# RGB HexMatrix | IOT Clock

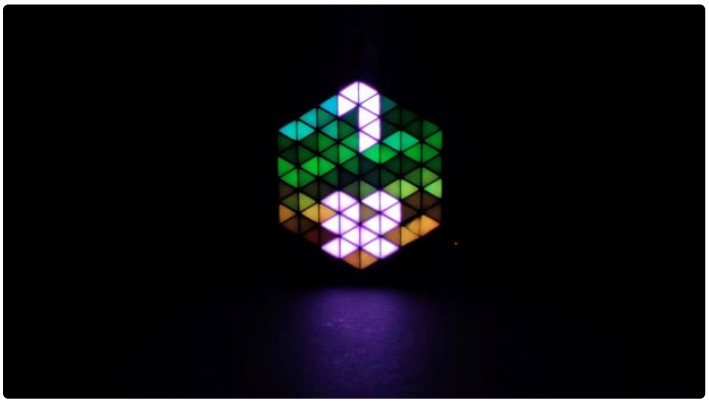
by Mukesh_Sankhla

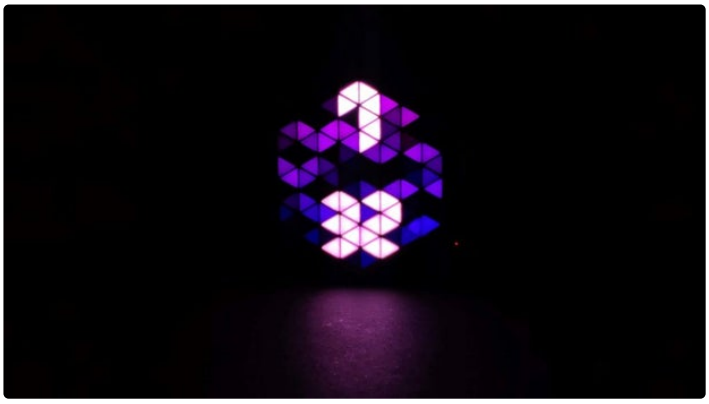
HexMatrix is the LED matrix having many triangular pixels. Six pixels combining makes a hexagon. There are many different animations that can be shown on the matrix form FastLED library, Also I have designed digits from 0 to 9 using 10 segments for each digit in the matrix and made a IOT clock.

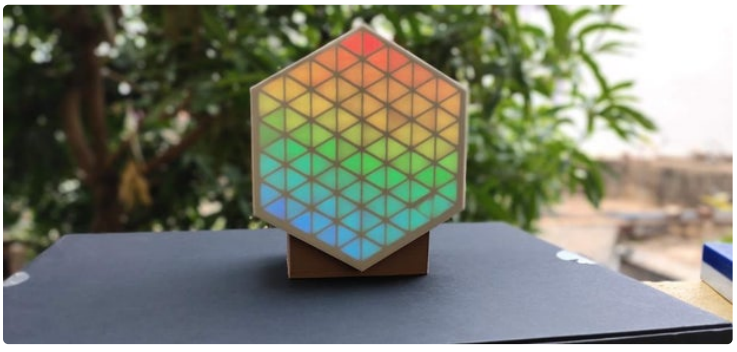
**Supplies:**

- ESP8266 or Arduino(Uno/Nano)
- WS2811 LED (96 LEDs)
- 5V/2A Power Supply
- 3D Printing

