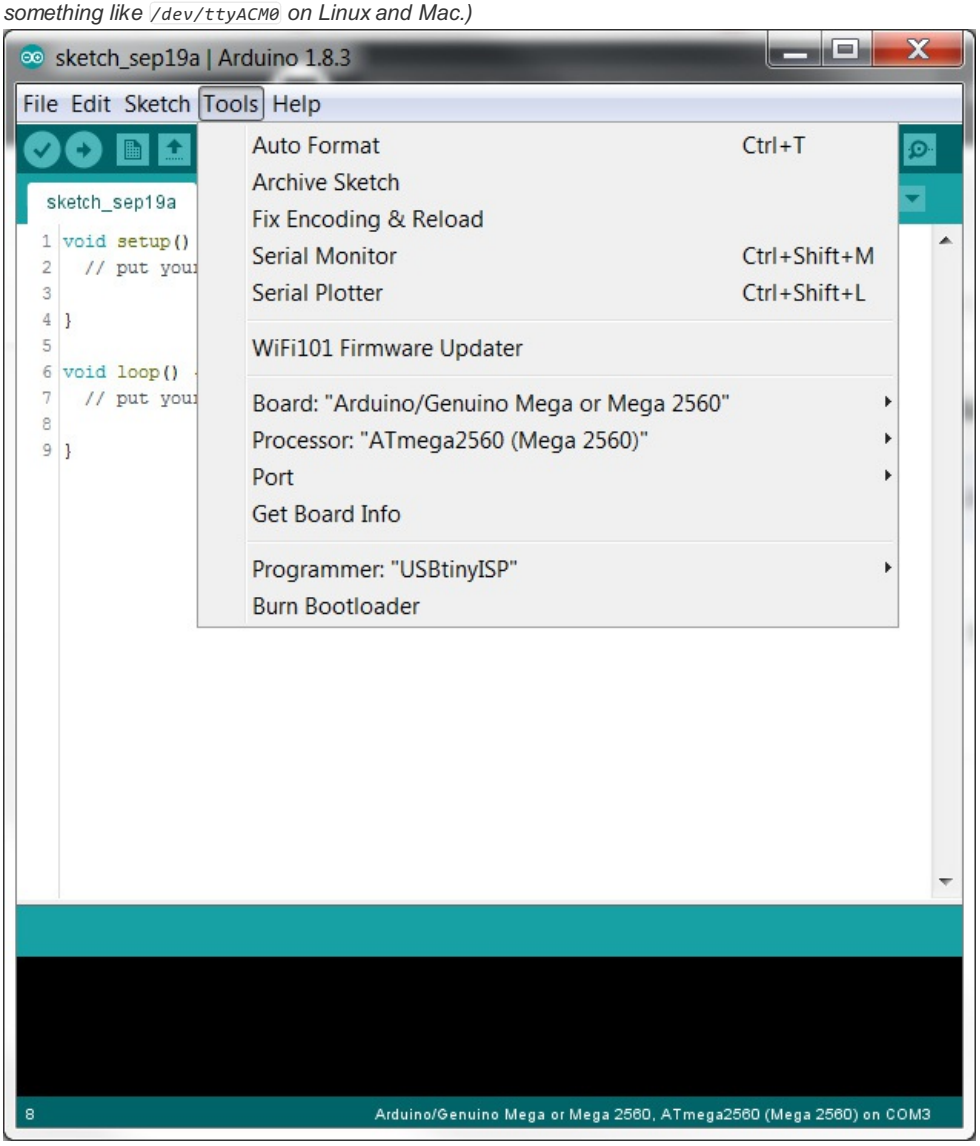
Downloading and Installing the Arduino Firmware

Once you have successfully installed the Processing programming language in the above steps, we can now prepare the firmware on the Choitek's Megamark's Arduino Mega 2560 board.

Step 1: If you have not done so already, follow the steps in the ***Megamark Arduino Setup Guide*** and make sure you have the Arduino software and the Megamark Arduino Library installed and ready to go. Plug the robot's internal Arduino Mega 2560 onto your laptop via USB Serial.

