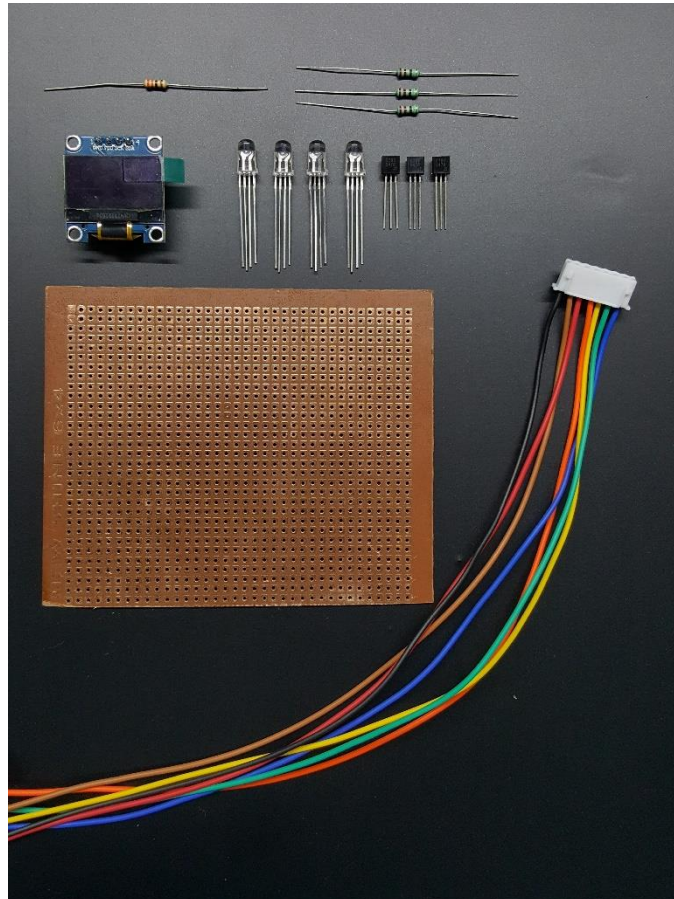


2.2: Assembly of Display Unit

We start by gathering the materials needed for making the display unit for this build.

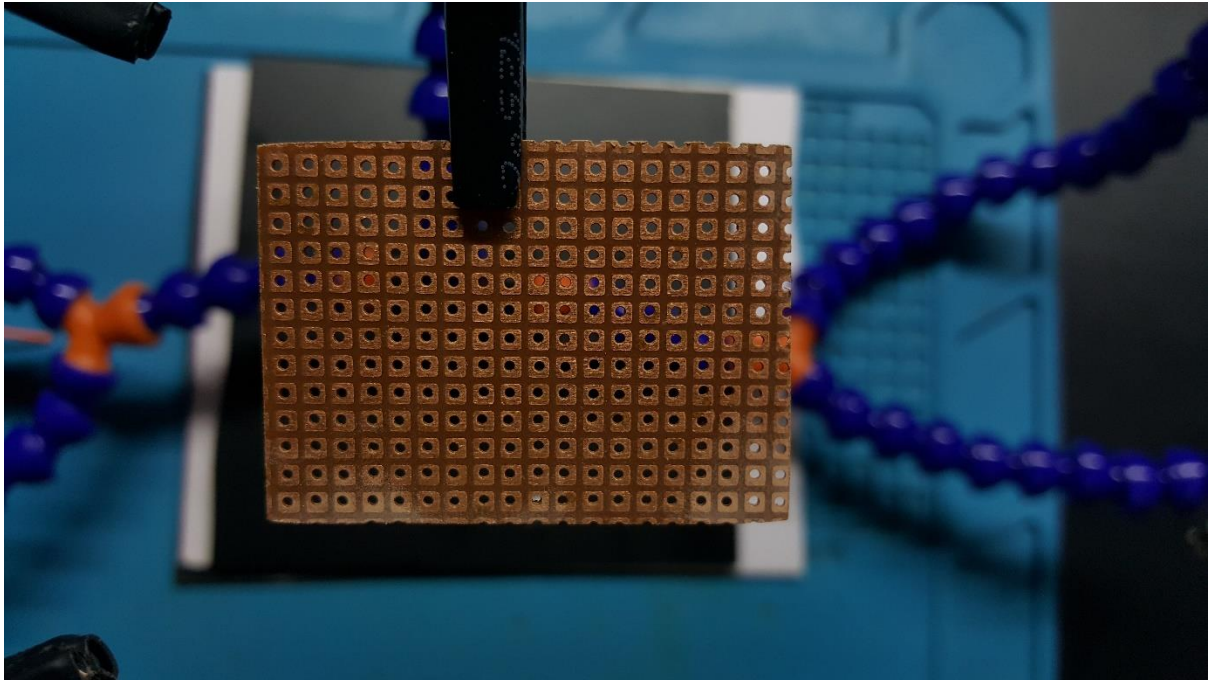


Parts used:

- 1 x SSD1306 128x64 OLED I2C display (White)
- 4 x RGB LEDs (Common anode)
- 1 x Resistor (330 Ω)
- 3 x Resistors (220 Ω)
- 3 x BC547 (NPN Transistor)
- Perf Board (Square or Dotted)
- 7 pin JST connector

2.2.1:

Prepare your PCB: It is recommended to secure your PCB that you are going to work on very securely to avoid mistakes.



2.2.2:

Arrange and solder the RGB LEDs : Place the RGB LEDs in the same orientation and according to the 3D printed enclosure and solder them to the perf board.



