Project-9

Temperature monitor from Node Red Dashboard

Introduction

In this project you are going to design a Clint-Server interface to monitor the temperature and humidity level. Here your Raspberry Pi will work as a Server and you as a Client can monitor the data. Using this project concept, you can create number of application and you can send number of hardware data on the server Raspberry Pi.

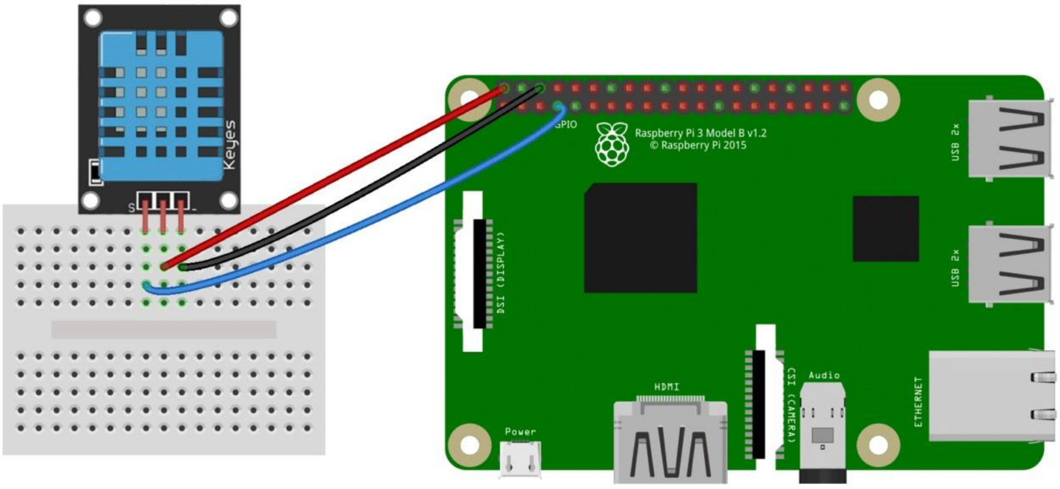
Software and Hardware Required

- Node-Red
- Raspberry-Pi
- DHT-Sensor
- Connecting wires

Software and Hardware Setup

DHT	Pi
Data Pin -------------	Pin 7
Vcc ---------------------	Pin 2
Gnd --------------------	Pin 6

If you have a three pin DHT11 and want to output the humidity and temperature then connect asper the connection given in diagram.



Python Coding

```
import Adafruit_DHT

sensor=Adafruit_DHT.DHT11 import

paho.mqtt.client as mq

x=mq.Client()

x.connect('iot.eclipse.org') gpio=7  humidity, temperature =

Adafruit_DHT.read_retry(sensor, gpio)  if humidity is not

None and temperature is not None:

  print('Temp={0:0.1f}*C  Humidity={1:0.1f}%'.format(temperature, humidity))

  x.publish('K12-System-temp','temperature')

  x.publish('K12-System-humi','humidity')

  x.disconnect() else:

  print('Failed to get reading. Try again!')
```

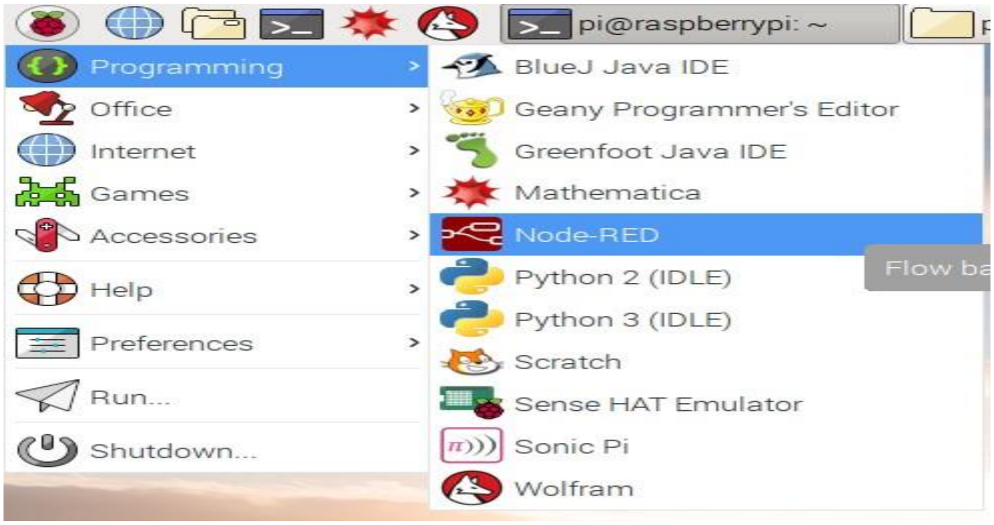
What can you do with Node-RED?

