Smart Water Fountain

Project Definition and Design Thinking

Problem Explain :

1. Problem Defition & Understanding.
2. Smart water fountains may face technical glitches or malfunctions, resulting in disruptions to their automated features, data monitoring systems, or user interface, leading to potential downtime and inconvenience.
3. introduction to respberry pi 4 .
4. The Python code to create a user inetraction web server display the result.
5. Conclusion for Smart Water Fountain .

Components :

1. Flow rate Sensor.
2. Water Level Sensor.
3. Water pump.
4. Power supply.
5. Raspberry Pi 4 Model B.
6. Raspberry Pi OS (formerly Raspbian).
7. GPIO Contorl.
8. Python code for Program.
9. Cloud AWS IoT .
10. Real-time Updation UI Design (HTML , CSS , JS).

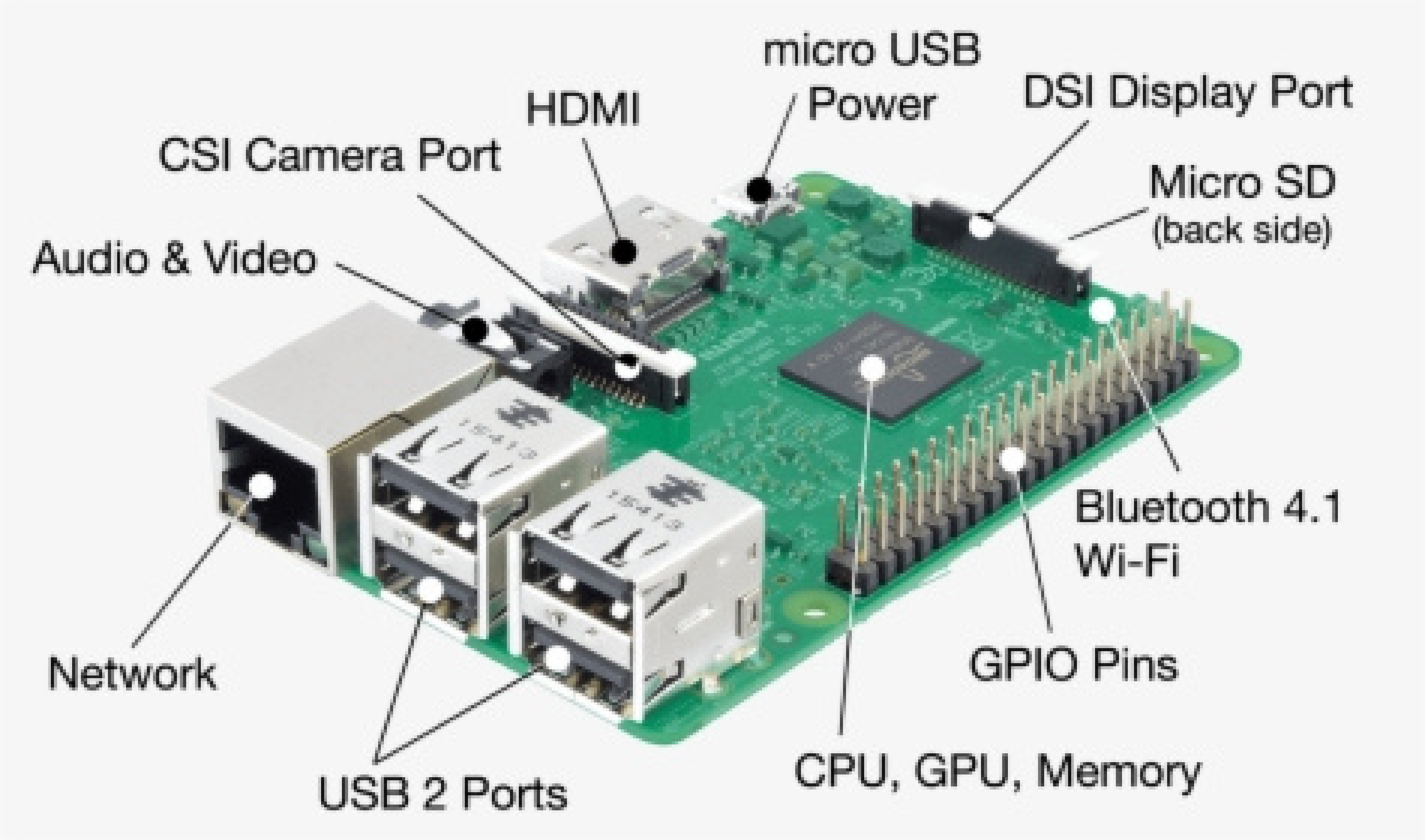
Hardware Step :

