

SPRINT-4

TEAM ID	PNT2022TMID25961
PROJECT TITLE	REAL-TIME RIVER WATER QUALITY MONITORING AND CONTROL SYSTEM
DATE	11 NOVEMBER 2022
MAXIMUM MARK	

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(Celsius);

Serial.print(voltage); Serial.print("V"); delay(10000);
}

```

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)
```

ARDUINO OUTPUT:

