**Week 5: Microservices with Spring Boot 3 and Spring Cloud**

**Exercise: Creating Microservices for Account and Loan**

**Scenario:**

In this hands-on exercise, we will create two separate microservices for a bank. One microservice will be responsible for handling customer accounts, and the other will handle loans. Each microservice will be an independent Spring RESTful Webservice built as a Maven project.

**Procedure:**

**Account Microservice**

**Step 1: Project Setup**

* Create a root folder for your projects (e.g., D:\<employee\_id>\microservices).
* Navigate to <https://start.spring.io/>.

**Step 2: Spring Initializr Configuration**

* Set **Group** to com.cognizant.
* Set **Artifact** to account.
* Add the following dependencies: Spring Boot DevTools and Spring Web.

**Step 3: Build and Import**

* Click **Generate** to download the project zip file.
* Extract the account folder into your microservices directory.
* Open a command prompt in the account folder and build the project using the command: mvn clean package.
* Import the project into your IDE (e.g., Eclipse) as an existing Maven project.

**Step 4: Implement Controller**

* Create a REST controller to handle requests for account details.
* **Method:** GET
* **Endpoint:** /accounts/{number}

**Step 5: Run and Test**

* Launch the application by running the main application class.
* Test the service by accessing the endpoint in a browser or API client.

**Loan Microservice**

**Step 1: Project Setup & Implementation**

* Follow the same steps as the Account Microservice to create a new Spring Boot project with the **Artifact** name loan.
* Implement a REST controller to get loan details based on a loan number.
* **Method:** GET
* **Endpoint:** /loans/{number}
* **Sample Response:**
* { "number": "H00987987972342", "type": "car", "loan": 400000, "emi": 3258, "tenure": 18 }

**Step 2: Address Port Conflict**

* If you try to run the loan service while the account service is running, it will fail because both defaults to port 8080.
* Open the application.properties file in the loan project (located in src/main/resources).
* Add the following line to change the default port:
* server.port=8081

**Step 3: Run and Test**

* Launch the loan application.
* Test the service on the new port (e.g., http://localhost:8081/loans/{number}).

**Implementation:**

**AccountApplication.java:**

package com.cognizant.account;

import org.springframework.boot.SpringApplication;

import org.springframework.boot.autoconfigure.SpringBootApplication;

*@SpringBootApplication*

public class AccountApplication {

public static void main(String[] args) {

SpringApplication.*run*(AccountApplication.class, args);

}

}

**AccountController.java:**

package com.cognizant.account;

import org.springframework.web.bind.annotation.\*;

*@RestController*

*@RequestMapping*("/accounts")

public class AccountController {

*@GetMapping*("/{number}")

public Account getAccount(*@PathVariable* String number) {

return new Account(number, "Vivek's savings", 234343);

}

}

class Account {

private String number;

private String type;

private double balance;

public Account(String number, String type, double balance) {

this.number = number;

this.type = type;

this.balance = balance;

}

public String getNumber() { return number; }

public String getType() { return type; }

public double getBalance() { return balance; }

}

**LoanApplication.java:**

package com.cognizant.loan;

import org.springframework.boot.SpringApplication;

import org.springframework.boot.autoconfigure.SpringBootApplication;

*@SpringBootApplication*

public class LoanApplication {

public static void main(String[] args) {

SpringApplication.*run*(LoanApplication.class, args);

}

}

**LoanController.java & Loan.java:**

package com.cognizant.loan;

import org.springframework.web.bind.annotation.\*;

*@RestController*

*@RequestMapping*("/loans")

public class LoanController {

*@GetMapping*("/{number}")

public Loan getLoan(*@PathVariable* String number) {

return new Loan(number, "Vivek's car", 400000, 3258, 18);

}

}

class Loan {

private String number;

private String type;

private double loan;

private double emi;

private int tenure;

public Loan(String number, String type, double loan, double emi, int tenure) {

this.number = number;

this.type = type;

this.loan = loan;

this.emi = emi;

this.tenure = tenure;

}

public String getNumber() { return number; }

public String getType() { return type; }

public double getLoan() { return loan; }

public double getEmi() { return emi; }

public int getTenure() { return tenure; }

}

**Output:**

A screenshot of a computer program

AI-generated content may be incorrect.A screenshot of a computer

AI-generated content may be incorrect.A screenshot of a computer

AI-generated content may be incorrect.