PROJECT DEVELOPMENT PHASE

SPRINT 2

Signs with Smart Connectivity for Better Road Safety

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MAIN.PY

```
# Python code
# IMPORT SECTION STARTS
import brain
# IMPORT SECTION ENDS
# ---------------------------------------------
# USER INPUT SECTION STARTS myLocation
= "Chennai,IN"
APIKEY = "92eedd4b0b4cd6c543c365f562a59ab3" 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 ENDS
```

BRAIN.PY

```
# Python code
# IMPORT SECTION STARTS 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
   })
# UTILITY LOGIC SECTION ENDS
```

WEATHER.PY

```
# Python code import
requests as reqs def
get(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 _ 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)
```

CODE 1

```
import weather


      from datetime import datetime as dt         from
publishData import logData2Cloud as log2cloud


           # IMPORT SECTION ENDS
           # ------------------------------------------------
      # UTILITY LOGIC SECTION STARTS       def
processConditions(myLocation,APIKEY,localityInfo):
               weatherData = weather.get(myLocation,APIKEY)

log2cloud(myLocation,weatherData["temperature"],weatherData["visibility"])


               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
```

```
            })
```

CODE 2

```
import brain



        # IMPORT SECTION ENDS
        # -----------------------------------------------
        # USER INPUT SECTION STARTS
                                                              myLocation = "Chennai,IN"
        APIKEY = "92eedd4b0b4cd6c543c365f562a59ab3"
                                                                      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
    while True :
            print(brain.processConditions(myLocation,APIKEY,localityInfo))

        '''
        MICRO CONTROLLER CODE WILL BE ADDED IN SPRINT 3 AS PER OUR PLANNED SPRINT
        SCHEDULE
        '''
```

CODE 3

```
import
wiotp.sdk.device #
python -m pip
install wiotp

                    import time

                    # IMPORT SECTION ENDS
                    # -----------------------------------------------
                    # API CONFIG SECTION STARTS

                    myConfig = {
                        "identity" : {
                            "orgId" : "epmoec",
                            "typeId" : "testDevice",
                            "deviceId" : "device0"
                        },
                        "auth" : {
```

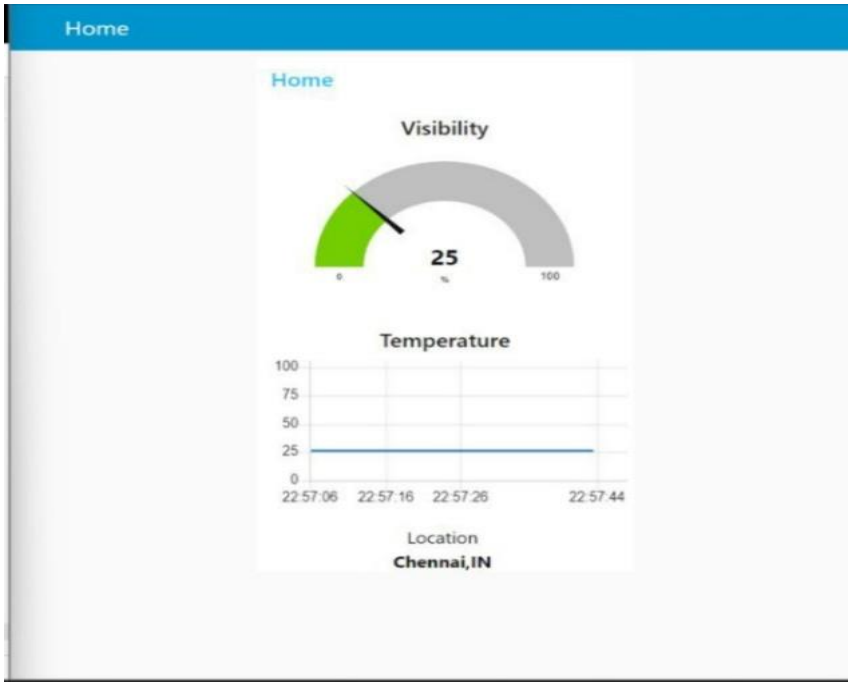
```
                        "token" : "?-KDXUPMvDo_TK2&b1"
                    }
                                                                    }
                # API CONFIG SECTION ENDS
                # ---------------------------------------------
                # FUNCTIONS SECTION STARTS
                        def myCommandCallback(cd):      print("recieved cmd : ",cd)

                 def logData2Cloud(location,temperature,visibility):
                    client =
                wiotp.sdk.device.DeviceClient(config=myConfig,logHandlers=None)
                    client.connect()
        client.publishEvent(eventId="status",msgFormat="json",data={
"temperature" : temperature,
                        "visibility" : visibility,
            "location" : location
},qos=0,onPublish=None)         client.commandCallback =
myCommandCallback       client.disconnect()
                    time.sleep(1)
```

CODE 4

```
Import
request
s as
reqs
                                                        def get(myLocation,APIKEY):
            apiURL =
          f"https://api.openweathermap.org/data/2.5/weather?q={myLocation}&appid={APIKE
          Y}"
         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)
          Footer
```

OUTPUT:


Home
Home
Visibility
25
%
0
100
Temperature
100
75
50
25
0
22:57:06
22:57:16
22:57:26
22:57:44
Location
Chennai,IN