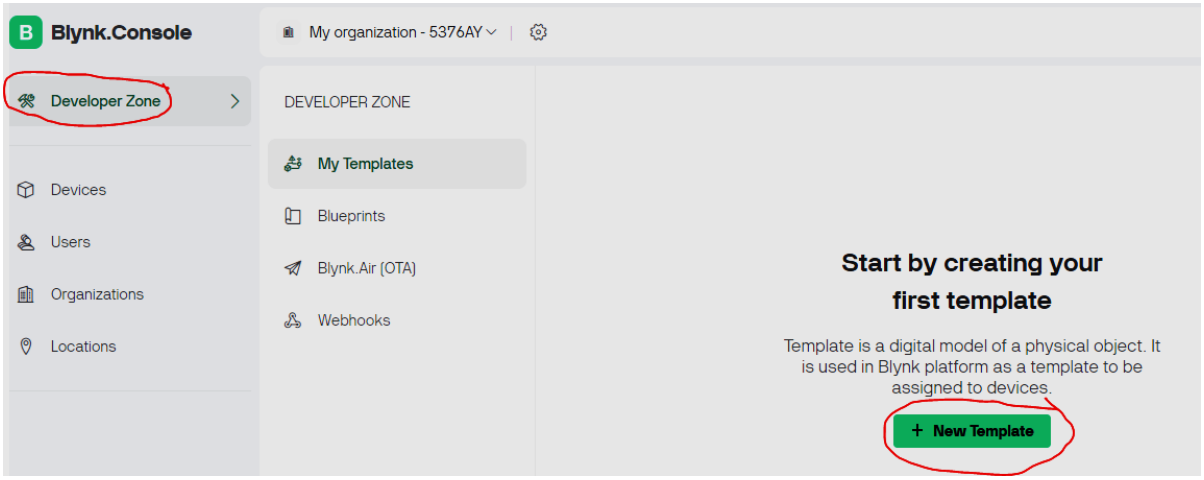
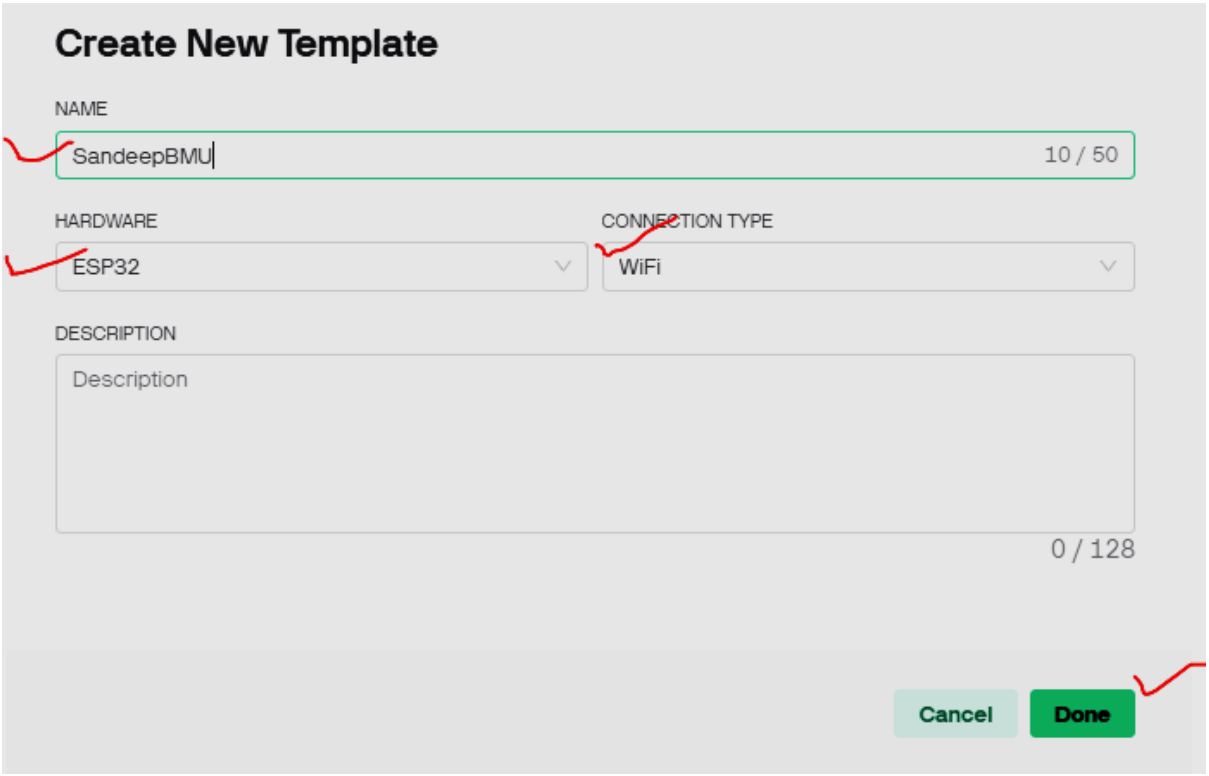
Exp-3: Controlling the home/industrial appliances over the internet using ESP32.

