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 inour 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();
}
</pre>
```

```
sketch_nov16a | Arduino 1.8.7 (Windows Store 1.8.15.0)
File Edit Sketch Tools Help
  sketch_nov16a§
void setup() {
  // put your setup code here, to run once:
setup
pinMode (button, INPUT);
pinMode(2, OUTPUT); //DIO
pinMode (3, OUTPUT)://DI1
pinMode(4, OUTPUT)://DI2
pinMode(5, OUTPUT)://DI3
pinMode(6, OUTPUT)://DI4
void loop() (
  // put your main code here, to run repeatedly:
  loop
if (button == HIGH) {
 digitalWrite(2, HIGH);
digitalWrite(3, LOW);
digitalWrite(4, LOW);
digitalWrite(5, LOW);
digitalWrite(6, LOW);}
Done uploading
Sketch uses 444 bytes (1%) of program storage space. Maximum is 32.
Global variables use 9 bytes (0%) of dynamic memory, leaving 2039
```

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}
```

