

Coding and Solution

Team ID	PNT2022TMID11410
Project Name	Real-time river water quality monitoring and control system

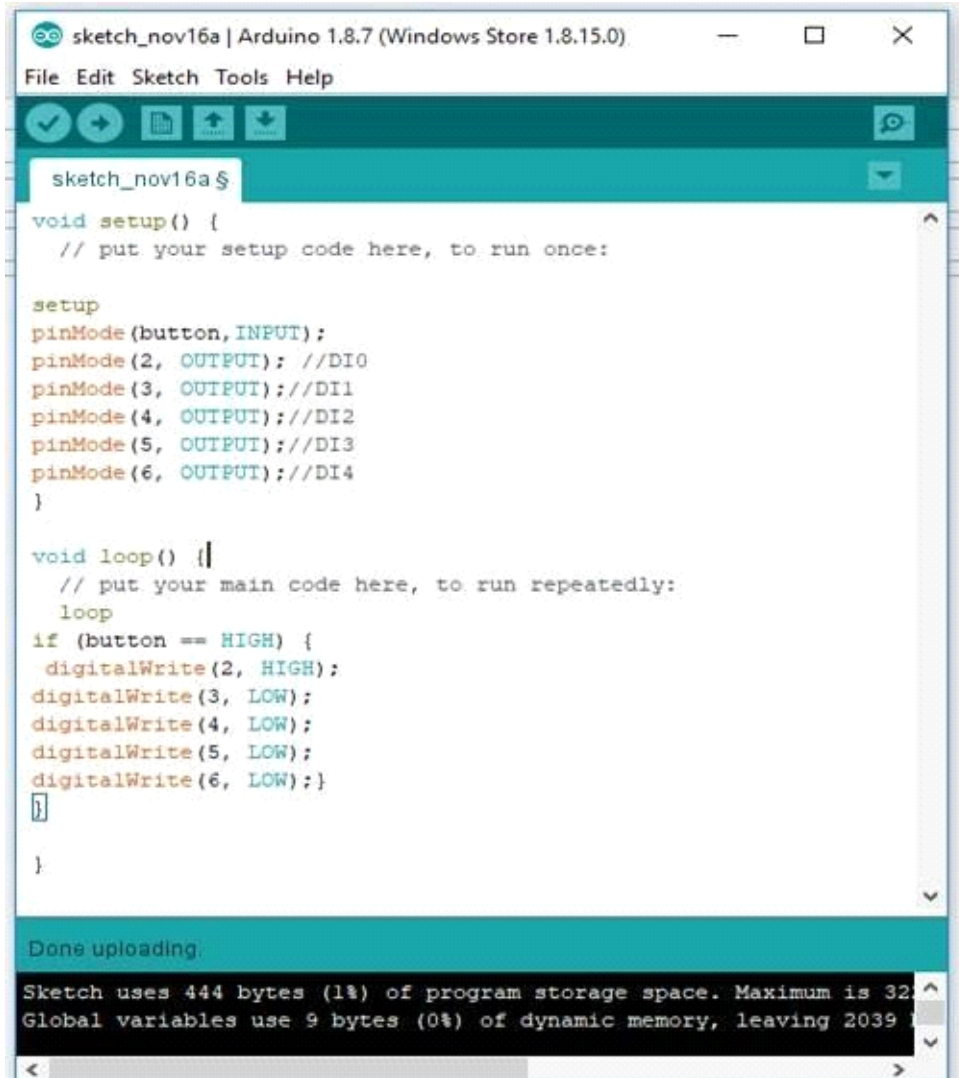
Utilization Of

Algorithms

- We are collecting the data from the sensor nodes.
- We have to setup the IBM cloud connection configuration in Node-RED platform
- Then it can connect the IBM Watson IoT with Node-RED platform
- Then the data are transferred to IBM Watson IoT platform
- We have to design and develop the app for our needed works.
- And connect the app with Node-RED
- So, it can easily show the real time water's pH and Turbidity values in our mobile app
- If we want to close the particular dam, we needed motor controller.
- So, we made a motor controller in our own mobile app.
- The controller's results are shown in Node-RED

Dynamic Program

```
void setup()
{
  Serial.begin(115200);
  pinMode(led, OUTPUT);
  pinMode(trigpin, OUTPUT);
  pinMode(echopin, INPUT);
  wifiConnect();
  mqttConnect();
}
void loop() {
  bool isNearby = dist < 100;
  digitalWrite(led, isNearby);
  publishData();
  delay(500);
  if (!client.loop()) {
    mqttConnect();
  }
}
```



Optimisation

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

```
}  
  
initManagedDevice();  
  
Serial.println();  
  
}  
  
}  
  
void initManagedDevice() {  
  
if (client.subscribe(topic)) {  
  
// Serial.println(client.subscribe(topic));  
  
Serial.println("IBM subscribe to cmd OK");  
  
} else {  
  
Serial.println("subscribe to cmd FAILED");  
  
}  
  
}  
  
void publishData()  
  
{  
  
digitalWrite(trigpin,LOW);  
  
digitalWrite(trigpin,HIGH);  
  
delayMicroseconds(10);  
  
digitalWrite(trigpin,LOW);  
  
duration=pulseIn(echopin,HIGH);
```

```
dist=duration*speed/2;

if(dist<100){

String payload = "{\"Alert Distance is\":";

payload += dist;

payload += "}";

Serial.print("\n");

Serial.print("Sending payload: ");

Serial.println(payload);

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

Serial.println("Warning crosses 110cm -- it automaticaly of the loop");

digitalWrite(led,HIGH);

}

}

if(dist>101 && dist<111){

String payload = "{\"Normal Distance\":";

payload += dist;

payload += "}";

Serial.print("\n");

Serial.print("Sending payload: ");

Se}
```

}

