Practical 6

Controlling Appliances using NodeMCU MQTT over the Internet. (Adafruit Cloud).

```
#include <WiFi.h>
#include <Adafruit_MQTT.h>
#include <Adafruit_MQTT_Client.h>

// Adafruit IO credentials
#define AIO_SERVER "io.adafruit.com"
#define AIO_SERVERPORT 1883
#define AIO_USERNAME  "Sh1vam"
#define AIO_KEY       "aio_HyuJ72RBYYxv5gF3GzWc2lxlN6ON"



// Set up MQTT client
WiFiClient client;
Adafruit_MQTT_Client mqtt(&client, AIO_SERVER, AIO_SERVERPORT, AIO_USERNAME, AIO_KEY);

// Define feed for appliance control
Adafruit_MQTT_Subscribe applianceFeed = Adafruit_MQTT_Subscribe(&mqtt, AIO_USERNAME "/feeds/appliance_control");

// Relay pin on ESP32
#define RELAY_PIN 15  // Adjust to match your Wokwi setup

void setup() {
  Serial.begin(115200);

  // Wokwi automatically connects WiFi, so skip WiFi.begin()
  Serial.println("Connected to Wokwi WiFi");
```

```
  // Initialize MQTT subscription
  mqtt.subscribe(&applianceFeed);

  // Set relay pin as output
  pinMode(RELAY_PIN, OUTPUT);
  digitalWrite(RELAY_PIN, LOW);  // Default OFF
}

void loop() {
  // Ensure MQTT connection
  if (!mqtt.connected()) {
    MQTT_connect();
  }
  mqtt.processPackets(10);

  // Check for feed data
  Adafruit_MQTT_Subscribe *subscription;
  while ((subscription = mqtt.readSubscription(5000))) {
    if (subscription == &applianceFeed) {
      Serial.print("Received: ");
      Serial.println((char *)applianceFeed.lastread);

      // Turn relay ON or OFF
      if (!strcmp((char *)applianceFeed.lastread, "ON")) {
        digitalWrite(RELAY_PIN, HIGH);
      } else if (!strcmp((char *)applianceFeed.lastread, "OFF")) {
        digitalWrite(RELAY_PIN, LOW);
      }
    }
  }
}
```

```
// Function to connect/reconnect to MQTT
void MQTT_connect() {
  while (mqtt.connected() == false) {
    Serial.print("Connecting to MQTT... ");
    int8_t ret = mqtt.connect();  // Store the return value of connect()

    if (ret == 0) {
      Serial.println("Connected");
    } else {
      Serial.print("Failed, retrying in 5 seconds. Error: ");
      Serial.println(mqtt.connectErrorString(ret));  // Pass ret as an argument
      delay(5000);
    }
  }
}
```