

PROJECT DEVELOPMENT PHASE

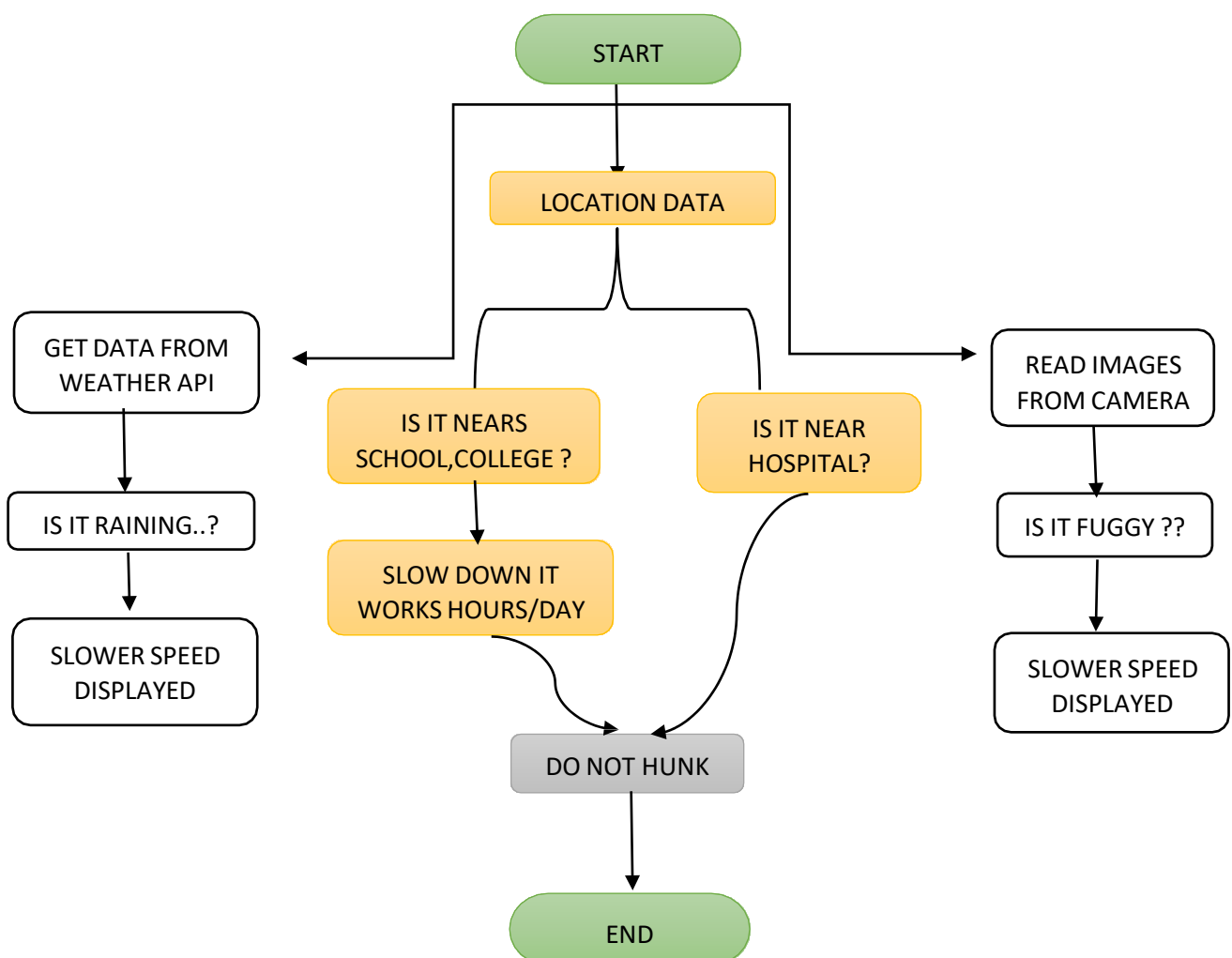
SPRINT 1

TEAM ID	PNT2022TMID44448
PROJECT NAME	Signs With smart connectivity for better road safety

SPRINT GOALS:

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.