Node-RED makes it easy to:

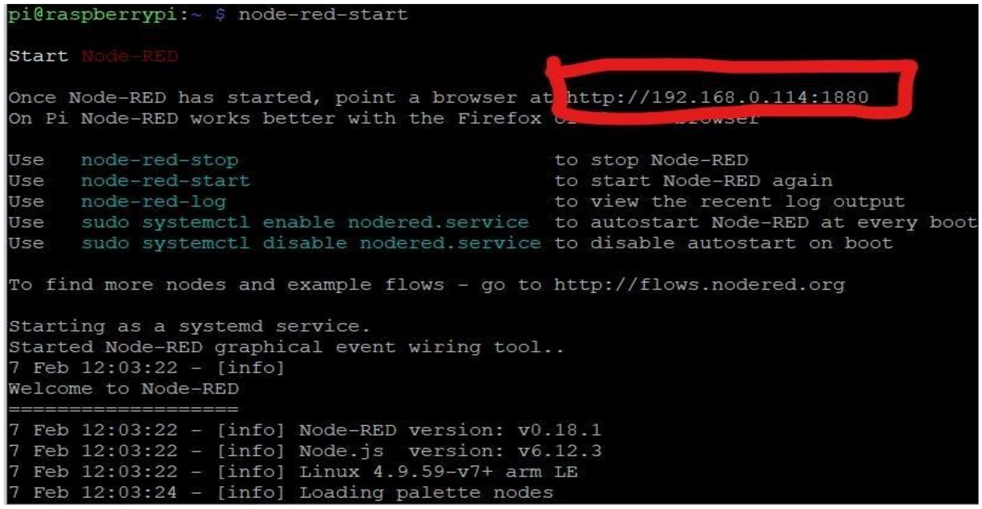
- Access your RPi GPIOs
- Establish an MQTT connection with other boards (Arduino, ESP8266, etc)
- Create a responsive graphical user interface for your projects
- Communicate with third-party services (IFTTT.com, Adafruit.io, Thing Speak, etc)
- Retrieve data from the web (weather forecast, stock prices, emails. etc)
- Create time triggered events
- Store and retrieve data from a database

Node-Red Setup

Now go to the raspberry icon ,Find Programming Section and the then find Node-Red.



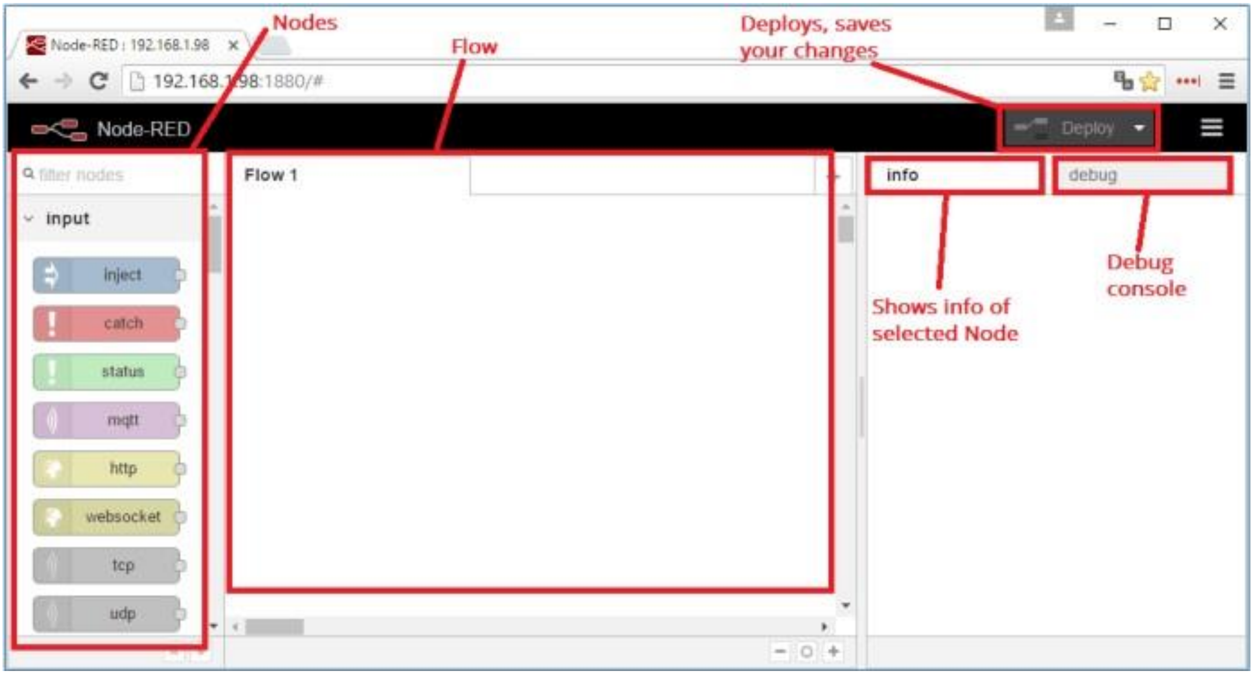
Click on Node-Red ,you will find a program running on Command Prompt.



