Setting up

1. Install the Arduino IDE

If you don't already have it, download and install the **Arduino IDE** from the official website.

2. Set Up the ESP32 Board

The Arduino IDE doesn't include support for the ESP32 by default. You need to add it:

1. Open the Arduino IDE.
2. Go to **File > Preferences**.
3. In the Additional Boards Manager URLs field, paste the following URL:

   https://raw.githubusercontent.com/espressif/arduino-esp32/gh-pages/package_esp32_index.json
4. Click **OK**.
5. Go to **Tools > Board > Boards Manager**.
6. Search for `esp32` and click **Install** on the `esp32 by Espressif Systems` package.

3. Install the FastLED Library

The code relies on the FastLED library to control the WS2812B LEDs.

1. In the Arduino IDE, go to **Sketch > Include Library > Manage Libraries**.
2. Search for `FastLED`.
3. Click on the FastLED library and click **Install**.

4. Set Up the Code Files

Download the code files and open as separate tabs within a sketch

5. Adjust the Code for Your Setup

You need to change the code to match your specific setup.

- **LED Count:** In your main sketch file, change the `NUM_LEDS` constant to as many as you have.
- **Data Pin:** Verify which GPIO pin you're using on your ESP32 to connect to the LED strip's data line and update the `DATA_PIN` constant if necessary.

6. Connect the Hardware and Upload

1. Connect the ESP32 to your computer with a USB cable.
2. In the Arduino IDE, go to **Tools > Board** and select your specific ESP32 board (e.g., `ESP32 Dev Module`).
3. Go to **Tools > Port** and select the correct COM port for your ESP32.
4. Click the **Upload** button (the right-arrow icon) to send the code to your ESP32. The LEDs should start showing the effect once the upload is complete.

7. For the Arduino UNO

- Follow the same instructions as the previous libraries, look for Adafruit Neopixel.

Note: If either of the boards is connected to your laptop for the first time, there is a chance that Arduino doesn’t read the port in which case the driver must be installed:

- Go to: Silicon Labs CP210x Driver Download
- Choose your OS (Windows, Mac, or Linux).
- Download and unzip the installer.

Once the driver is installed irrespective of the board, the port will show up as COM3/COM4.

Compiling a sketch and uploading it to the board the first 1-2 times may take a few minutes after which every upload occurs within 20-60 seconds.