Smart Water Fountains

INTRODUCTION:-

✓Water fountains have become a popular tourist destination these days, captivating visitors with its array of lights, patterns, and summits. And as everyone knows, music has a significant a routine aspect of our life.

Thus, our concept is to blend the lovely a musical water feature that creates an remarkable tourism destination when used effectively equipped with a spectrum of frequencies that allows us to function using a variety of electrical gadgets. The objective of the initiative is to improve public water fountains. by using Internet of Things sensors to regulate water flow and identify issues.

SENSORS:

ESP8266 or ESP32: These are low-cost Wi-Fi modules with integrated microcontrollers. They are commonly used for IoT projects due to their Wi-Fi capabilities

Water Level Sensor: To measure the water level in the fountain.

Motion Sensor Pressure Sensor: Measures force or pressure in gases or liquids, converting it to an electrical signal.

Flow Sensor: Measures fluid flow rate, providing data on volume or velocity.**(PIR Sensor):** To detect the presence of people or animals near the fountain.

Temperature and Humidity Sensor: To monitor the environment around the fountain.

Pressure Sensor: Measures force or pressure in gases or liquids, converting it to an electrical signal.

Flow Sensor: Measures fluid flow rate, providing data on volume or velocity.

3. Actuators:

Water Pump: To control the flow of water in the fountain.

LEDs: For decorative lighting or indicating the fountain's status.

4. Communication:

Wi-Fi Module: Allows the fountain to connect to the internet.

MQTT Protocol: A lightweight messaging protocol for small sensors and mobile devices optimized for high-latency or unreliable networks.

5. Power Supply:

Power Source: Depending on the location of the fountain, you might use batteries, solar power, or a stable electrical source.

Cloud Service (e.g., AWS IoT, Google Cloud IoT, Azure IoT): A cloud platform to store data from the fountain and manage device communication.

IoT Development Board: Some development boards come with built-in support for IoT platforms, making it easier to connect your devices to the cloud.

6. IoT Platform:

Cloud Service (e.g., AWS IoT, Google Cloud IoT, Azure IoT): A cloud platform to store data from the fountain and manage device communication.

IoT Development Board: Some development boards come with built-in support for IoT platforms, making it easier to connect your devices to the cloud.

7. User Interface:

Mobile App/Web App: Allows users to remotely control and monitor the fountain. Push Notifications: Sends alerts or notifications to users based on fountain events (e.g., low water level).

8. Security:

Encryption and Authentication: Ensures secure communication between the fountain and the IoT platform.

9. Data Storage and Analysis:

Database: For storing historical data from the fountain (e.g., water usage patterns, user interactions).

Analytics Tools: To gain insights from the collected data.

10. Additional Components:

Real-Time Clock (RTC) Module: Maintains accurate time for scheduling events even when the microcontroller is powered off.

LCD Display: Provides real-time feedback or information about the fountain's status.

Python Code:

```
import machine

import time
```

```
import dht
from hcsr04 import HCSR04
import mpu6050
from machine import I2C, Pin
flow_sensor_pin = Pin(12, Pin.IN)
motion_sensor_pin = Pin(14, Pin.IN)
dht_sensor = dht.DHT22(Pin(15))
water_level_sensor_pin = Pin(27, Pin.IN)
i2c = I2C(scl=Pin(22), sda=Pin(21))
pressure_sensor = mpu6050.MPU6050(i2c)
while True:
    # Read from the flow sensor
    flow_value = flow_sensor_pin.value()
    # Read from the motion sensor
    motion_detected = motion_sensor_pin.value()
    # Read temperature and humidity from the DHT22 sensor
    dht_sensor.measure()
    temperature = dht_sensor.temperature()
    humidity = dht_sensor.humidity()
    water_level = water_level_sensor_pin.value()
   pressure = pressure_sensor.read_pres()
   print("Flow Sensor:", flow_value)
    print("Motion Sensor:", motion_detected)
    print("Temperature (°C):", temperature)
    print("Humidity (%):", humidity)
    print("Water Level Sensor:", water_level)
```

```
print("Pressure (Pa):", pressure)

time.sleep(5)
```

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