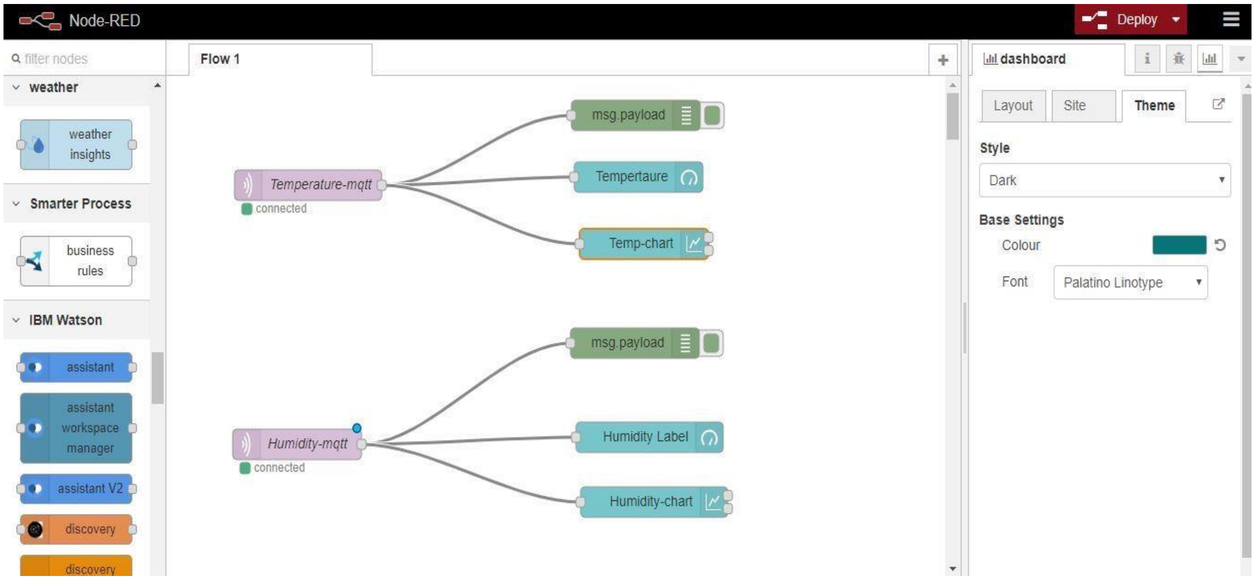
```
pi@raspberrypi:~ $ node-red-start

Start Node-RED

Once Node-RED has started, point a browser at http://192.168.0.114:1880
On Pi Node-RED works better with the Firefox or [illegible] browser

Use   node-red-stop                          to stop Node-RED
Use   node-red-start                         to start Node-RED again
Use   node-red-log                           to view the recent log output
Use   sudo systemctl enable nodered.service  to autostart Node-RED at every boot
Use   sudo systemctl disable nodered.service to disable autostart on boot

To find more nodes and example flows - go to http://flows.nodered.org

Starting as a systemd service.
Started Node-RED graphical event wiring tool..
7 Feb 12:03:22 - [info]
Welcome to Node-RED
===================
7 Feb 12:03:22 - [info] Node-RED version: v0.18.1
7 Feb 12:03:22 - [info] Node.js  version: v6.12.3
7 Feb 12:03:22 - [info] Linux 4.9.59-v7+ arm LE
7 Feb 12:03:24 - [info] Loading palette nodes
```

In the last of 3rd line you will find an address like – **http://192.168.0.114 :1880**
You may have different IP-Address then me. Here 1880 is the port number on which Node-red Runs.

