

Team ID	PNT2022TMID04624
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Project Title	IoT Based Safety Gadget for Child Safety Monitoring and Notification

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 PLATFORM
#define TOKEN "OKZ+q@JfPWDOd6wBTj"//Token
String 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 perform
and 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 id
by 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 +=",\" \"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 screenshot displays an IoT simulation environment. On the left, a 'Manager' pane shows MQTT logs. The main area features a 'Simulation' tab with a hardware diagram of an ESP32 microcontroller connected to a sensor module. The bottom status bar indicates a temperature of 27°C and a cloudy weather condition.

MQTT Log:

```
MQTT
/rte* payload,unsigned i
:count-----
ON ID
//DEVICE TYPE MENTIONED
ENTIONED IN IOT WATSON
aken

ID-----
:ofthings.ibmcloud.com"
sta/fmt/json";/*topic n
f
/test/fmt/String";/*cmd
authentication method
/PE": " DEVICE_ID;//CLIE
Instance for wificlient
(lback , wificlient);/*
```

Simulation Hardware Diagram:

- ESP32 microcontroller
- Sensor module (labeled 'u273')
- Wires connecting the two components

Simulation Log:

```
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
```

Status Bar: 27°C Cloudy, 18:19, 31-10-2022

The screenshot shows a web-based IoT device management dashboard. It includes a sidebar with navigation icons and a main content area with a table of devices. The table lists device IDs, status, device types, class IDs, and dates added. A detailed view for a specific device is also visible.

Dashboard Navigation: Browse, Action, Device Types, Interfaces, Add Device

Device ID	Status	Device Type	Class ID	Date Added
123	Disconnected	Node_RED	Device	Oct 29, 2022 9:56 PM
brwe2	Disconnected	ESP32_Controller	Device	Oct 28, 2022 8:46 PM

Device Details for brwe2:

Identity	Device Information	Recent Events	State	Logs
Device	Device ID: brwe2	Device Name: brwe2	Device Type: ESP32_Controller	Device Class: Device
Device	Device ID: brwe2	Device Name: brwe2	Device Type: ESP32_Controller	Device Class: Device
Device	Device ID: brwe2	Device Name: brwe2	Device Type: ESP32_Controller	Device Class: Device
Device	Device ID: brwe2	Device Name: brwe2	Device Type: ESP32_Controller	Device Class: Device
Device	Device ID: brwe2	Device Name: brwe2	Device Type: ESP32_Controller	Device Class: Device

Status Bar: 27°C Cloudy, 17:49, 31-10-2022

