

3D IOT Light Boxes

Creating your own hackable light box

What you'll need

- 3D printed light box base, shade, and top
- Microcontroller with USB C cable
- NeoPixel LED ring
- 3 jump wires of different color
- Soldering equipment



Flashing the microcontroller

- In order to give our light boxes instructions such as color and pattern, we will first need to flash the microcontroller
- Flashing is the process of installing a program onto our microcontrollers
- Once flashed the microcontroller will run the program whenever it is powered on
- We will be installing a program called WLED onto our microcontrollers

Step #1

- In your browser go to install.wled.me
- Connect the USB C end of your cable to the microcontroller and the USB A end into an open port on your raspberry pi
- Click Install



Welcome to the WLED web installer!

1. Plug in your ESP to a USB port. We will install WLED 0.14.0-b3 to it.
2. Hit "Install" and select the correct COM port. [No device found?](#)
3. Get WLED installed and connected in less than 3 minutes!

Install

0.14.0-b3

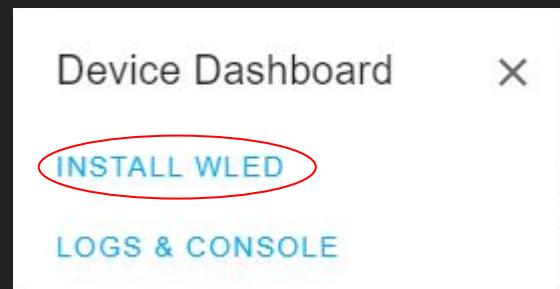
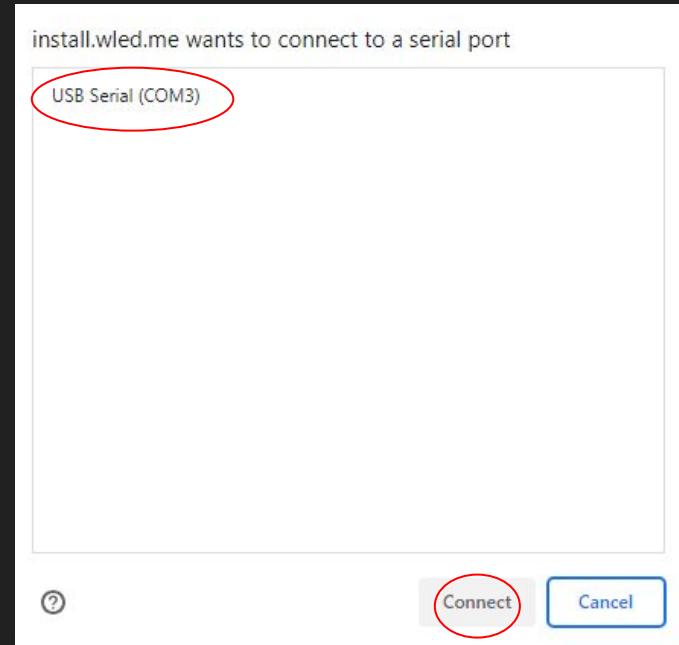
My board has Ethernet

Powered by [ESP Web Tools](#)

[GitHub](#) [kno.wled.ge](#)

Step #2

- Select the USB serial device (this is the microcontroller)
- Once selected click Connect
- In the Device Dashboard click INSTALL WLED



Step #3

wled-31e407 X

WLED 0.14.0-b3/2306180

esp8266

[VISIT DEVICE](#)

[ADD TO HOME ASSISTANT](#)

[CHANGE WI-FI](#)

[LOGS & CONSOLE](#)

[RESET DATA](#)

Configure Wi-Fi

Enter the credentials of the Wi-Fi network that you want your device to connect to.

