Practical No: 11

**Aim:** Building Google assistant using Raspberry Pi.

**Hardware Required:**

1. Raspberry Pi 3B+
2. Ethernet Cable
3. Monitor
4. HDMI to VGA convertor
5. Micro SD card (any class best is class 10)
6. Adaptor with 5v 2A
7. USB mouse
8. USB keyboard
9. Jumper wires
10. Breadboard

**Software Required:**

1. Raspbian OS
2. Thonny Python
3. Thingspeak (web portal)
4. IFTTT (web portal)

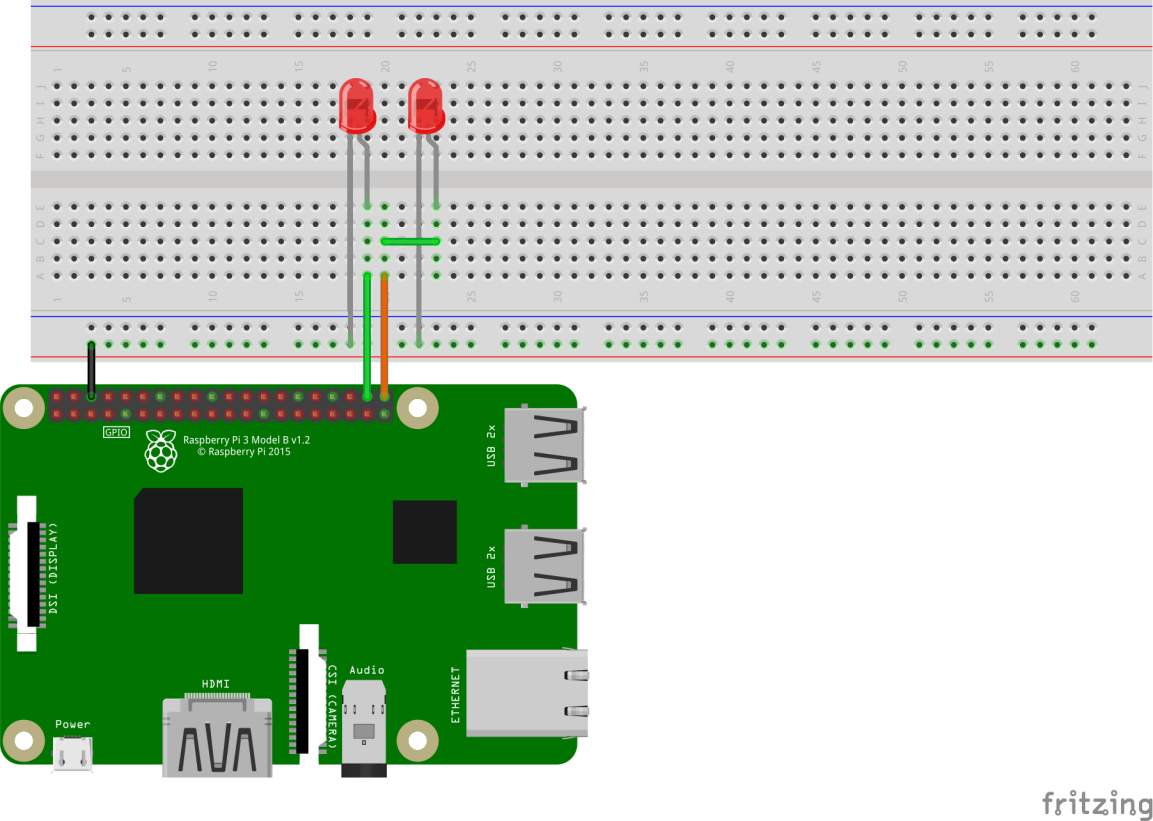
**Procedure:**

1. **Hardware Setup:**

* Connect according to the figure.

