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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 shows a simulation environment with an ESP32 module connected to a sensor. The terminal window displays the following MQTT logs:

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

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

The logs show the device sending a payload: {"distance":141.21,"object": "No"} and receiving a response: {"distance":141.21,"object": "No"}.

The screenshot shows an IoT dashboard with a table of devices. The table has columns for Device ID, Status, Device Type, Class ID, and Date Added. The devices listed are 123 and bme2.

Device ID	Status	Device Type	Class ID	Date Added
123	Disconnected	Node_RED	Device	Oct 29, 2022 9:56 PM
bme2	Disconnected	ESP32_Controller	Device	Oct 28, 2022 8:46 PM

The dashboard also includes a sidebar with navigation icons and a top bar with an 'Add Device' button.