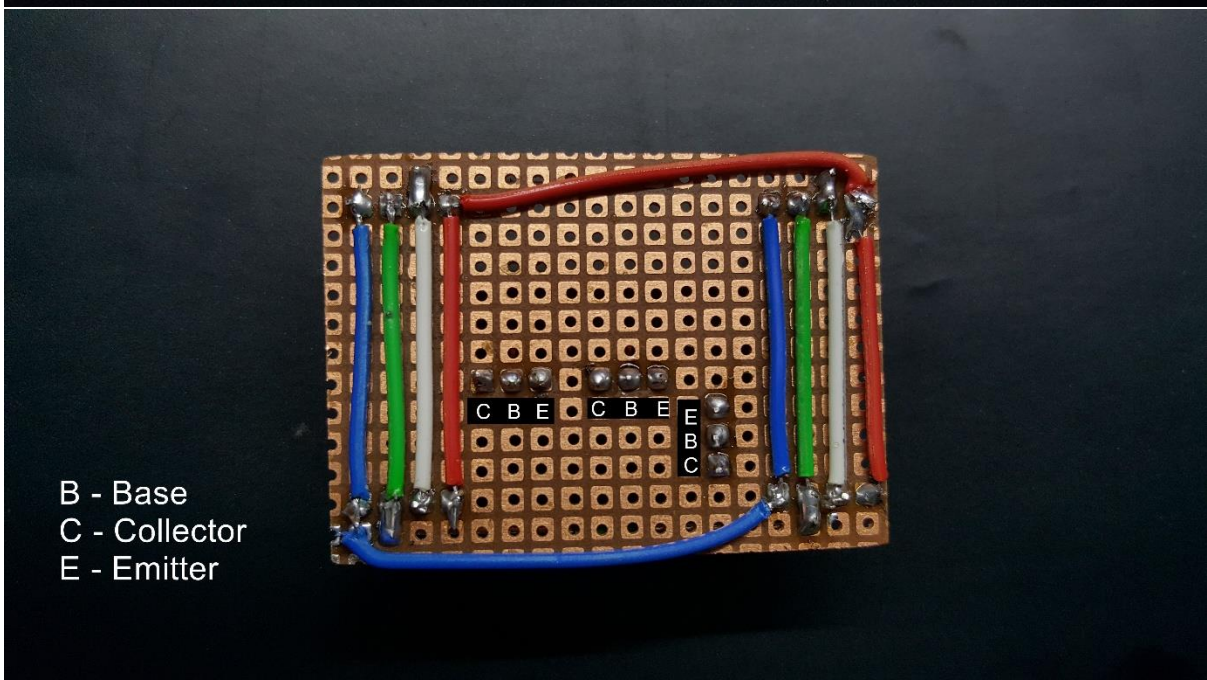
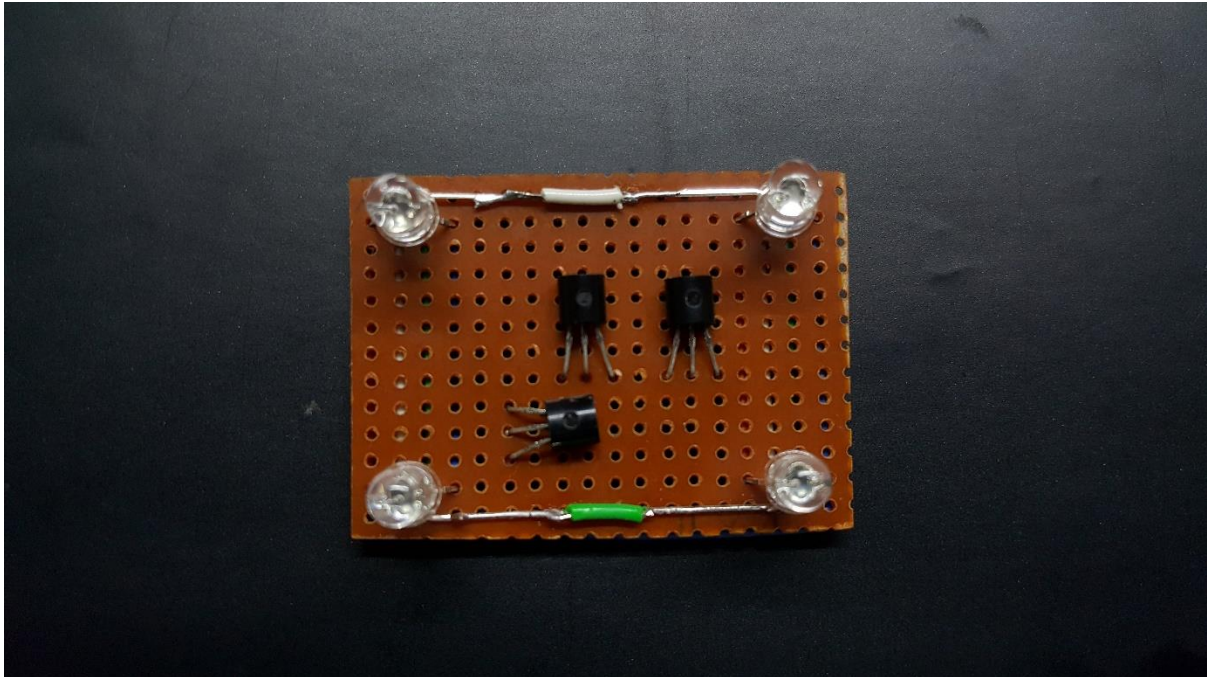
2.2.3:

Connect all the LEDs' terminals together (colour coded ☺) (Red = Red, Green = Green, Blue = Blue, White = Anode [Positive (+)]).



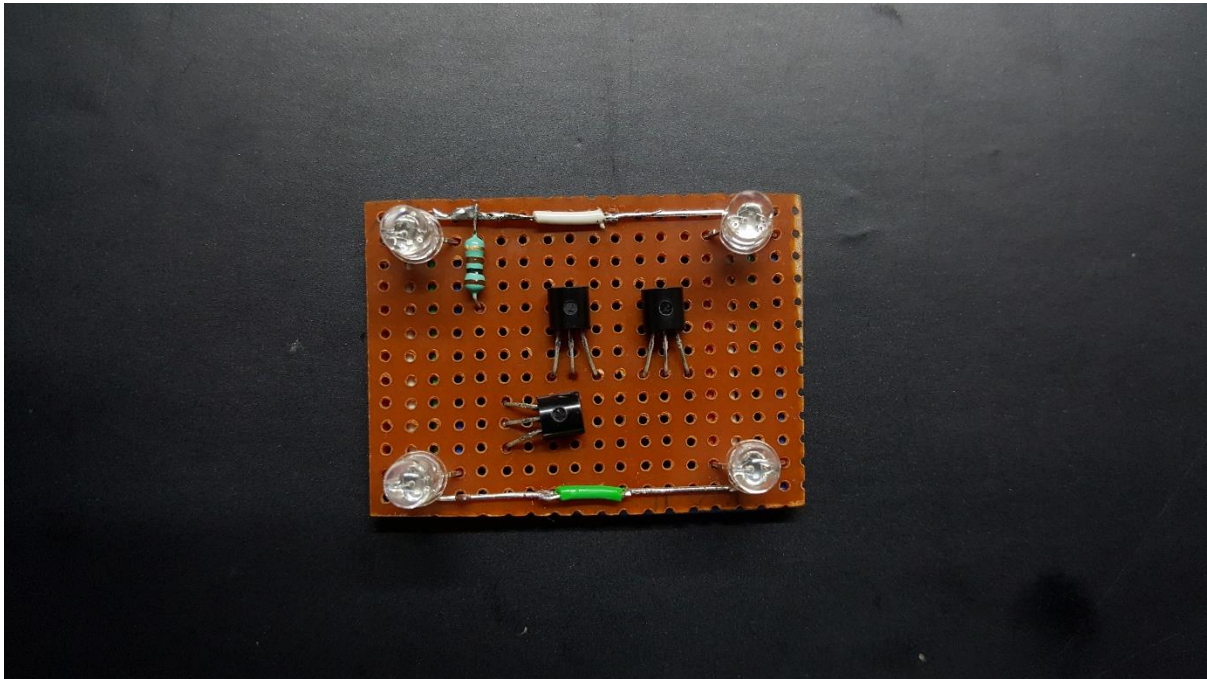
2.2.4:

Solder the BC547 Transistors : I have arranged them such that they lie flush against the PCB (the side where the display would rest on) to prevent damages to the display.



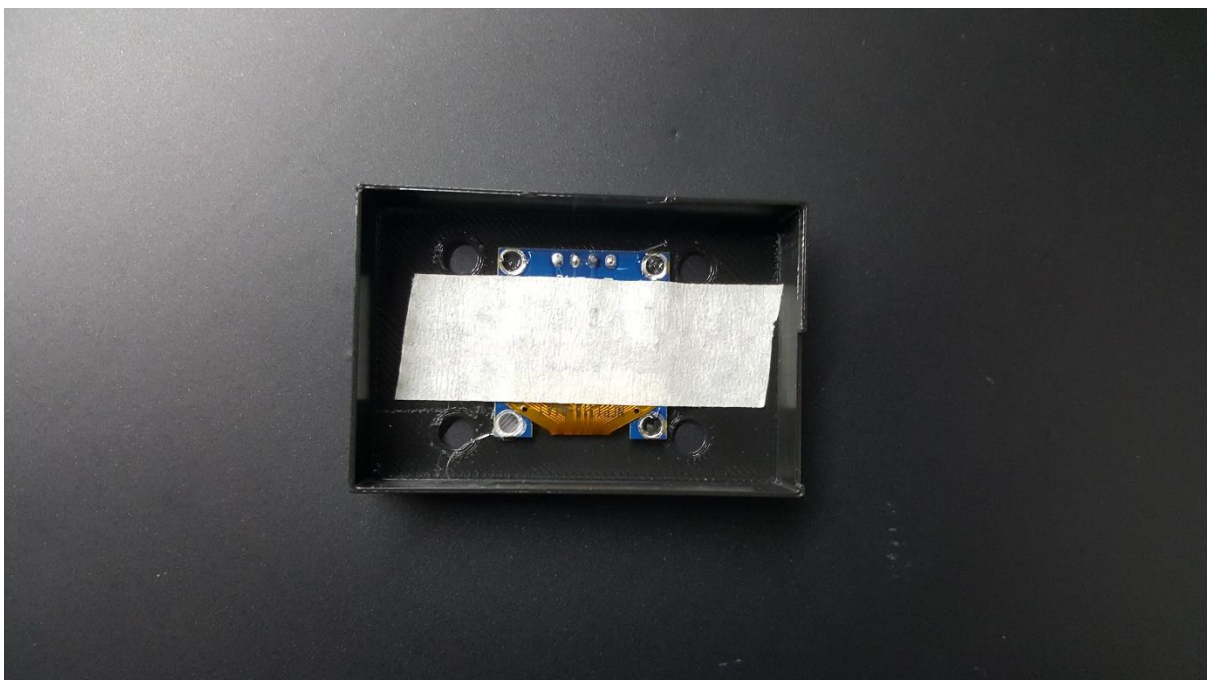
2.2.5:

Solder the 100Ω resistor on the board, connecting to the Anode (+) terminal of the LEDs as shown. This resistor is used to limit the current into the LEDs at 5V.



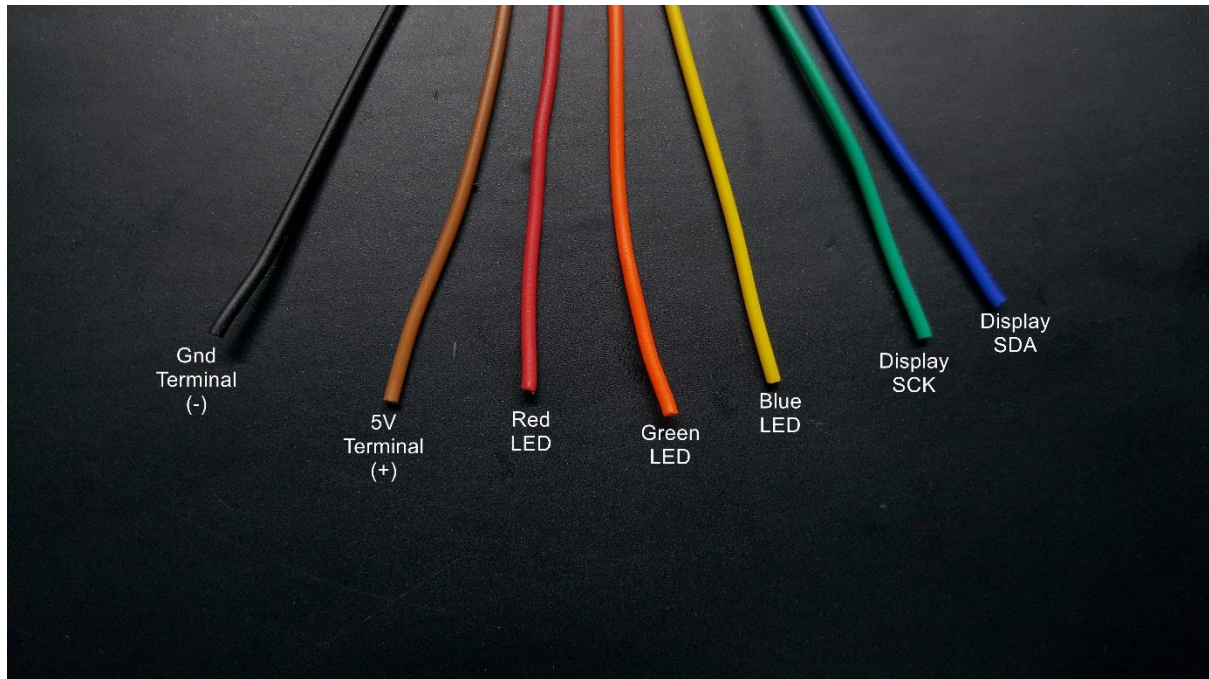
2.2.6:

Secure the OLED display with hot glue and masking tape.



2.2.7:

Prepare the JST connector wires: These are the corresponding wire terminals and their colours. You may change the order but make sure to check all the connections.



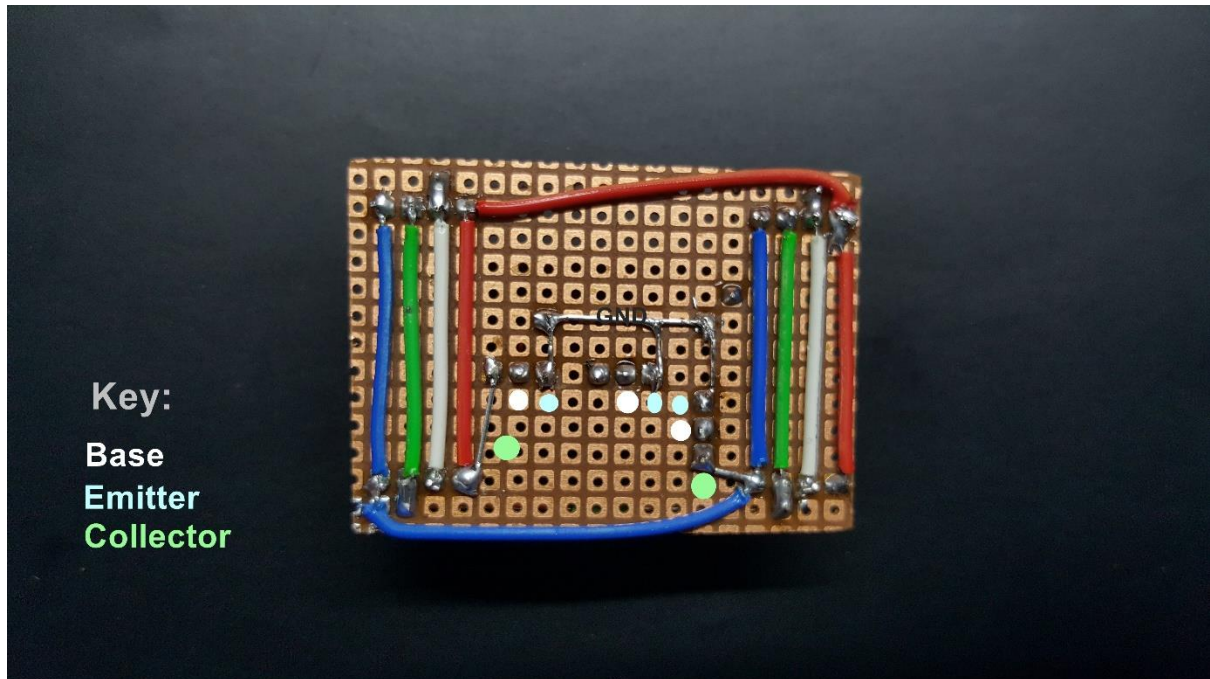
2.2.8:

Solder the SCK (Green) and SDA (Blue) wires to SCK and SDA terminals of the display and solder the GND and VDD to two wires (separate).