Step-1 Visit **https://blynk.io/** and complete your registration (signup) process. You will receive a user ID and password (*verification link on email*).

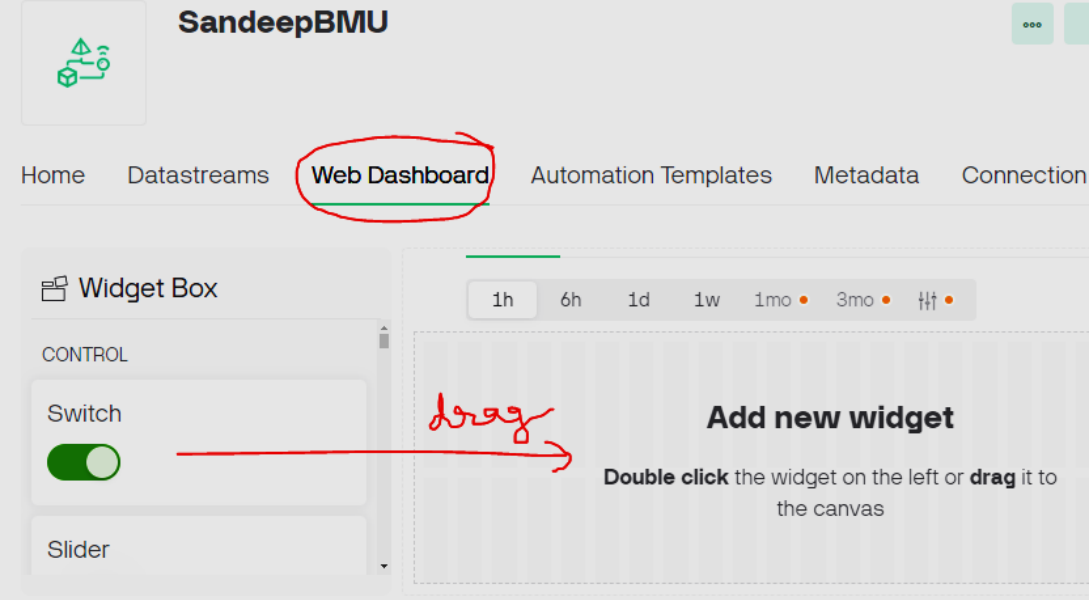
Log in to the Blynk Cloud from your laptop using the generated user ID (email) and password.

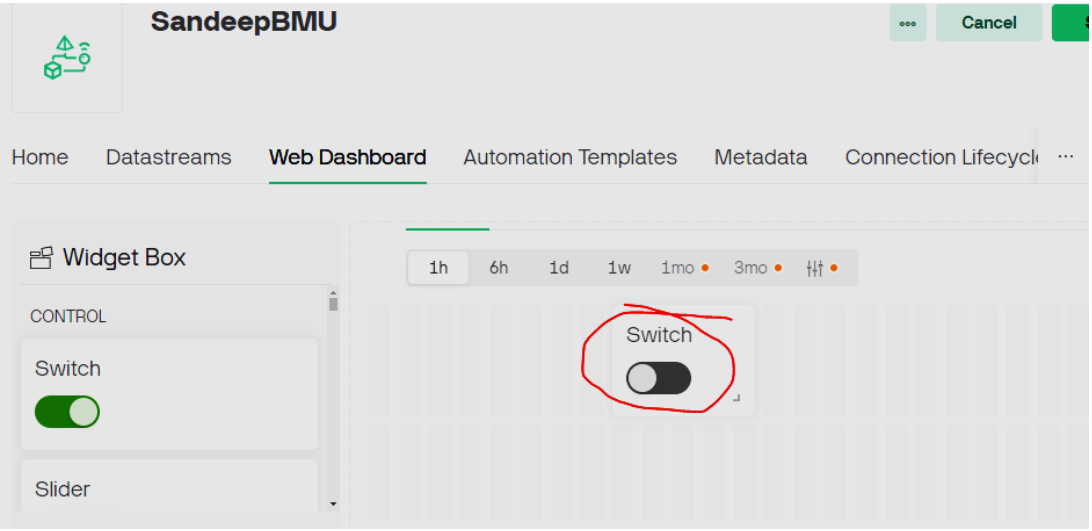
Step-2 Click on developer's zone and create a new template (**see snaps below**)



