🏭 Enterprise Asset Management System (EAMS)

A Spring Boot-based simulation project that monitors and manages industrial assets in real-time using simulated IoT sensor data. Developed under the domain of **Information Technology and Operations Management**.

📌 Domain

Manufacturing / Energy

🎯 Objectives

- Digitally manage and track industrial assets.

- Register and authenticate users with roles (Manager/Operator).

- Simulate and monitor sensor readings (temperature, pressure).

- Trigger alerts on anomalies and send according emails.

- Maintain logs for up-time and maintenance.

🧱 Tech Stack

Layer	Technology
Framework	Spring Boot
Security	Spring Security + JWT (optional)
Persistence	Spring Data JPA (Hibernate)
Database	MySQL Workbench
Build Tool	Maven
Utilities	Swagger, Lombok (optional)
Testing	JUnit
Documentation	Swagger (springdoc-openapi)

🧩 Key Modules

1. **User & Role Management**

   - User registration/login

- Role assignment (Operator, Manager)

- JWT token generation & validation (optional)

2. **Asset Management**

   - CRUD on assets

   - Assign assets to users

   - Track asset location, type, and threshold limits

3. **Sensor Data Ingestion (Simulation)**

   - Simulated API to push sensor data

   - Store readings with timestamp

   - Trigger alerts if data exceeds threshold

4. **Alert Management**

   - Create alerts based on rules

   - Store active/resolved alerts

   - Notification simulation (email/log console)

5. **Maintenance & Uptime Logs**

   - Record scheduled maintenance

   - Auto-calculate uptime/downtime

   - Generate daily/weekly reports

🔐 **Roles & Access**

Role	Access Description
Manager	Full access, manage assets and users
Operator	Manage only assigned assets, log maintenance

🧪 API Endpoints (Examples)

- `POST /api/auth/register` – Register a new user

- `POST /api/auth/login` – Authenticate & get JWT token

- `POST /api/assets` – Create a new asset

- `GET /api/assets` – List all assets

- `POST /api/sensors/send-data` – Push sensor data

- `GET /api/alerts` – View active/resolved alerts

- `POST /api/maintenance` – Record maintenance

👥 Authors

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- Capgemini CG Simulation Guidelines

- Spring Boot & Spring Security Teams

- MySQL Community

- Swagger / SpringDoc

📜 GitHub Repository

[EnterpriseAssetMonitoringSystem](https://github.com/akashsivakumar0403/EnterpriseAssetMonitoringSystem)

🤝 Contributors

Thanks to everyone who contributed through feedback, testing, or documentation.