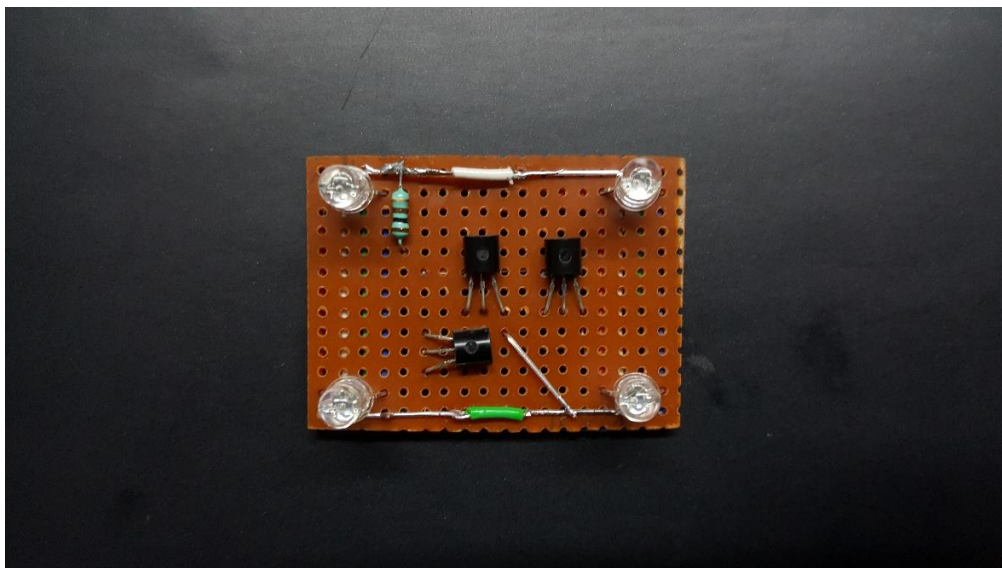


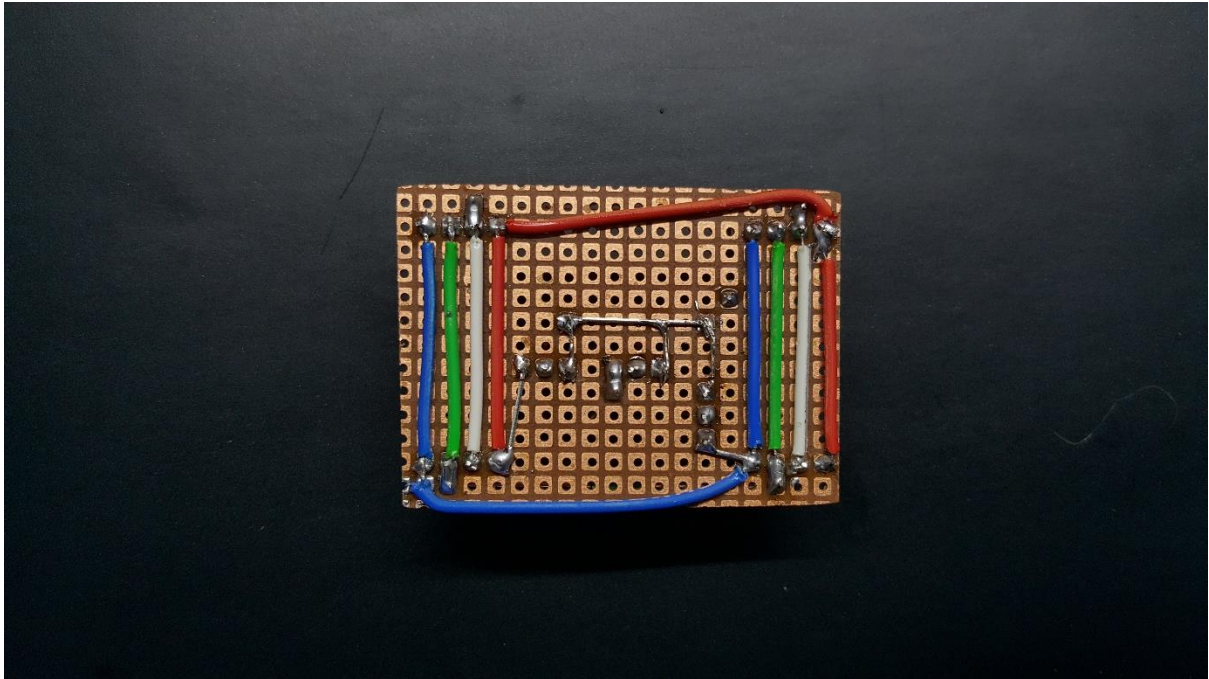
2.2.9:

Connect the transistors' emitter to GND (-) and connect the transistors' collector to the respective (colour) terminals of the LEDs as shown. (Green LEDs' terminal done separately).



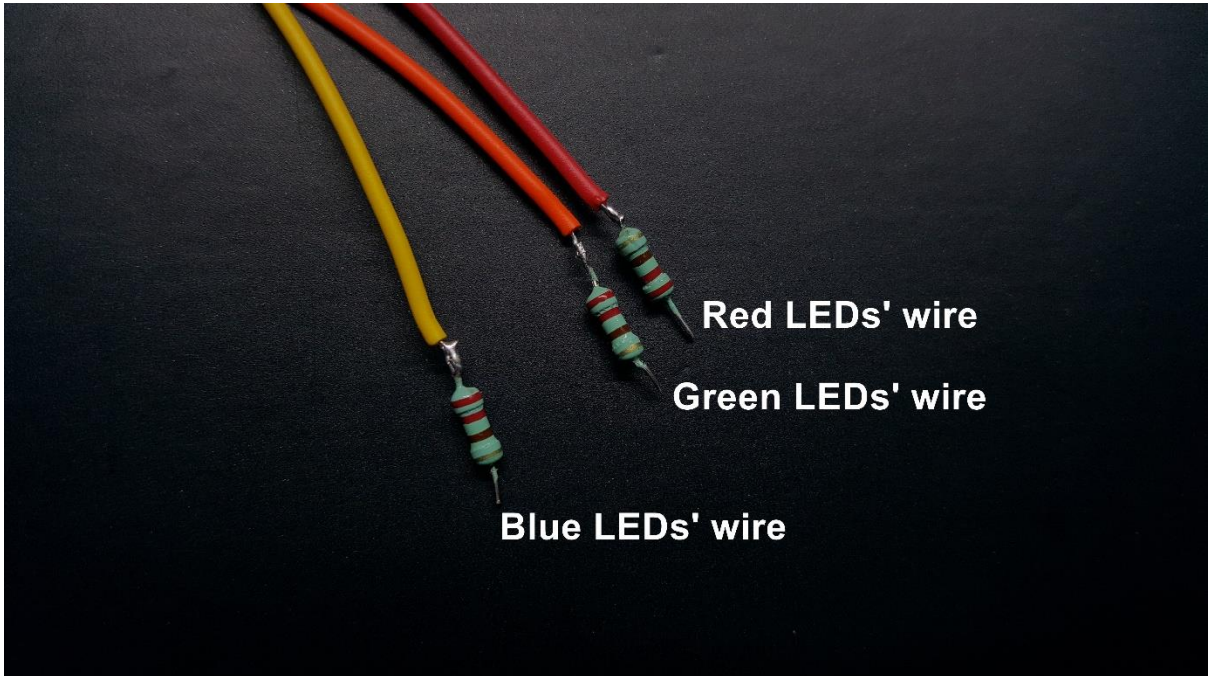
Once it is done, Connect the collector terminal of the Green LEDs' transistor (the middle one) with a silvered copper wire that connects the transistor's collector to the Green LEDs' Terminal. (Like shown in the images)