https://www.youtube.com/watch?v=iDJgYJqa-gg

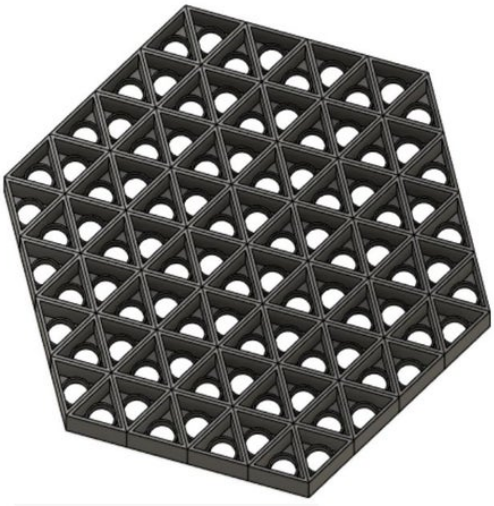


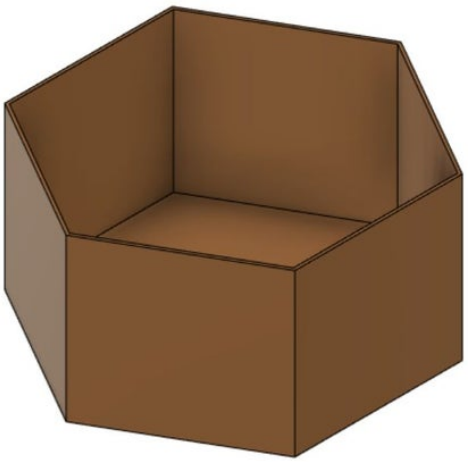


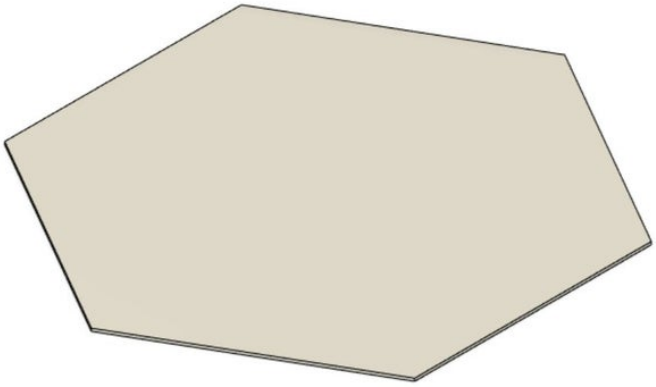


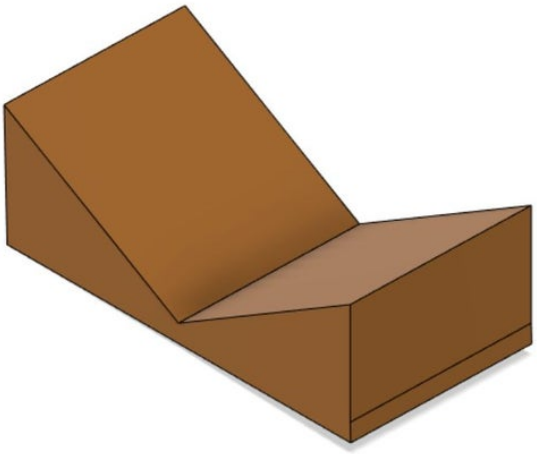
## Step 1: 3D Printing:

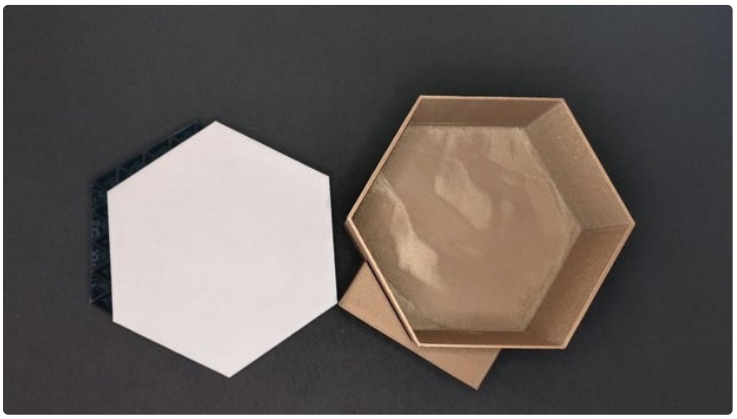
- 3D print all given 3D models: Click here for STL Files and Codes
- Print the screen layer in white PLA.





