**DEPARTMENT OF ELECTRONIC AND TELECOMMUNICATION ENGINEERING**

**UNIVERSITY OF MORATUWA**

# EN2560 - Internet of Things Design and Competition

# PROJECT REPORT

## IOT Based COVID19 Update System

## Group no – 08

**Group members-**

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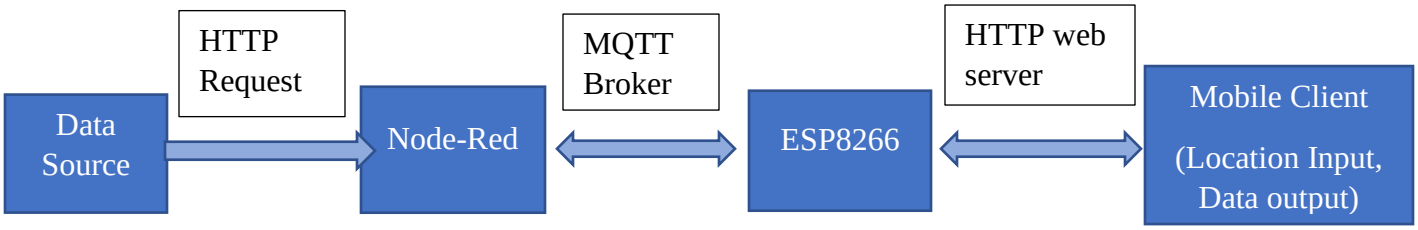
## Problem intended to be solved

Since the world is in COVID19 pandemic situation it's important to be updated on its status. People have to listen to news or searching internet frequently to get this updates. They are time consuming ways and sometimes people will miss important updates.

## System Overview and operation




Smart phone works as a client. Therefore we can enter our input location to the web page in the smart phone which is created using webserver in Arduino. Then this input will be delivered the open source API through the MQTT broker via Node-MCU. After that this API will give its output data, using our node red flow we can process necessary data separately. These data are next delivered to the NodeMCU through MQTT broker. Then they are delivered to the web page.By updating input location in the webpage we can get related output details.

- **Open Source API** – This is the data source for the node red flow.
- **Node-red –** Use necessary palettes to process necessary output data from API.
- **MQTT broker** – Get input from the Node-MCU and deliver output of the node red flow to the Node-MCU.
- **Node- MCU** –Connect web page and node-red through MQTT broker.
- **Mobile** – We Input the location and get output updates through the mobile.

