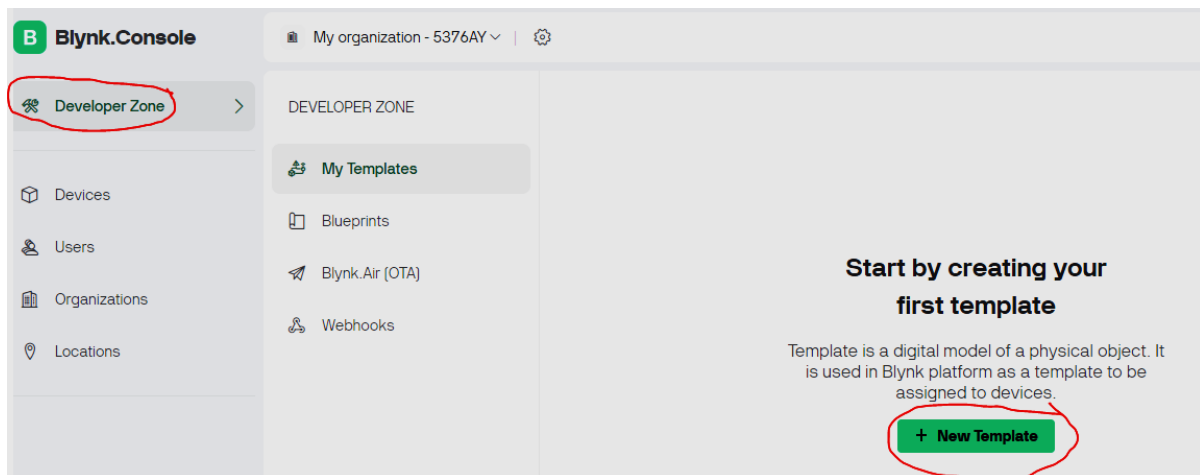


Exp-3: Controlling the home/industrial appliances over the internet using ESP32.

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

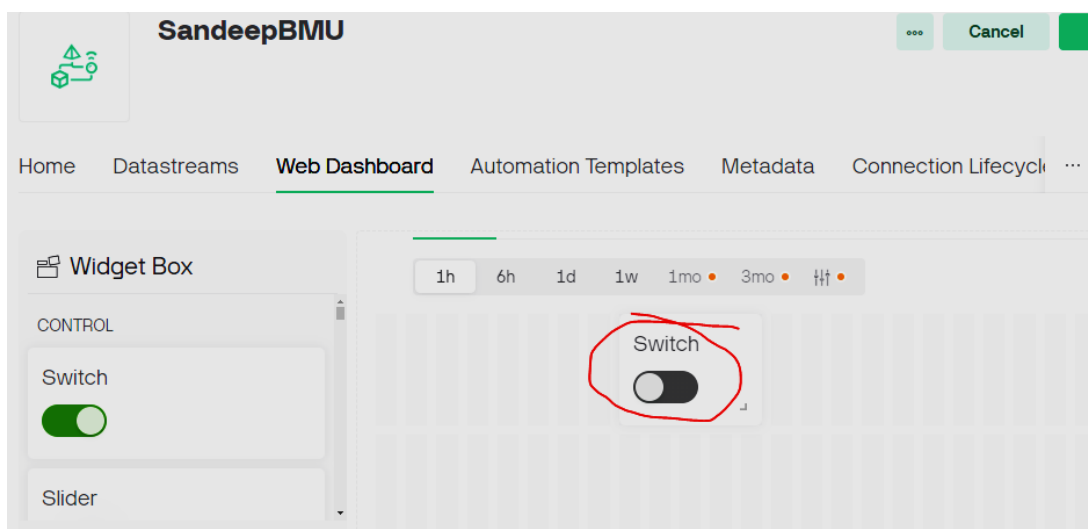
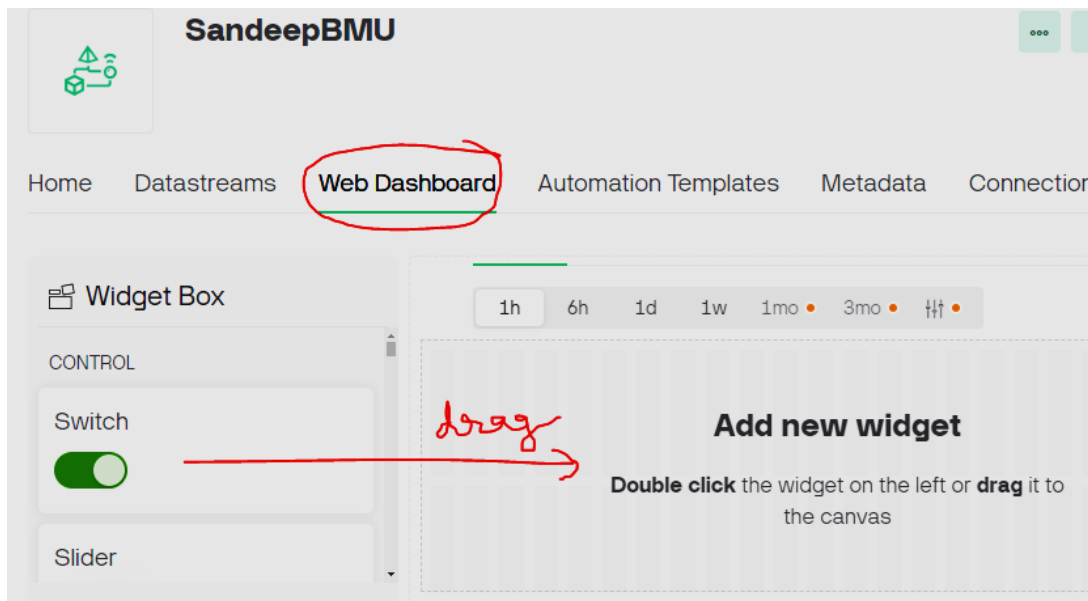
Log in to the Blynk Cloud from your laptop using the generated user ID (email) and password.

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



The screenshot shows the 'Create New Template' form. It has three main sections: 'NAME', 'HARDWARE', and 'CONNECTION TYPE'. The 'NAME' field contains 'SandeepBMU' with a character count of '10 / 50'. The 'HARDWARE' dropdown is set to 'ESP32' and the 'CONNECTION TYPE' dropdown is set to 'WiFi'. Both dropdowns are marked with red checkmarks. Below these is a 'DESCRIPTION' text area with a character count of '0 / 128'. At the bottom right, there are 'Cancel' and 'Done' buttons, with a red checkmark next to the 'Done' button.

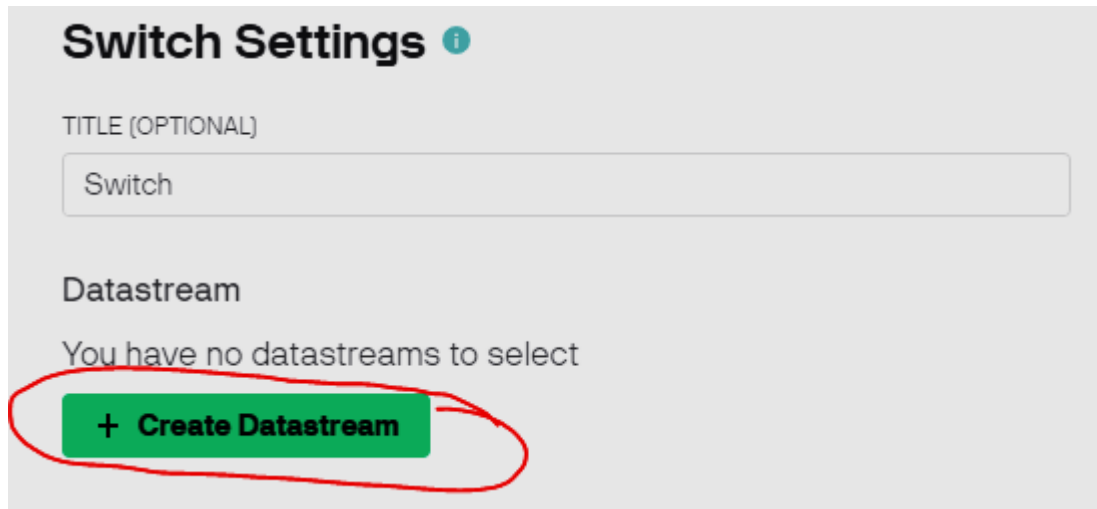
Step-3 Now, click on 'Web Dashboard' and drag the 'Switch' to 'Add new widget' (see snaps below)