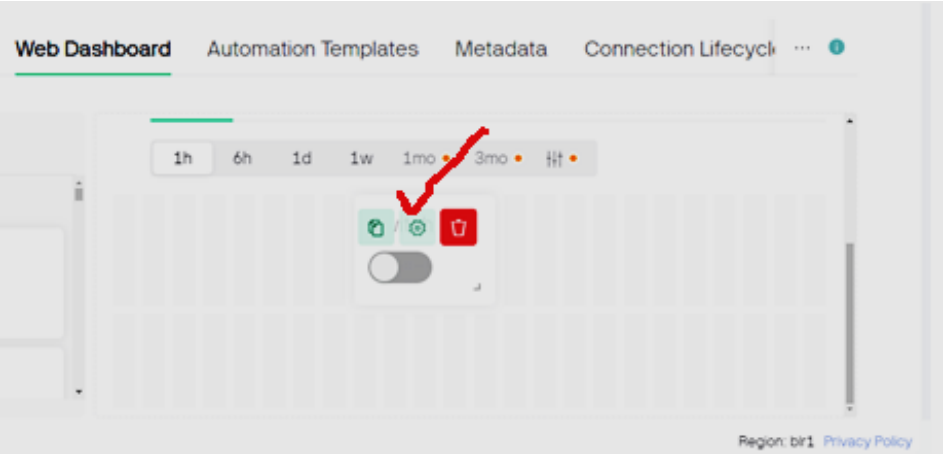


Step-3 Now, click on '**Web Dashboard**' and drag the 'Switch' to 'Add new widget' (see snaps below)