1. Flow rate Sensor.
2. Water Level Sensor.
3. Water pump.
4. Power supply.
5. Raspberry Pi 4 .

Software Libraries :

1. Raspbain OS
2. GPIO Contorl.
3. Python code for Program.
4. Cloud AWS IoT .
5. Real-time Updation UI Design (HTML , CSS , JS

Respberry pi Functions :

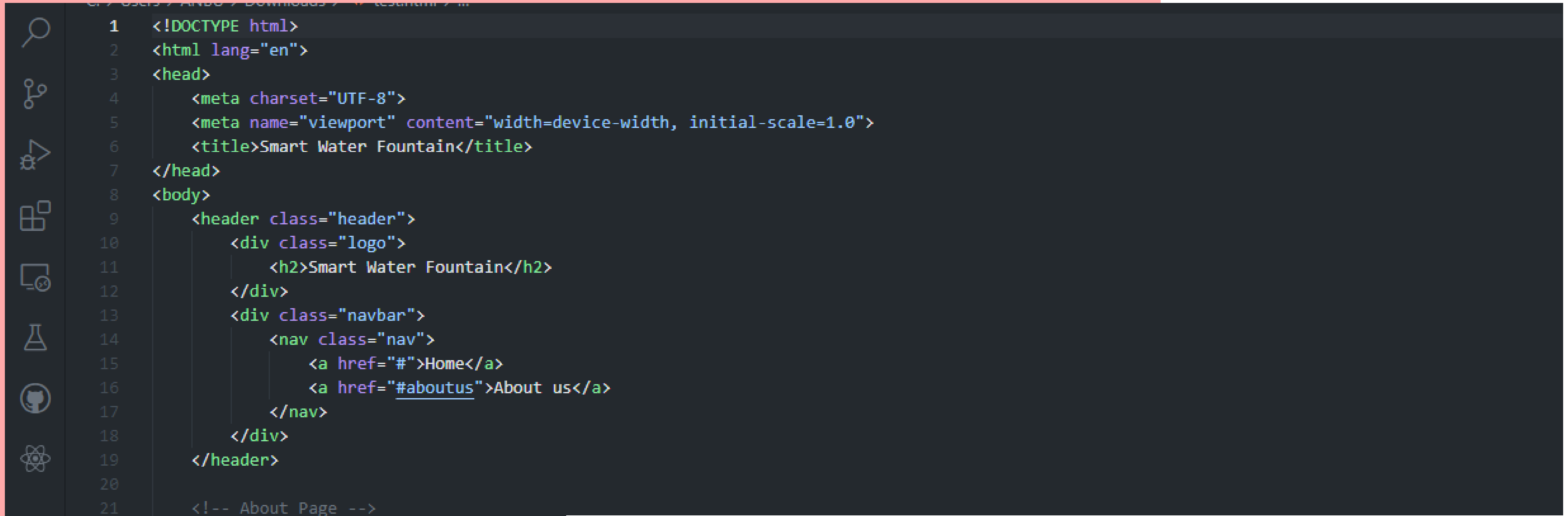


- Install the Raspbain OS .
- GPIO Contorl.
- Multimedia applications & IoT projects.
- Data Visualization with python module Flask.
- Cloud AWS IoT .
- User Interaction via Web Interface.