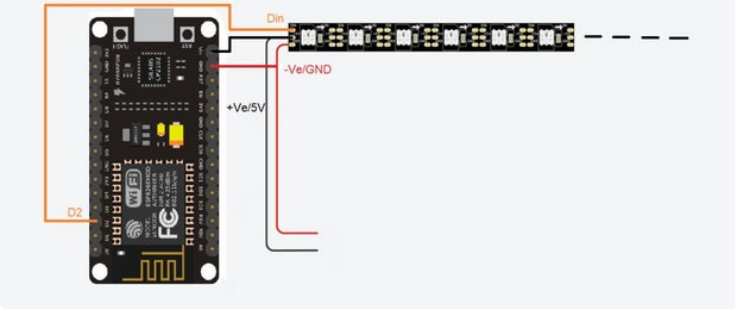


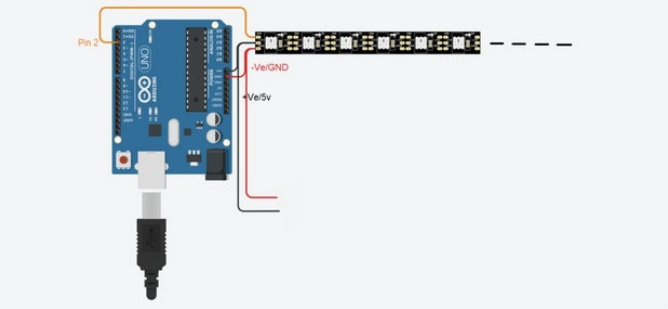




## Step 2: Circuit Connections:

- Make all the connections as shown in circuit diagram.
- GND~-Ve
- Vin~5V~+Ve
- DataIn ~ Pin 2
- Also extend the power supply wires to last LED and connect, to prevent the voltage drop across the LEDs.



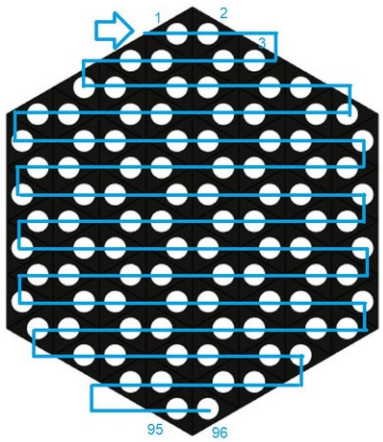



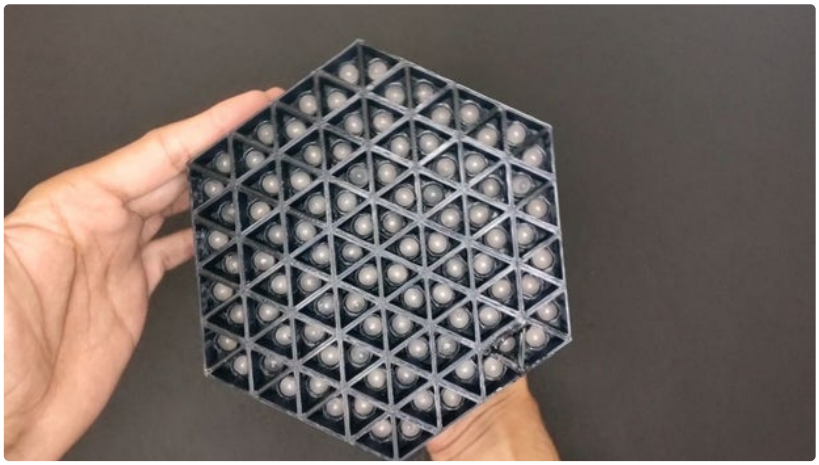

## Step 3: Note:

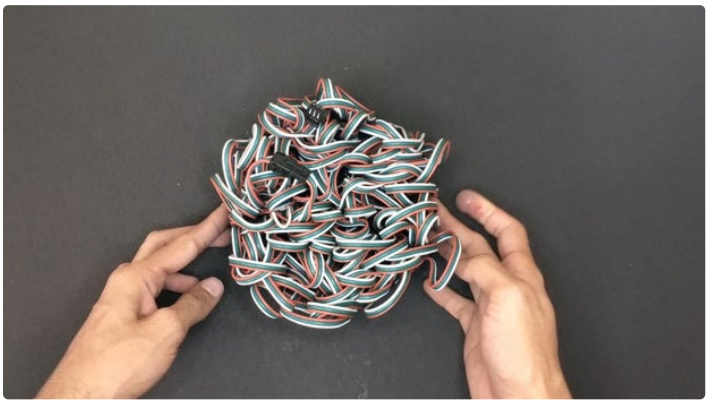
- If you use Arduino board then you can only display animations,you cannot display time.
- If you use ESP8266 board then we can display time and other animations on the matrix.

