

Java Developer Homework Assignment

Background

Our company manages resources for metering points and connection points across multiple countries. Each resource has a location and multiple characteristics. We need a system to handle these resources and notify stakeholders of changes.

Requirements

Domain Model

1. Resource

- Type (METERING_POINT or CONNECTION_POINT)
- Country code
- One Location
- Multiple Characteristics

2. Location

- Street address
- City
- Postal code
- Country code

3. Characteristic

- Code (max length 5 characters)
- Type (one of: CONSUMPTION_TYPE, CHARGING_POINT, CONNECTION_POINT_STATUS)
- Value (string)

Functional Requirements

1. Create a RESTful API in Java for:

- Creating new resources with location and characteristics
- Retrieving resources
- Updating existing resources, locations, and characteristics
- Deleting resources

2. Implement a notification system that informs stakeholders when a resource is modified:

- Send the updated resource data to a Kafka topic for stakeholders to consume

3. Create an endpoint to send all resources in database to other stakeholders using Kafka
4. Populate the database with sample data when the application starts:
 - Include at least 3 resources of different types
 - Each resource should have a location and multiple characteristics
 - Include resources from at least 2 different countries

Technical Requirements

1. Use Java 21 or higher
2. Use Spring Boot framework
3. Add database migration capability
4. Make the application containerized
5. Write comprehensive tests to ensure high code quality and coverage

Deliverables

1. Java source code
2. README with setup instructions and API documentation
3. Simple way to test the API