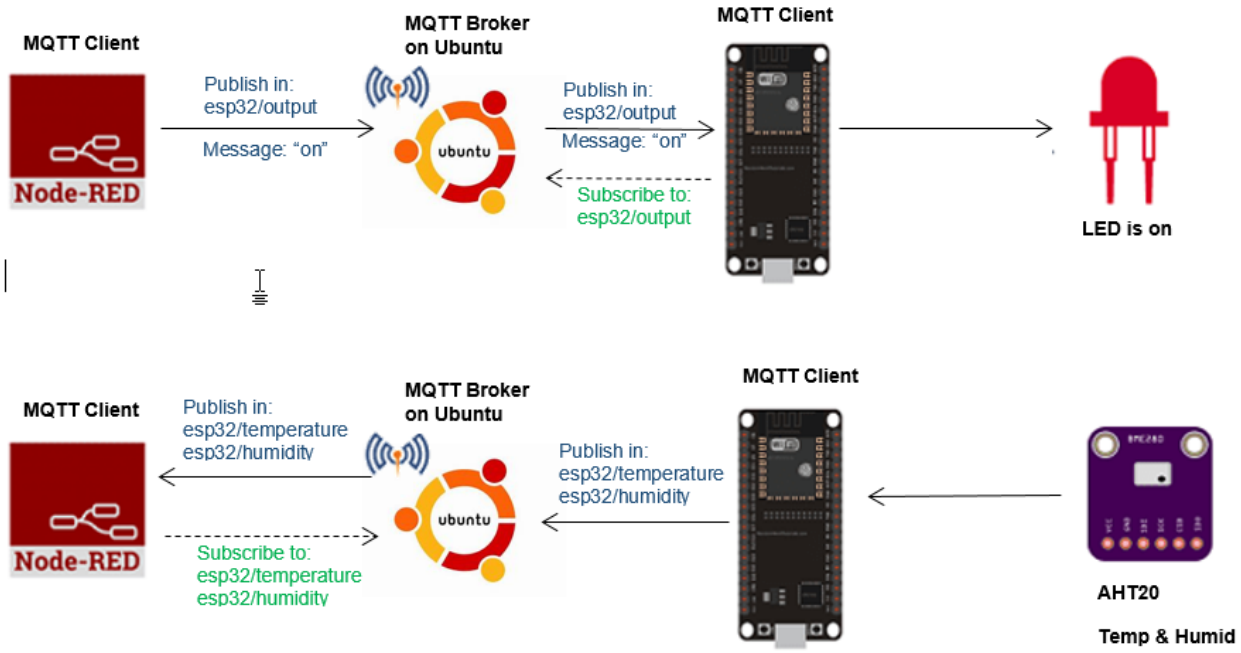
Chancheep Mahacharoensuk 6288092
Kantapong Matangkarat 6288160

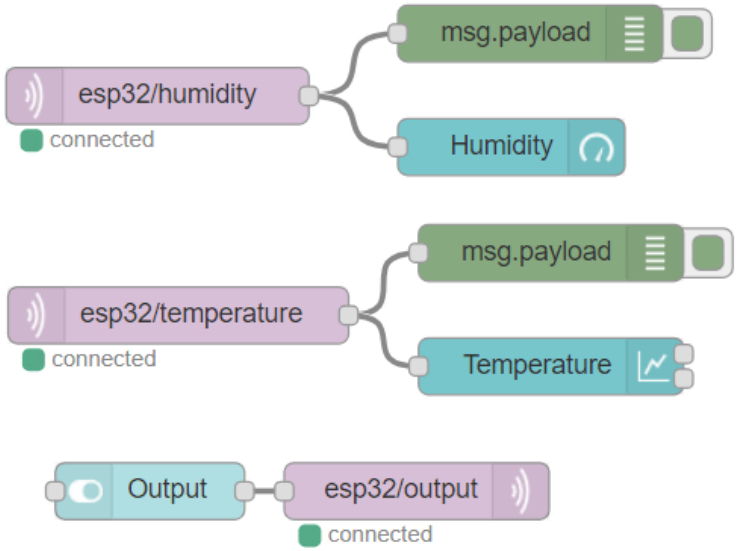


The above figure shows the architecture of this exercise where Ubuntu acts as MQTT broker. Node-RED and AHT20 is used for MQTT clients