Network Name

Password

SKIP CONNECT



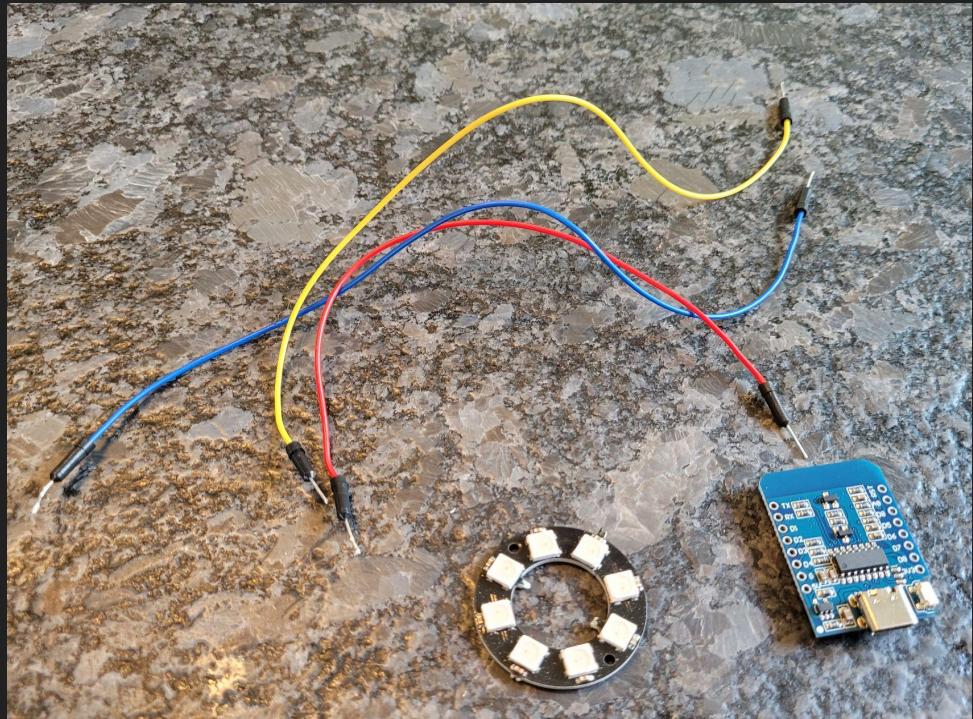
Installation complete!

NEXT

Soldering the Microcontroller

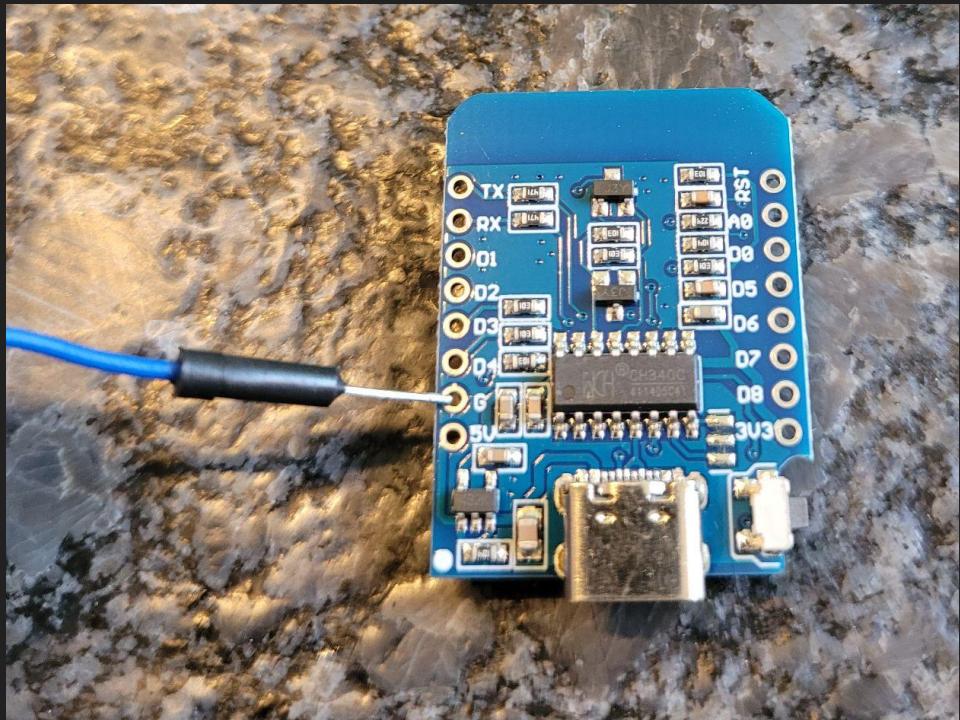
Step #4

- Gather the components we will be soldering
- 3 jump wires
- Microcontroller
- NeoPixel LED ring