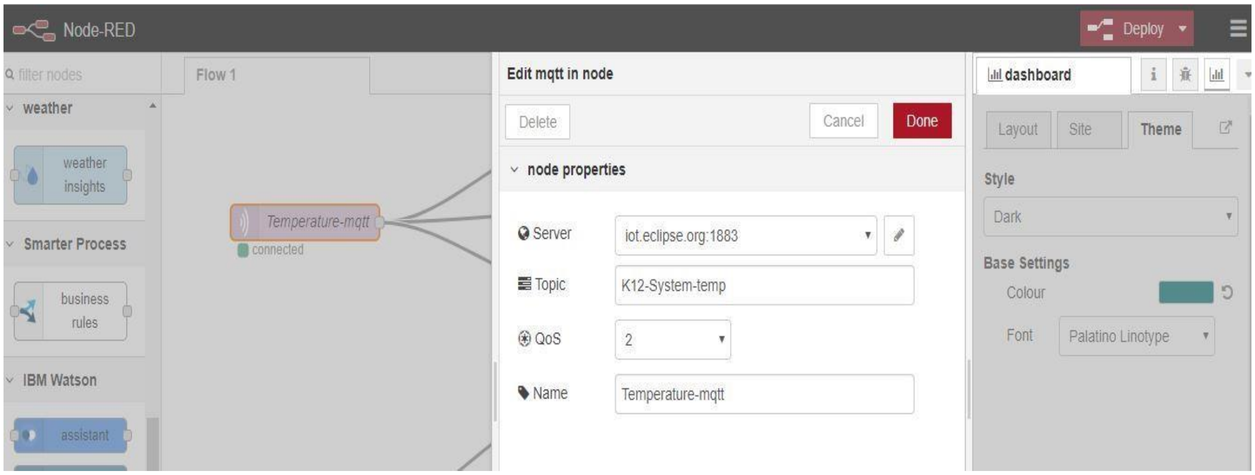
Copy the whole IP-Address and search in any stander browser, like Chrome.
A user interface you will find as shown in the picture below.



Find the MQTT and different nodes from the Filter Node option and make connection as shown in the   below pictures.



Edit the mqtt-node and change their confugration .
Mqqt node renamed as Temperature-mqtt.



Edit mqtt in node

Delete Cancel Done

node properties

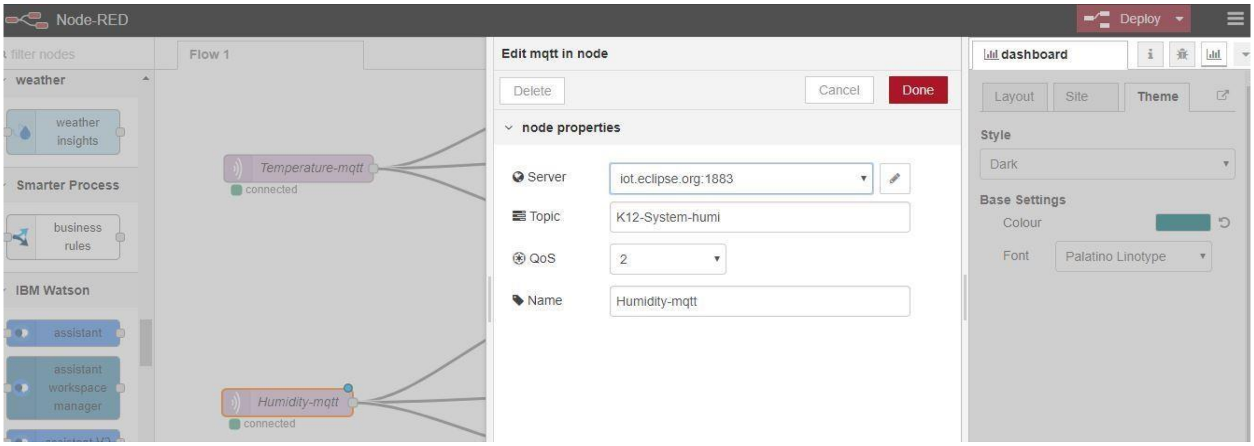
Server: iot.eclipse.org:1883

Topic: K12-System-temp

QoS: 2

Name: Temperature-mqtt

Mqtt node renamed as Humidity-mqtt.



