

## Dinosaur-Lamp: Instruction to code the LEDs

### Introduction

The lamp consists of a series of 8 LEDs, each of which can be programmed individually. This document explains how to set up the code, connect a computer to the lamp, and upload the code. Specifically, the computer is connected to the Arduino Nano board, which serves as the "brain" of the lamp. Once the code is uploaded to the Arduino Nano, it can run directly on the lamp without further input from the computer.

### Step 1: Download Arduino IDE

To write our code we need an “Integrated Development Environment”, or IDE in short. This is a software that allows us to write and debug our code and ultimately send it to the lamp.

The Arduino IDE can be download here: <https://www.arduino.cc/en/software/>

In the first box, make sure to correctly choose the version according to your computer (Microsoft, MacOS, or Linux):

The screenshot shows the Arduino website's main navigation bar with options for 'For Education', 'For Makers', 'Products', 'Community', 'Documentation', and a 'SHOP' button. Below the navigation, there are two main sections: 'Arduino Cloud Editor' and 'Downloads'. The 'Cloud Editor' section features a call-to-action button 'GO TO CLOUD EDITOR' and a 'LEARN MORE' link. To the right of the editor is an image of a hand interacting with a digital interface. The 'Downloads' section is highlighted with a purple arrow pointing to its 'DOWNLOAD OPTIONS' box. This box lists download links for Windows (MSI installer, ZIP file), Linux (AppImage 64 bits, ZIP file 64 bits), and macOS (Intel, Apple Silicon) operating systems, along with a 'Release Notes' link.

### Downloads

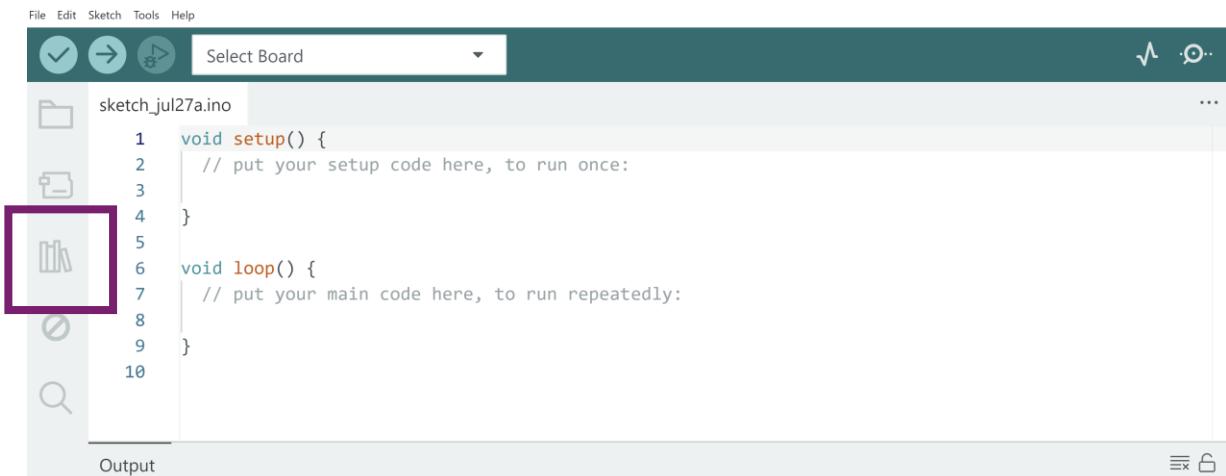
The screenshot shows the 'Downloads' page for the Arduino IDE 2.3.6. It features a large image of the Arduino logo and the text 'Arduino IDE 2.3.6'. Below this, a paragraph describes the new features of the release. A 'Windows' download link is provided. A purple box highlights the 'DOWNLOAD OPTIONS' section, which contains links for Windows, Linux, and macOS. A purple arrow points from the 'Downloads' section of the previous screenshot to this highlighted area.