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):



Switch Settings ⓘ

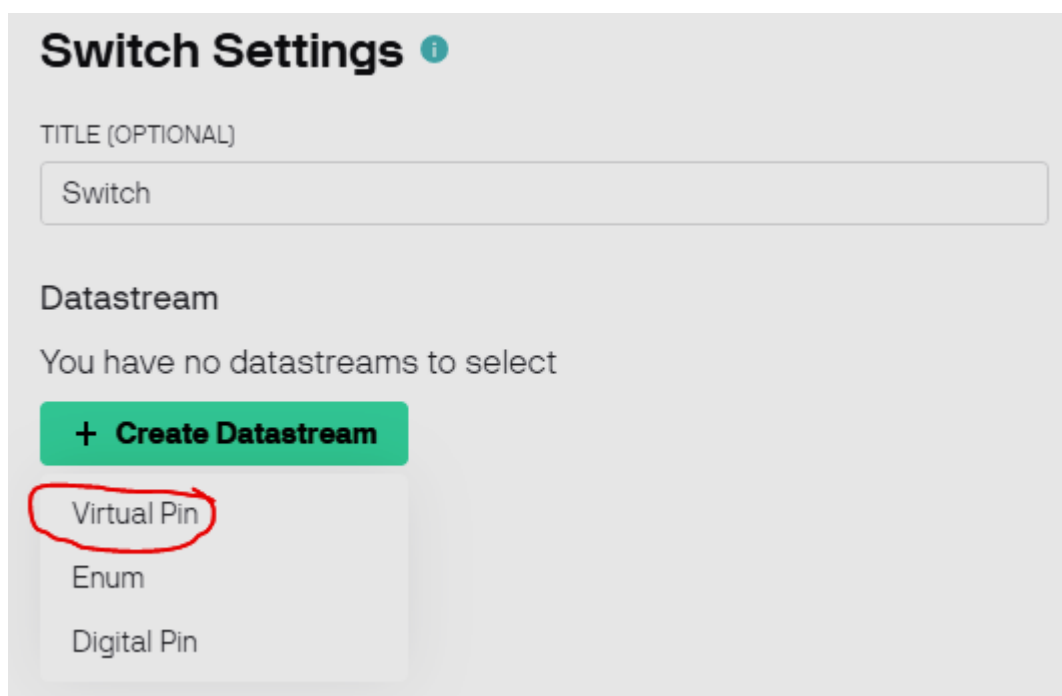
TITLE [OPTIONAL]

Switch

Datastream

You have no datastreams to select

+ Create Datastream



Switch Settings ⓘ

TITLE [OPTIONAL]

Switch

Datastream

You have no datastreams to select

+ Create Datastream

Virtual Pin

Enum

Digital Pin

Virtual Pin Datastream

General Expose to Automations

NAME LED1 ALIAS LED1

PIN V0 DATA TYPE Integer

Cancel Create

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

Virtual Pin Datastream

V0 Integer

UNITS None

MIN 0 MAX 1 DEFAULT VALUE 0

Cancel Create

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

Switch Settings

TITLE (OPTIONAL) LED1

Datastream LED1 [V0]

