

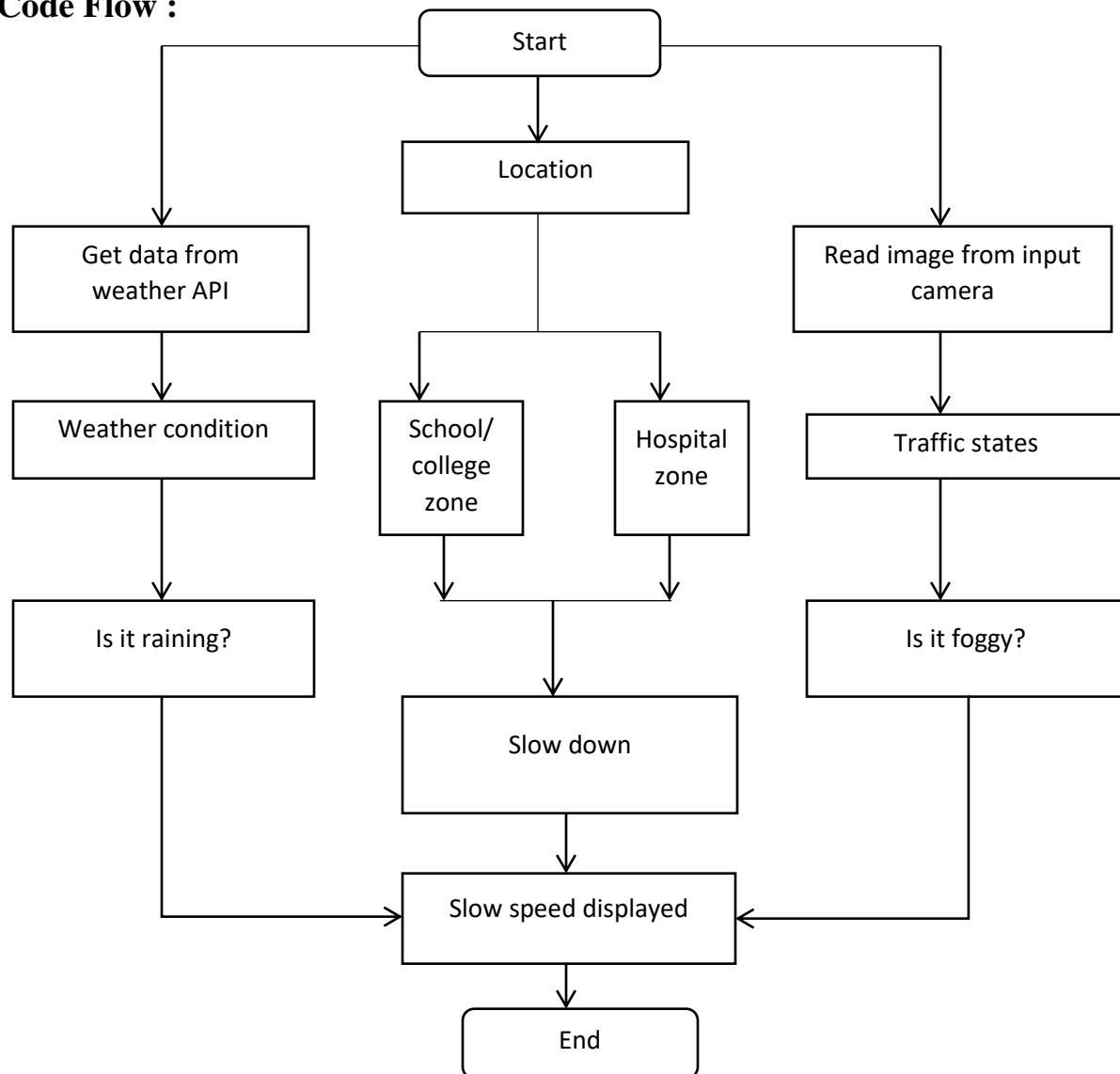
Sprint-1

| | |
|--------------|---|
| Date | 11 november 2022 |
| Team ID | PNT2022TMID42771 |
| Project Name | Signs with Smart Connectivity for Better Road Safety. |

Sprint Goals :

1. Create and initialize accounts in various public APIs like OpenWeather API.
2. Write a Python program that outputs results given the inputs like weather and location.
3. Extract data from OpenWeatherMap using APIs
4. Send the extracted data to the cloud.
5. Receive data from the cloud and view it in the python compiler.

