

SPRINT 4

Team ID	PNT2022TMID06042
Project Name	Project - Real Time River Water Monitoring and Control system

ARDUINO CODE

```
#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);
}

```

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_b  
ytes]) 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(Celci  
us); 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