ON VALUE 1 OFF VALUE 0

Show on/off labels

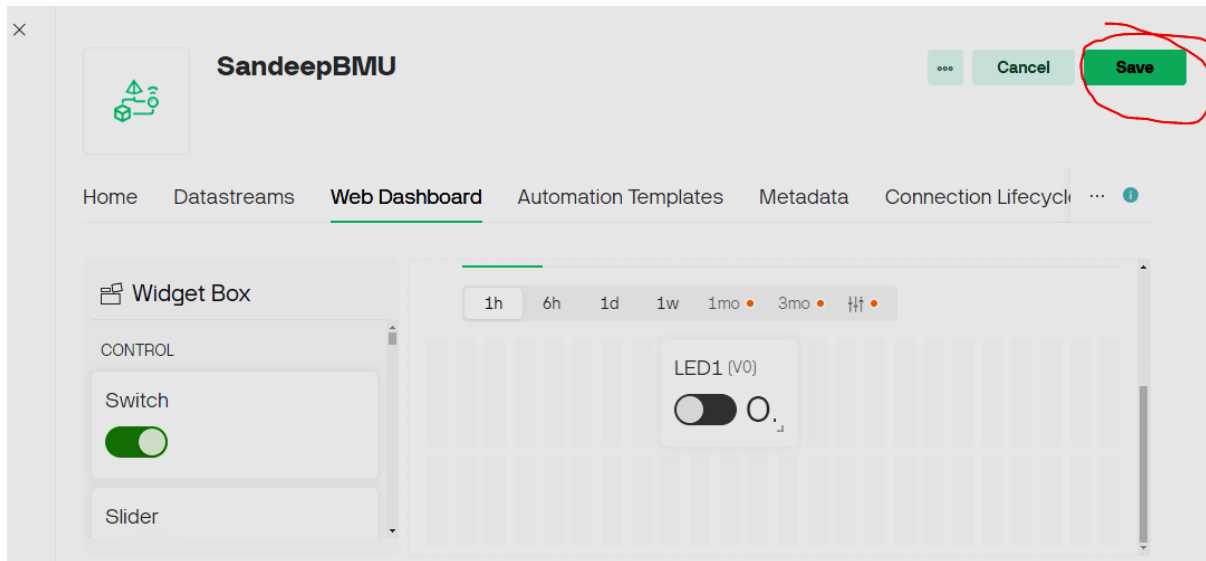
ON LABEL ON OFF LABEL OFF

LABEL POSITION

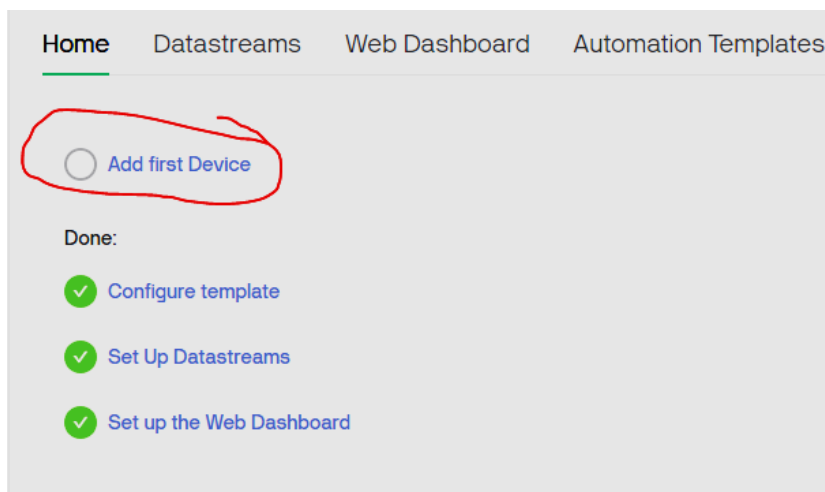
LED1 [V0] OFF

Cancel Save

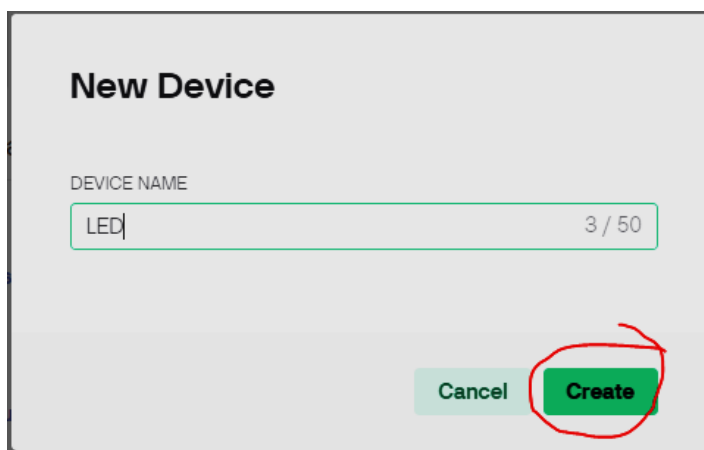
Step-5: After finishing these steps, we will be directed on the main page. Save the settings on this page as shown below:



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 "XXXXXXXXXXXXXXXXXX"
```

```
#define BLYNK_TEMPLATE_NAME "XXXXXXXXXXXXXXXXXX"
```

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

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[] = "";

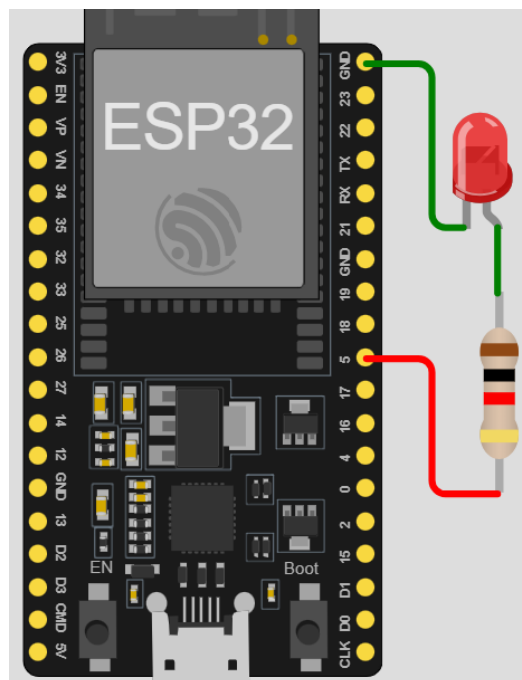
// This function is called every time the Virtual Pin 0 state changes
BLYNK_WRITE(V0)
{
  int value = param.asInt();
  value ? digitalWrite(RelayPin1, HIGH) : digitalWrite(RelayPin1, LOW);
}

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

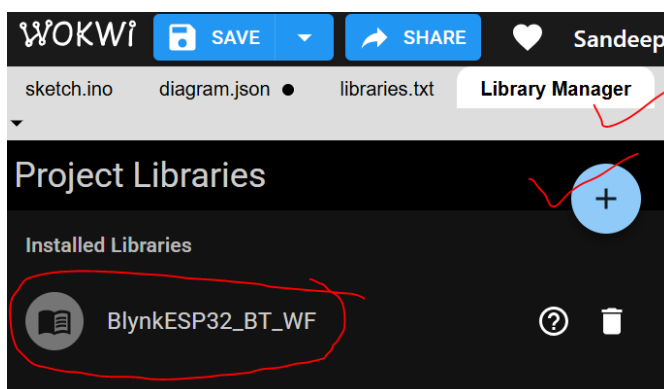
  Serial.begin(115200);
  Blynk.begin(auth, ssid, pass);
}

void loop(){
  Blynk.run();
}
```

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

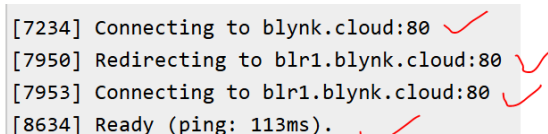


Step-10 Add the following library in WokWi:



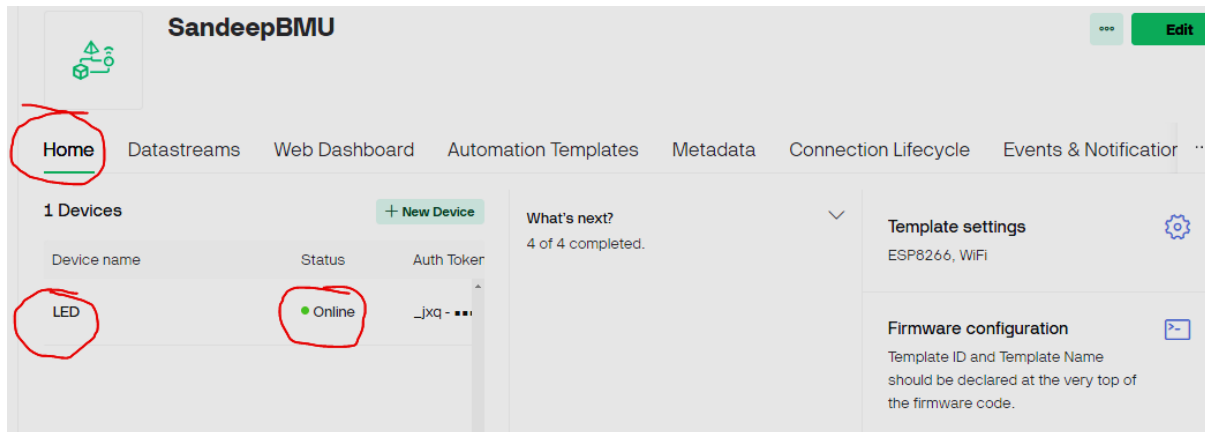
Step-11: Again go to **Sketch.ino** tab and start the simulation (it may take 1 to 2 minutes).