Code Flow :



Python code:

weather

This file is a utility function that fetches the weather from OpenWeatherAPI. It returns only certain required parameters of the API response.

```
Import requests as reqs
```

```
def get(myLocation,APIKEY):
```

```
    apiURL =f"https://api.openweathermap.org/data/2.5/weather?q={ myLocation}&appid={ API KEY }"
```

```
    responseJSON =(reqs.get(apiURL)).json()
```

```
    returnObject = { "temperature" : responseJSON['main']['temp'] - 273.15,
```

```
    "weather" : [responseJSON['weather'][_]['main'].lower() for _ in
```

```
    range(len(responseJSON['weather']))],
```

```
    "visibility" : responseJSON['visibility']/100, # visibility in percentage where 10km is 100% and 0km is 0%
```

```
    }
```

```
    if("rain" in responseJSON):
```

```
        returnObject["rain"] = [responseJSON["rain"][key]
```

```
        for key in responseJSON["rain"]]
```

```
    return(returnObject)
```

brain.py >

This file is a utility function that returns only essential information to be displayed at the hardware side and abstracts all the unnecessary details. This is where the code flow logic is implemented.

```

import weather

from datetime import datetime as dt

# IMPORT SECTION ENDS

#

# UTILITY LOGIC SECTION STARTS

def processConditions(myLocation,APIKEY,localityInfo):

    weatherData = weather.get(myLocation,APIKEY)

    finalSpeed = localityInfo["usualSpeedLimit"]if "rain" not in weatherData else
    localityInfo["usualSpeedLimit"]/2

    finalSpeed = finalSpeed if weatherData["visibility"]>35 else finalSpeed/2

    if(localityInfo["hospitalsNearby"]):

        # hospital zone

        doNotHonk = True

    else:

        if(localityInfo["schools"]["schoolZone"]==False):

            # neither school nor hospital zone

            doNotHonk = False

        else:

            # school zone

            now = [dt.now().hour,dt.now().minute]

            activeTime = [list(map(int,_.split(":"))) for _ in

            localityInfo["schools"]["activeTime"]]

            doNotHonk = activeTime[0][0]<=now[0]<=activeTime [1][0] and
            activeTime[0][1]<=now[1]<=activeTime[1][1]

```

```
return({  
  
"speed" : finalSpeed,  
  
"doNotHonk" : doNotHonk  
  
})
```

main.py

The code that runs in a forever loop in the micro-controller. This calls all the until functions from other python files and based on the return value transduces changes in the output hardware display.

```
# IMPORT SECTION STARTS  
  
import brain  
  
# IMPORT SECTION ENDS  
  
# -----  
  
# USER INPUT SECTION STARTS  
  
myLocation = "Chennai,IN"  
  
APIKEY = "bf4a8d480ee05c00952bf65b78ae826b"  
  
localityInfo = {  
  
"schools" : {  
  
"schoolZone" : True,  
  
"activeTime" : ["7:00","17:30"] # schools active from 7 AM till 5:30 PM  
  
},  
  
"hospitalsNearby" : False,  
  
"usualSpeedLimit" : 60 # in km/hr
```

```
}
```

```
# USER INPUT SECTION ENDS
```

```
# -----
```

```
# MICRO-CONTROLLER CODE STARTS
```

```
print(brain.processConditions(myLocation,APIKEY,localityInfo))
```

```
'''
```