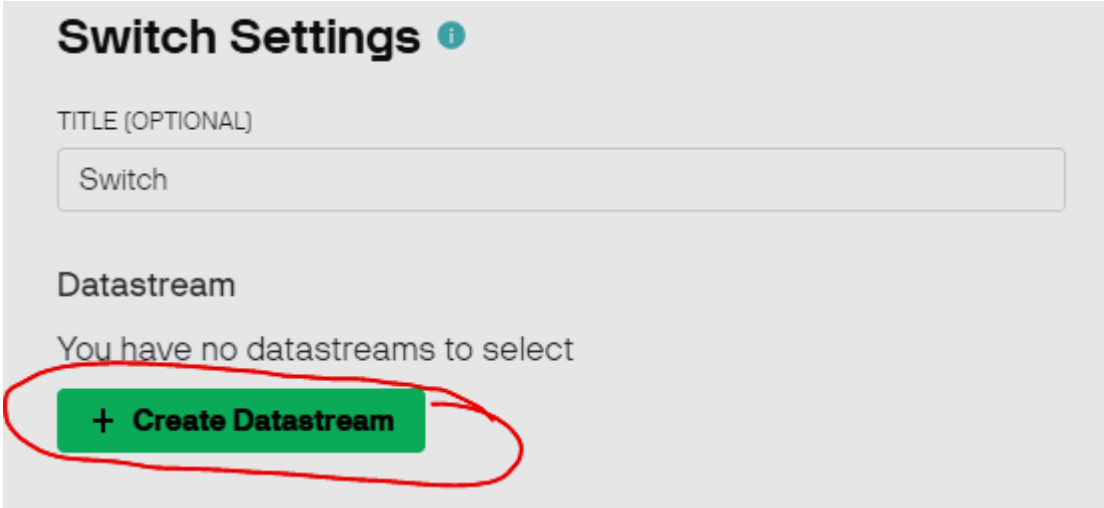


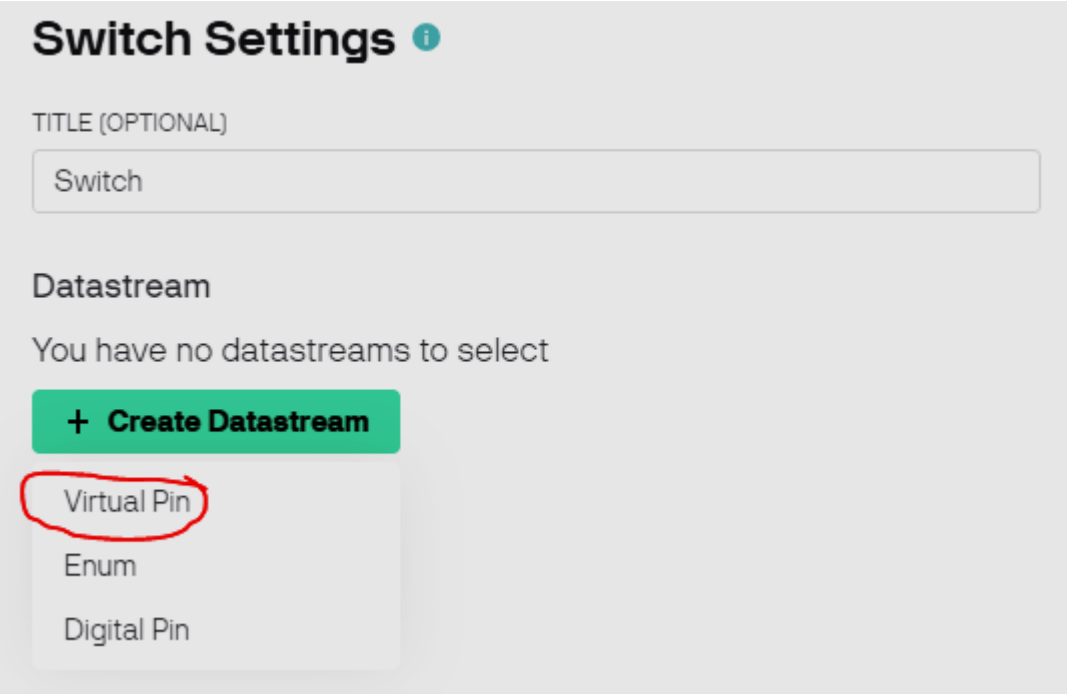


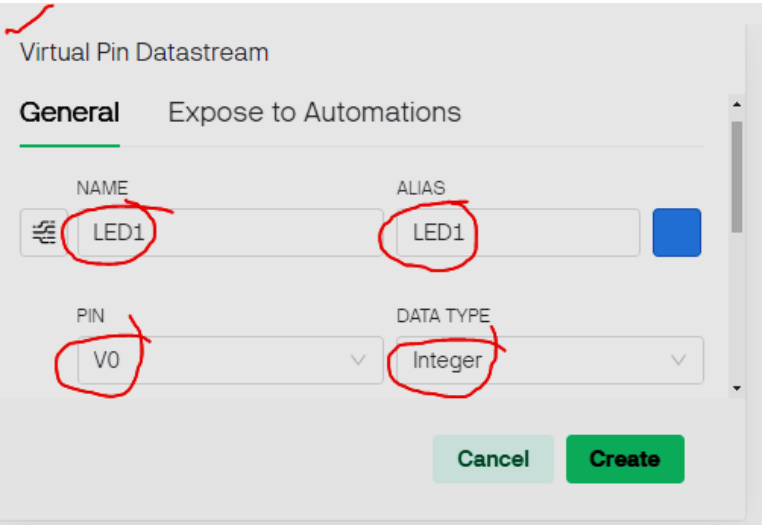
Step-4 Now, click on the **settings icon** (***shown by tick mark in snap below***) of the 'dragged Switch' to configure it.



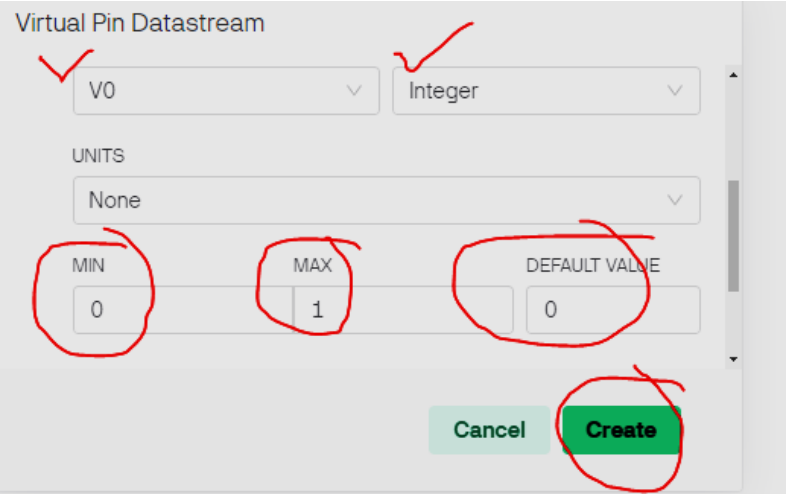
Create a 'Data Stream' in the newly opened window (as shown below):