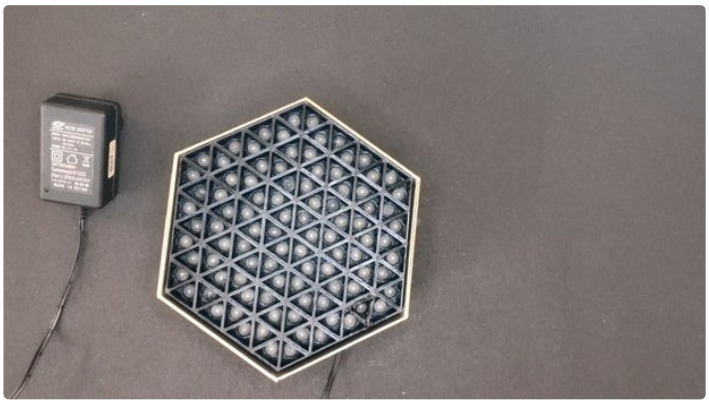
## Step 4: Assembly:

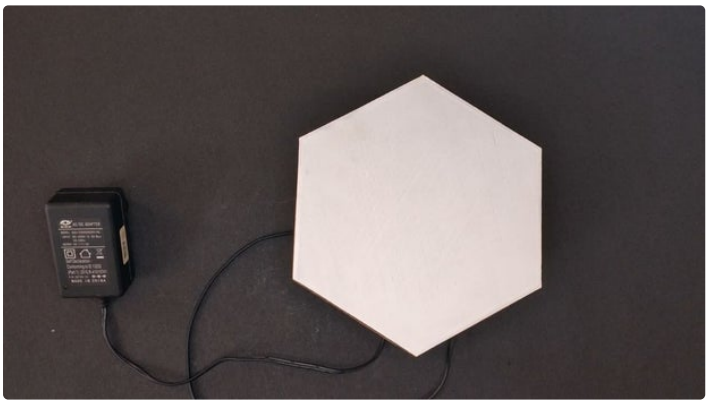
- Put all the LEDs in snake wise order.
- Assemble everything together.
- Solder the connector to Microcontroller board , the connector is taken from the other end of the LEDs line.

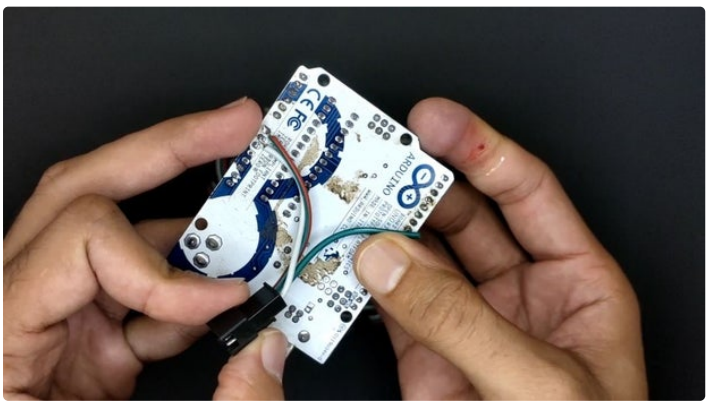


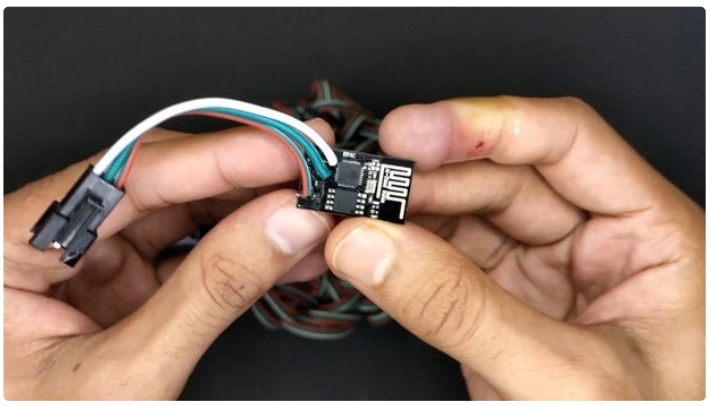













## Step 5: Coding:

- Click here for codes
- For this matrix I have made three codes HexMatrix.ino ,clock1.ino and clock2.ino.
- HexMatrix code is the code for displaying animations on the matrix,it can run on any Microcontroller board.
- Clock and clock2 code only runs on ESP8266 boards.