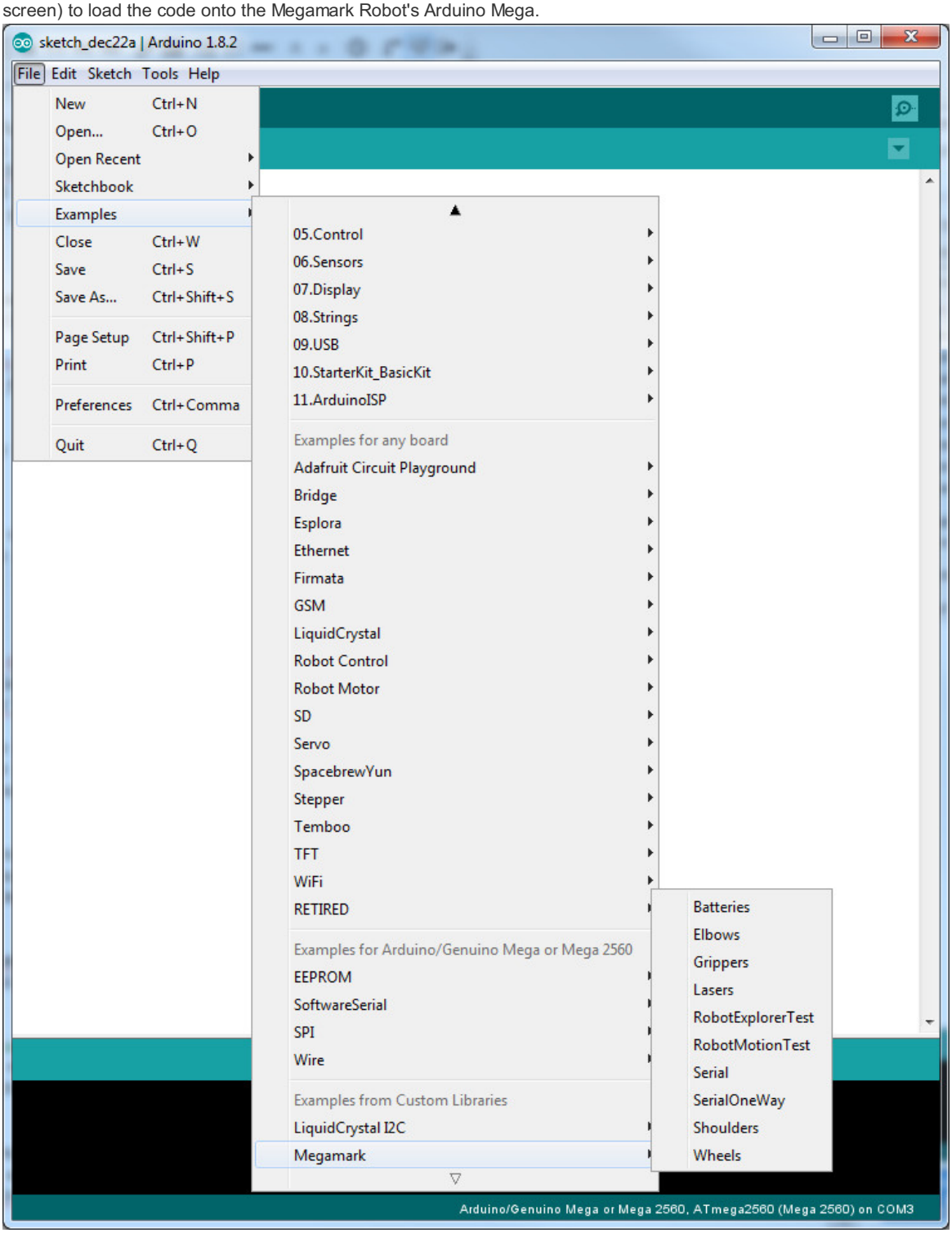


Step 2: Fire up the newly installed Arduino IDE. Set your board type by going into `Tools->Board->Arduino/Genuino Mega or Mega 2560`. Set your COM port by going into `Tools->Port->COM##`. *(Normally, this would be `COM3` on Windows if this is the first time you are using Arduino. This is something like `/dev/ttyACM0` on Linux and Mac.)*



Some versions of the Choitek Megamark run on an Arduino Mega 1280 instead of the Arduino Mega 2560 for legacy compatibility reasons. If this applies to your Megamark robot, you will also need to change `Tools->Processor->Board->ATmega1280`.

Step 3: Go over to `File->Examples->Megamark->Serial`. This allows the Megamark robot to communicate over USB serial to Processing scripts running on a laptop. Once the example file has been loaded, press the `Upload` button (shaped liked an arrow in the upper left corner of the screen) to load the code onto the Megamark Robot's Arduino Mega.