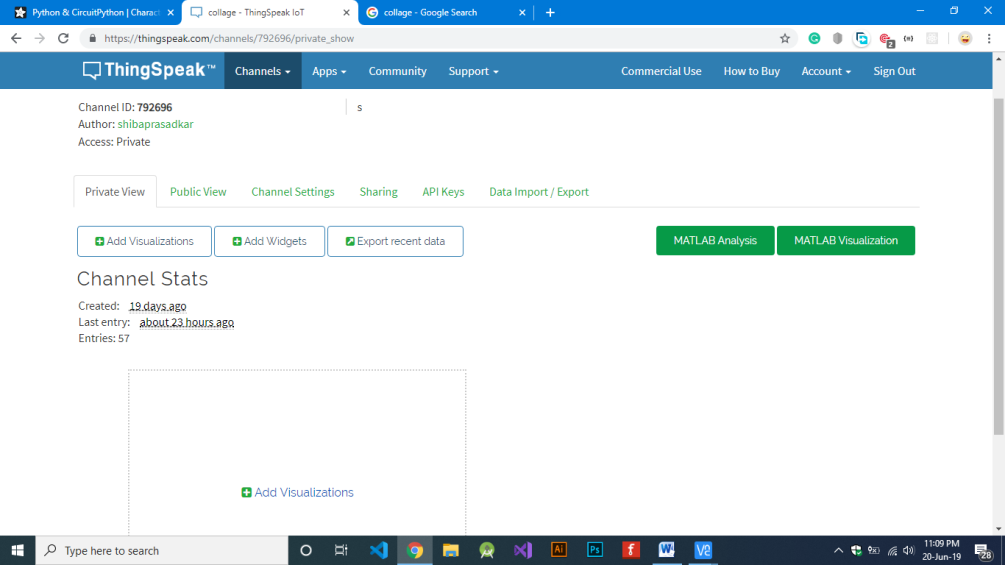
**GPIO20** 🡪 **LED2** Anode

**GPIO21** 🡪 **LED3** Anode

\*Black wire is the **GND** (ground) 

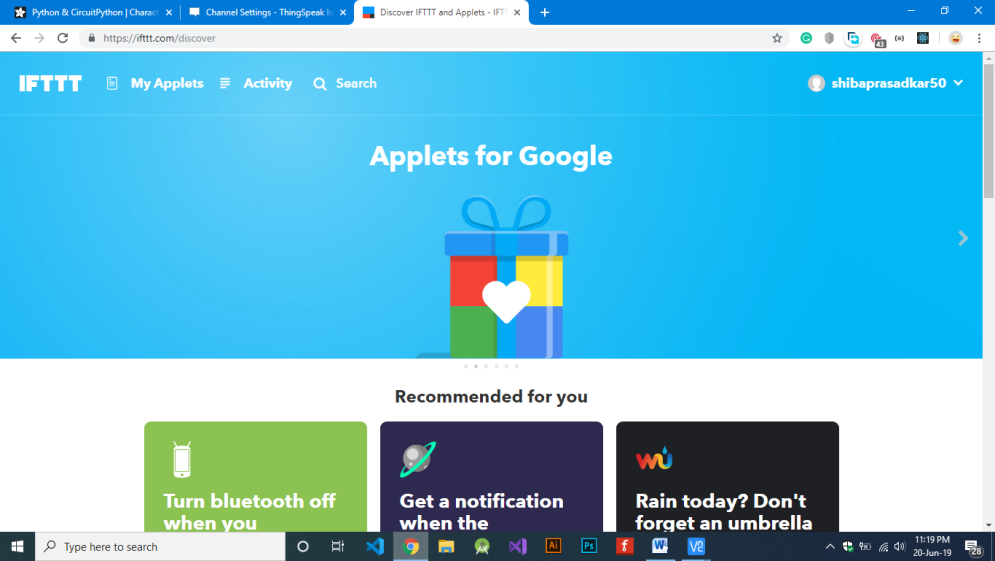
1. **Software Setup:**

* Thingspeak:
* Go to “Thingspeak” sign up and sign in <https://thingspeak.com/users/sign_up>
* Create a new channel and navigate to it.

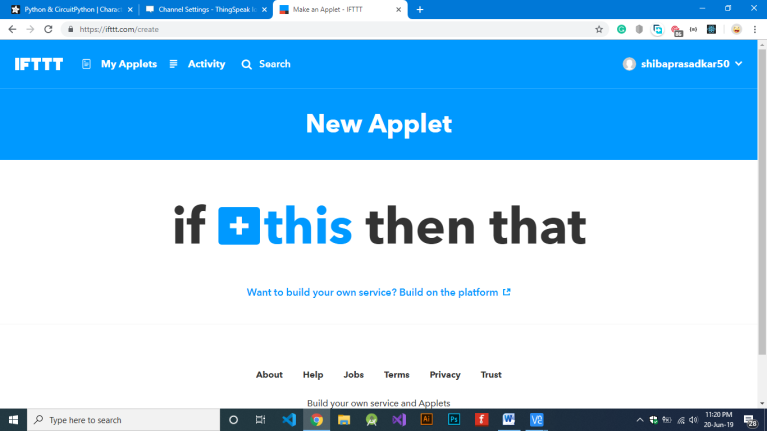


* Navigate to API keys Tab and jot down the write API key and channel ID.
* Navigate to Channel Settings and tick mark field1 and field2 and provide “field1” and “field2” as their names. Save it.
* IFTTT:

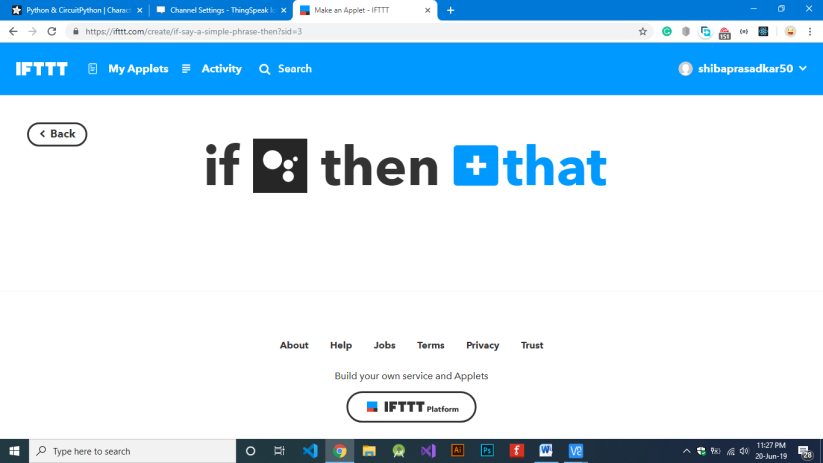
1. Browse to IFTTT (<https://ifttt.com/>) site and create and account by clicking on continue with Google.



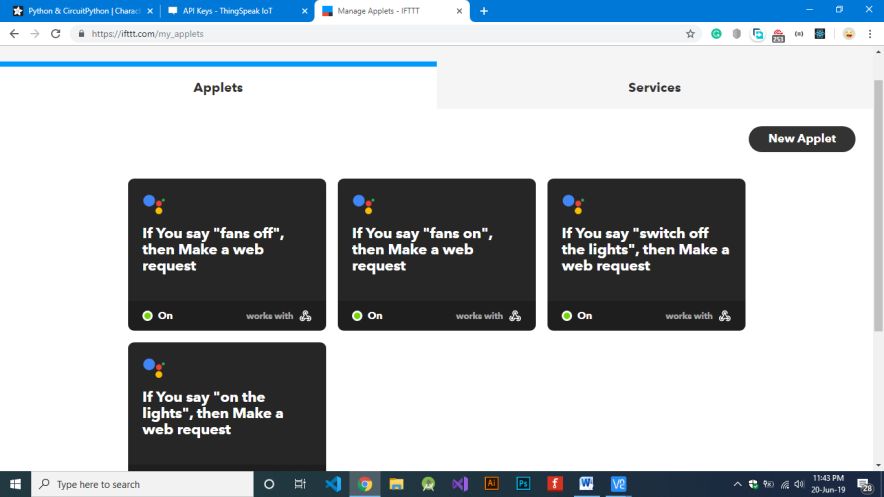
1. Navigate to My Applets and create a new one by clicking New Applet



1. Click on this and search for Google Assistant select “Say a simple phrase”.
2. Complete the form for light on
3. Click on “that”



1. Search for “Webhooks”
2. Click on “Make a web request”
3. In the URL field type the following [https://api.thingspeak.com/update?api\_key={YOUR\_API\_Key}&field1=on](https://api.thingspeak.com/update?api_key=%7bYOUR_API_Key%7d&field1=on)
4. Method : POST
5. Content type: text/plain
6. Click on create action
7. Repeat steps 2 to 11 for light off just change the command you give to Google assistant in step 4 and in step 8 change “&field1=on” to “&field1=off”.
8. Repeat the same steps for another device in this case a fan. Just change the commands in step 4 which you give to Google assistant and step 8 change “&field12=on” and “&field2=off” accordingly.
9. At the end it should look like this…



* Open a terminal and type *pip3 install thingspeak*
* Open Thonny Python IDE and type the following code…

*from time import sleep*

*import ast*

*import thingspeak*

*from gpiozero import LED*

*import json*

*channel\_id = 792696*

*write\_key = "Your\_API\_KEY"*

*lightsPin = LED(21)*

*fanPins = LED(20)*

*def doit(channel):*

*try:*

*lights = ast.literal\_eval(channel.get\_field\_last(field="field1"))*

*l = lights["field1"]*

*print("Lights=>>", l)*

*fans = ast.literal\_eval(channel.get\_field\_last(field="field2"))*

*f = fans['field2']*

*print("Fans =>>", f)*

*if l == "on":*

*lightsPin.on()*

*else:*

*lightsPin.off()*

*if f == "on":*

*fanPins.on()*

*else:*

*fanPins.off()*

*except:*

*print("Failed to get")*

*if \_\_name\_\_ == "\_\_main\_\_":*

*channel = thingspeak.Channel(channel\_id, write\_key)*

*while True:*

*doit(channel)*

*sleep(1)*

* Run the python script in a terminal by typing python3 <filename>.py
* And open Google assistant in the phone with the same account you have used to signed in to the IFTTT web portal, and give command “switch on lights”.

**Precautions:**

* If it is a fresh flash of Raspbian OS “*sudo apt update”* and “*sudo apt upgrade”* is a must thing.
* Connect the components before powering on the device and double check your connections.
* Use the same Google account in android phone and the IFTTT web site.
* Use your API KEY correctly
* Use the same phrase as you have given in the IFTTT form.