COAD FLOW



Wokwi Simulation: <https://wokwi.com/projects/348562583249224276>

The screenshot shows the Wokwi simulation interface. On the left, the sketch.ino file contains the following code:

```
1 #include <WiFi.h> //library for wifi
2 #include <PubSubClient.h> //library for MQTT
3 #include "DHT.h" // Library for dht11
4 #define DHTPIN 5 // what pin we're connected to
5 #define DHTTYPE DHT22 // define type of sensor DHT 11
6
7 DHT dht (DHTPIN, DHTTYPE); // creating the instance by passing pin and type of
8
9 void callback(char* topic, byte* payload, unsigned int payloadLength)
10
11 //-----credentials of IBM Accounts-----
12
13 #define ORG "w5704q" //IBM ORGANIZATION ID
14 #define DEVICE_TYPE "PNTIBM" //Device type mentioned in ibm watson IOT Platform
15 #define DEVICE_ID "PNTIBM" //Device ID mentioned in ibm watson IOT Platform
16 #define TOKEN "Wzi6IvG7x2rEVL7pc8" //Token
17 String data3;
18 float h, t;
19
20
21 //----- Customise the above values -----
22 char server[] = ORG ".messaging.internetofthings.ibmcloud.com"; // Server Name
23 char publishTopic[] = "iot-2/evt/Data/fmt/json"; // topic name and type of event
24 char subscribeTopic[] = "iot-2/cmd/command/fmt/String"; // cmd REPRESENT command
25 char authMethod[] = "use-token-auth"; // authentication method
26 char token[] = TOKEN;
27 char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID; //client id
28
29
```

On the right, the simulation shows an ESP32 microcontroller connected to a DHT22 sensor. The sensor's pins are connected to the ESP32's pins. The output of the simulation shows the following data:

```
{ "temp": 37.40, "humidity": 86.00, "North": 0, "South": 0, "East": 0, "West": 0 }
```

The simulation is running, and the output shows the temperature and humidity values being published to the IBM Watson IoT Platform.

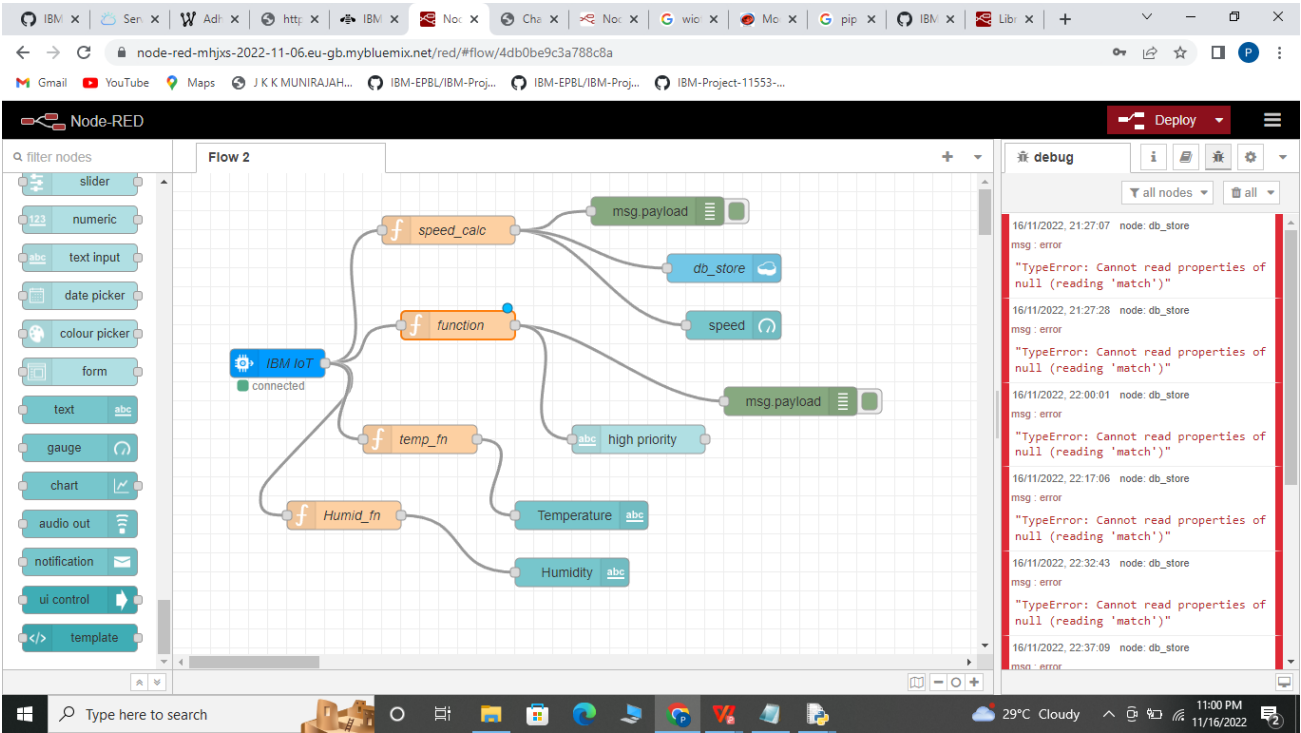
IoT Device – IoT Platform :