## Implementation

### Data Sources

- **https://www.hpb.health.gov.lk/**
- **https://rapidapi.com/**

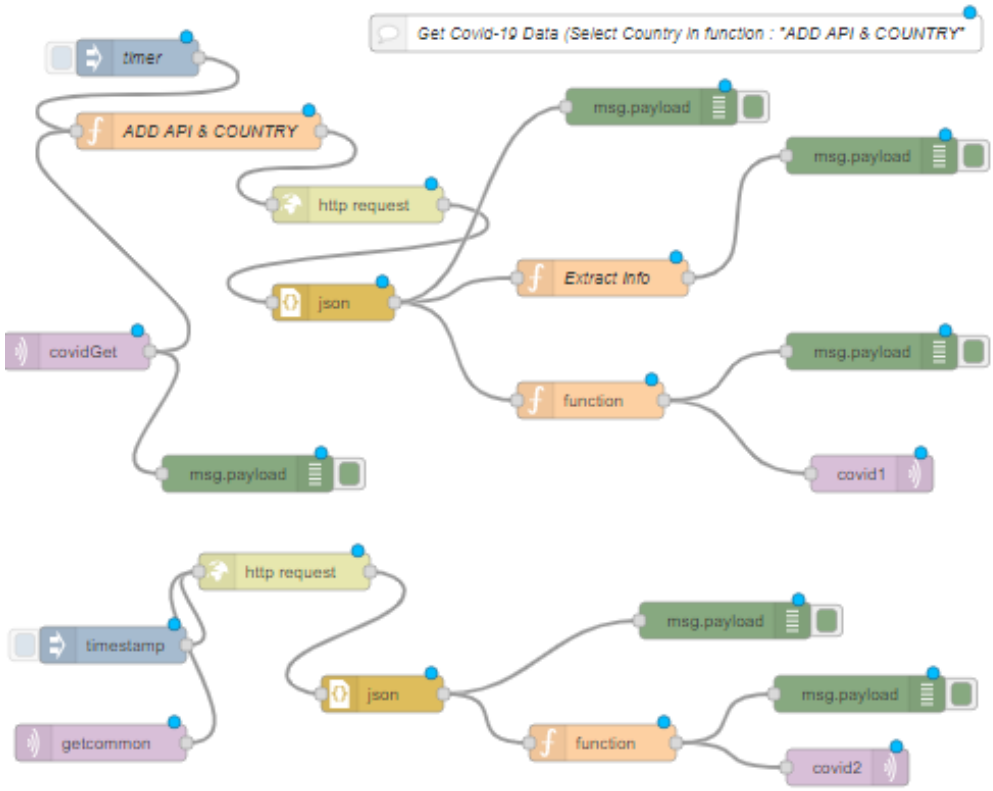
### MQTT broker

- broker.hivemq.com

### Hardware

- ESP8266

- **Node-Red flow**



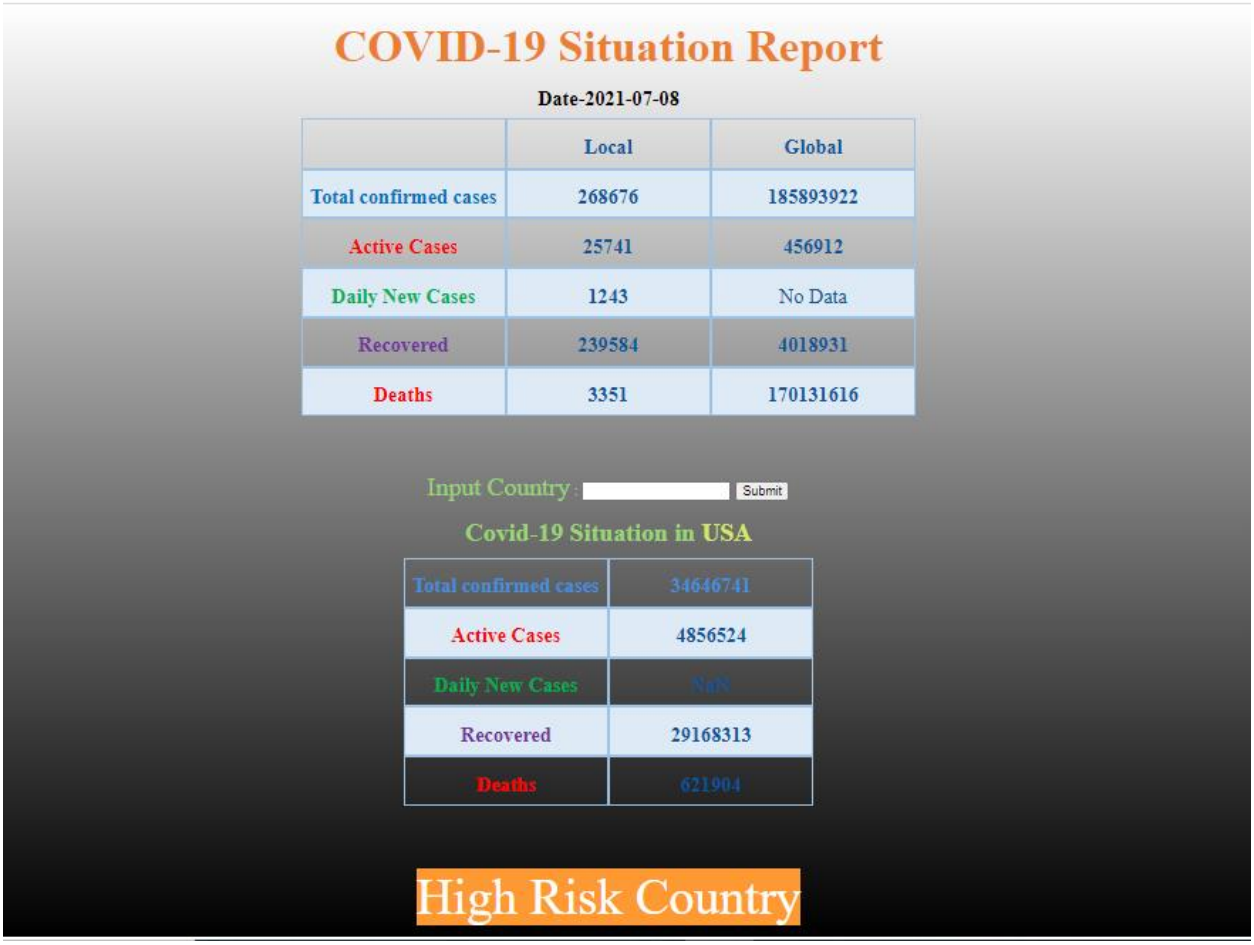

## Arduino Webserver

Web page and Node-red flow are connected through ESP8266 for exchanging inputs and output via Arduino Webserver.The serial monitor output is demonstrated in below.

```
Connecting to Dialog 4G 106
......
WiFi connected
IP address:
192.168.8.135
Attempting MQTT connection...connected
Reading file: /Input Location.txt
- read from file:
singapore
*** Your Input Location: singapore
singapore
Reading file: /Input Location.txt
- read from file:
singapore
*** Your Input Location: singapore
Message arrived [covid1] 62668,16,269,62363,36,45
62668
16
269
62363
36
45
Low Risk Country
Message arrived [covid2] 268676,25741,1243,239584,3351,185893922,456912,4018931,170131616,2021-07-08
268676
25741
1243
239584
3351
185893922
456912
4018931
170131616
2021-07-08
```

**System functionality achieved**

We give inputs and get outputs through the web page.




The 1st chart of the web page is created to show COVID19 updates in a particular day locally and globally.

If we want to get COVID19 updates in a particular country we can give it as input and get data as in the 2nd chart.

We decide whether the country is in Low Risk, Medium Risk or High Risk by analyzing Active Cases out of the 1 million population.

- **(Active Cases/1M Population) < 300 – Low Risk**
- **300 < (Active Cases/1M Population) <1000 – Medium Risk**
- **1000 < (Active Cases/1M Population) – High Risk**