**Flowchart Management System**

This is a Spring Boot application designed to manage flowcharts with basic CRUD operations and additional features. It includes functionality for creating, fetching, updating, deleting flowcharts, validating graphs, and querying connections and outgoing edges.

**Features**

* **CRUD Operations**: Create, retrieve, update, and delete flowcharts.
* **Graph Validation**:
  + Check for duplicate nodes.
  + Validate edges refer to existing nodes.
* **Outgoing Edges**: Fetch all outgoing edges for a specific node.
* **Connected Nodes**: Query all nodes directly or indirectly connected to a specific node.
* **Swagger Documentation**: Provides an interactive API interface.
* **Unit Tests**: Comprehensive test cases for all features.

**Prerequisites**

Ensure the following are installed on your system:

* Java 17 or higher
* Maven 3.6+

**Build the Application**

Run the following command to build the application:

./mvnw clean install

**Run the Application**

Start the application using:

./mvnw spring-boot:run

**Access the Application**

Once the application is running, you can access it at:

* **Swagger UI**: <http://localhost:8080/swagger-ui.html>
* **Base API URL**: <http://localhost:8080/flowcharts>

**API Endpoints**

**Base URL: /flowcharts**

**1. Create Flowchart**

* **Method**: POST
* **Endpoint**: /
* **Payload**:

{

"id": "1",

"nodes": ["A", "B", "C"],

"edges": [

{"from": "A", "to": "B"},

{"from": "B", "to": "C"}

]

}

* **Response**: 201 Created

**2. Get Flowchart by ID**

* **Method**: GET
* **Endpoint**: /{id}
* **Response**: 200 OK

**3. Update Flowchart**

* **Method**: PUT
* **Endpoint**: /{id}
* **Payload**: Same as Create Flowchart.
* **Response**: 200 OK

**4. Delete Flowchart**

* **Method**: DELETE
* **Endpoint**: /{id}
* **Response**: 204 No Content

**5. Fetch Outgoing Edges**

* **Method**: GET
* **Endpoint**: /{id}/edges/{node}
* **Response**: 200 OK

**6. Fetch Connected Nodes**

* **Method**: GET
* **Endpoint**: /{id}/connections/{node}
* **Response**: 200 OK

**Running Unit Tests**

To run the unit tests, execute:

./mvnw test

**Project Structure**

