## MongoDB Proxy API Guide (Using Node.js and Express)

The ESP32 cannot directly talk to MongoDB, so it sends its data to this proxy server. The proxy acts as a secure intermediary, handling authentication, data validation, and database storage.

### 1. Architectural Overview

| **Component** | **Responsibility** |
| --- | --- |
| **ESP32** | Sends HTTP POST request with sensor data (JSON payload). |
| **Node.js/Express Server (The Proxy)** | Receives the request, runs business logic, and uses the Mongoose driver. |
| **MongoDB Atlas/Server** | Permanently stores the data. |

### 2. Required Setup (Server Side)

Before running the code, you need a server environment set up (e.g., your local machine, a cloud VM, or a serverless function).

1. **Initialize Project:**  
   mkdir esp32-mongo-proxy  
   cd esp32-mongo-proxy  
   npm init -y
2. **Install Dependencies:**  
   npm install express mongoose dotenv

### 3. The Proxy API Code

The following file (server.js) contains the complete Node.js/Express code for the two required endpoints, matching the placeholders in your ESP32 code.

### 4. Code Breakdown and Endpoints

#### Endpoint 1: POST /api/v1/data/save

This endpoint receives the temperature data from the ESP32 and saves it to MongoDB.

* **ESP32 Action:** Sends a POST request to https://YOUR-CUSTOM-PROXY-API.com/api/v1/data/save.
* **Proxy Action:**
  1. Receives the JSON body ({ "device\_id": "...", "temperature": ... }).
  2. Creates a new SensorData document.
  3. Saves the document to MongoDB.
  4. Responds with a 201 Created status to the ESP32.

#### Endpoint 2: GET /api/v1/data/latest

This endpoint retrieves the most recent temperature reading from MongoDB.

* **ESP32 Action:** Sends a GET request to https://YOUR-CUSTOM-PROXY-API.com/api/v1/data/latest?device=ESP32\_001.
* **Proxy Action:**
  1. Reads the device query parameter.
  2. Queries MongoDB to find the single latest record for that device, sorted by time.
  3. Responds with the data (e.g., { "temperature": 26.1 }) to the ESP32.

***Note:*** *This example uses Mongoose for MongoDB interaction. You must replace the placeholder MONGO\_URI in the .env file with your actual database connection string.*