Edit mqtt in node

Delete Cancel Done

node properties

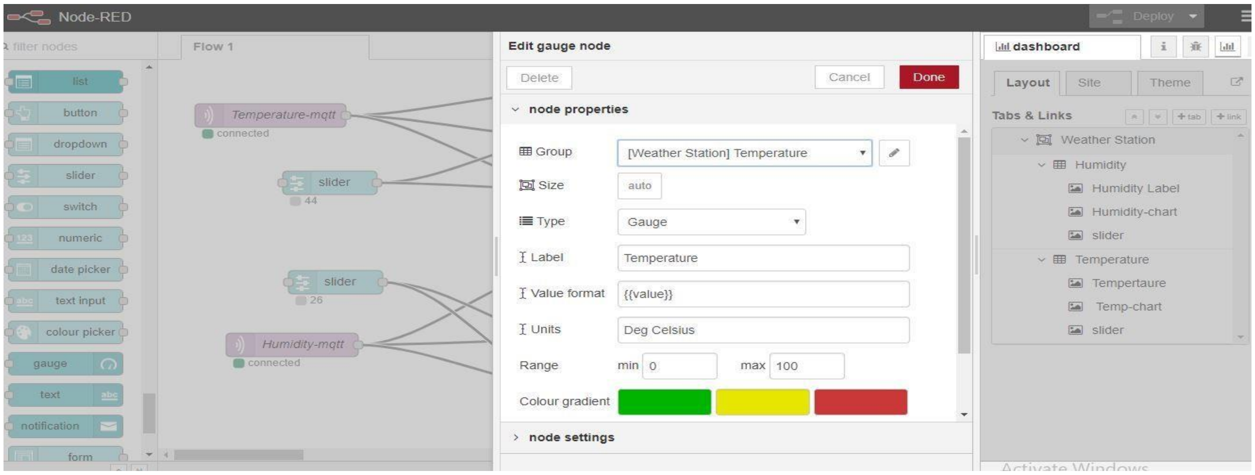
Server: iot.eclipse.org:1883

Topic: K12-System-humi

QoS: 2

Name: Humidity-mqtt

Change the confugeration of gauge and chart of both temperature and humidity nodes as same



