Smart water fountains

Smart water fountains using IoT (Internet of Things) can have various applications, from water conservation to user-friendly features. Here's a basic outline to get you started:

Components Needed:

Water Fountain: Choose a basic water fountain to modify or build one from scratch.

Microcontroller (e.g., Arduino or Raspberry Pi): This will be the brain of your IoT system.

Sensors:

Water Level Sensor: To monitor and manage water levels.
Temperature/Humidity Sensor: To monitor environmental conditions.
Flow Sensor: To measure water flow rates.
Actuators:

Pump Control: To control the water flow.
Valves: For regulating water output.
Communication Module (e.g., Wi-Fi or Bluetooth): To connect the system to the internet.

Power Supply: Depending on the location of the fountain, you might need a power source or consider using solar panels.

IoT Platform or Server: To process and store data from the fountain.

User Interface: A web or mobile app for users to interact with the fountain.

Basic Functionalities:

Remote Monitoring: Users can check the water level, temperature, and humidity through the app.

Automated Refilling: When the water level drops below a certain threshold, the system can trigger the pump to refill it.

Flow Control: Adjusting the flow rate based on user preferences or environmental conditions.

Alerts and Notifications: Send alerts if there are any issues like low water levels, high temperatures, or malfunctions.

Data Logging and Analytics: Record and analyze data over time for insights into usage patterns and efficiency.

Optional Enhancements:

Water Quality Monitoring: Add sensors to check water quality, like pH, turbidity, or contaminants.

Weather Integration: Use weather forecasts to adjust fountain settings, like water flow or shut-off during rain.

User Authentication: Implement user accounts for personalized settings and usage history.

Voice or Gesture Control: Integrate with voice assistants or gesture recognition for hands-free operation.

Water Recycling System: Include a filtration system to recycle water, promoting sustainability.

Source code :

```
#include <ESP8266WiFi.h>
```

```cpp
const char* ssid = "your_SSID";
const char* password = "your_PASSWORD";


const int waterLevelPin = A0; // Analog pin for water level sensor
int waterLevel;


void setup() {
  Serial.begin(115200);
  WiFi.begin(ssid, password);


  while (WiFi.status() != WL_CONNECTED) {
    delay(1000);
    Serial.println("Connecting to WiFi...");
  }
  Serial.println("Connected to WiFi");
}


void loop() {
  waterLevel = analogRead(waterLevelPin);


  if (waterLevel < 500) {
    startFountain(); // Function to start the fountain
  } else {
    stopFountain(); // Function to stop the fountain
  }


  delay(10000); // Adjust delay based on your needs
}


void startFountain() {
  // Code to open solenoid valve or control fountain pump
}
```

```
void stopFountain() {
  // Code to close solenoid valve or turn off fountain pump
}
```