### Step 2: Download the FastLED library

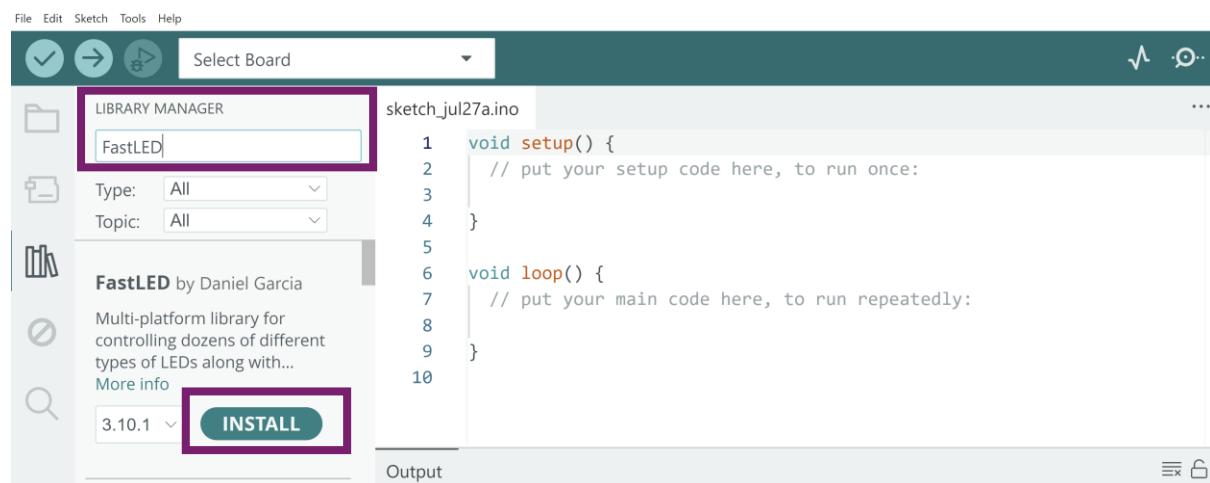
To facilitate the use of the LEDs, we need to install the library “FastLED” within the Arduino IDE.

First, open the Arduino IDE. Then, click on the “book” symbol on the left to open the library manager:

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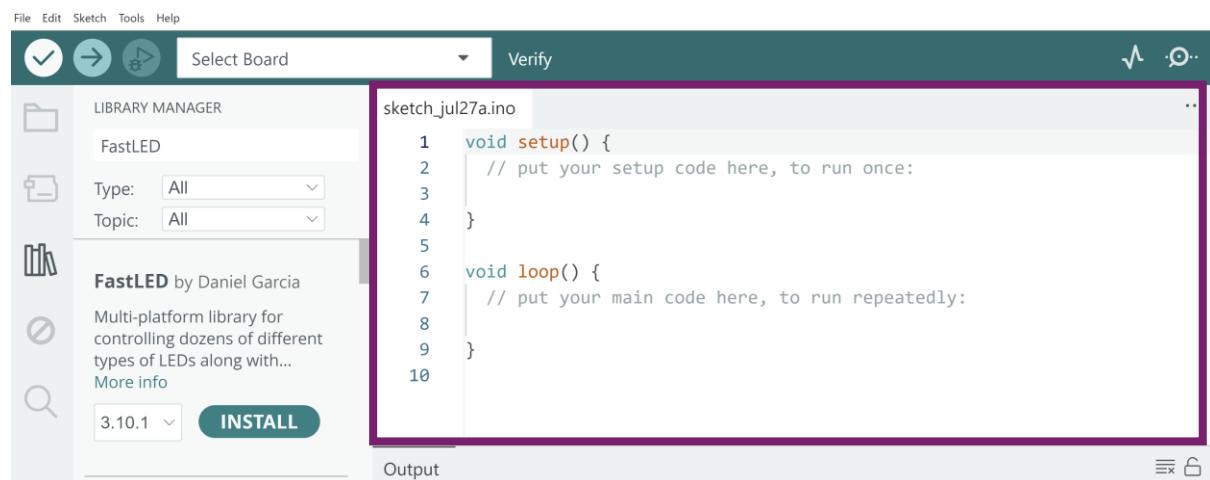
In the library manager, enter the word “FastLED”, and click on “INSTALL”:



You are ready to code!

### Step 3: Write your code

You can write your code in the windows on the right of the Arduino IDE:



Examples of code are given in the folder “code\_examples” of the GitHub repository, and some explanations are in the “README” (the text shown on the front page of the GitHub repository <https://github.com/girlscodetoo-ch/3D-Printing>).

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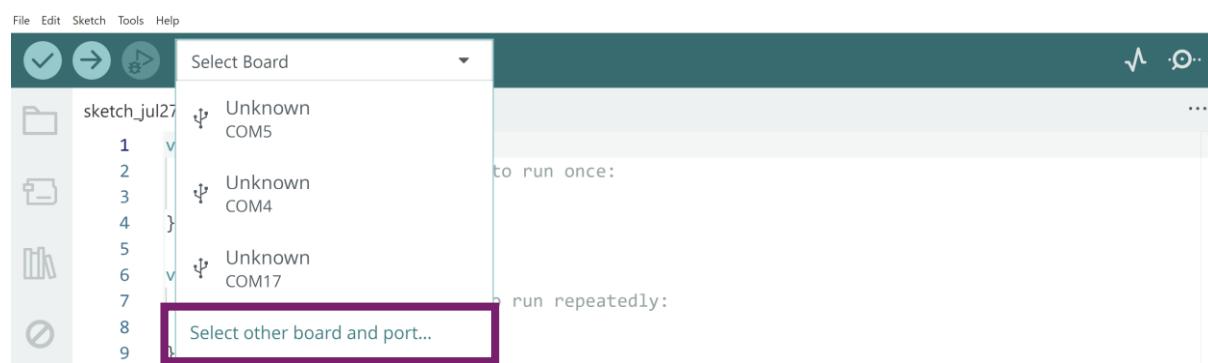
Similar to Word, you can save your code and open it later by clicking on “File”, and then “Save As...” or “Open...”. You can also use the shortcut “Ctrl” and “S” to save your file.