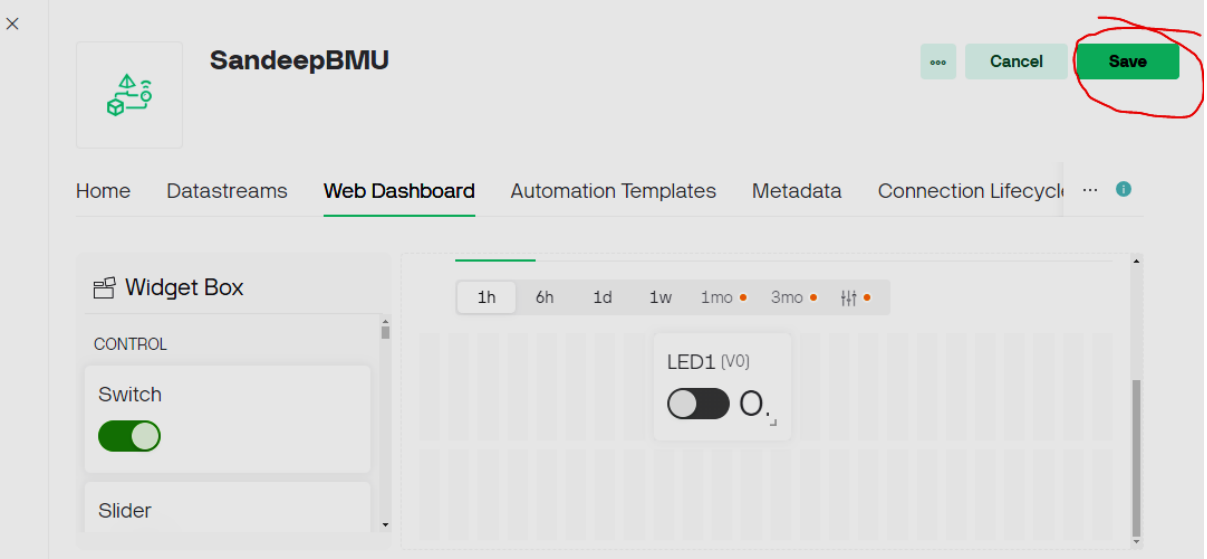


For the same window (open above), pls see more settings in snap below:

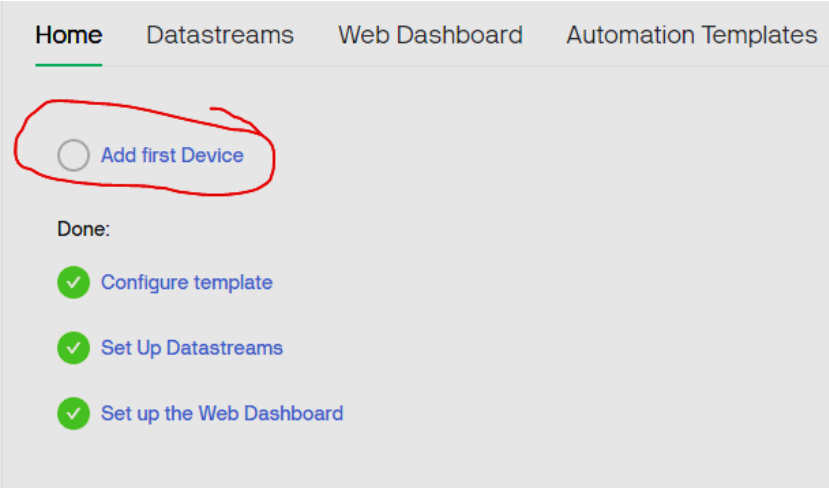


Once we click on 'Create', **a new window will open**. Do the following settings (snap below) and click on save.