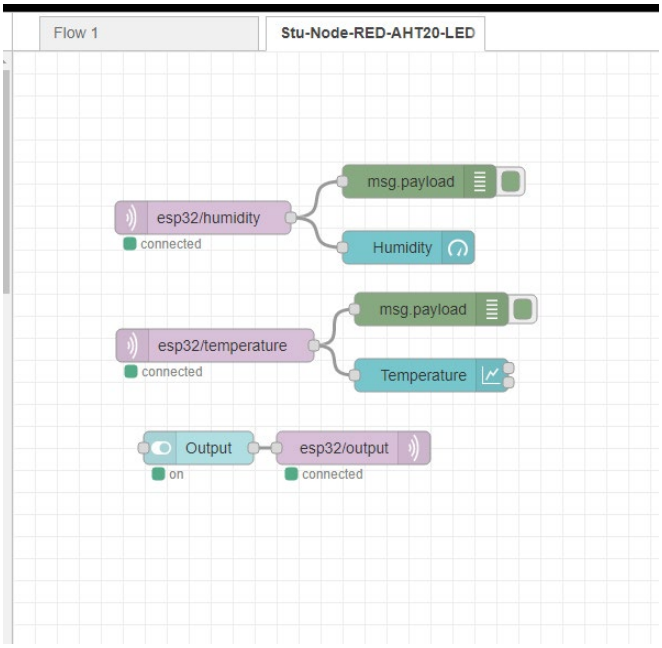
ESP32:

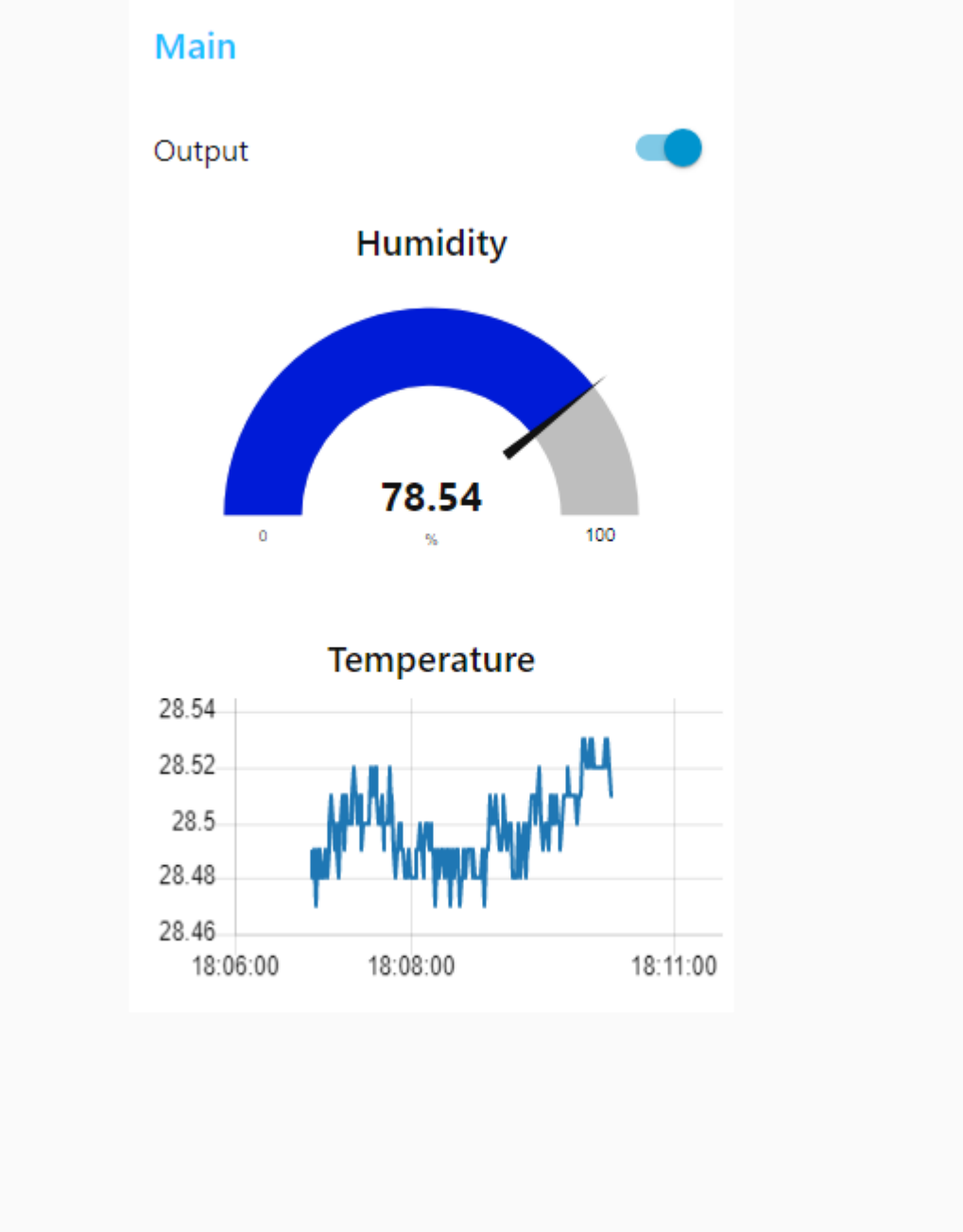
AHT20 SDA -> GPIO21
AHT20 SCL -> GPIO22
AHT20 Vcc -> 3.3V
AHT20 GND -> GND
LED -> GPIO4