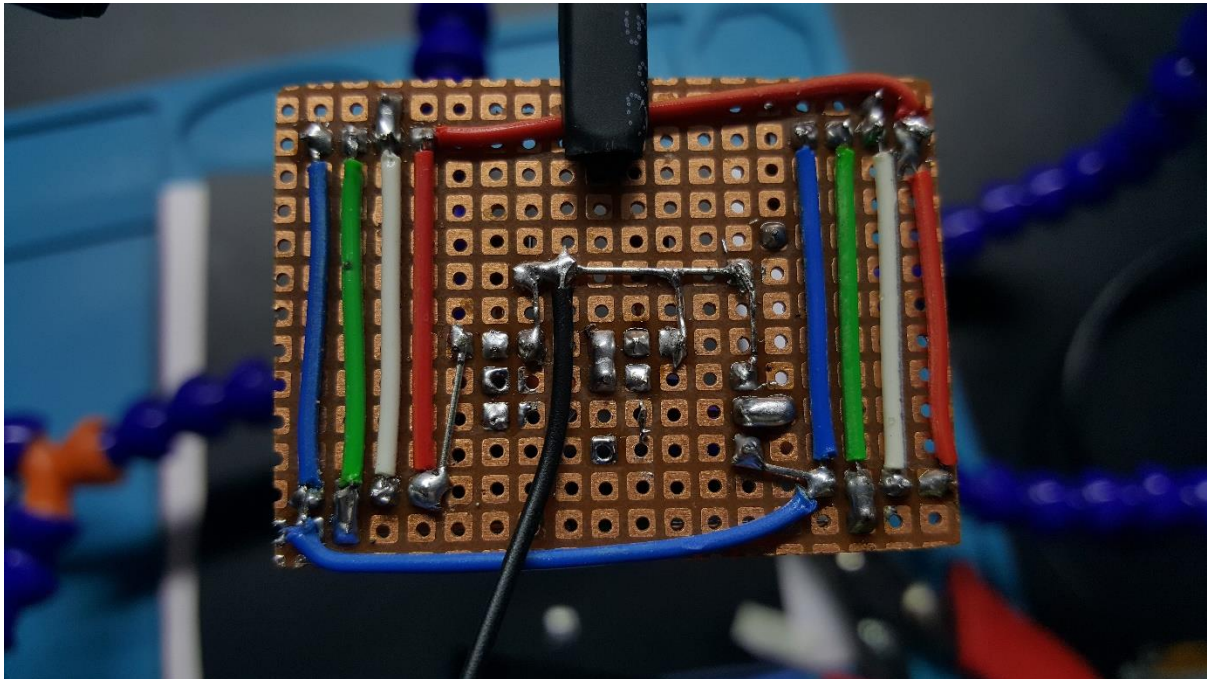
2.2.10:

Prepare the Colour LEDs' wires : Start by soldering the three 220Ω resistors to the JST connector's respective wires (RGB wires).



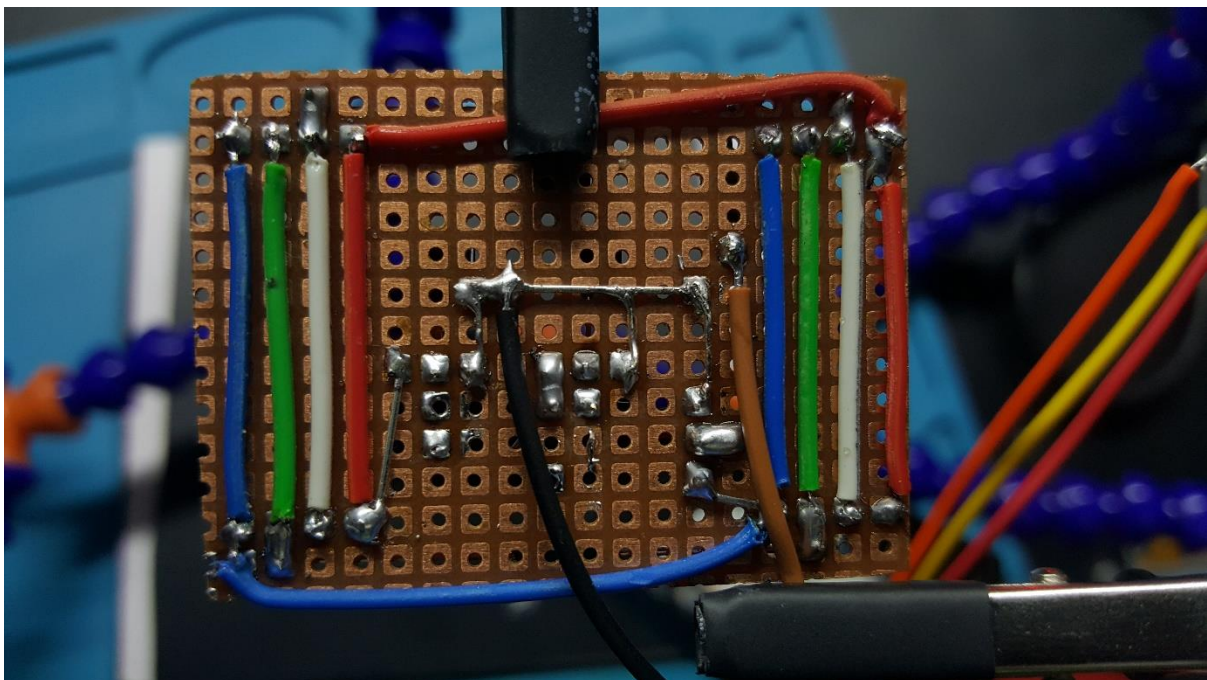
2.2.11:

Solder the GND wire (black) to the GND rail we just created (like shown in the image)



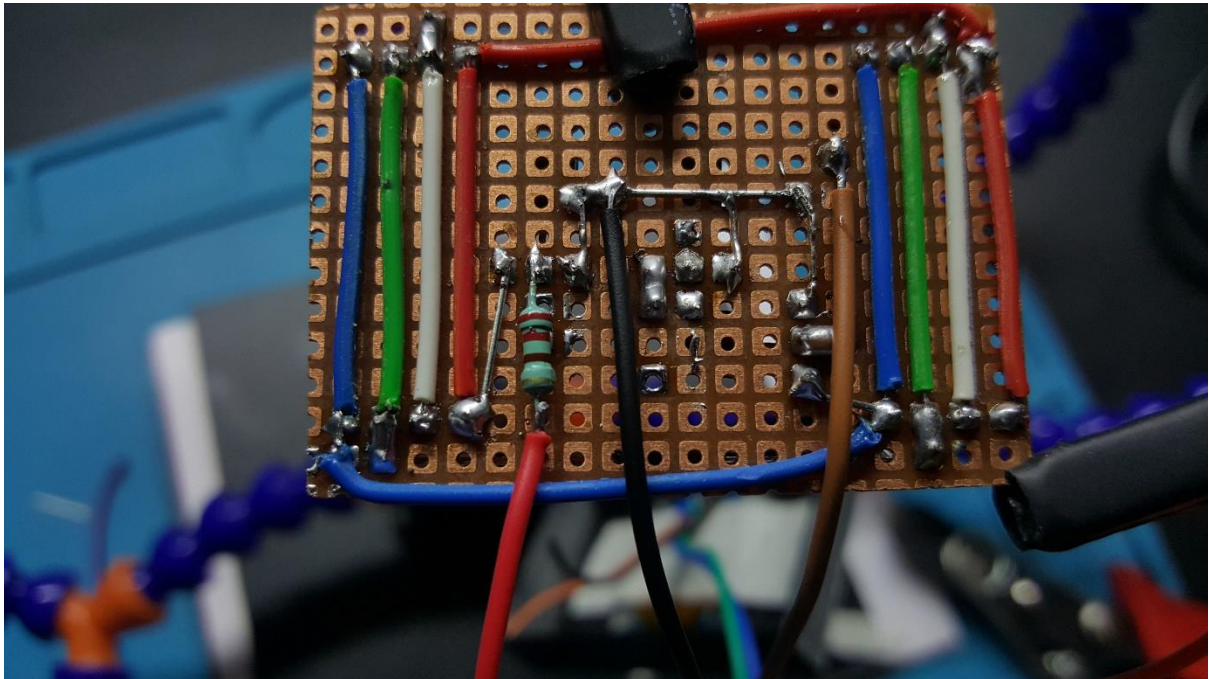
2.2.12:

Solder the VCC/VDD wire (Brown) to the 100Ω resistor we soldered beforehand (like shown in the image)



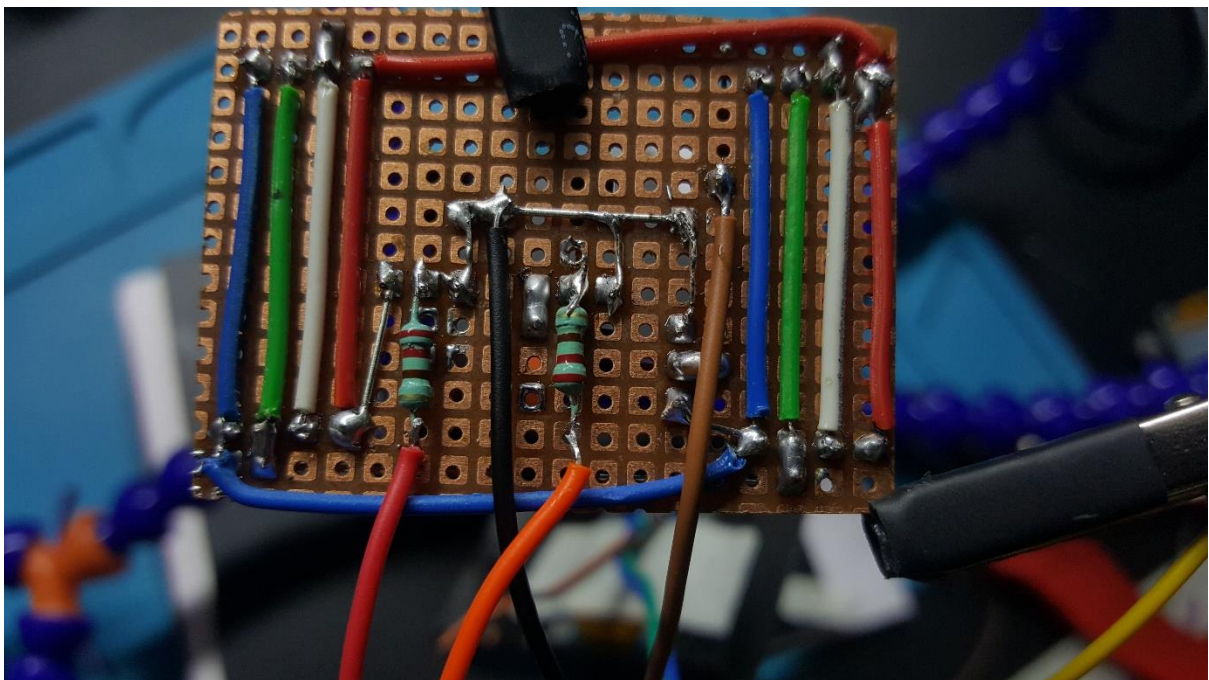
2.2.13:

Solder the Red LEDs' wire (red) (resistor terminal) to the Base of the Red LEDs' transistor. (like shown in the image).



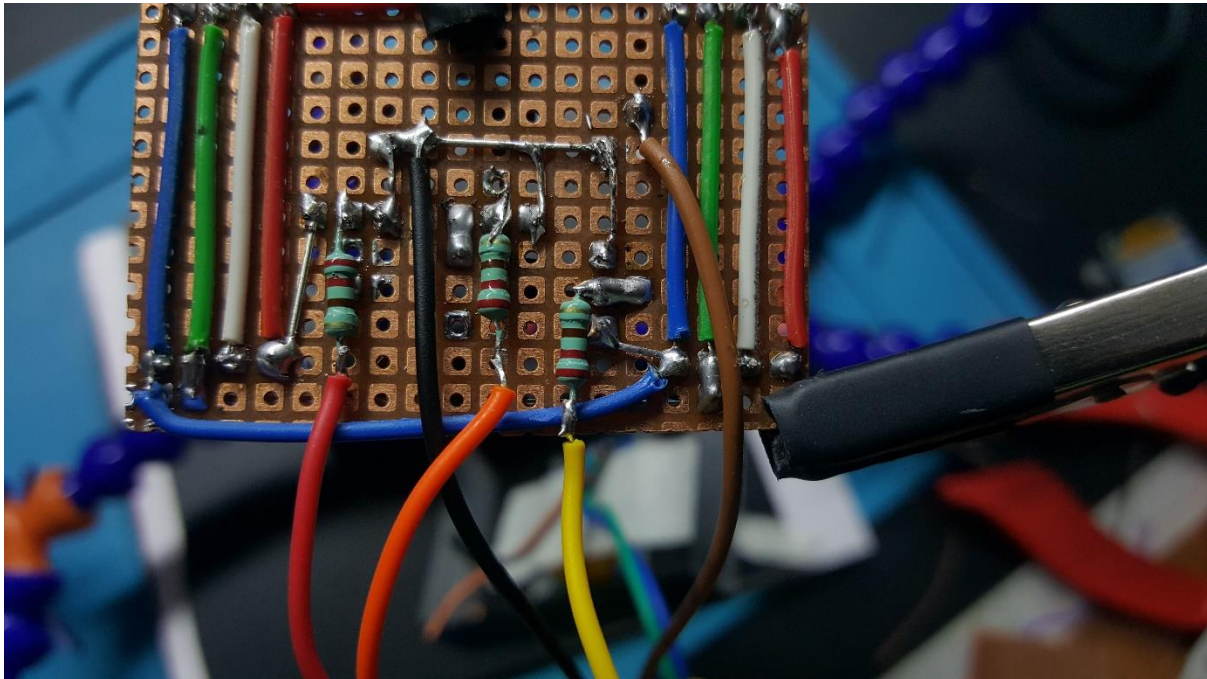
2.2.14:

Solder the Green LEDs' wire (Orange) (resistor terminal) to the Base of the Green LEDs' transistor. (like shown in the image)



2.2.15:

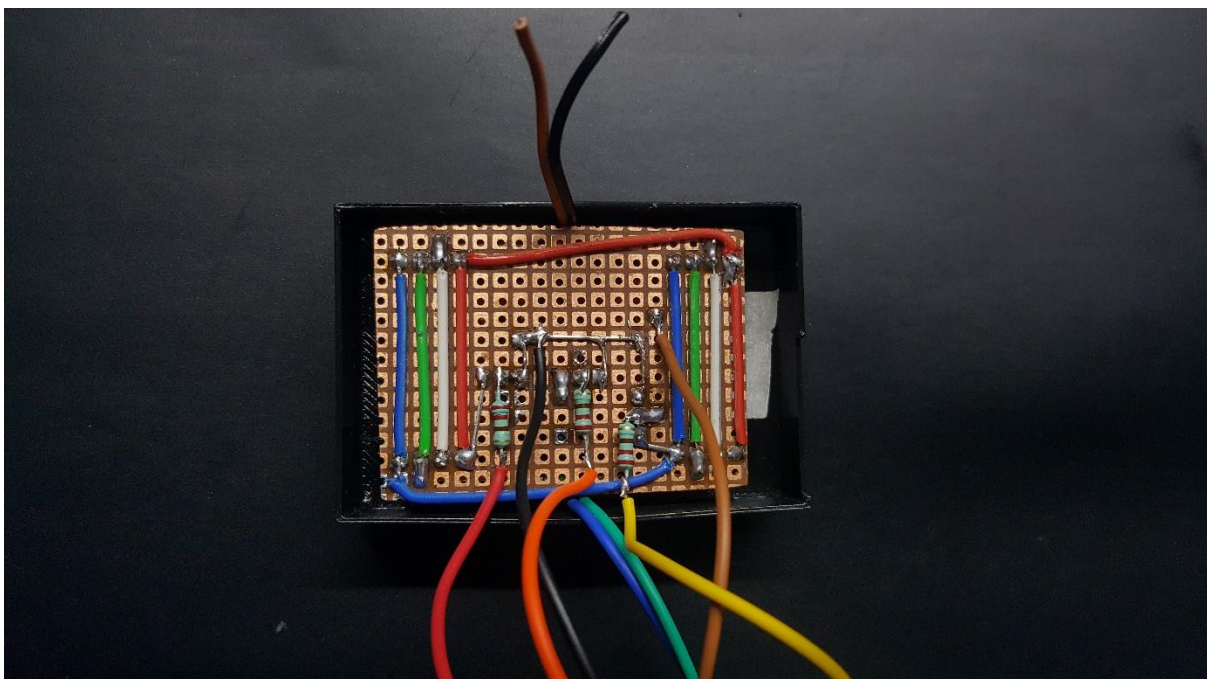
Solder the Blue LEDs' wire (Yellow) (resistor terminal) to the Base of the Blue LEDs' transistor. (like shown in the image)