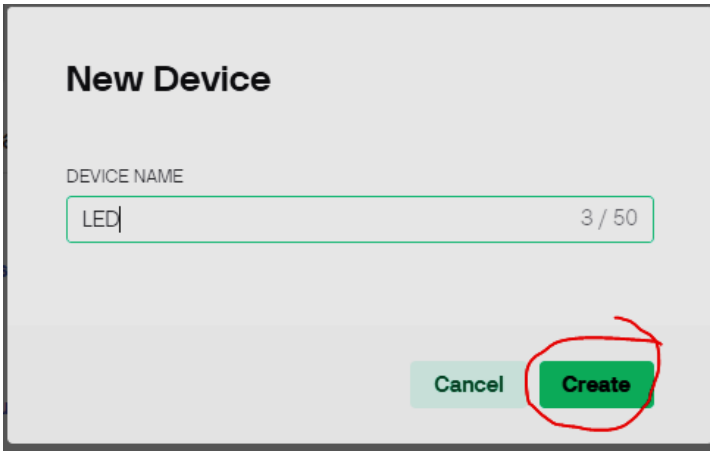
Step-5: After finishing these steps, we will be directed on the main page. Save the settings on this page as shown below:



Step-6: Now, click on the 'Home' tab and click on 'Add first device'. (see snap below)



Write name as 'LED' and click on create.



We can see the message as 'device created'.

Step-7 Now, click on the **'Home' tab on Blynk portal** and get **(copy) the following lines** (*to be used in our program in the next step*)

#define BLYNK_TEMPLATE_ID "XXXXXXXXXXXXXXX"

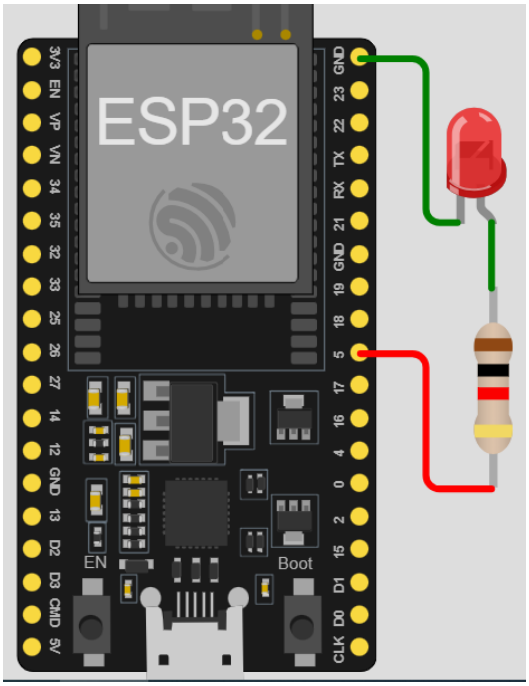
#define BLYNK_TEMPLATE_NAME "XXXXXXXXXXXX"

Auth Token (*Zoom OFF screen to make icon small to see it if not visible*): XXXXXXXXXXXXXX

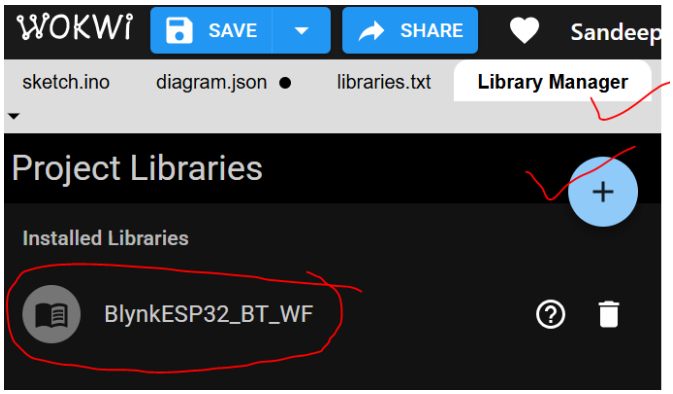
Step-8 Open WokWi Simulator and write the following program (code):

```
#define BLYNK_TEMPLATE_ID "TMPL3V4VGE5ai"  //To be changed to your template id
#define BLYNK_TEMPLATE_NAME "SandeepBMU" //To be changed to your template name

#define BLYNK_AUTH_TOKEN "R6ayifSZGQtFdhHZHSu3M8LgQacqwKsi"
// To be changed to your Blynk generated token

#define BLYNK_PRINT Serial

#include <WiFi.h>
#include <WiFiClient.h>
#include <BlynkSimpleEsp32.h>

#define RelayPin1 5

char auth[] = BLYNK_AUTH_TOKEN;

char ssid[] = "Wokwi-GUEST";
char pass[] = "";

// This function is called every time the Virtual Pin 0 state changes
BLYNK_WRITE(V0)
{
int value = param.asInt();
value ? digitalWrite(RelayPin1, HIGH) : digitalWrite(RelayPin1, LOW);
}

void setup()
{
pinMode(RelayPin1, OUTPUT);

Serial.begin(115200);
Blynk.begin(auth, ssid, pass);
}
void loop(){
Blynk.run();
}
```

Step-9 On the WokWi simulator, design the following circuit.