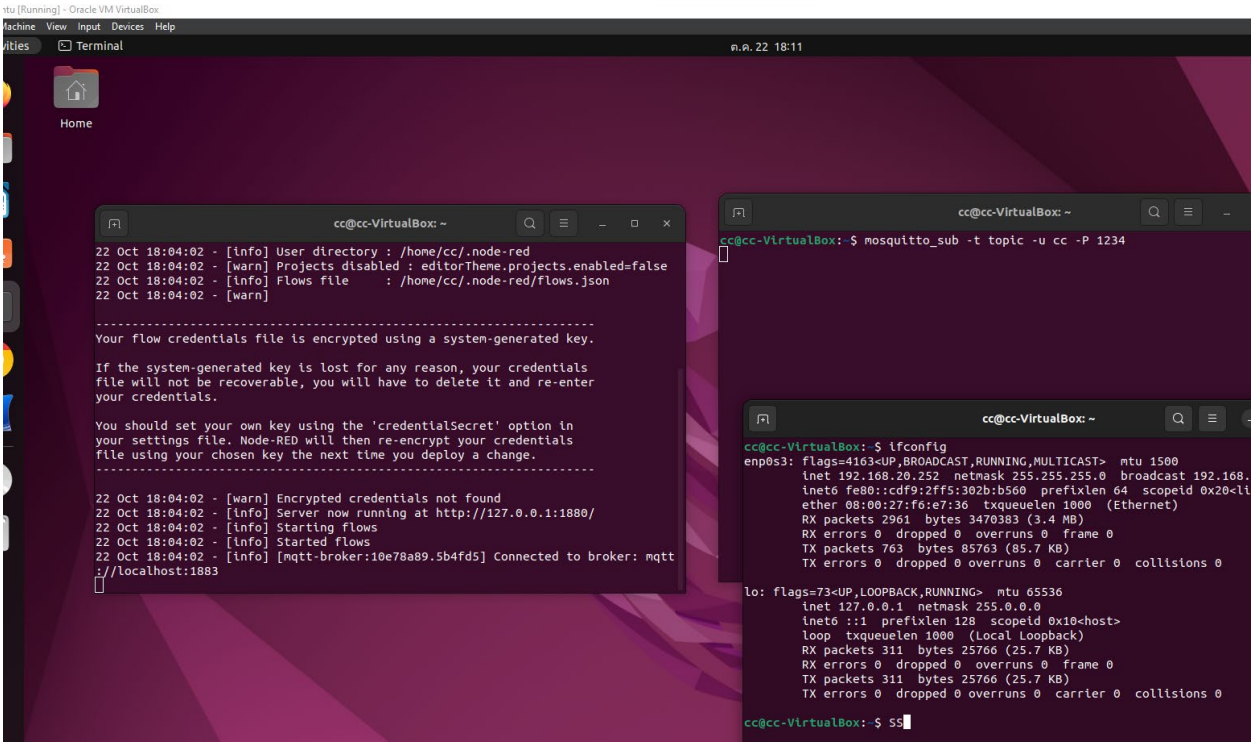
1. Wire up the above circuit on ESP32.
2. Upload "AHT20-LED-Node-RED.ino" to ESP32. Do not forget to specify your Wi-Fi SSID, password and MQTT server IP address.
3. Make sure that both your ESP32, Ubuntu, and working laptop are in the same network, e.g., your mobile phone hotspot or your home access point.
4. Copy and paste the "AHT20-LED-Node-RED.json" flow to your NodeRED (Import -> Clipboard). Then you should get the following flow.
   Note: you have to install Node-RED-dashboard from Palette Manager.