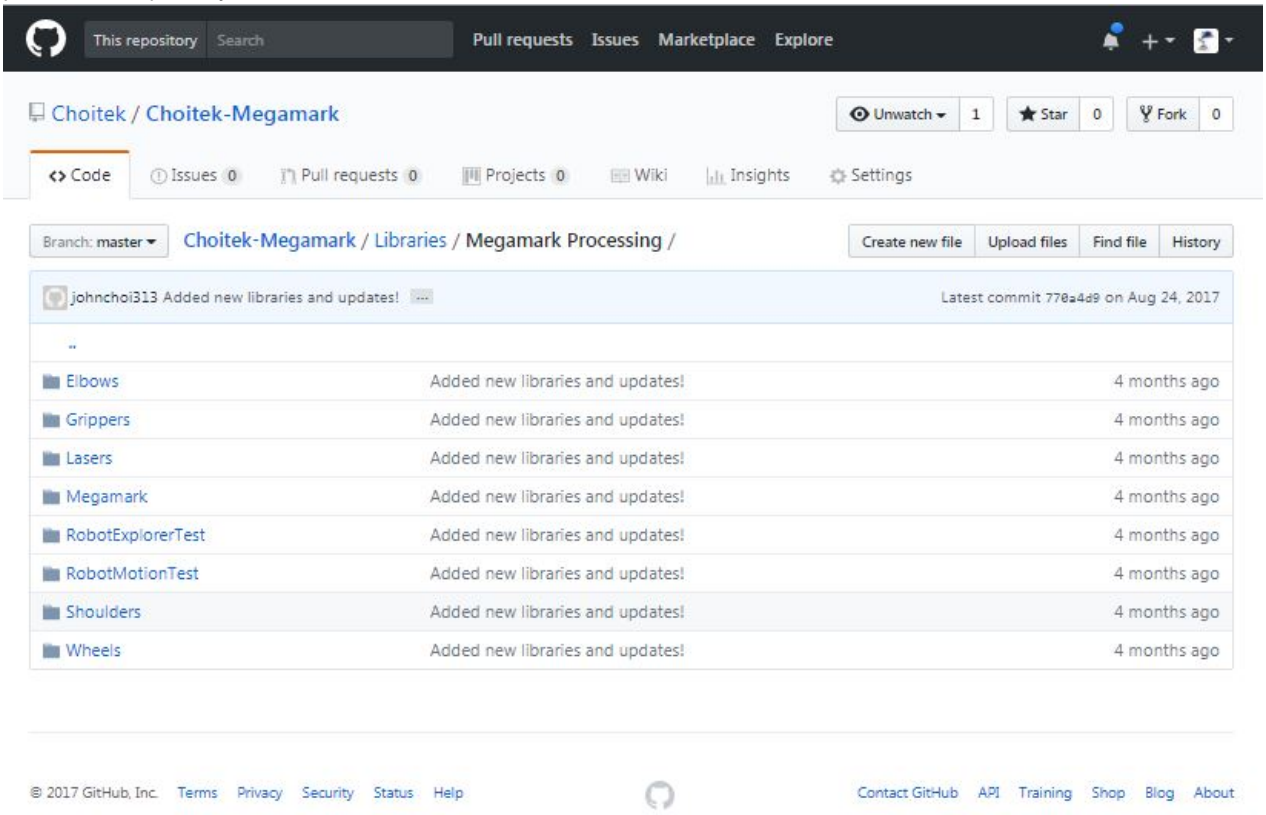


Once the `Serial` example has been loaded, the robot should now be programmable using Processing 3.0.

