

Smart Campus

Full-Stack IoT Monitoring Project

React | Node.js | MySQL

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Project Goal

Developing a web-based system using the MERN stack offers an effective solution for managing and supervising the maintenance of sensors.

These sensors gather data about the plants located within the rooms of the HIT college facility.



Main Technologies

This web application, created with React 18, Vite, and Tailwind CSS, oversees sensor maintenance for plant data in HIT college rooms. It utilizes Recharts for data visualization, an Express.js REST API for server-side logic, a MySQL database for storage, and adheres to the MVC architecture for structured code.



The Processes

Sensor Management

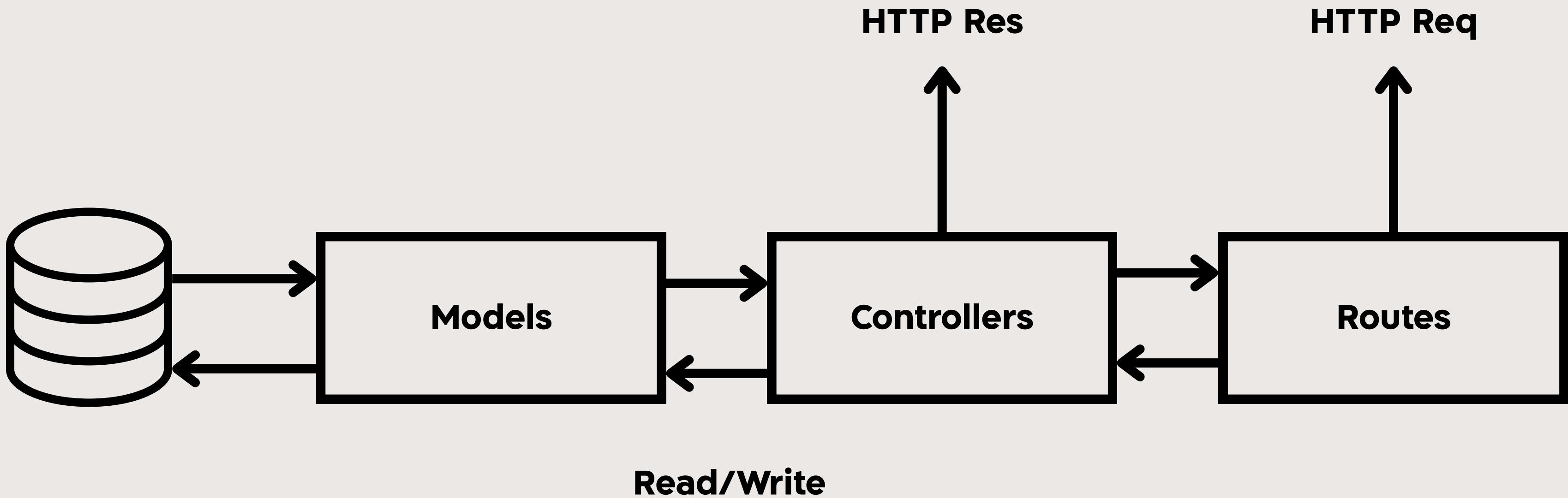
Sensor management is made convenient through a dashboard that allows you to place sensors based on your choice of building, floor, room, and specific location within the room.

Facility Management

You can manage floor maps in English. Each floor is associated with a building, and every floor has a map that can be uploaded. The map image is converted to Base64.



Main modules - Server



Unexpected problems

- **Data Deletion Complexity** - We encountered several challenges during the data deletion phase – realizing that removing one component, like a building, required also deleting its connected data such as maps and floors.
- **Working with AI** - Another challenge was understanding how to collaborate effectively with AI – knowing both the process and the technologies to guide the AI with proper context and clear instructions.
- **Handling Maps and Images** - Initially, we didn't know how to work with maps or images, but through research, we discovered how to convert images into Base64 format, enabling us to store them as text data.