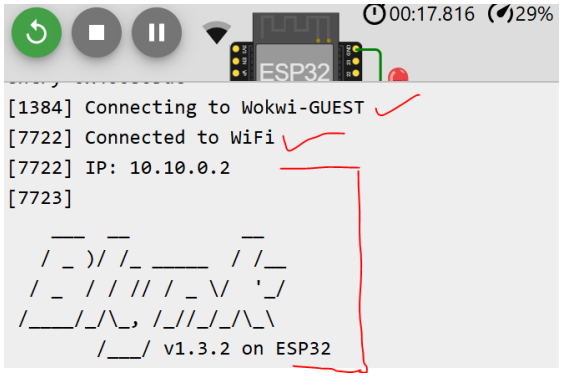


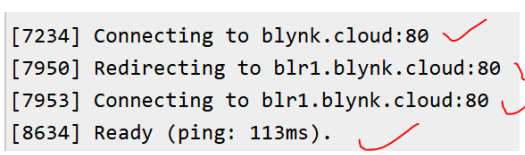
Step-10 Add the following library in WokWi:



Step-11: Again go to **Sketch.ino tab and start the simulation** (it may take 1 to 2 minutes).

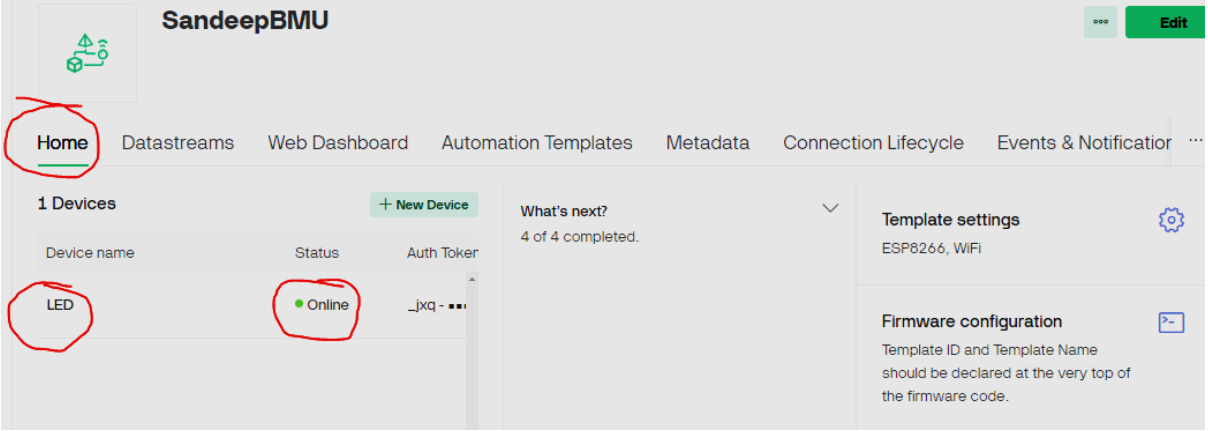
On successful simulation, it will show the following info:



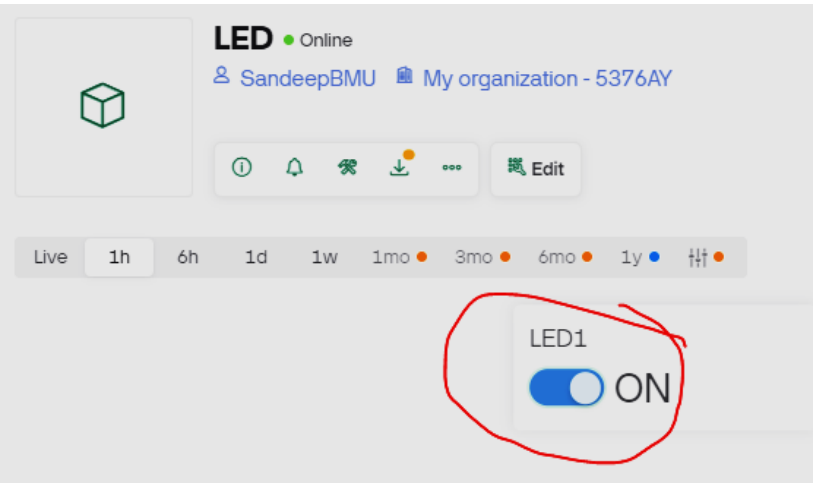


Step-12: Again, go to Blynk portal (website) and click on the 'Home' tab. **It will show our device ONLINE** (see snap below)

If the device is shown offline, stop and start the simulation again (on WokWi).



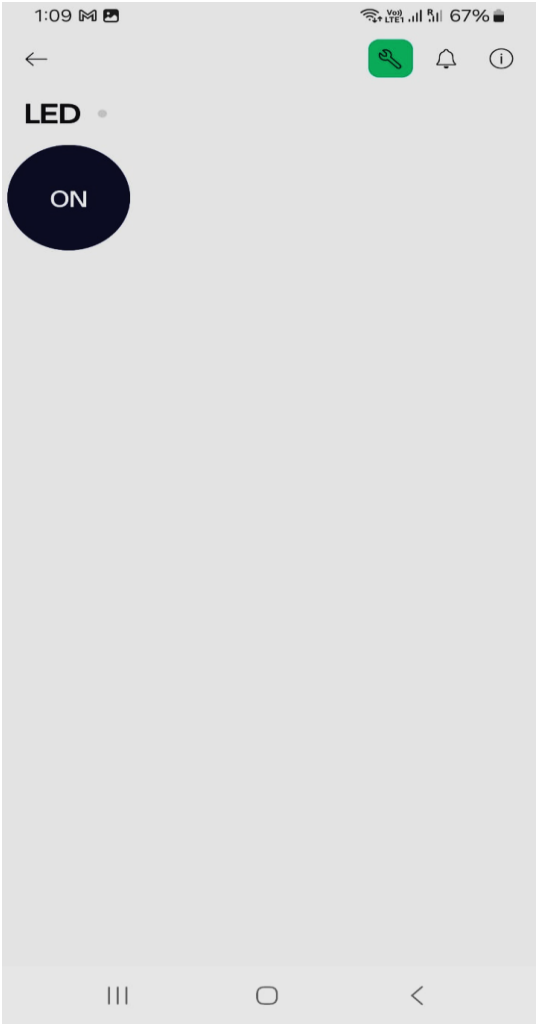
Click on LED, the ON/OFF button will be shown. Click on the button to toggle it ON/OFF. We can observe that the LED connected to ESP32 (on WokWi) will be controlled (ON/OFF) accordingly.



Step-13 *Controlling the device (LED) from Smartphone.*

Install the Blynk IoT app on the smartphone → log in with the same credentials (email id and password) which are used to create the Blynk account → Device (LED) will be visible → Click on it → click on the setting tab (on top, left to bell icon) to create user interface → Click on the plus (+) icon on bottom → select button → Click on the button (on main screen) → **select switch** (out of Push and swich) → choose data stream → select LED1(V0) → click on cross (on top) → Again click on cross (on top) → Go back to previous screen (with bottom arrow) → Finally, the interface is created. On toggling the ON/OFF the LED button on mobile, we can observe that the device (LED on ESP8266) is getting controlled.

SEE SNAPS BELOW:

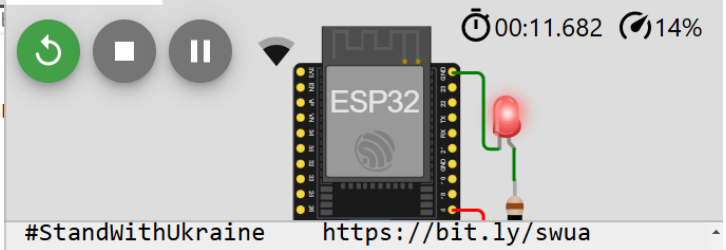


WOKWI SAVE SHARE Sandeep-Exp-3 Docs

sketch.ino | diagram.json | libraries.txt | Library Manager

```
#define BLYNK_TEMPLATE_ID "TMPL3V4VGE5ai"  //To
#define BLYNK_TEMPLATE_NAME "SandeepBMU" //To be

#define BLYNK_AUTH_TOKEN "R6ayifSZGQtFdhHZHSu3M8
// To be changed to your Blynk generated token

#define BLYNK_PRINT Serial

#include <WiFi.h>
#include <WiFiClient.h>
#include <BlynkSimpleEsp32.h>

#define RelayPin1 5

char auth[] = BLYNK_AUTH_TOKEN;
```

Simulation




```
#StandWithUkraine    https://bit.ly/swua

[7234] Connecting to blynk.cloud:80
[8017] Redirecting to blr1.blynk.cloud:80
[8020] Connecting to blr1.blynk.cloud:80
[8684] Ready (ping: 96ms).
```