

PROJECT DEVELOPMENT PHASE

SPRINT 2

Sprint 2 is about **LOGIN and NOTIFIACATION** of the IoT device in Parent's Web Application for getting information about Child's Status.

LOGIN:

This Coding is to built login page of parent's application to get information about child's condition.

Coding:

```
<!DOCTYPE html>

<html> <head>

<meta name="viewport" content="width=device-width, initial-scale=1">

<title> Login Page </title>

<style>
Body {
  font-family: Calibri, Helvetica, sans-
  serif;background-color: #9FE2BF;
}

button {
  background-color: #9FE2BF;
```

```
width: 100%;  
color: black;  
padding: 15px;  
margin: 10px  
0px;border: none;  
cursor: pointer;  
}
```

```
form {  
    border: 3px solid #f1f1f1;  
}
```

```
input[type=text], input[type=password]  
{ width: 100%;  
margin: 8px 0;  
padding: 12px 20px;  
display: inline-  
block;border: 2px  
white;  
box-sizing: border-box;  
}
```

```
button:hover {  
    opacity: 0.7;  
}
```

```
.cancelbtn {
```

```
        width: auto;
        padding: 10px 18px;
        margin: 10px 5px;
    }

    .container {
        padding: 25px;
        background-color: #CCCCFF;
    }
</style> </head>

<body>

    <center> <h1> Login Form </h1> </center>

    <form>

        <div class="container">

            <label>Device ID/Number: </label>

                <input type="password" placeholder="Enter Password" name="password" required>

            <label>E-Mail : </label>

                <input type="text" placeholder="Enter Username" name="username" required>

            <label>Password : </label>

                <input type="password" placeholder="Enter Password" name="password" required>

            <button type="submit">Login</button>

            <button class="loginBtn loginBtn--facebook">Login with Facebook.</button>

            <button class="loginBtn loginBtn--google">Login with Google.</button>
```

```
<input type="checkbox" checked="checked"> Remember me
```

```
<button type="button" class="cancelbtn">
```

```
Cancel</button>Forgot <a href="#"> password? </a>
```

```
</div>
```

```
</form>
```

```
</body>
```

```
</html>
```

NOTIFICATION:

This coding will make connection between IoT Device & Parent's application. When the child cross across the geofence message will be notified on parent's application.

Coding:

```
#include<WiFi.h>//library for wifi
#include<PubSubClient.h>//library for MQTT
void callback(char* subscribetopic, byte* payload,unsigned int payloadlength);

//-----credentials of IBM Account-----

#define ORG "45z3o2"// IBM ORGANIZATION ID

#define DEVICE_TYPE "ESP32_Controller"//DEVICE TYPE MENTIONED IN IOT WATSON
PLATFORM#define DEVICE_ID "bme2"//DEVICE ID MENTIONED IN IOT WATSON PLATEFORM
#define TOKEN
"OKZ+q@JfPWDOd6wBTj"//TokenString
data3;
float dist;

//-----customize the above value-----

char server[]=ORG ".messaging.internetofthings.ibmcloud.com";//server name

char publishtopic[]="ultrasonic/evt/Data/fmt/json";/*topic name and type of event
performand format in which data to be send*/
char subscribetopic[]="ultrasonic/cmd/test/fmt/String";/*cmd REPRESENT Command
tupe and COMMAND IS TEST OF FORMAT STRING*/
```

```

char authMethod[]="use-token-auth";//authentication method
char token[]=TOKEN;
char clientid[]="d:" ORG ":" DEVICE_TYPE":" DEVICE_ID;//CLIENT ID

// .....

WiFiClient wifiClient;// creating an instance for wificlient

PubSubClient client(server, 1883 , callback , wifiClient);/*calling the predefined
client idby passing parameter like server id,portand wificredential*/
int LED =4;

int    trig
=5;    int
echo=18;
void
setup(){
    Serial.begin(115200)
    ;
    pinMode(trig,OUTPUT
    );
    pinMode(echo,INPUT
    );
    pinMode(LED,OUTPUT)
    ; delay(10);
    Serial.println();
    wificonnect();
    mqttconnect();
}

```

```

void loop() {
  digitalWrite(trig,LOW);
  digitalWrite(trig,HIGH);
  delayMicroseconds(10);
  digitalWrite(trig,LOW);
  float
  dur=pulseIn(echo,HIGH); float
  dist=(dur * 0.0343)/2;
  Serial.print("distance in
  cm");Serial.println(dist);
  PublishData(dist);
  delay(1000);
  if (!client.loop()){
    mqttconnect();
  }
}

```

```

/*.....retriving to cloud.....*/

```

```

void PublishData(float dist){
  mqttconnect();//function call for connecting to
  ibm
  /*creating the string in form of JSON to update the data to ibm cloud*/
  String object;

```

```
if(dist<100)
{
    digitalWrite(LED,HIGH);
    Serial.println("no object is
near");object="Near";
}

else
{
    digitalWrite(LED,LOW);
    Serial.println("no object
found");object="No";
}

String
payload="{\"distance\": ";
payload +=dist;
payload +=", "
payload += "\"object\": \"";payload +=
object;
payload += "\"}";

Serial.print("Sending payload: ");
Serial.println(payload);
```



```

if(client.publish(publishtopic, (char*) payload.c_str())){

    Serial.println("Publish ok");/* if its sucessfully upload data on the cloud then it will print
    publish ok in serial monitor or else it will print publish failed*/
} 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()//function defenition for wificonnect

```

```

{
    Serial.println();
    Serial.print("Connecting to ");
    WiFi.begin("vivo 1816", "taetae95",6);//PASSING THE WIFI CREDENTIALS TO ESTABLISH CONNECTION

    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("dta: "+ data3);
```

```
    //if(data3=="Near")
```

```
    //{
```

```
    //Serial.println(data3);
```

```
    //digitalWrite(LED,HIGH);
```

```
    //}
```

```
    //else //{
```

```
    //Serial.println(data3);
```

```
    //digitalWrite(LED,LOW);//}
```

```
    data3="";
```

```
}
```

Output:

The image shows a simulation environment for an IoT project. On the left, a 'Manager' pane displays MQTT topics and their associated data. The central area features a 'Simulation' window with a visual representation of an ESP32 microcontroller board connected to a sensor module via jumper wires. The right side of the interface shows a terminal window with the following output:

```
MQTT
/test/* payload,unsigned i
:count-----
M ID
//DEVICE TYPE MENTIONED
INTIONED IN IOT WATSON
aken

no object found
Sending payload: {"distance":141.21,"object":"No"}
Publish ok
Distancein cm141.21
no object found
Sending payload: {"distance":141.21,"object":"No"}
Publish ok
```

The terminal output indicates that the device is successfully sending MQTT payloads to the topic `/test/*`. The payloads contain distance measurements (e.g., 141.21 cm) and object detection status (e.g., "No").