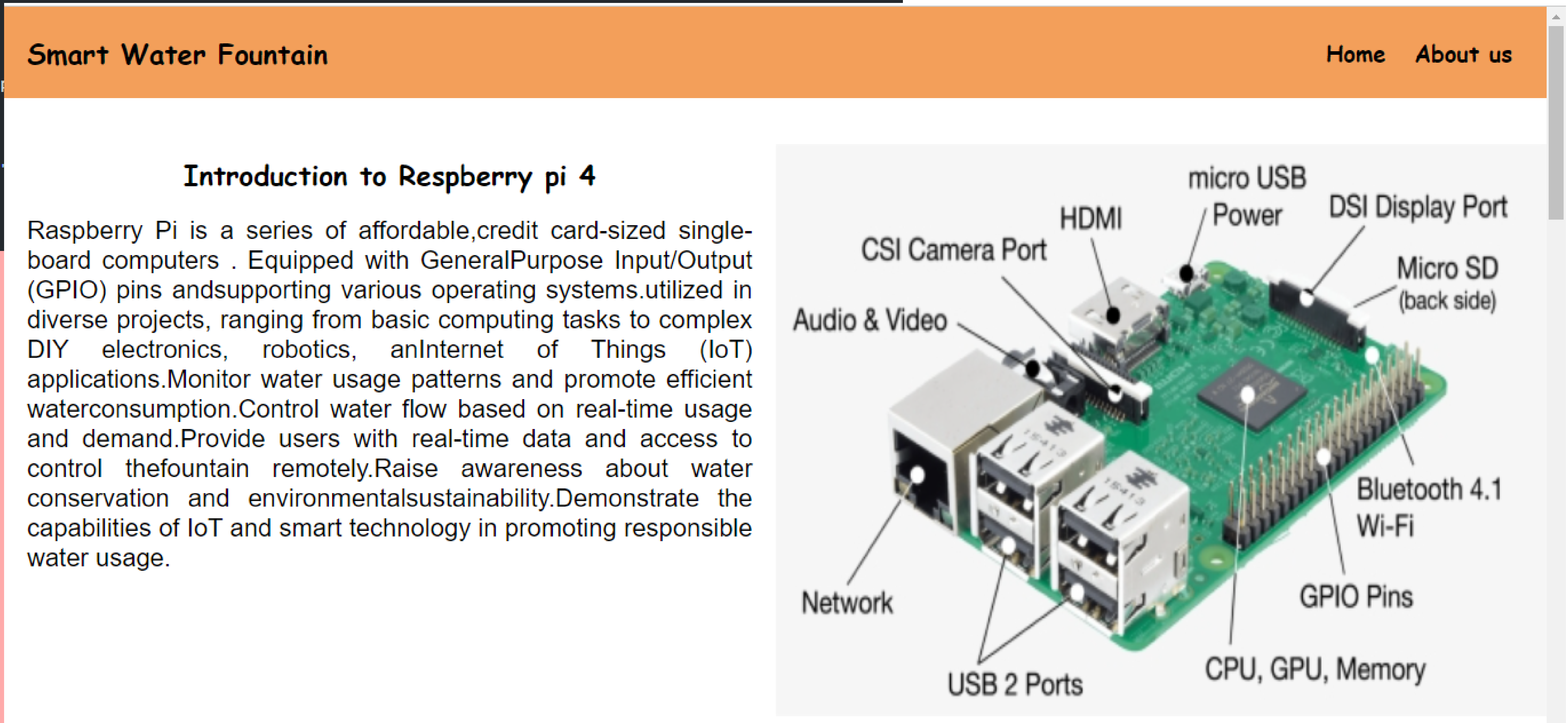
Data Transfer in Raspberry Pi :

- We can read data from a smart water fountain using Raspberry Pi 4.
- To install the required python liberies files in our respberry pi 4 board.
- The necessary libraries installed, and the water sensor is properly connected to the specified GPIO pin on your Raspberry Pi.
- To set the platform for remote access AWS IoT.
- Smart water fountain implemented on a Raspberry Pi via Python Flask to the AWS IoT platform, you can use the AWS IoT Device SDK for Python.