The screenshot shows the IBM Watson IoT Platform dashboard. The top navigation bar includes links to Browse, Action, Device Types, and Interfaces. The main content area displays a list of devices, with the following columns: Device ID, Status, Device Type, Class ID, and Date Added. The device listed is PNTIBM, with a status of Connected, Device Type of PNTIBM, Class ID of Device, and Date Added of 31 Oct 2022 07:57.

Below the device list, there is a section for Recent Events. The events are listed in a table with the following columns: Event, Value, Format, and Last Received. The events show a stream of data being received from the device, with values for temperature, humidity, and location coordinates.

Event	Value	Format	Last Received
Data	{ "temp": 37.4, "humidity": 86, "North": 0, "South": 0, ... }	json	a few seconds ago
Data	{ "temp": 37.4, "humidity": 86, "North": 0, "South": 0, ... }	json	a few seconds ago
Data	{ "temp": 37.4, "humidity": 86, "North": 0, "South": 0, ... }	json	a few seconds ago
Data	{ "temp": 37.4, "humidity": 86, "North": 0, "South": 0, ... }	json	a few seconds ago
Data	{ "temp": 37.4, "humidity": 86, "North": 0, "South": 0, ... }	json	a few seconds ago

Node Red :

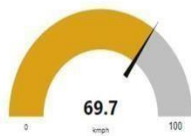


Node Red Web UI :



Home

Speed Limit



69.7
kmph

Environment Data

Temperature
14.7

Humidity
88

High Priority Vehicle Direction
High Priority
Towards East

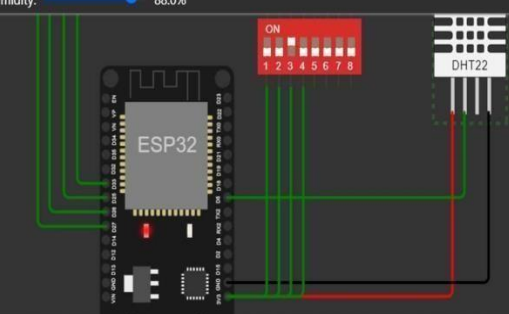
WOKWI

SAVE SHARE final_iotino SIGN UP

sketch.ino diagram.json libraries.txt Library Manager

Simulation 01:32.632 96%

Editing DHT22
Temperature: 14.7°C
Humidity: 88.0%

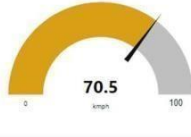


```
1 #include <DHT.h>
2 #include <DHT22.h>
3 #include <WiFi.h>
4 #include <HTTP.h>
5 #define DHTPIN 4
6 #define DHTTYPE DHT22
7 DHT dht(DHTPIN, DHTTYPE);
8 void setup() {
9   pinMode(13, OUTPUT);
10  // pinMode(14, OUTPUT);
11  // pinMode(15, OUTPUT);
12  // pinMode(16, OUTPUT);
13  #define LED_BUILTIN 13
14  #define LED_BUILTIN 14
15  #define LED_BUILTIN 15
16  #define LED_BUILTIN 16
17  digitalWrite(LED_BUILTIN, HIGH);
18  digitalWrite(LED_BUILTIN, LOW);
19  digitalWrite(LED_BUILTIN, HIGH);
20  digitalWrite(LED_BUILTIN, LOW);
21  // digitalWrite(LED_BUILTIN, HIGH);
22  // digitalWrite(LED_BUILTIN, LOW);
23  // digitalWrite(LED_BUILTIN, HIGH);
24  // digitalWrite(LED_BUILTIN, LOW);
25  // digitalWrite(LED_BUILTIN, HIGH);
26  // digitalWrite(LED_BUILTIN, LOW);
27  // digitalWrite(LED_BUILTIN, HIGH);
28  // digitalWrite(LED_BUILTIN, LOW);
```

```
{ "temp":14.70,"humidity":88.00,"North":0,"South":0,"East":1,"West":0}
Publish ok
temp:14.70
humidity:88.00
Sending payload:
{"temp":14.70,"humidity":88.00,"North":0,"South":0,"East":1,"West":0}
Publish ok
```

