Here's a simple scenario you can give your intern to practice using Feign clients and REST APIs to connect a **User Management Microservice**, **Supplier Microservice**, and **Product Microservice**.

Scenario: Inventory Management System

Overview:

The goal is to create a simplified **Inventory Management System** where a user can manage suppliers and products across different microservices. Each microservice is responsible for communicating with others through Feign clients.

Microservices Involved:

1. **User Management Microservice**: Handles users who interact with the system.
2. **Supplier Microservice**: Manages suppliers and their information.
3. **Product Microservice**: Manages product information and links products to suppliers.

Requirements:

- **User Management Microservice** should expose an API to fetch details about users (user ID, name, and role).
- **Supplier Microservice** should expose an API to fetch details about suppliers and allow adding new suppliers.
- **Product Microservice** should expose an API to fetch product details, add new products, and link products with suppliers.

Scenario Details:

1. User Management Microservice:

- **API**: `/users/{userId}` (GET)
  Fetch user details by user ID (e.g., userId = 1).

Response:
- JSON
- Copy code

```
{
  "userId": 1,
  "name": "John Doe",
  "role": "ADMIN"
}
```

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2. Supplier Microservice:

- **API**: `/suppliers/{supplierId}` (GET)
  Fetch supplier details by supplier ID.
- **API**: `/suppliers` (POST)
  Add a new supplier.

Request (for POST):
- JSON
- Copy code

```
{
  "name": "Tech Supplies",
  "contactEmail": "techsupplies@example.com"
}
```

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3. Product Microservice:

- **API**: `/products/{productId}` (GET)
  Fetch product details by product ID.
- **API**: `/products` (POST)
  Add a new product.
- **API**: `/products/link/{productId}/supplier/{supplierId}` (POST)
  Link a product with a supplier.

Request (for POST):
- JSON
- Copy code

```
{
  "name": "Laptop",
  "price": 1200.00
}
```

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Task Breakdown:

1. **Create Feign Clients**:
   - In the **Product Microservice**, create Feign clients to call APIs from the **User Management** and **Supplier Microservice**.
2. **Connect User and Supplier**:

- When a product is added, the product microservice should validate the user adding the product (by calling the **User Management Microservice**), and the product must be linked to a valid supplier (by calling the **Supplier Microservice**).
- Example flow:
    1. The user adds a new product through the Product Microservice.
    2. The Product Microservice first calls the **User Management Microservice** to verify the user's role.
    3. Then, it calls the **Supplier Microservice** to verify the supplier or create a new one.
    4. Finally, the product is created, and the product is linked to the supplier.

3. **API Requests**:

In the **Product Microservice**, implement a REST API to add a product:
java
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```
@PostMapping("/products")
public ResponseEntity<?> addProduct(@RequestBody ProductDto
productDto) {
    // Verify the user from User Management Microservice
    // Check or add supplier from Supplier Microservice
    // Save product and link to supplier
}
```

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4. **Feign Client Example**:

For **User Management Microservice**:
java
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```
@FeignClient(name = "user-management", url =
"http://user-management-service")
public interface UserClient {
    @GetMapping("/users/{userId}")
    UserDto getUserById(@PathVariable("userId") Long userId);
}
```

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For **Supplier Microservice**:
java
Copy code

```
@FeignClient(name = "supplier-service", url =
"http://supplier-service")
```

```
public interface SupplierClient {
    @GetMapping("/suppliers/{supplierId}")
    SupplierDto getSupplierById(@PathVariable("supplierId") Long
supplierId);

    @PostMapping("/suppliers")
    SupplierDto addSupplier(SupplierDto supplierDto);
}
```

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Bonus:

- [ ] API Gateway should be implemented.