Sprint-01

Signs with Smart Connectivity for Better Road Safety

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###SprintGoals:

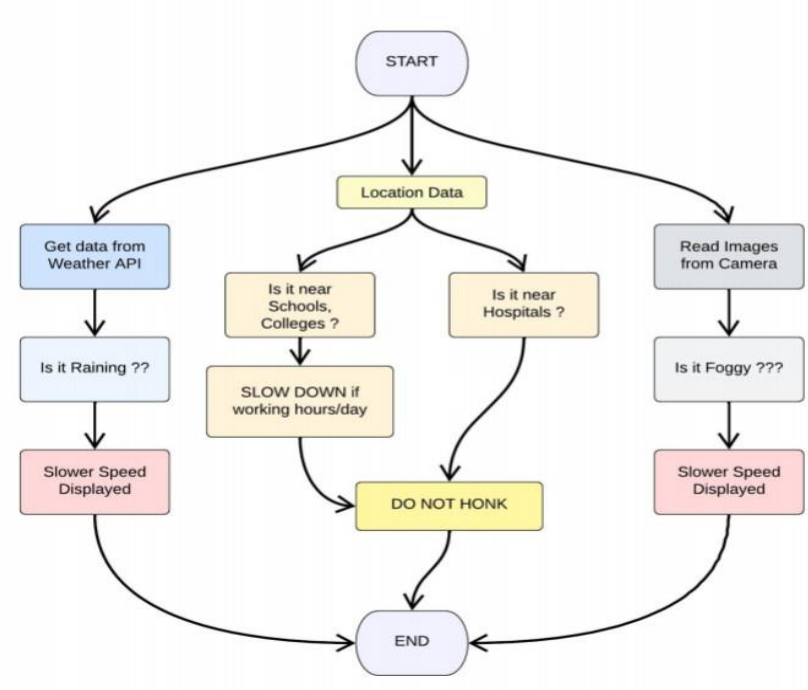
1. Create and initialize accounts in various public

APIs like Open Weather API.

2. Write a Python program that outputs results

given the inputs like weather and location.

###CodeFlow :



Program Code

:(./weather.py)

This file is a utility function that fetches the weather from OpenWeatherAPI. It returns only certainrequiredparametersof theAPI response.

```python
#Pythoncode

importrequestsasreqs

defget(myLocation,APIKEY):
    apiURL =
    f"https://api.openweathermap.org/data/2.5/weather?q={myLocation}&appid={APIKEY}"response
    JSON= (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%
and0kmis0%
    }
    if("rain"inresponseJSON):
        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 hardwareside andabstracts alltheunnecessarydetails.Thisiswherethecodeflow logicisimplemented.

```python
#Pythoncode

#IMPORTSECTIONSTARTS

importweather
fromdatetime importdatetimeasdt
```

```
#IMPORTSECTIONENDS
#----------------------------------------------------
#UTILITYLOGICSECTIONSTARTS
defprocessConditions(myLocation,APIKEY,localityInfo):
   weatherData=weather.get(myLocation,APIKEY)

   finalSpeed = localityInfo["usualSpeedLimit"] if "rain" not in weatherData
elselocalityInfo["usualSpeedLimit"]/2
   finalSpeed=finalSpeedifweatherData["visibility"]>35elsefinalSpeed/2

   if(localityInfo["hospitalsNearby"]):
      # hospital
      zonedoNotHonk=True
   else:
      if(localityInfo["schools"]["schoolZone"]==False):
         # neither school nor hospital
         zonedoNotHonk= False
      else:
         # schoolzone
         now=[dt.now().hour,dt.now().minute]
         activeTime = [list(map(int,_.split(":"))) for _ in
         localityInfo["schools"]["activeTime"]]doNotHonk=activeTime[0][0]<=now[0]<=activ
         eTime[1][0] and
activeTime[0][1]<=now[1]<=activeTime[1][1]

   return({
      "speed" :
      finalSpeed,"doNotHonk":doNo
      tHonk
   })

#UTILITYLOGICSECTIONENDS
```

(./main.py)

> The code that runs in a forever loop in the micro-controller. This calls all the util functions fromotherpythonfilesandbasedonthereturnvaluetransduceschangesintheoutput hardwaredisplay.