Home

Speed Limit



70.5
kmph

Environment Data

Temperature
15.5

Humidity
91.5

High Priority Vehicle Direction
High Priority
Towards South

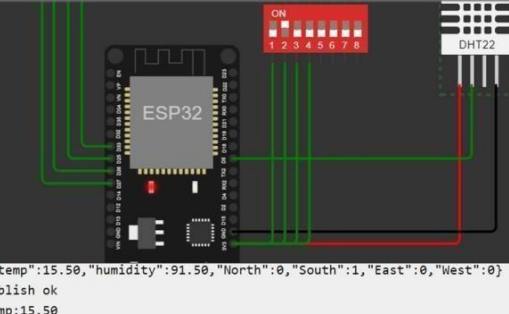
WOKWI

SAVE SHARE final_iotino SIGN IN

sketch.ino diagram.json libraries.txt Library Manager

Simulation 02:23.068 91%

Editing DHT22
Temperature: 15.5°C
Humidity: 91.5%



```
1 #include <DHT.h>
2 #include <DHT22.h>
3 #include <WiFi.h>
4 #include <HTTP.h>
5 #define DHTPIN 4
6 #define DHTTYPE DHT22
7 DHT dht(DHTPIN, DHTTYPE);
8 void setup() {
9   pinMode(13, OUTPUT);
10  // pinMode(14, OUTPUT);
11  // pinMode(15, OUTPUT);
12  // pinMode(16, OUTPUT);
13  #define LED_BUILTIN 13
14  #define LED_BUILTIN 14
15  #define LED_BUILTIN 15
16  #define LED_BUILTIN 16
17  digitalWrite(LED_BUILTIN, HIGH);
18  digitalWrite(LED_BUILTIN, LOW);
19  digitalWrite(LED_BUILTIN, HIGH);
20  digitalWrite(LED_BUILTIN, LOW);
21  // digitalWrite(LED_BUILTIN, HIGH);
22  // digitalWrite(LED_BUILTIN, LOW);
23  // digitalWrite(LED_BUILTIN, HIGH);
24  // digitalWrite(LED_BUILTIN, LOW);
25  // digitalWrite(LED_BUILTIN, HIGH);
26  // digitalWrite(LED_BUILTIN, LOW);
27  // digitalWrite(LED_BUILTIN, HIGH);
28  // digitalWrite(LED_BUILTIN, LOW);
```

```
{ "temp":15.50,"humidity":91.50,"North":0,"South":1,"East":0,"West":0}
Publish ok
temp:15.50
humidity:91.50
Sending payload:
{"temp":15.50,"humidity":91.50,"North":0,"South":1,"East":0,"West":0}
Publish ok
```

Cloudant Database :

data_iot

All Documents

Query

Permissions

Changes

Design Documents

Log Out

Document ID

Options

{ } JSON

Table

Metadata

{ } JSON

Create Document

	_id	payload
<input type="checkbox"/>	060cc88d44faf11288e9cdfd7d8de45a	35
<input type="checkbox"/>	060cc88d44faf11288e9cdfd7d904e58	60
<input type="checkbox"/>	060cc88d44faf11288e9cdfd7d90c3f9	45.5
<input type="checkbox"/>	060cc88d44faf11288e9cdfd7d92a313	60
<input type="checkbox"/>	2314e7571ab5925365e082f191bb2c9c	52.5
<input type="checkbox"/>	26939bb99e5c84bed4f6a20342a22ab2	35
<input type="checkbox"/>	26939bb99e5c84bed4f6a20342a7ccd5	44
<input type="checkbox"/>	3ffa1240575d0cd0d7f848833802e389	55
<input type="checkbox"/>	48a3afbcf5f840466e09ed279d3c3451	53
<input type="checkbox"/>	48a3afbcf5f840466e09ed279d3c5b7c	53
<input type="checkbox"/>	48a3afbcf5f840466e09ed279d3c9545	53
<input type="checkbox"/>	52730057f2d5fde2d21dfaaaabc10dc8	55

Showing 2 of 3 columns. ☐ Show all columns.

Showing document 1 - 20. Documents per page: 20