Step #5

- Locate the ground on your microcontroller marked as G
- Carefully solder the first wire to the ground



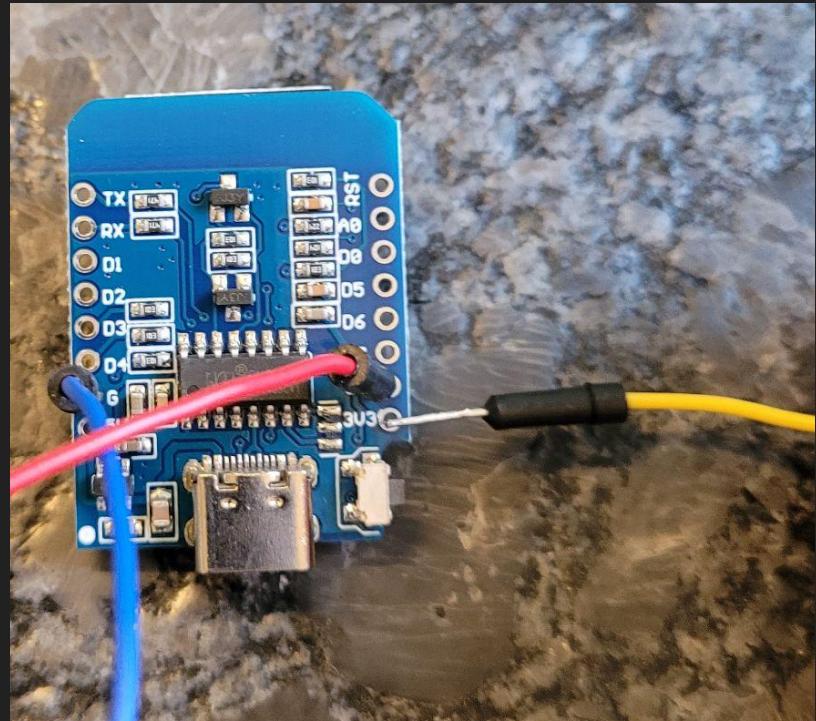
Step #6

- Locate D8 on your microcontroller
- Carefully solder the second wire in D8



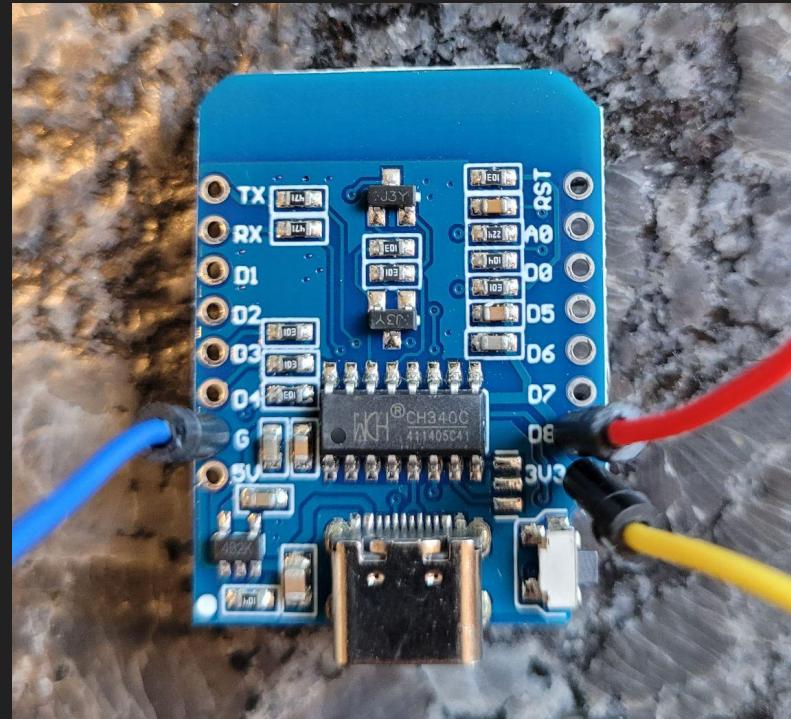
Step #7

- Locate the power on your microcontroller labeled 3V3
- Carefully solder the third wire to 3V3



Halfway there!

- Once your microcontroller looks like this you are ready for the next step!



