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#include <WiFi.h>
#include <AsyncMqttClient.h>
#include <Ticker.h>

/* ----- CONFIGURACIÓN WIFI ----- */
const char* ssid = "TU_WIFI";
const char* password = "TU_PASSWORD";

/* ----- CONFIGURACIÓN MQTT ----- */
const char* mqttServer = "192.168.1.8";
const int mqttPort = 1883;
const char* mqttUser = "usuario";
const char* mqttPass = "password";
const char* topicFeed = "gallinas/alimentar";

/* ----- PIN RELÉ ----- */
const int relayPin = 4;

/* ----- OBJETOS ----- */
AsyncMqttClient mqttClient;
Ticker timerFeed;

/* ----- VARIABLES ----- */
bool feeding = false;

/* ----- ESTADO SEGURO ----- */
void setSafeState() {
    feeding = false;
    timerFeed.detach();
    digitalWrite(relayPin, HIGH); // Relé OFF (activo en LOW)
    Serial.println("Estado seguro");
}

/* ----- ACTIVAR DISPENSADOR ----- */
void stopFeed() {
    setSafeState();
}

void startFeed() {
    if (feeding) return;

    feeding = true;
    digitalWrite(relayPin, LOW); // Relé ON
    Serial.println("Dispensando alimento");
}

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    timerFeed.once(2, stopFeed); // tiempo de activación
    (segundos)
}

/* ----- EVENTOS MQTT ----- */
void onMqttConnect(bool sessionPresent) {
    Serial.println("MQTT conectado");
    mqttClient.subscribe(topicFeed, 1);
}

void onMqttDisconnect(AsyncMqttClientDisconnectReason reason) {
    Serial.println("MQTT desconectado");
    setSafeState();
}

void onMqttMessage(char* topic, char* payload,
                  AsyncMqttClientMessageProperties properties,
                  size_t len, size_t index, size_t total) {

    String msg;
    for (size_t i = 0; i < len; i++) msg += (char)payload[i];

    Serial.print("Mensaje recibido: ");
    Serial.println(msg);

    if (msg == "ON") startFeed();
    if (msg == "OFF") setSafeState();
}

/* ----- WIFI ----- */
void connectWiFi() {
    WiFi.mode(WIFI_STA);
    WiFi.setSleep(false);
    WiFi.begin(ssid, password);

    Serial.print("Conectando WiFi");
    while (WiFi.status() != WL_CONNECTED) {
        delay(500);
        Serial.print(".");
    }

    Serial.println();
    Serial.print("IP: ");
    Serial.println(WiFi.localIP());
}

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/* ----- SETUP ----- */
void setup() {
  Serial.begin(115200);

  pinMode(relayPin, OUTPUT);
  setSafeState();

  connectWiFi();

  mqttClient.setServer(mqttServer, mqttPort);
  mqttClient.setCredentials(mqttUser, mqttPass);

  mqttClient.onConnect(onMqttConnect);
  mqttClient.onDisconnect(onMqttDisconnect);
  mqttClient.onMessage(onMqttMessage);

  mqttClient.connect();
}

/* ----- LOOP ----- */
void loop() {
  // AsyncMqttClient no necesita loop
}
```