# Project Development Phase

# Sprint-1

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| **Date** | 20 November 2022 |
| **Team ID** | PNT2022TMID08255 |
| **Project Name** | Signs with Smart Connectivity for Better Road Safety |

## Sprint Target:

| Sprint | Functional Requirements | User Story Number | Task/User Story |
|---|---|---|---|
| Sprint-1 | Python code | USN-1 | Connect sensor Arduino with python code |

## Python Code in Wokwi:

```
#include <WiFi.h> #include
<PubSubClient.h>
void callback(char* subscribetopic, byte* payload, unsigned intpayloadLength);
//-------credentials of IBM Accounts------
#define ORG "confidential"//IBM ORGANITION ID
#define DEVICE_TYPE "gaya"//Device type mentioned in ibm watson IOT Platform#define DEVICE_ID
"0605"//Device ID mentioned in ibm watson IOT Platform #define TOKEN "confidential" //Token
String data3;
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";char publishTopic[] =
"iot-2/evt/Data/fmt/json";
char subscribetopic[] = "iot-2/cmd/test/fmt/String";char authMethod[] =
"use-token-auth";
char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
WiFiClient wifiClient;
PubSubClient client(server, 1883, callback ,wifiClient);const int trigPin = 5;
const int echoPin = 18; #define
SOUND_SPEED 0.034long
duration;
float distance;void
setup() {
```

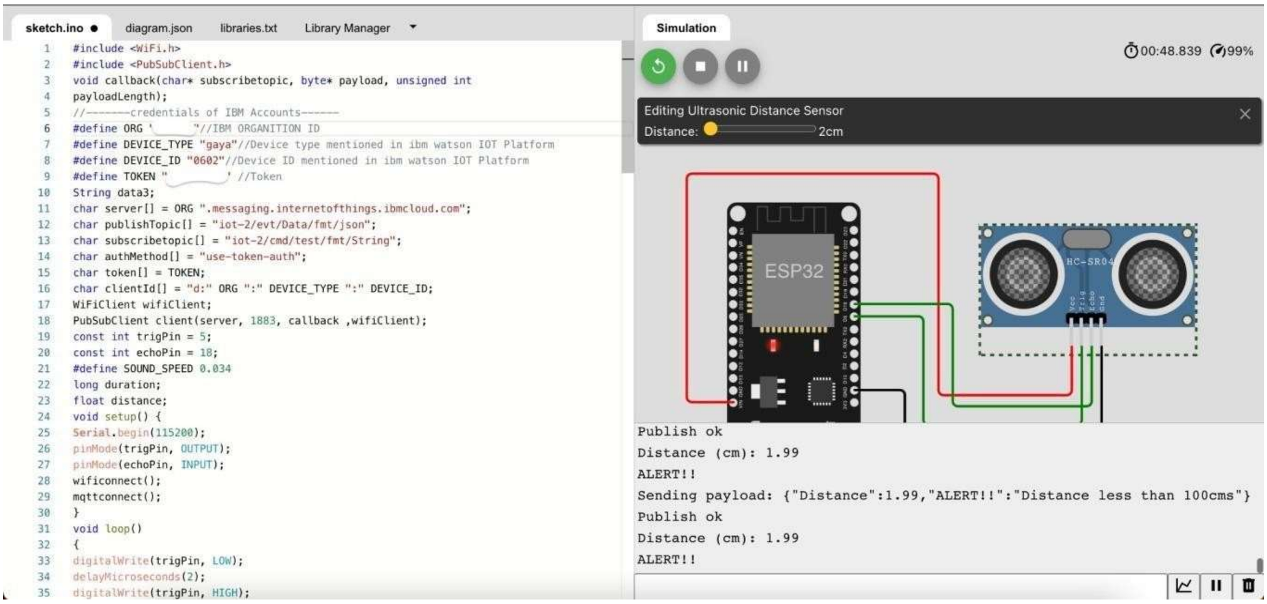
```
Serial.begin(115200);
pinMode(trigPin, OUTPUT);
pinMode(echoPin, INPUT);
wificonnect(); mqttconnect();
 }
 void loop()
 {
 digitalWrite(trigPin, LOW);
 delayMicroseconds(2); digitalWrite(trigPin,
 HIGH); delayMicroseconds(10);
 digitalWrite(trigPin, LOW); duration =
 pulseIn(echoPin, HIGH); distance = duration *
 SOUND_SPEED/2;Serial.print("Distance (cm):
 "); Serial.println(distance); if(distance<100)
 {
 Serial.println("ALERT!!");delay(1000);
 PublishData(distance); delay(1000);
 if (!client.loop()) {
 mqttconnect();
 }
 }
 delay(1000);
 }
 void PublishData(float dist) {
 mqttconnect();
 String payload = "{\"Distance\":";payload +=
 dist;
 payload += ",\"ALERT!!\":""\"Distance less than 100cms\"";payload += "}";
 Serial.print("Sending payload: ");
 Serial.println(payload);

 if (client.publish(publishTopic, (char*) payload.c_str())) {Serial.println("Publish
 ok");
 } else {
 Serial.println("Publish failed");
 }
 }
 void mqttconnect() {

 if (!client.connected()) { Serial.print("Reconnecting
 client to ");Serial.println(server);
 while (!!!client.connect(clientId, authMethod, token)) {Serial.print(".");
 delay(500);
 }
 initManagedDevice();
 Serial.println();
 }
 }
 void wificonnect()
```

```
{
Serial.println(); Serial.print("Connecting to
"); WiFi.begin("Wokwi-GUEST", "", 6);
while (WiFi.status() != WL_CONNECTED) {
delay(500);
Serial.print(".");
}
Serial.println(""); Serial.println("WiFi
connected");Serial.println("IP address: ");
Serial.println(WiFi.localIP());
}
void initManagedDevice() {
if (client.subscribe(subscribetopic)) {
Serial.println((subscribetopic));
Serial.println("subscribe to cmd OK");
}
else {
Serial.println("subscribe to cmd FAILED");
}
}
void callback(char* subscribetopic, byte* payload, unsigned int payloadLength)
{
Serial.print("callback invoked for topic: ");
Serial.println(subscribetopic);
for (int i = 0; i < payloadLength; i++) {
//Serial.print((char)payload[i]);data3 +=
(char)payload[i];
}
Serial.println("data: "+ data3);data3="";
}
```