Soldering the NeoPixel Ring

Step #8

- Locate the ground wire (soldered to G on the microcontroller)
- Locate the ground on the NeoPixel ring labeled GND
- Carefully solder the ground wire to GND



Step #9

- Locate the power wire (soldered to 3V3 on the microcontroller)
- Locate the power on the NeoPixel ring labeled 5V
- Carefully solder the power wire to 5V



Step #10

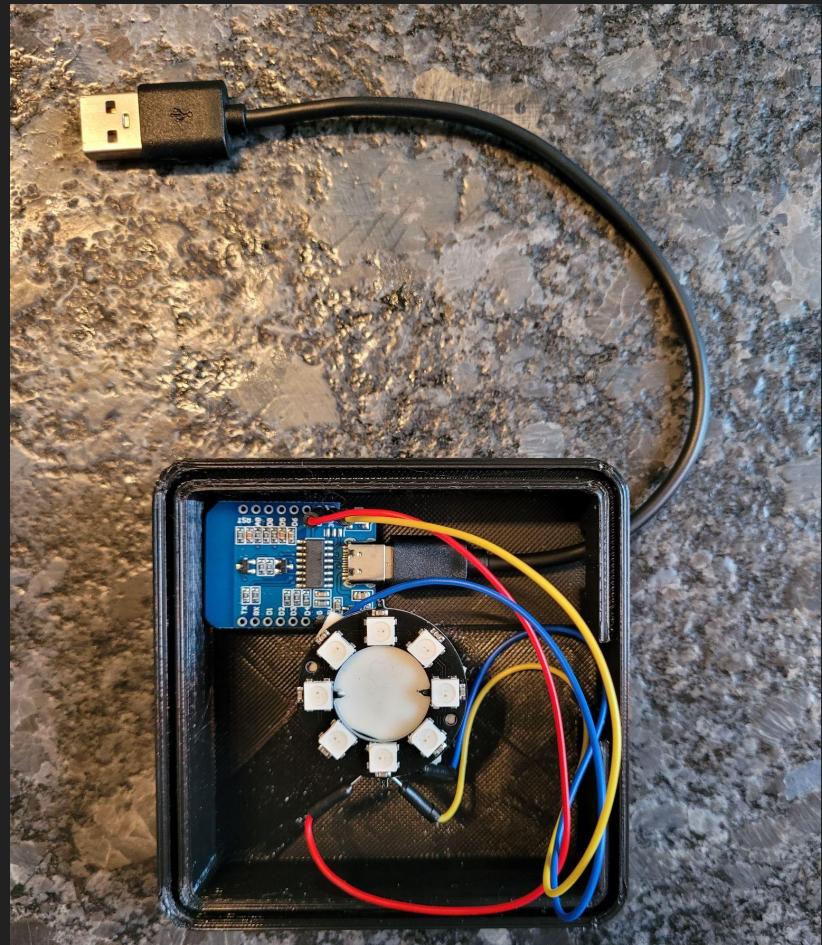
- Locate the wire that is soldered to D8 on the microcontroller
- Locate DI on the NeoPixel ring
- Carefully solder your last wire to DI



Putting it All Together

Step #11

- Apply double sided tape to the bottom of your microcontroller and NeoPixel ring
- Tape the microcontroller to the base of the light box with the USB port facing the hole in the base
- Tape the NeoPixel ring to the post in the middle of the base
- Run the USB C cable through the hole and plug it into the microcontroller



Step #12

- Collect the other pieces of your light box
- Gently insert the shade into the base
- Gently slide the cap of the light box onto the shade



Power

Timer

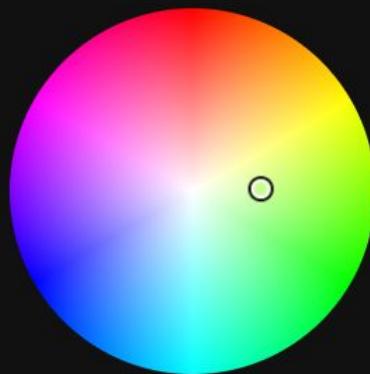
Sync

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Info

Config

PC Mode



Color palette not used

Effect mode

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Blink Rainbow

Blurz

Bouncing Balls

Bpm

Segment 0

+ Add segment

Transition: 0.7 s

Brightness



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