**You may add heat shrink tube to the resistor terminals, but I hadn't as its going to be enclosed in an enclosure anyway.*

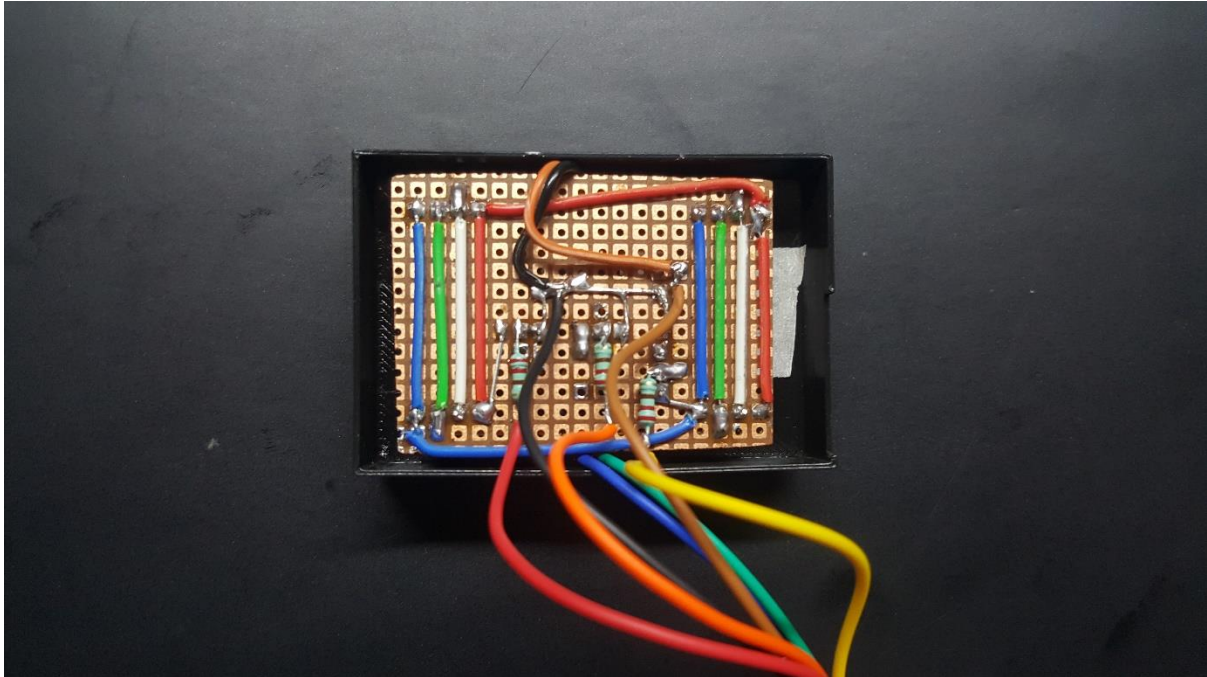
2.2.16:

Placing the circuit inside the enclosure.



2.2.17:

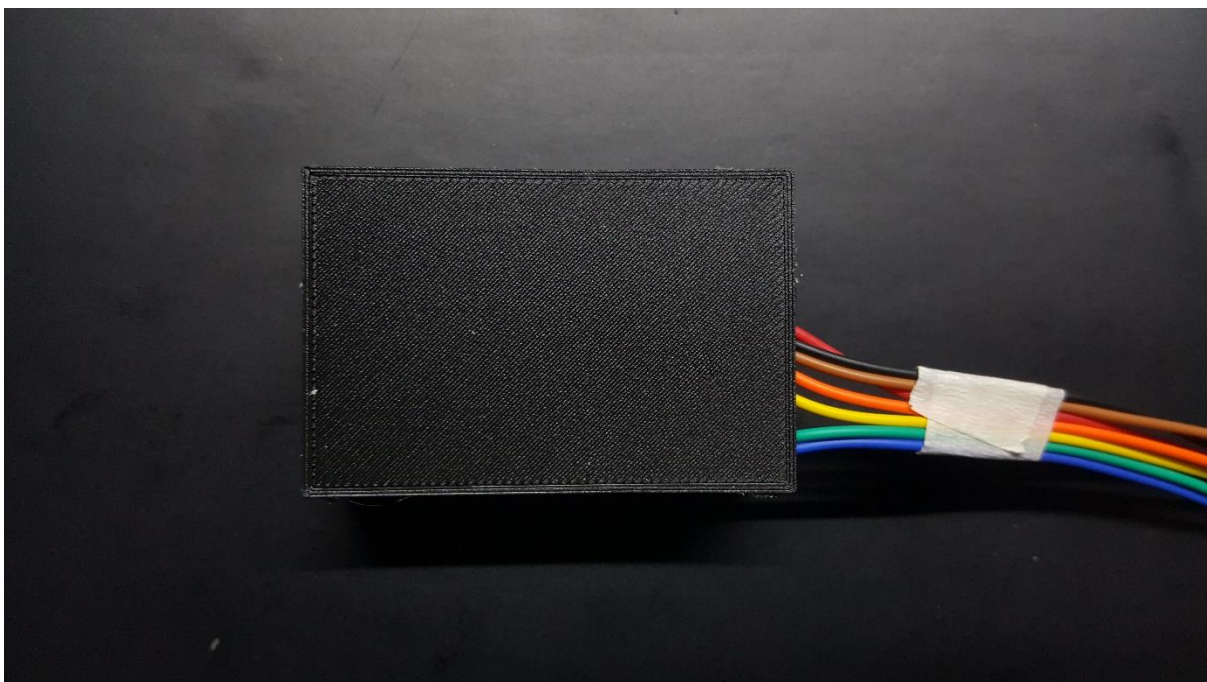
Soldering the supply wires of the display to the board. (Like shown in the image)



2.2.18:

Closing the display unit : After guiding the wires out (to the groove on the enclosure), fix the back panel of the enclosure to the front panel using hot glue.

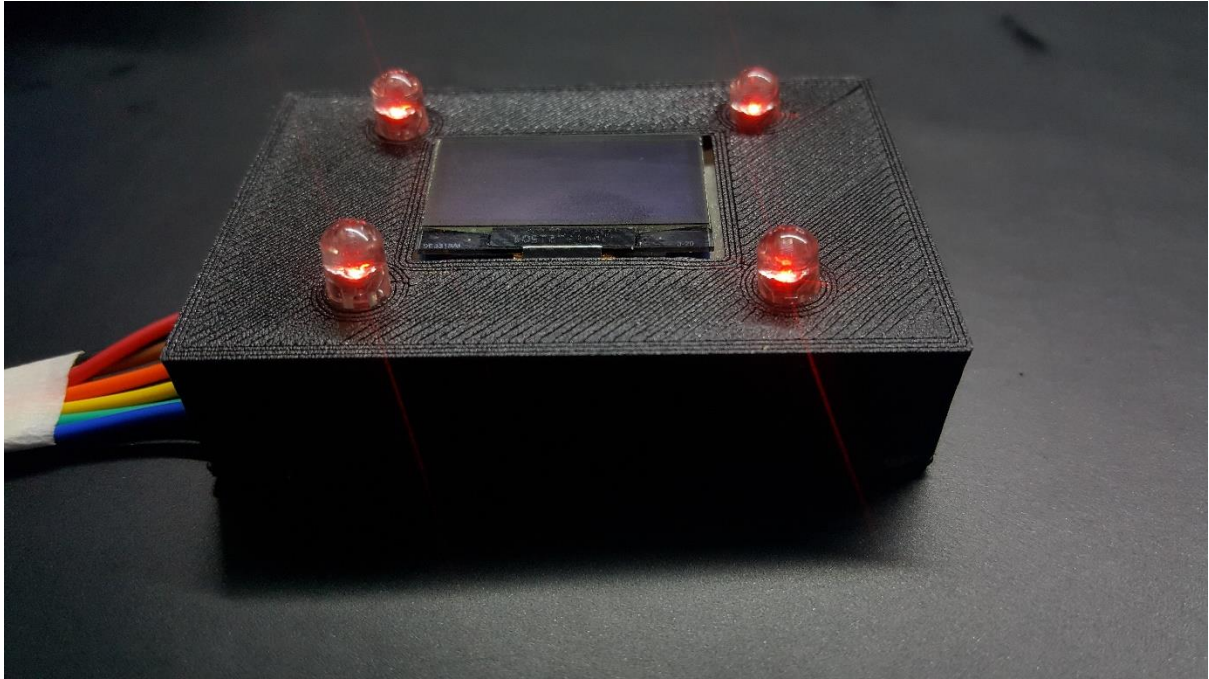
**You may test the circuit for any issues. Mine worked so I proceeded with this step.*



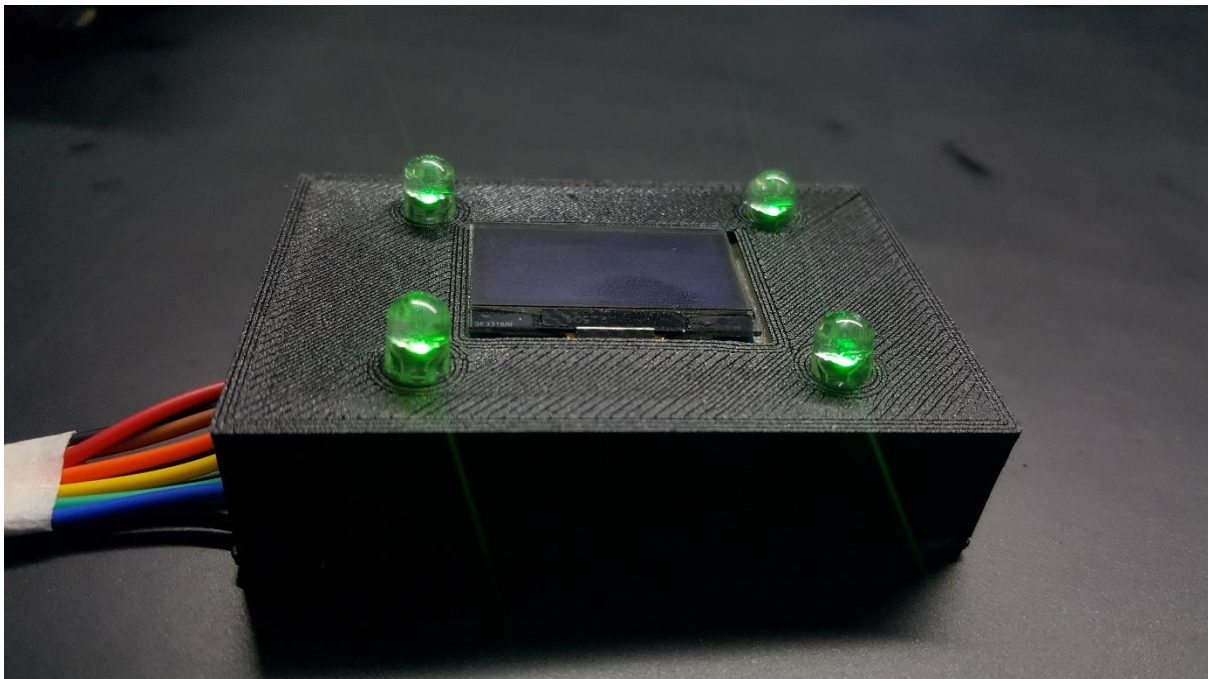
Testing:

I just connected the GND and VCC to GND and 5V (to my bench power supply) and connected the corresponding LED colour's wire to VCC.

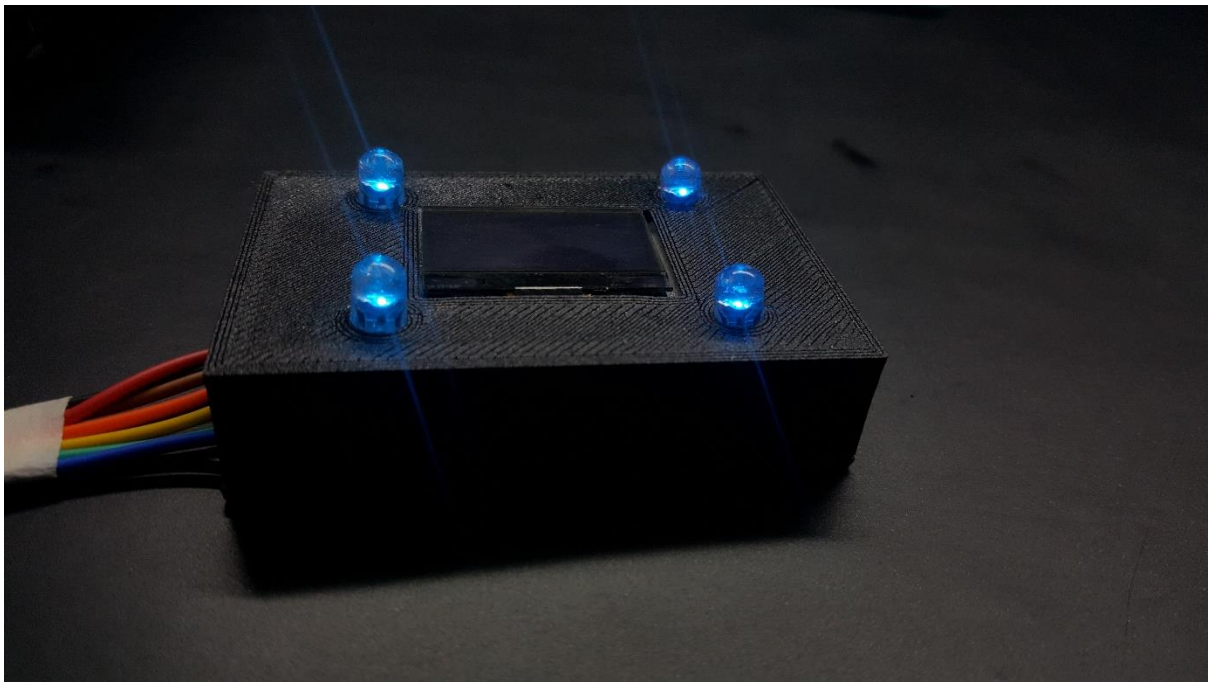
Red



Green



Blue



After three days of carefully and neatly soldering, I was happy that everything worked like intended.