Edit gauge node

Delete Cancel Done

node properties

Group: [Weather Station] Temperature

Size: auto

Type: Gauge

Label: Temperature

Value format: {{value}}

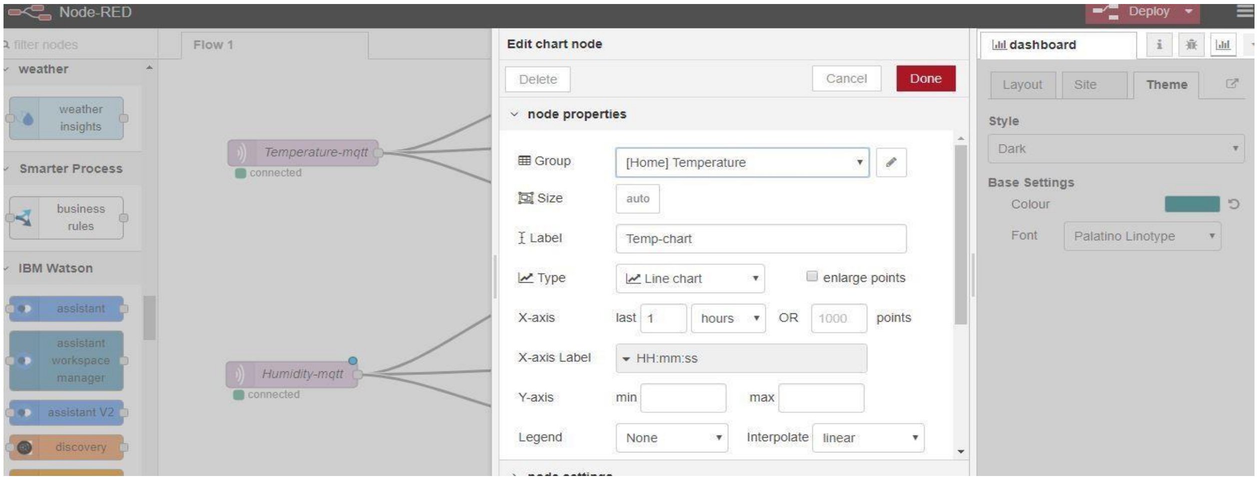
Units: Deg Celsius

Range: min 0 max 100

Colour gradient: 🟩 🟨 🟥

node settings

humidity chart node..



Edit chart node

Delete | Cancel | Done

node properties

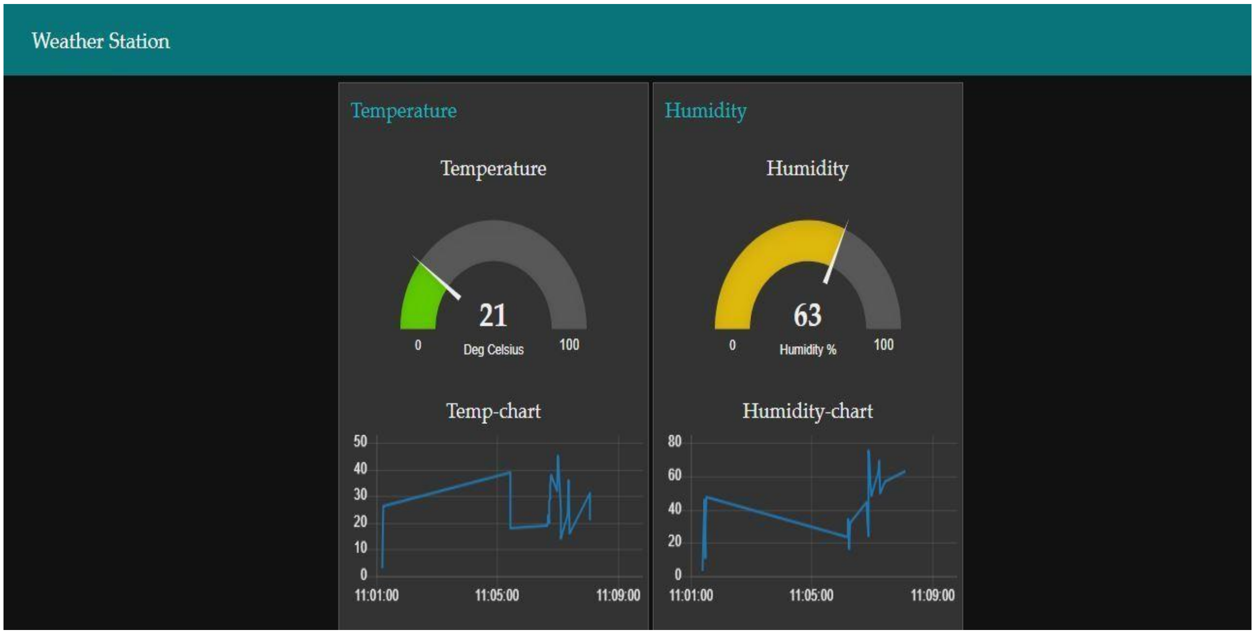
Group [Home] Temperature
Size auto
Label Temp-chart
Type Line chart □ enlarge points
X-axis last 1 hours OR 1000 points
X-axis Label HH:mm:ss
Y-axis min max
Legend None Interpolate linear

After this all Deploy the program and go to the user-interface by searching the address in the browser- **http://192.168.0.114 :1880/ui**

Just add **/ui** in the last of your current Node-Red address.

Output

You will find a user-interface with all live data of your DHT-Sensor.


Weather Station
Temperature
Temperature
21
0
Deg Celsius
100
Temp-chart
50
40
30
20
10
0
11:01:00
11:05:00
11:09:00
Humidity
Humidity
63
0
Humidity %
100
Humidity-chart
80
60
40
20
0
11:01:00
11:05:00
11:09:00