**HexMatrix.ino:**

- Open the code given in Arduino IDE.
- Install the FastLED Library in Arduino IDE.
- Select the board type,port and upload the code.

**Clock1 and Clock2 Codes:**

- Open the code in Arduino IDE.
- In this code we can change this values as per our color requirement

```
//Digit color values in RGB
int r=255;

int g=255;

int b=255;

//Background color values in RGB

int br=0;

int bg=20;

int bb=10;
```

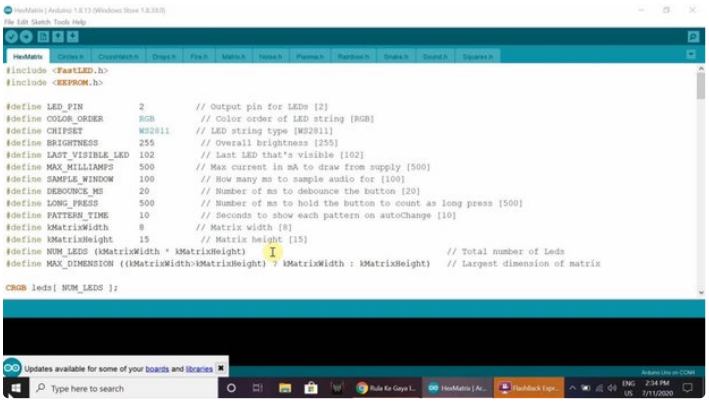
- Enter the Wifi name and password

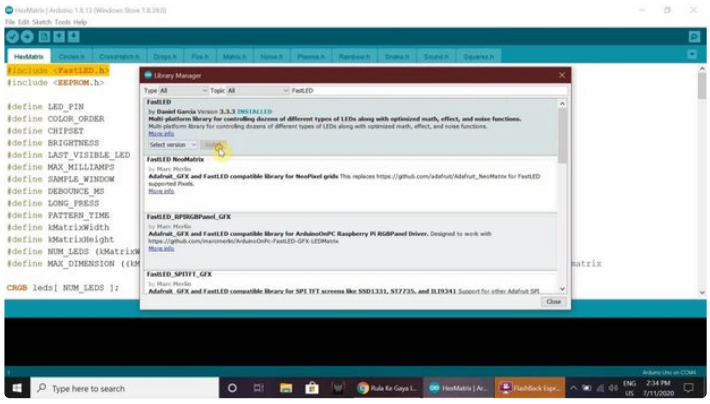
```
const char* ssid = "Wifi_Name";

const char* password = "Password";
```

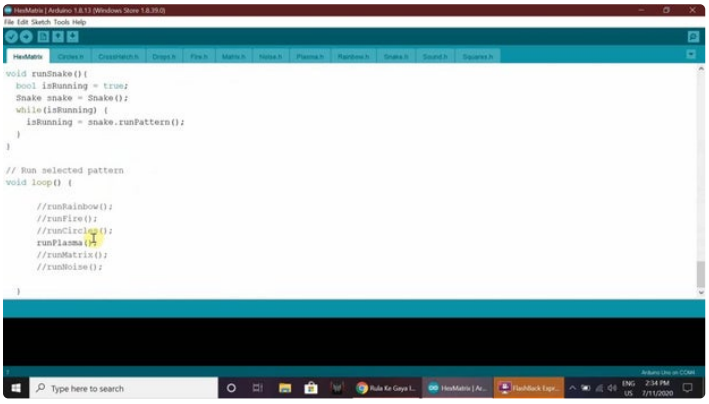
- Enter the time zone of your country(India 5:30=5.5 similarly enter your time zone)

```
//Your time zone
int timezone = -5.5 * 3600;
```

- Select the board type as ESP8266,select the port and upload the code.
- Apart from this we also have many other animations in the FastLED Examples.







Nice job! What program did you use to design the 3D printed parts?

Thank You! I use Fusion 360 to design the 3D models.

Super...it looks amazing...

Thank You!