Web Server UI Design



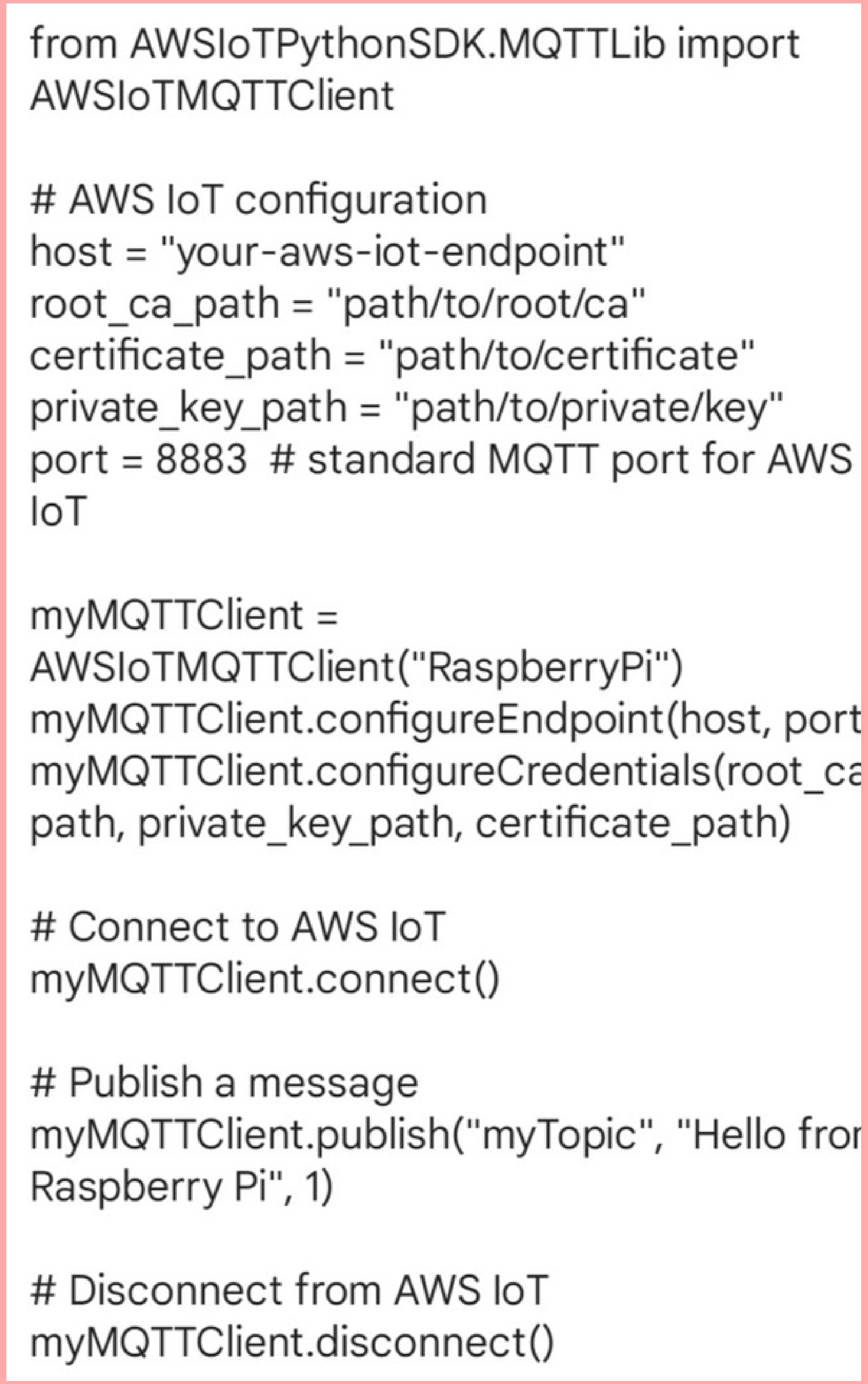
```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Smart Water Fountain</title>
</head>
<body>
    <header class="header">
        <div class="logo">
            <h2>Smart Water Fountain</h2>
        </div>
        <div class="navbar">
            <nav class="nav">
                <a href="#">Home</a>
                <a href="#aboutus">About us</a>
            </nav>
        </div>
    </header>

    <!-- About Page -->

    <div class="info_about">
        <div class="items">
            <h2>Introduction to Respberry p
            <p>Raspberry Pi is a series of
        </div>
        <div class="items">
            <img src="raspberry2.png" alt="
        </div>
    </div>
```