#### Step 4: Send your code to the lamp

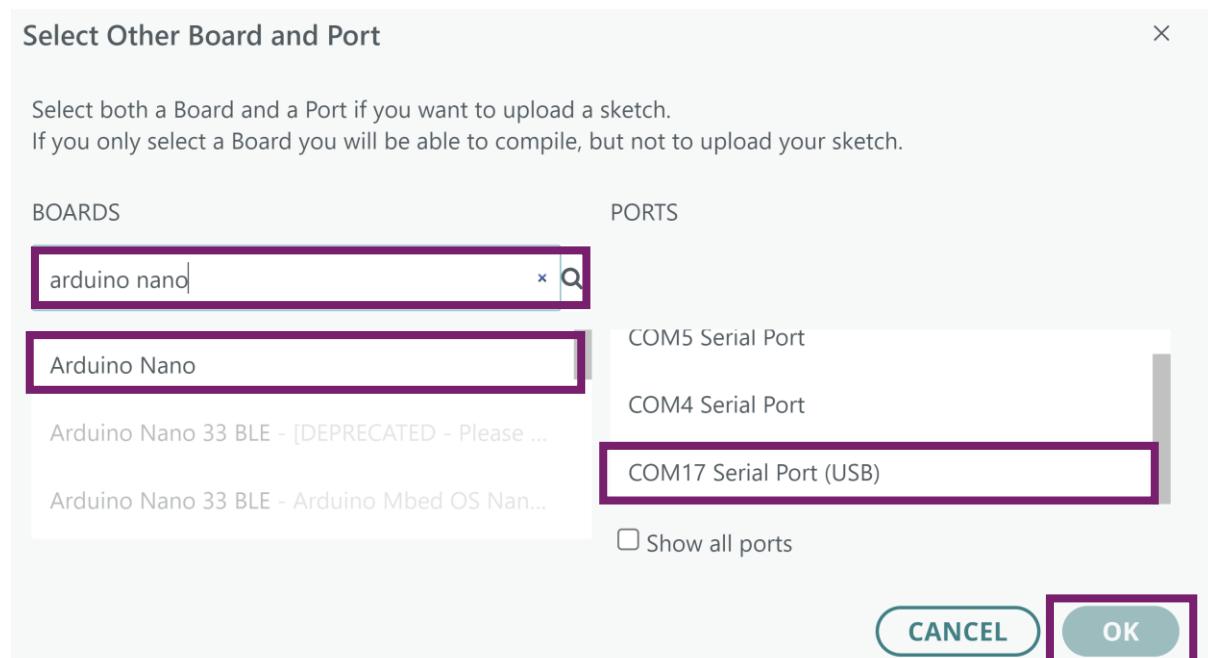
First, connect your lamp to the computer using the USB port. Then, select the correct type of board (there are many options besides our "Arduino Nano" board) and specify the port it is connected to on your computer. To do this, click on "Select Board":



Click on “Select other board and port...”:



This will open a new window within the Arduino IDE. In the field “BOARDS”, type “Arduino Nano” and select it. In the field “PORTS”, select the Serial Port that says “USB” (the exact number in “COM...” might be different, that’s ok). You can also unplug and plug the lamp again, and you will see the correct port disappearing and reappearing. Click on “OK”:



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The name “Arduino Nano” should now be displayed on the top of the Arduino IDE:



We are ready to send our code! To do so, simply click on the “arrow” symbol on the top left:



This step will compile your code and, if it does not contain any mistake, will send it to the lamp (or more precisely, to the Arduino Nano board within the lamp). It can take a few seconds to compile and upload the code to the lamp. The progress is shown in a small window at the bottom right.

### Some hints

- You only need to connect the lamp once at the beginning of your session. If you change your code and want to send it to the lamp again, you can simply click on “send” (the arrow symbol).
- Downloading the Arduino IDE and the FastLED library needs to be performed once only.
- If your code contains mistakes, the compiler will complain. This will be shown in red in what we call the “terminal” at the bottom of the Arduino IDE. You can read the message to get an idea of why or where your code fails. If you are having trouble with debugging, you can also send your code and the error message to ChatGPT, it might help.

Have fun, and do not hesitate to contact us if you have questions or issues ([info@girlscodetoo.ch](mailto:info@girlscodetoo.ch))!

Happy coding 😊