Sprint 01

**Signs with Smart Connectivity for Better Road Safety**

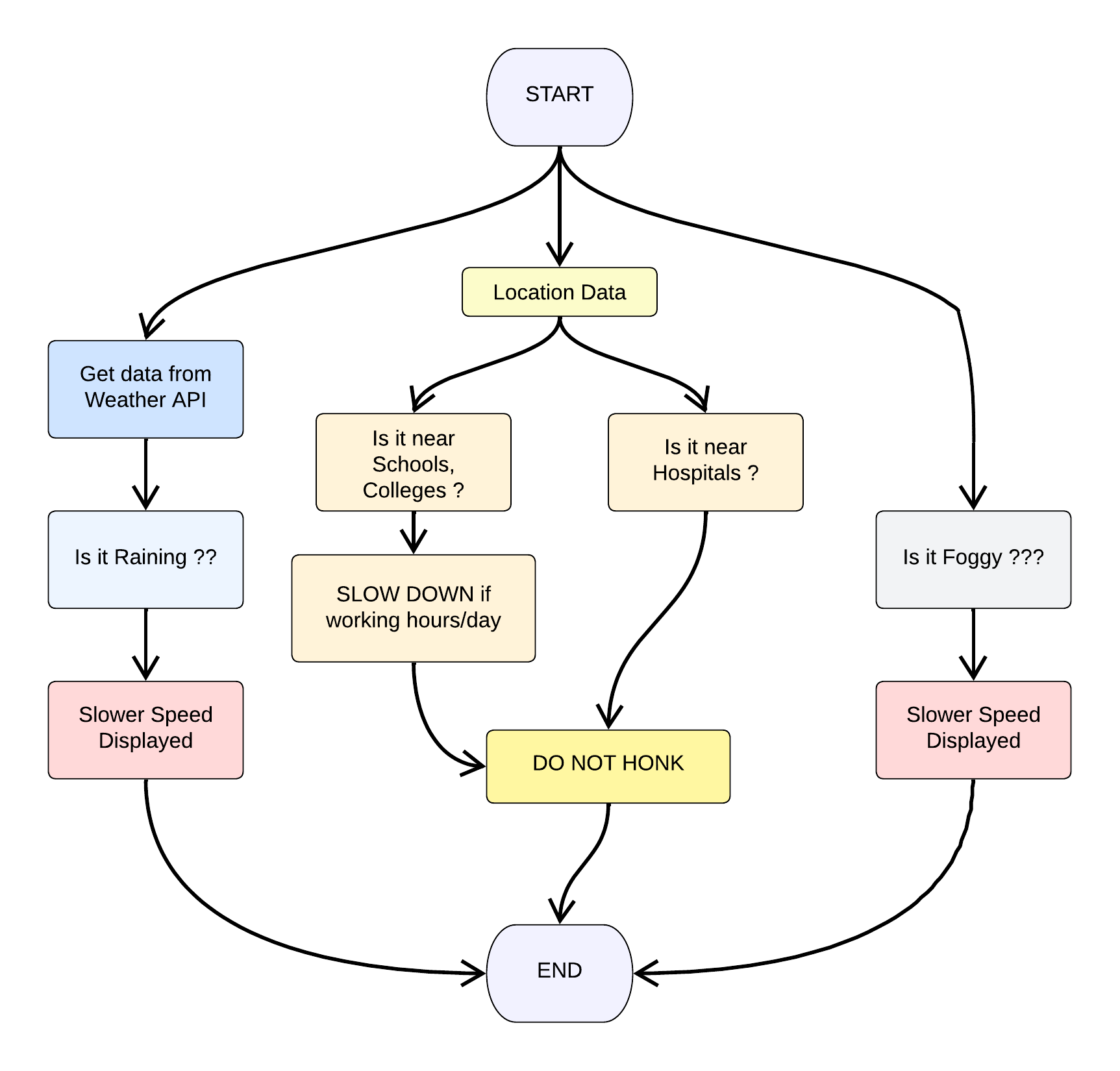
**Team ID - PNT2022TMID23663**

# Sprint Goals:

1. Create and initialize accounts in various public APIs like Open Weather API.

# Write a Python program that outputs results given the inputs like weather and location.

Code Flow:



## Program Code:

> weather.py

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

# 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)

> 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**

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

> main.py

The code that runs in a forever loop in the micro-controller. 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

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" : 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}

