

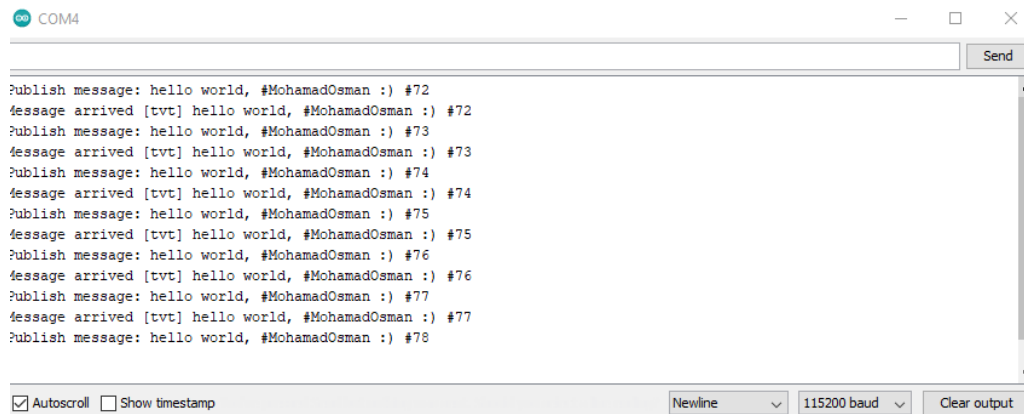
Rain Sensor integrated with irrigation system used to save water in farm

Testing Part

1- Components testing:

Micro Controller testing:

- Test the Node MCU with MQTT server to show if it is capable of sending data wirelessly.

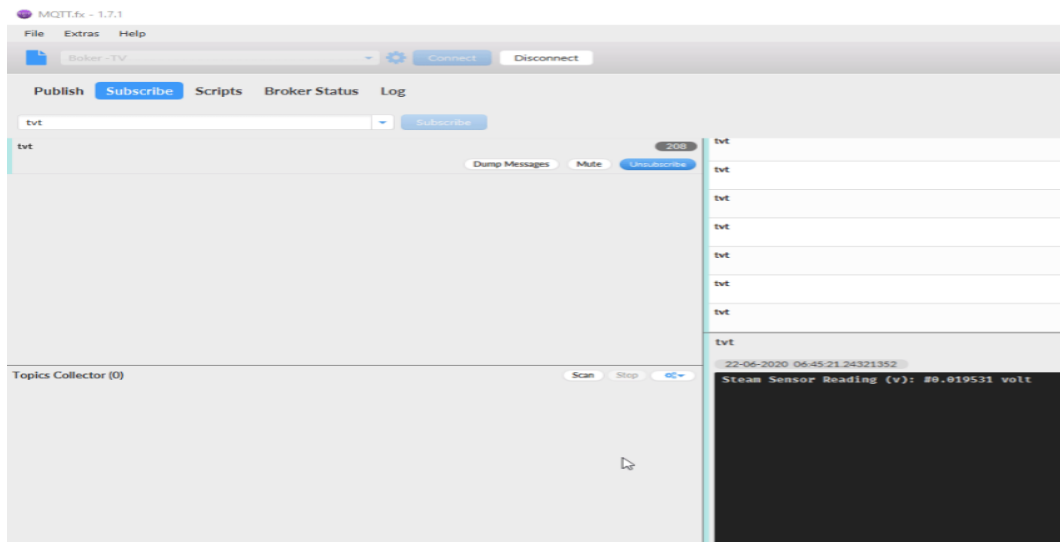


```
COM4
Publish message: hello world, #MohamadOsman :) #72
Message arrived [tvt] hello world, #MohamadOsman :) #72
Publish message: hello world, #MohamadOsman :) #73
Message arrived [tvt] hello world, #MohamadOsman :) #73
Publish message: hello world, #MohamadOsman :) #74
Message arrived [tvt] hello world, #MohamadOsman :) #74
Publish message: hello world, #MohamadOsman :) #75
Message arrived [tvt] hello world, #MohamadOsman :) #75
Publish message: hello world, #MohamadOsman :) #76
Message arrived [tvt] hello world, #MohamadOsman :) #76
Publish message: hello world, #MohamadOsman :) #77
Message arrived [tvt] hello world, #MohamadOsman :) #77
Publish message: hello world, #MohamadOsman :) #78
```