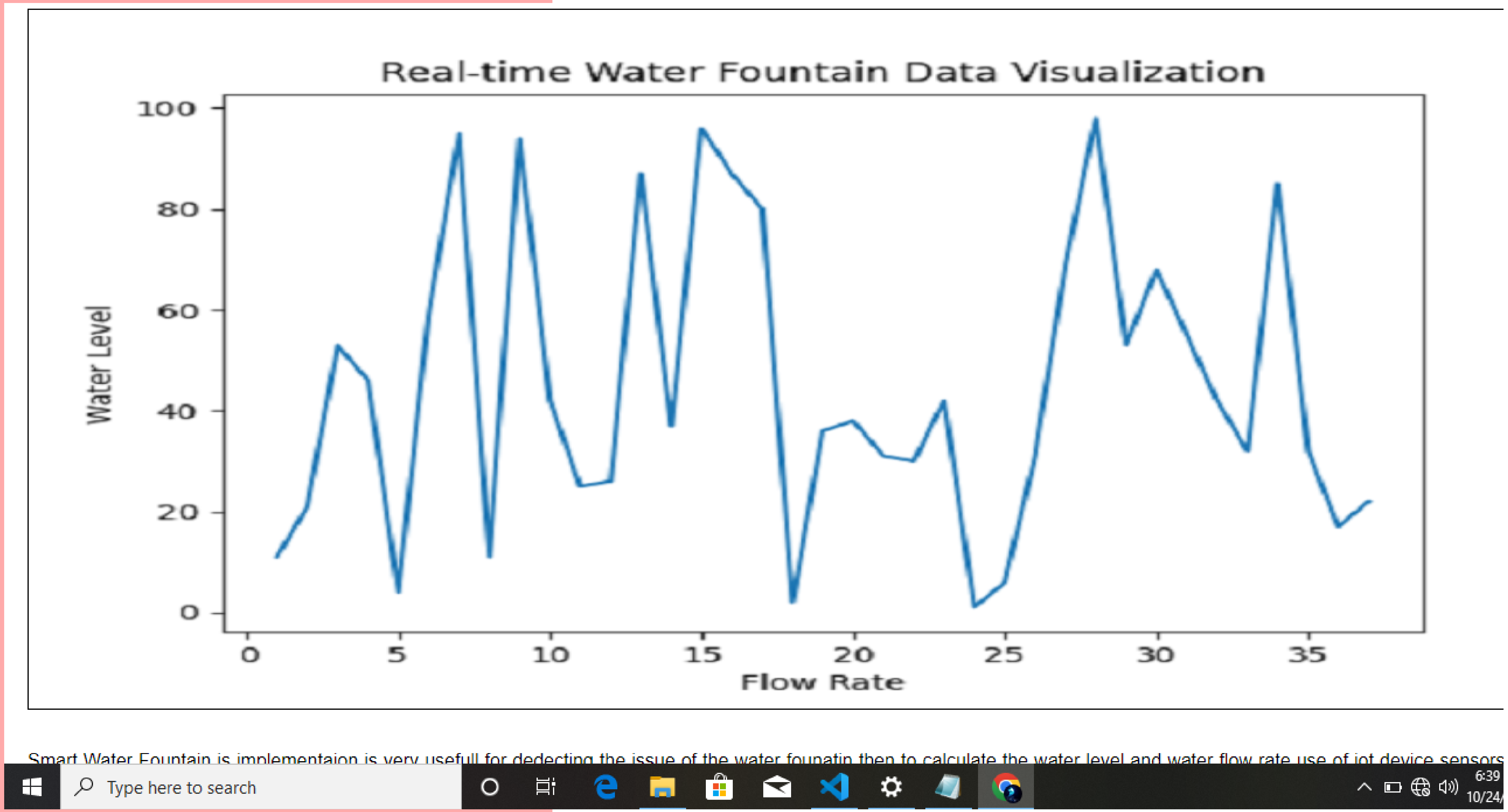
Introduction to Respberry pi 4

Raspberry Pi is a series of affordable,credit card-sized single-board computers . Equipped with GeneralPurpose Input/Output (GPIO) pins andsupporting various operating systems.utilized in diverse projects, ranging from basic computing tasks to complex DIY electronics, robotics, anInternet of Things (IoT) applications.Monitor water usage patterns and promote efficient waterconsumption.Control water flow based on real-time usage and demand.Provide users with real-time data and access to control thefountain remotely.Raise awareness about water conservation and environmentalsustainability.Demonstrate the capabilities of IoT and smart technology in promoting responsible water usage.