Running Example Processing Scripts

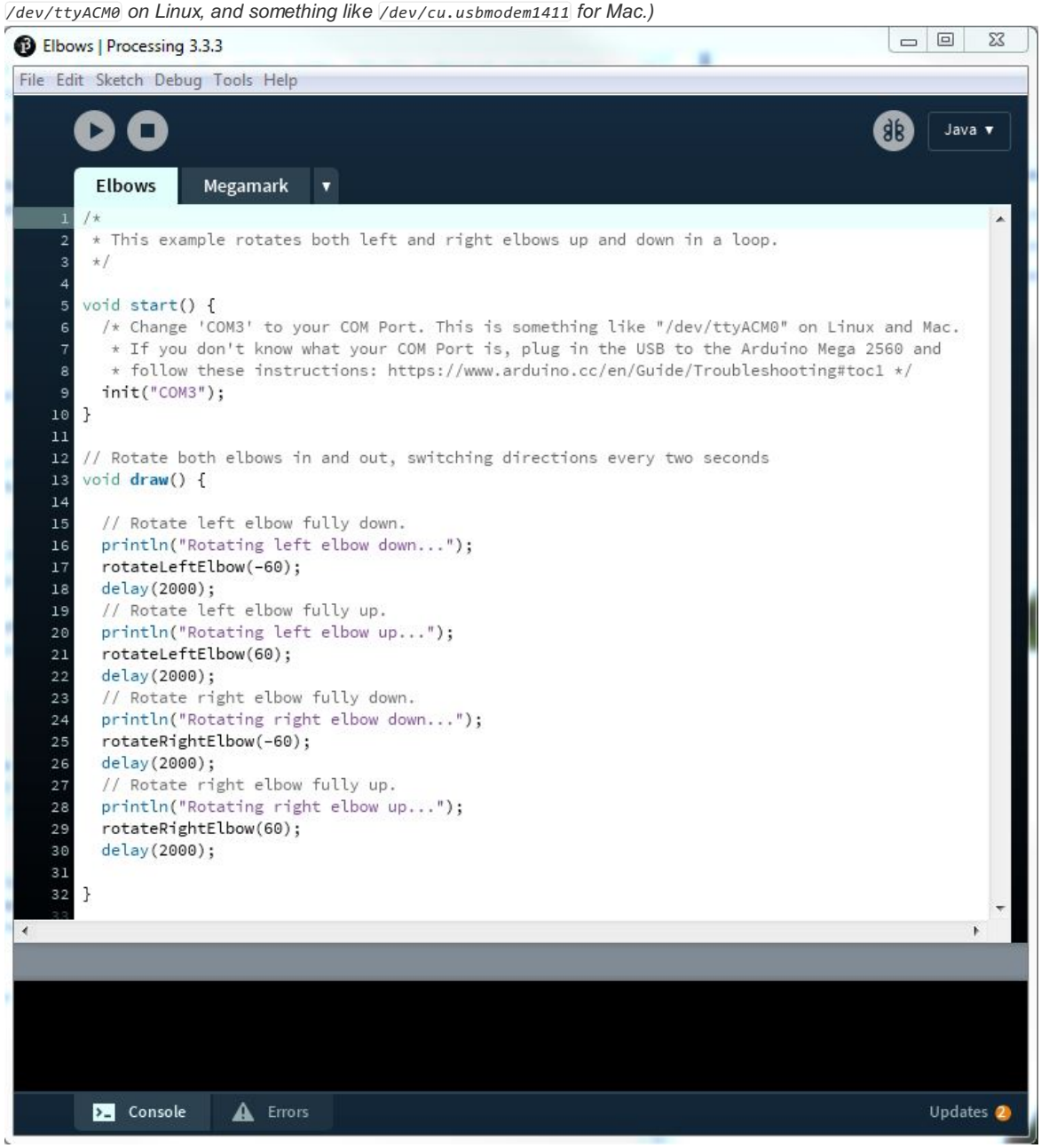
Now that Processing 3.0 has been installed with the correct Arduino firmware loaded on the Megamark Robot, we can now test some actual Processing scripts for the Megamark Robot.

Step 1: Go ahead and download the *Megamark Library for Processing*, which can be found on Github or the main Choitek website. Extract it and place the examples in your desired location.