```python
#Pythoncode


#IMPORTSECTIONSTARTS


importbrain


#IMPORTSECTIONENDS
#----------
#USERINPUTSECTIONSTARTS


myLocation="Chennai,IN"
APIKEY="bf4a8d480ee05c00952bf65b78ae826b"


localityInfo =
   {"schools":{
      "schoolZone":True,
      "activeTime":["7:00","17:30"]#schoolsactivefrom7AMtill5:30PM
      },
   "hospitalsNearby" :
   False,"usualSpeedLimit":40#inkm
   /hr
}


#USERINPUTSECTIONENDS
#----------
#MICRO-CONTROLLERCODESTARTS
```

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

'''

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

#MICRO-CONTROLLERCODEENDS

```

Output:

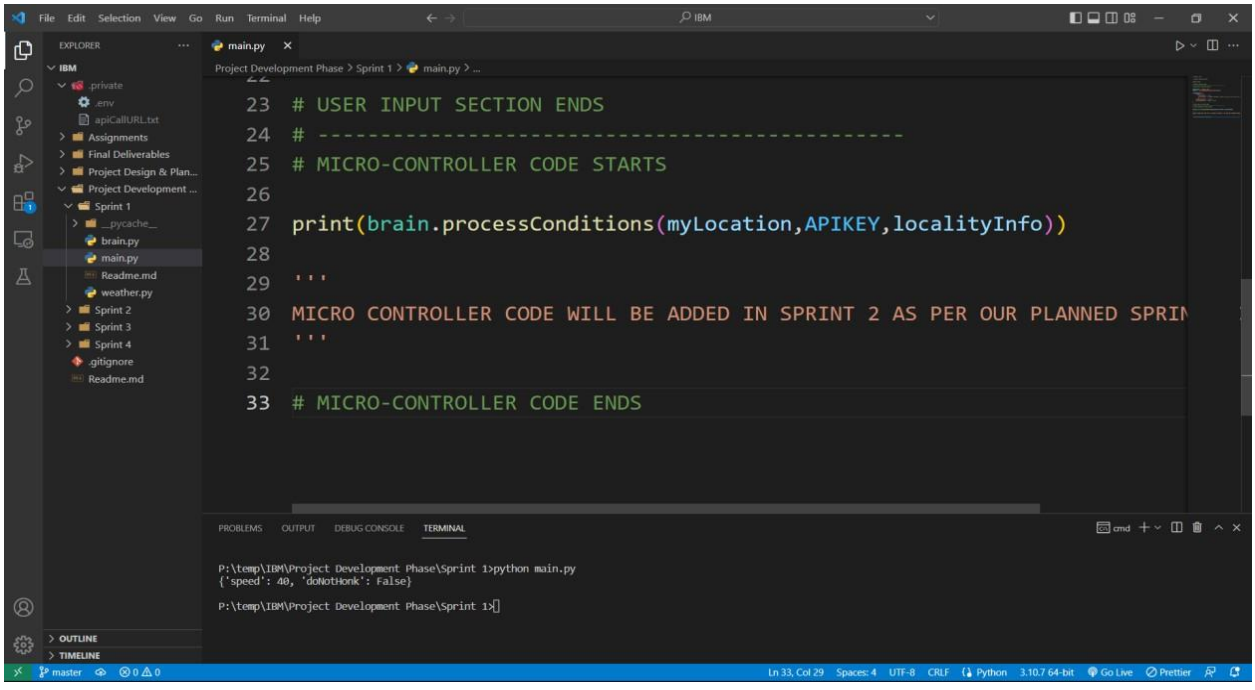
```python

#CodeOutput

{'speed':40,'doNotHonk':False}

```

Images:



ThankYou
```