# Connect sensor Arduino with python code:



```
#include <WiFi.h>
#include <PubSubClient.h>
void callback(char* subscribetopic, byte* payload, unsigned int
payloadLength);
//-------credentials of IBM Accounts------
#define ORG '      "//IBM ORGANITION ID
#define DEVICE_TYPE "gaya"//Device type mentioned in ibm watson IOT Platform
#define DEVICE_ID "0602"//Device ID mentioned in ibm watson IOT Platform
#define TOKEN "        ' //Token
String data3;
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/Data/fmt/json";
char subscribetopic[] = "iot-2/cmd/test/fmt/String";
char authMethod[] = "use-token-auth";
char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
WiFiClient wifiClient;
PubSubClient client(server, 1883, callback ,wifiClient);
const int trigPin = 5;
const int echoPin = 18;
#define SOUND_SPEED 0.034
long duration;
float distance;
void setup() {
Serial.begin(115200);
pinMode(trigPin, OUTPUT);
pinMode(echoPin, INPUT);
wificonnect();
mqttconnect();
}
void loop()
{
digitalWrite(trigPin, LOW);
delayMicroseconds(2);
digitalWrite(trigPin, HIGH);
```

```
Publish ok
Distance (cm): 1.99
ALERT!!
Sending payload: {"Distance":1.99,"ALERT!!":"Distance less than 100cms"}
Publish ok
Distance (cm): 1.99
ALERT!!
```