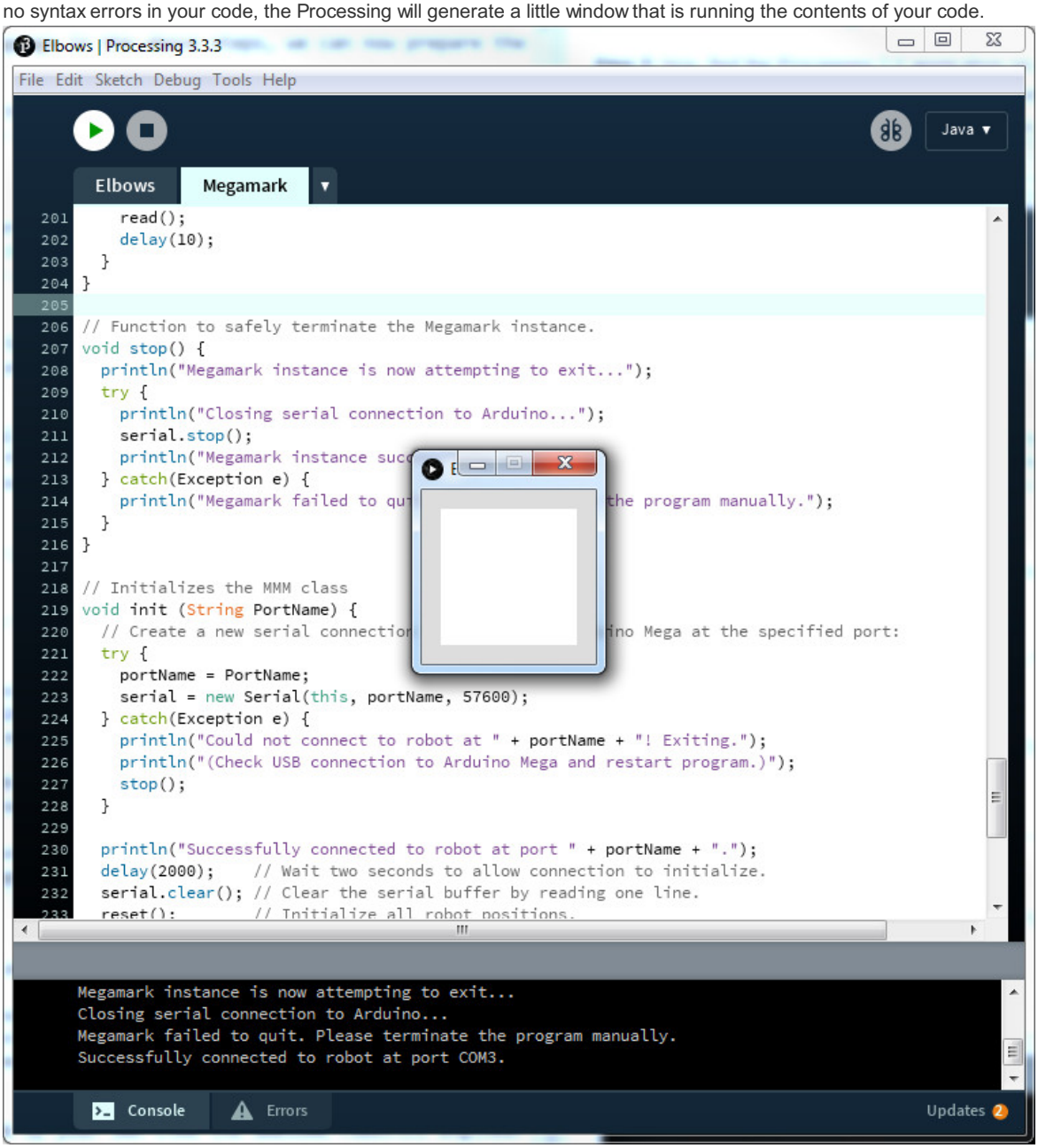
Note: Every Processing project that references the Choitek Megamark must have the `Megamark.pde` *file in the same folder! If you don't do this, you will be faced with a missing library error.*

Step 2: Now, find the Processing 3.0 application on your computer and run it. Go to `File->Open...` and open `Elbows.pde` from the Megamark Processing examples. Be sure to change the line referencing your COM Port. *(Normally, this would be `COM3` on Windows. This is something like `/dev/ttyACM0` on Linux, and something like `/dev/cu.usbmodem1411` for Mac.)*



Note: In the upper right hand corner of the screen, make sure you are running `Java` mode.

Step 3: To execute the program, click on the `Run` button on the upper left corner of the screen (it looks like a triangle inside a circle). If you have no syntax errors in your code, the Processing will generate a little window that is running the contents of your code.



Step 4: Your robot will now play the Processing 3.0 script continuously until the script closes. If you were running the `Elbows.pde` script, the robot should now be happily moving its elbows in a continuous up and down motion! Be sure to try out the other examples to get a more comprehensive sense of how to program the Megamark robot using Processing 3.0.

That was pretty easy wasn't it? Now go out there and make some code of your own like the awesome robotics engineer you know you are!