Python Script to Route the Server and Display Real-time Upadate



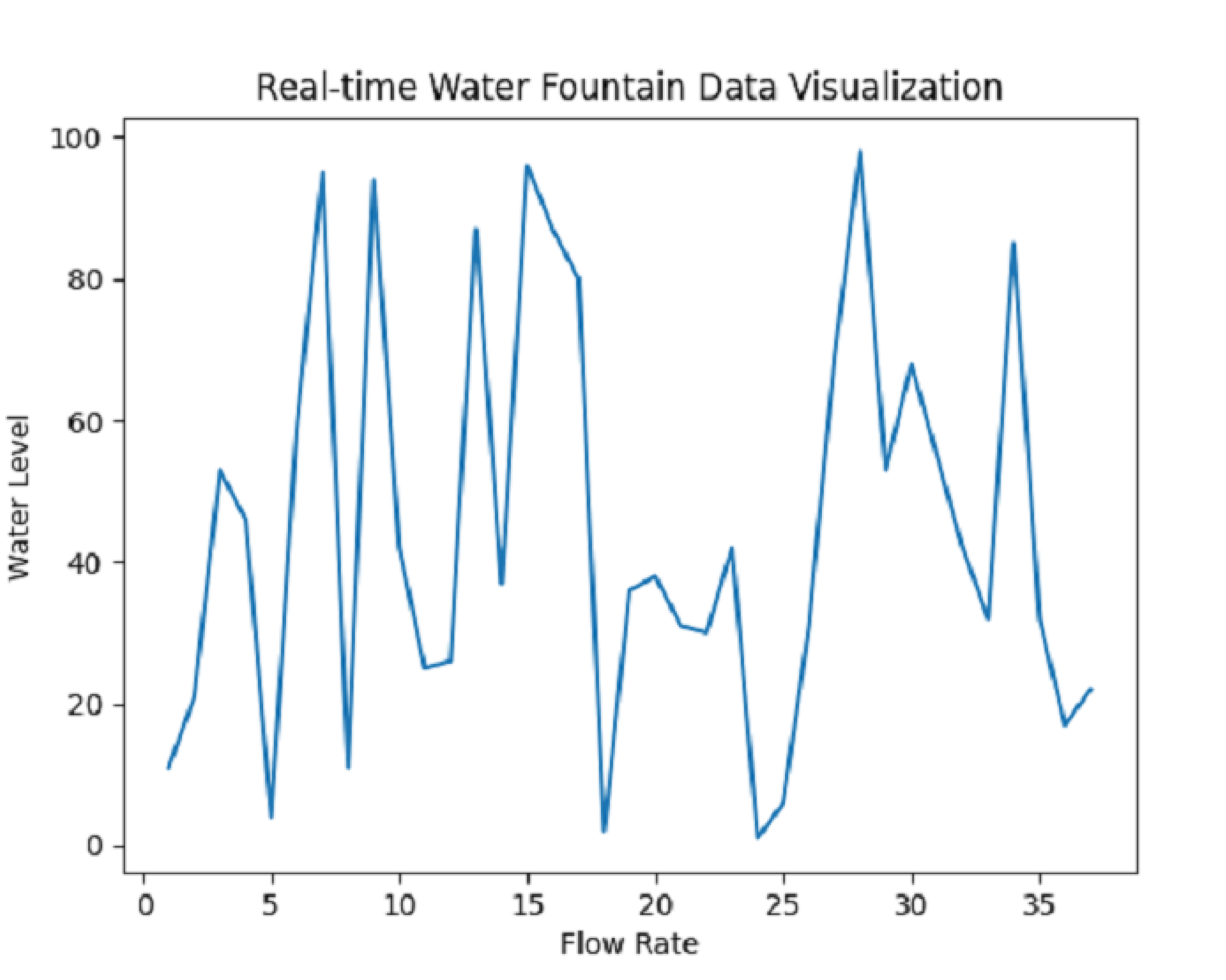
```
from AWSIoTPythonSDK.MQTTLib import
AWSIoTMQTTClient

# AWS IoT configuration
host = "your-aws-iot-endpoint"
root_ca_path = "path/to/root/ca"
certificate_path = "path/to/certificate"
private_key_path = "path/to/private/key"
port = 8883  # standard MQTT port for AWS
IoT

myMQTTClient =
AWSIoTMQTTClient("RaspberryPi")
myMQTTClient.configureEndpoint(host, port
myMQTTClient.configureCredentials(root_ca
path, private_key_path, certificate_path)

# Connect to AWS IoT
myMQTTClient.connect()

# Publish a message
myMQTTClient.publish("myTopic", "Hello fror
Raspberry Pi", 1)

# Disconnect from AWS IoT
myMQTTClient.disconnect()
```



Real-time Water Fountain Data Visualization

Smart Water Fountain is implementaion is very usefull for dedecting the issue of the water founatin then to calculate the water level and water flow rate use of iot device sensors

Real-Time Analysis :



THANK YOU