MICRO CONTROLLER CODE WILL BE ADDED IN SPRINT 2 AS PER OUR PLANNED SPRINT SCHEDULE

```
'''
```

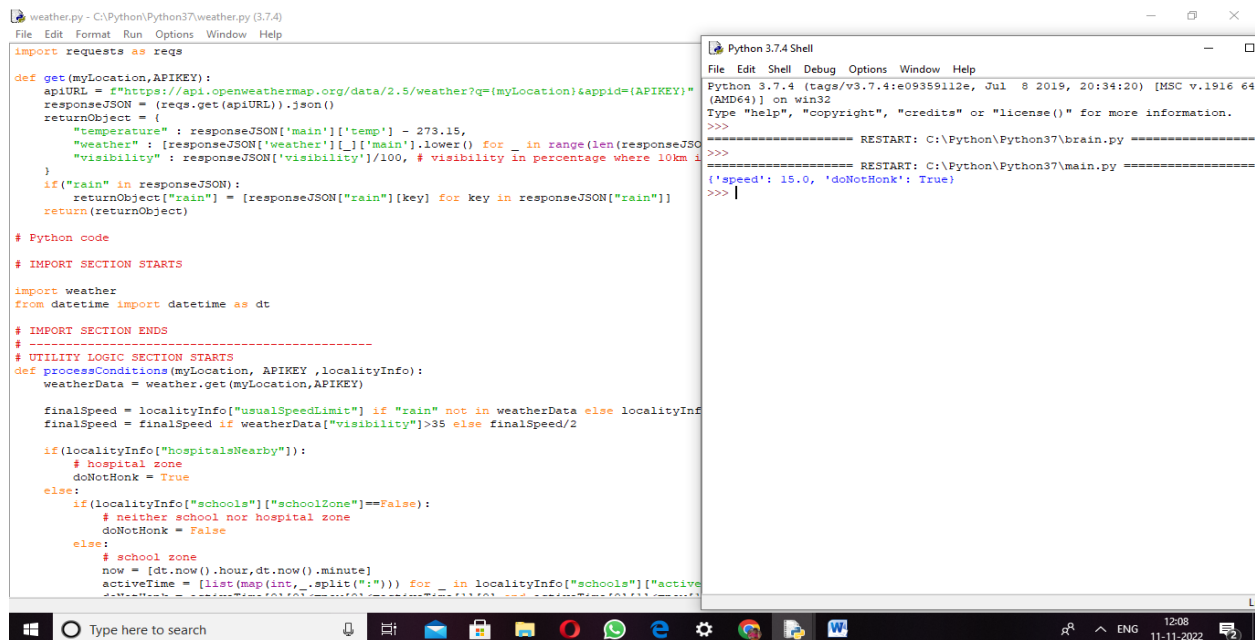
Output :

```
```python
```

```
Code Output {'speed':15.0 , 'doNotHonk': False}
```

```
``
```

Images:



```
main.py - C:\Python\Python37\main.py (3.7.4)
File Edit Format Run Options Window Help
Python code
IMPORT SECTION STARTS
import brain
IMPORT SECTION ENDS

USER INPUT SECTION STARTS
myLocation = "Chennai,IN"
APIKEY = "9cd610e5fd400c74212074c7ace0d62c"
localityInfo = {
 "schools" : {
 "schoolZone" : True,
 "activeTime" : ["7:00","17:30"] # schools active from 7 AM till 5:30 PM
 },
 "hospitalsNearby" : False,
 "usualSpeedLimit" : 60 # in km/hr
}
USER INPUT SECTION ENDS

MICRO-CONTROLLER CODE STARTS
print(brain.processConditions(myLocation ,APIKEY, localityInfo))
'''
MICRO CONTROLLER CODE WILL BE ADDED IN SPRINT 2 AS PER OUR PLANNED SPRINT SCHEDU
'''
MICRO-CONTROLLER CODE ENDS

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Python 3.7.4 Shell
File Edit Shell Debug Options Window Help
Python 3.7.4 (tags/v3.7.4:e09359112e, Jul 8 2019, 20:34:20) [MSC v.1916 64 bit
(AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: C:\Python\Python37\main.py =====
{'speed': 10.0, 'doNotHonk': False}
>>>
===== RESTART: C:\Python\Python37\main.py =====
{'speed': 12.5, 'doNotHonk': False}
>>>
===== RESTART: C:\Python\Python37\main.py =====
{'speed': 2.5, 'doNotHonk': False}
>>>
===== RESTART: C:\Python\Python37\main.py =====
{'speed': 25.0, 'doNotHonk': False}
>>>
===== RESTART: C:\Python\Python37\main.py =====
{'speed': 15.0, 'doNotHonk': False}
>>>
```