Deploy your flow then capture your finished Node-RED dashboard and put it below.




Main
Output
Humidity
78.54
0
%
100
Temperature
28.54
28.52
28.5
28.48
28.46
18:06:00
18:08:00
18:11:00


Terminal
ต.ค. 22 18:11
Home
cc@cc-VirtualBox: ~
22 Oct 18:04:02 - [info] User directory : /home/cc/.node-red
22 Oct 18:04:02 - [warn] Projects disabled : editorTheme.projects.enabled=false
22 Oct 18:04:02 - [info] Flows file : /home/cc/.node-red/flows.json
22 Oct 18:04:02 - [warn]
Your flow credentials file is encrypted using a system-generated key.
If the system-generated key is lost for any reason, your credentials
file will not be recoverable, you will have to delete it and re-enter
your credentials.
You should set your own key using the 'credentialSecret' option in
your settings file. Node-RED will then re-encrypt your credentials
file using your chosen key the next time you deploy a change.
22 Oct 18:04:02 - [warn] Encrypted credentials not found
22 Oct 18:04:02 - [info] Server now running at http://127.0.0.1:1880/
22 Oct 18:04:02 - [info] Starting flows
22 Oct 18:04:02 - [info] Started flows
22 Oct 18:04:02 - [info] [mqtt-broker:10e78a89.5b4fd5] Connected to broker: mqtt://localhost:1883
cc@cc-VirtualBox: ~
cc@cc-VirtualBox:~$ mosquitto_sub -t topic -u cc -P 1234
cc@cc-VirtualBox: ~
cc@cc-VirtualBox:~$ ifconfig
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
inet 192.168.20.252 netmask 255.255.255.0 broadcast 192.168.
inet6 fe80::cdf9:2ff5:302b:b560 prefixlen 64 scopeid 0x20<li
ether 08:00:27:f6:e7:36 txqueuelen 1000 (Ethernet)
RX packets 2961 bytes 3470383 (3.4 MB)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 763 bytes 85763 (85.7 KB)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
inet 127.0.0.1 netmask 255.0.0.0
inet6 ::1 prefixlen 128 scopeid 0x10<host>
loop txqueuelen 1000 (Local Loopback)
RX packets 311 bytes 25766 (25.7 KB)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 311 bytes 25766 (25.7 KB)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
cc@cc-VirtualBox:~$ ss