☒ Autoscroll ☐ Show timestamp Newline 115200 baud Clear output

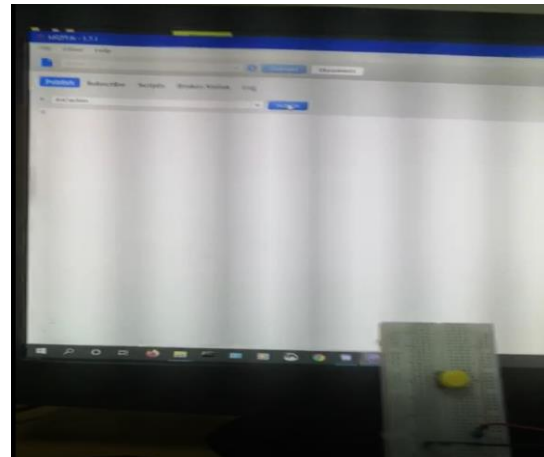
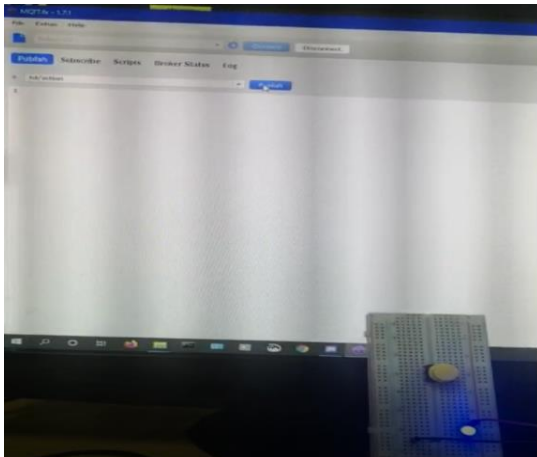
Rain Sensor testing with MQTT:

- Simulation the rain sensor process through putting the sensor above a boiling water cup and observe the collected data.



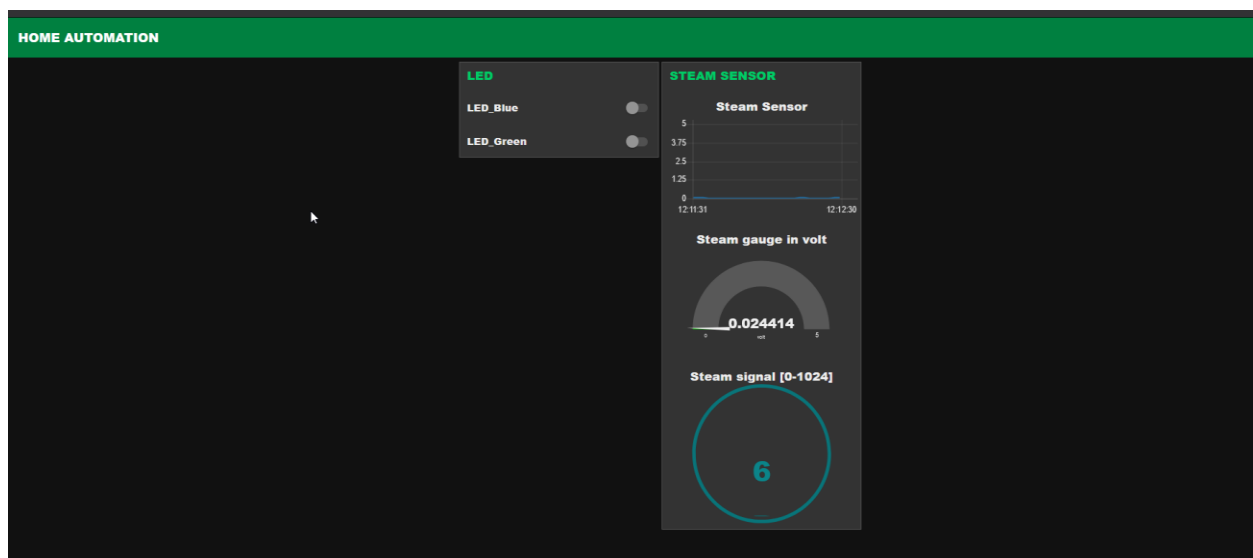
Testing the system remotely using LED:

- Test the system working using MQTT protocol and LED to show if the system is working and controlled remotely
- When I publish data to the microcontroller including number one (1) LED is working which implies turn on the system.
- When I publish data to the microcontroller including number zero (0) LED is stop working which implies turn off the system.



Testing the dashboard to receive the data from the rain sensor:

- As shown below I have connected the rain sensor and the ESP 8266 to a dash board to illustrate the received data in the runtime



2. Integration Testing:

- Testing ESP 8266 , MQTT protocol, LED, and rain sensor together
- Testing the previous elements with the designed dashboard.
- As shown below the data of the rain sensor are illustrated in three different ways: graphically, in volt & analog forms

