Hey there, Firefly fan! Ready to light up your Wemos Mini D1 Firefly board with some shiny new firmware? Don't worry if you've never done this before—I've written these beginner-friendly instructions. We're going to load a zip file packed with .bin files onto your board. The memory table you'll be working with is like a map telling us where each file goes:
for an ESP8266:

- 0x0000 – firefly.bin (this is the firmware)
- 0x300000 – littlefs.bin (this is the file system image)

for a ESP32:

- 0x1000 bootloader.bin
- 0x8000 partitions.bin
- 0xe000 boot_app0.bin
- 0x10000 firmware.bin
- 0x310000 spiffs.bin

We've got 3 ways to do this: a breezy, browser-based method using Chrome (perfect for newbies), a python uploader if you already have python in your system and a more hands-on approach with esptool for those who already are familiar with uploading to microcontrollers.
Let's dive in!

Option 1: The Easy Chrome Way (No Experience Needed!)

Imagine flashing your Firefly board directly from your Chrome browser. Here's how to do it:

1. **Gear Up**
   - Plug your Esp into your computer with a USB cable.
   - Make sure you're using a recent version of Chrome (or Edge works too). Old browsers won't play nice here.

2. **Grab the Zip File**
   - Download the zip file I've left for you (it's got all those .bin files inside).
   Save it somewhere easy to find, like your Desktop.

3. **Head to the Online Installer**
   - Open Chrome and zoom over to https://esptool.spacehuhn.com/ This is a slick tool made by the Spacehuhn for boards like your Firefly.

4. **Connect Your Firefly**
   - Click "Install" on the site. It'll ask to connect to your board. Look for a serial
port option (like COM3 on Windows or /dev/ttyUSB0 on Linux/Mac). If you don't see it, you might need a driver—hop to wemos.cc to grab the CH340 driver, install it, and try again.

5. **Upload the Zip**
   - The site usually expects a single .bin file, but since we've got a zip with multiple files, unzip it first (right-click and "Extract All" on Windows, or double-click on Mac)..

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6. **Flash It!**
   - Hit the “Flash” button, and watch the magic happen. Your Firefly might blink while it loads up. When it’s done, you’ll get a happy “Success” message. Unplug, replug, and see your board come to life!

Option 2: the easy python way

If you already have python installed in your system I prepared an uploader that just launches esptool with the right parameters. When you execute the uploader by typing in a terminal and in the same folder where you unzipped the files:

python3 uploader.py

you’ll see this window where you can choose the port and upload the firmware.

Option 3: The Tech-Wizard Way with esptool (For Curious Adventurers)

This method uses esptool, a powerful tool for ESP boards, and it’s perfect for loading all those .bin files exactly where they belong.
Let’s get started!

1. **Set Up your dependencies (Install Python & esptool)**
   - You’ll need Python installed on your computer—it’s like the spellbook for esptool. Head to python.org, grab the latest version (3.9 or higher is fab), and install it. Make sure to check “Add Python to PATH” during setup.
   - Open a terminal (Command Prompt on Windows, Terminal on Mac/Linux) and type pip install esptool then hit Enter. This grabs esptool from the internet and sets it up for you.

2. **Unzip Your Files**
   - Download that zip file I’ve shared, then unzip it (right-click > “Extract

All” on Windows, or double-click on Mac). You’ll see those five .bin files: firefly.bin and littlefs.bin. Move them to a folder you’ll remember, like C:/FireflyFirmware on Windows or ~/FireflyFirmware on Mac/Linux.

3. **Hook Up Your Firefly**

- Plug your Firefly into your computer via USB. If your computer doesn’t recognize it (no “ding” sound?), you might need that CH340 driver from wemos.cc. Install it, then check your ports:
- Windows: Open Device Manager, look under “Ports (COM & LPT)” for something like COM3.
- Mac/Linux: Type ls /dev/tty* in the terminal and spot something like /dev/ttyUSB0.

4. **Flash Those .bin Files**

- Now, load each file to its special spot on the memory map. Run this big, fun command all at once (copy-paste it!):

For esp8266 run:

```
esptool.py --chip esp8266 --port COM3 --baud 115200 write_flash -z 0x000 firefly.bin 0x300000 littlefs.bin
```

For ESP32 run:

```
esptool.py --chip esp32 --port COM3 --baud 921600 --before default_reset --after hard_reset write_flash -z --flash_mode dio --flash_freq 40m --flash_size 4MB 0x1000 bootloader.bin 0x8000 partitions.bin 0xe000 boot_app0.bin 0x10000 firmware.bin 0x00310000 spiffs.bin
```

- Swap COM3 for your port.
- -z keeps the flash compressed (faster!).
- --baud 115200 sets a speedy upload rate (you can bump it to 921600 if you’re feeling bold, but 115200 is safe).
- You’ll see progress bars zip by as each file lands in place. If it says “Connecting…” forever, unplug/replug your Firefly and try again— sometimes it’s shy.

5. **Celebrate!**

- When it’s done, you’ll see “Hash of data verified” or similar. Unplug your Firefly, plug it back in, and watch it glow with its new firmware!

Wizard Tip: If something goes wonky (like “Failed to connect”), double-check your port,ensure your cable’s good (data cables only—no charge-only ones!), and maybe press the reset button on the board before flashing.