SMART WATER FOUNTAIN

OVERVIEW:

Creating an Arduino IoT program for a smart water fountain involves integrating your Arduino with an IoT platform for remote monitoring and control. Below is an example using the Arduino with the ESP8266 Wi-Fi module to send data to ThingSpeak, an IoT platform, and control the fountain pump. You'll need an Arduino board (e.g., Arduino Uno), an ESP8266 module (e.g., ESP-01), a water level sensor, and a relay module.

CODING

```arduino
#include <Arduino.h>
#include <ESP8266WiFi.h>
#include <ESP8266HTTPClient.h>

// Define Wi-Fi credentials
const char* ssid = "YourWiFiSSID";
const char* password = "YourWiFiPassword";

// ThingSpeak settings
const String server = "api.thingspeak.com";
const String apiKey = "YourAPIKey";
const String channelID = "YourChannelID";

// Define the pins for water level sensor and relay module
const int waterLevelSensorPin = A0;  // Analog pin for water level sensor
const int relayPin = 2;              // Digital pin for controlling the relay

// Define water level threshold (adjust as needed)
const int waterLevelThreshold = 500; // Example threshold value

void setup() {
  // Initialize serial communication for debugging (optional)
```

```
  Serial.begin(115200);

  // Connect to Wi-Fi
  WiFi.begin(ssid, password);
  while (WiFi.status() != WL_CONNECTED) {
    delay(1000);
    Serial.println("Connecting to WiFi...");
  }
  Serial.println("Connected to WiFi");

  pinMode(relayPin, OUTPUT);
}

void loop() {
  // Read the water level sensor
  int waterLevel = analogRead(waterLevelSensorPin);

  // Check if the water level is below the threshold
  if (waterLevel < waterLevelThreshold) {
    // Turn on the water pump (activate the relay)
    digitalWrite(relayPin, HIGH);
    Serial.println("Water Pump ON");
  } else {
    // Turn off the water pump
    digitalWrite(relayPin, LOW);
    Serial.println("Water Pump OFF");
  }

  // Send data to ThingSpeak
  if (WiFi.status() == WL_CONNECTED) {
    HTTPClient http;
```

```
  String url = "http://" + server + "/update?api_key=" + apiKey + "&field1=" + String(waterLevel);

  http.begin(url);
  int httpCode = http.GET();

  if (httpCode > 0) {
    Serial.println("Data sent to ThingSpeak");
  } else {
    Serial.println("Error sending data to ThingSpeak");
  }
  http.end();
 }

 // Add a delay between readings
 delay(60000); // Delay for 1 minute
}
```

In this code:

1. You include necessary libraries for Wi-Fi communication and HTTP requests using the ESP8266.

2. Set your Wi-Fi credentials (SSID and password) and ThingSpeak API key and channel ID.

3. The `setup` function initializes Wi-Fi and sets up the relay pin as an output.

4. The `loop` function continuously reads the water level sensor and controls the water pump based on the water level.

5. It also sends the water level data to ThingSpeak using an HTTP GET request.

Please make sure to replace `"YourWiFiSSID"`, `"YourWiFiPassword"`, `"YourAPIKey"`, and `"YourChannelID"` with your actual credentials. Additionally, ensure you have the required libraries installed in your Arduino IDE for ESP8266 support.