

PROJECT DEVELOPMENT PHASE

SPRINT - 4

TEAM ID	PNT2022TMID19330
PROJECT NAME	Project - Real time river water quality monitoring and control system
MAXIMUM MARKS	4

CODE IMPLEMENTATION

```
import serial

import time

import csv

import numpy as np

import matplotlib.pyplot as plt

ser = serial.Serial('/COM6',9600)

ser_bytes = ser.readline(10)

print (ser_bytes)

ser.flushInput()

while True:

    try:

        ser_bytes = ser.readline()

        decoded_bytes = float(ser_bytes[0:len(ser_bytes)-2].decode("utf-8"))

        print(decoded_bytes)
```

```

temp = float(decoded_bytes(1:3))

turb = float(decoded_bytes(4:6))

pH = float(decoded_bytes(6:8))

with open("test_data.csv", "a") as f:

    writer = csv.writer(f, delimiter=",")

    writer.writerow([time.time(), decoded_bytes])

except:

    print("Keyboard Interrupt")

    ser.close()

    break()

t = np.arange(0.0, 2.0, 0.01)

s = 1 + np.sin(2*np.pi*t)

plt.plot(t, s)

plt.xlabel('time (s)')

plt.ylabel('Celsius (C)')

plt.title('Temperature')

plt.grid(True)

plt.savefig("Temperature.png")

plt.show()

Serial.begin(9600);

sensors.begin();

int sensorValue = analogRead(A1);

voltage = sensorValue * (5.0 / 1024.0);

}

void loop(void)

```

```

{
    sensors.requestTemperatures();

    Celcius=sensors.getTempCByIndex(0);

    Fahrenheit=sensors.toFahrenheit(Celcius);

    for(int i=0;i<10;i++)
    {
        buf[i]=analogRead(analogInPin);

        delay(10);
    }

    for(int i=0;i<9;i++)
    {
        for(int j=i+1;j<10;j++)
        {
            if(buf[i]>buf[j])
            {
                temp=buf[i];
                buf[i]=buf[j];
                buf[j]=temp;
            }
        }
    }

    n = 256

    X = np.linspace(-np.pi, np.pi, 256, endpoint=True)

    C,S = np.cos(X), np.sin(X)

    plt.plot(X, C)

    plt.plot(X,S)

    plt.show()

```

```

print ("Visualization of real time sensor Data.")

print("/n")

while True:

    try:

        ser_bytes = ser.readline()

        decoded_bytes = float(ser_bytes[0:len(ser_bytes)-2].decode("utf-8"))

        print(decoded_bytes)

        temp = float(decoded_bytes(1:3))

        turb = float(decoded_bytes(4:6))

        pH = float(decoded_bytes(6:8))

        with open("test_data.csv","a") as f:

            writer = csv.writer(f,delimiter=",")

            writer.writerow([time.time(),decoded_bytes])

    except:

        print("Keyboard Interrupt")

        ser.close()

        break()

t = np.arange(0.0, 2.0, 0.01)

s = 1 + np.sin(2*np.pi*t)

plt.plot(t, s)

```

CODE FOR ARDUINO

```
#include <OneWire.h>
#include <DallasTemperature.h>

#define ONE_WIRE_BUS 5

OneWire oneWire(ONE_WIRE_BUS);

DallasTemperature sensors(&oneWire);

float Celcius=0;

float Fahrenheit=0;

float voltage=0;

const int analogInPin = A0;

int sensorValue = 0;

unsigned long int avgValue;

float b;

int buf[10],temp;

void setup(void)

{

    Serial.begin(9600);

    sensors.begin();

    int sensorValue = analogRead(A1);

    voltage = sensorValue * (5.0 / 1024.0);

}

void loop(void)

{

    sensors.requestTemperatures();

    Celcius=sensors.getTempCByIndex(0);

    Fahrenheit=sensors.toFahrenheit(Celcius);
```

```

for(int i=0;i<10;i++)
{
buf[i]=analogRead(analogInPin);
delay(10);
}
for(int i=0;i<9;i++)
{
for(int j=i+1;j<10;j++)
{
if(buf[i]>buf[j])
{
temp=buf[i];
buf[i]=buf[j];
buf[j]=temp;
}
}
}
for(int i=2;i<8;i++)
avgValue+=buf[i];

float pHVol=(float)avgValue*5.0/1024/6;
float pHValue = -5.70 * pHVol + 21.34;
Serial.println(pHValue);
Serial.print("pH");

Serial.print(" C ");
Serial.print(Celcius);

Serial.print(voltage);
Serial.print("V");

```

```
delay(10000);  
}
```

ARDUINO OUTPUT

