Project Development Phase

Project Development Delivery of Sprint 1

Team ID	PNT2022TMID41963
Project Name	Signs with smart connectivity for Better road safety
Maximum Marks	4 Marks

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.

Program Code :
Weather.py:

```
# Python code importrequestsasreqs defget(myLocation,APIKEY):
apiURL=f"https://api.openweathermap.org/data/2.5/weather?q={myLocation}&appid=
 {APIKEY}"
 responseJSON= (reqs.get(apiURL)).json() returnObject=
 {
 "temperature" : responseJSON['main']['temp'] -273.15, "weather"
 : [responseJSON['weather'][_]['main'].lower()
 for_inrange(len(responseJSON['weather']))],
 "visibility" : responseJSON['visibility']/100, # visibility in percentage where 10km is
 100% and 0km is 0%
 } if("rain"inresponseJSON): returnObject["rain"] =
 [responseJSON["rain"][key] forkeyinresponseJSON["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.

```
 # Python code
 # IMPORT SECTION STARTS
 importweather fromdatetimeimportdatetimeasdt
 # IMPORT SECTION ENDS
# --- -------- ------ -------- -------- ------ -------- ------ --  -  -  -  -  --
 # UTILITY LOGIC SECTION STARTS
 defprocessConditions(myLocation,APIKEY,localityInfo):
```

```
weatherData=weather.get(myLocation,APIKEY)
finalSpeed=localityInfo["usualSpeedLimit"]
if"rain"notinweatherDataelselocalityInfo["usualSpeedLimit"]/2
finalSpeed=finalSpeedifweatherData["visibility"]>35elsefinalSpeed/2
if(localityInfo["hospitalsNearby"]): # hospital zone doNotHonk=True
else: if(localityInfo["schools"]["schoolZone"]==Fals e): # neither
school nor hospital zone doNotHonk=False else:
```

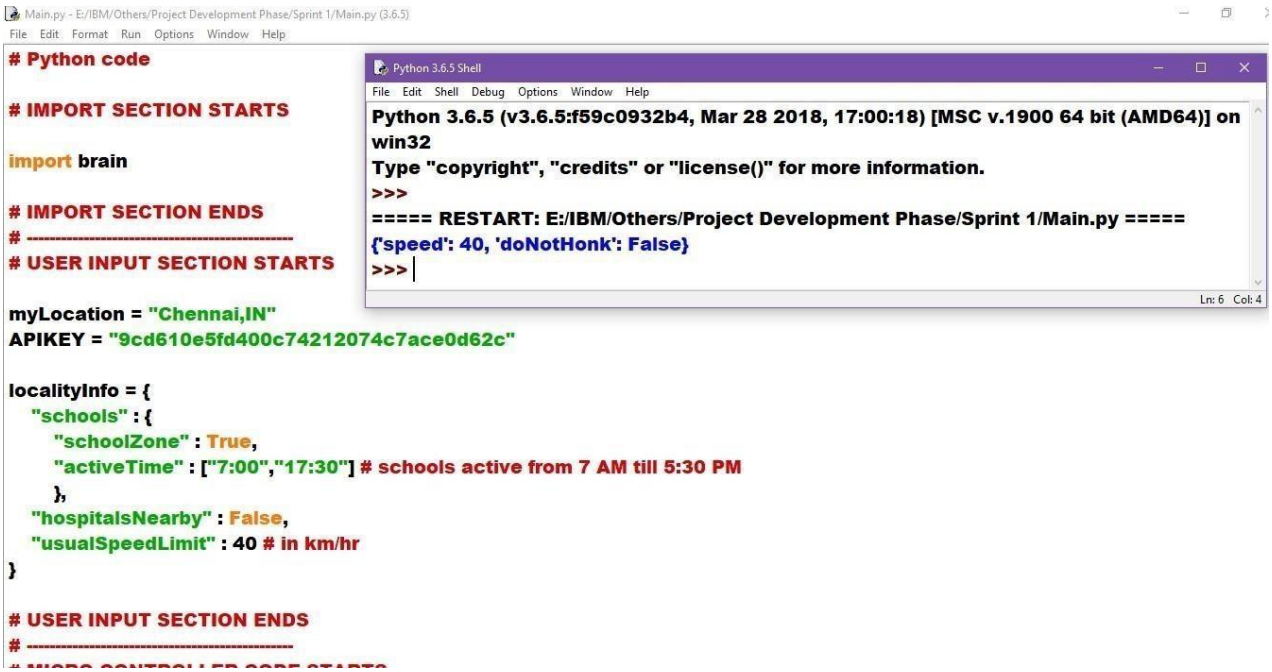
```
# school zone now= [dt.now().hour,dt.now().minute] activeTime=
[list(map(int,_.split(":"))) for_inlocalityInfo["schools"]["activeTime"]]
doNotHonk=activeTime[0][0]<=now[0]<=activeTime[1][
0] andactiveTime[0][1]<=now[1]<=activeTime[1][1]
return({
"speed" : finalSpeed,
"doNotHonk" : doNotHonk
})
# UTILITY LOGIC SECTION ENDS main.py
```

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

```
# Python code
# IMPORT SECTION STARTS
importbrain
# IMPORT SECTION ENDS
# --- -------- ------ -------- -------- ------ -------- ------ --  -  -  -  --
# USER INPUT SECTION STARTS myLocation="Chennai,IN"
APIKEY="9cd610e5fd400c74212074c7ace0d62
c" localityInfo= { "schools" :
{ "schoolZone" :
True,
"activeTime" : ["7:00","17:30"] # schools active from 7 AM till 5:30 PM
},
"hospitalsNearby" : False,
"usualSpeedLimit" : 40# 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
'''
# MICRO-CONTROLLER CODE ENDS
```

Output :

```
# Code Output
{'speed': 40, 'doNotHonk': False}
```


Main.py - E:/IBM/Others/Project Development Phase/Sprint 1/Main.py (3.6.5)
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" : 40 # in km/hr
}
# USER INPUT SECTION ENDS
# ---
Python 3.6.5 Shell
File Edit Shell Debug Options Window Help
Python 3.6.5 (v3.6.5:f59c0932b4, Mar 28 2018, 17:00:18) [MSC v.1900 64 bit (AMD64)] on win32
Type "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: E:/IBM/Others/Project Development Phase/Sprint 1/Main.py =====
{'speed': 40, 'doNotHonk': False}
>>>
Ln: 6 Col: 4