

**SPRINT-4**  
**CODE**  
**IMPLEMENTATION**

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PROJECT TITLE	REAL-TIME RIVER WATER QUALITY MONITORING ANDCONTROL SYSTEM
DATE	Nov 2022

```
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(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)

```