On successful simulation, it will show the following info:

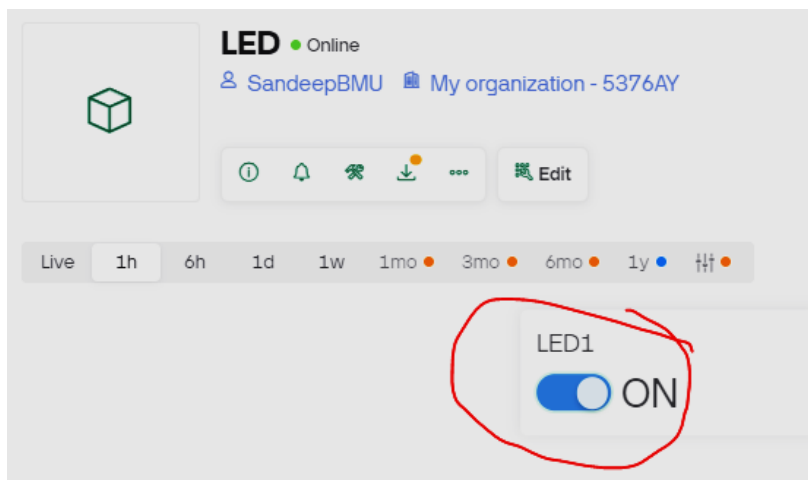


Step-12: Again, go to Blynk portal (website) and click on the 'Home' tab. It will show our device **ONLINE** (see snap below)

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



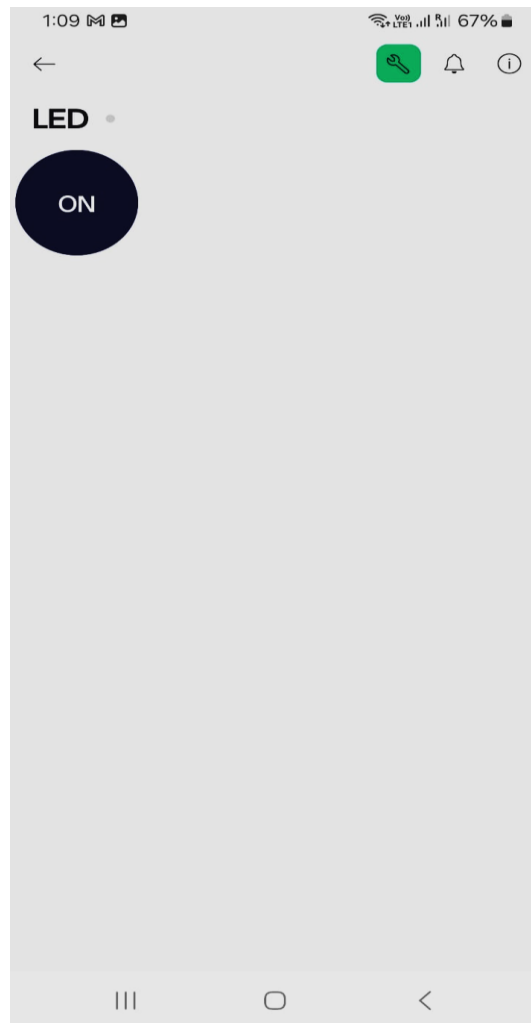
Click on LED, the ON/OFF button will be shown. Click on the button to toggle it ON/OFF. We can observe that the LED connected to ESP32 (on WokWi) will be controlled (ON/OFF) accordingly.



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 switch) → 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

```
1 #define BLYNK_TEMPLATE_ID "TMPL3V4VGE5ai" //To
2 #define BLYNK_TEMPLATE_NAME "SandeepBMU" //To be
3
4 #define BLYNK_AUTH_TOKEN "R6ayifSZGQtFdhHZHSu3M8I
5 // To be changed to your Blynk generated token
6
7 #define BLYNK_PRINT Serial
8
9 #include <WiFi.h>
10 #include <WiFiClient.h>
11 #include <BlynkSimpleEsp32.h>
12
13 #define RelayPin1 5
14
15 char auth[] = BLYNK_AUTH_TOKEN;
16
```

Simulation

00:11.682 14%

#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).