

## **Topic: Supplier & Product Management System**

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### **1. GENERAL REQUIREMENTS**

#### **Technology Stack**

- Spring Boot (MVC pattern, Thymeleaf View) + Spring Data JPA + MS SQL Server/MySQL

#### **Architecture**

- Apply N-Layer Architecture: Controller – Service – Repository – Entity
- Do **not** connect to the database directly from Controller or Service.
- All database operations must go through the Repository layer.

#### **Project Structure**

- Project name: HSF302\_GroupNumber
- Must include at least 4 packages: entity, repository, service, controller

#### **Database**

- Database name: HSF302

#### **Authentication & Authorization**

- Use **HttpSession** to store login information.
- Use **Spring Interceptor** to check all requests:
  - If the user has not logged in → automatically redirect to the login page.

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### **2. DATABASE STRUCTURE**

#### **2.1. user\_accounts**

##### **Column   Type   Note**

id        int        Primary key, auto-increment

username varchar Account username

password varchar Account password

role        int        1 = Manager, 2 = Staff, 3 = Guest

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#### **2.2. suppliers**

##### **Column   Type   Note**

id        int        Primary key, auto-increment

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Column	Type	Note
suppliername	varchar	Supplier name

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### 2.3. products

Column	Type	Note
id	int	Primary key, auto-increment
productid	varchar	Unique product code
name	varchar	5–50 characters
price	float	price $\geq 0$
supplier_id	int	Foreign key → suppliers.id
created_at	date	Creation date
updated_at	date	Last update date
created_by	varchar	Username of the creator

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## 3. FUNCTIONAL REQUIREMENTS

### Task 1. User Interface

#### Login Page

- URL: `http://localhost:8080/`
  - Attributes:
    - Title = *Login Page*
    - Students can freely design the page style
  - Allows input of username and password for login
  - Use **HttpSession** to store login information
  - If the user's role is not a Manager, Staff should see an error message:
    - “You have no permission to access this function!”
  - If login credentials (Manager, Staff) are invalid, show:
    - “username or password is invalid!”
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#### Suppliers Page

- Attributes:
  - Title = *Suppliers Page*

- Students can design styles freely

Only user's role is manager can access this page (from Product Management Page) to do CRUD.

**Page layout:** design is up to the student.

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### **Product Management Page**

- Only **Staff** can perform CRUD operations
- **Manager** can only view the product list (only the 5 products with the highest prices), go to the Suppliers page.

**Page Attributes:**

- Title = *Product Management Page*
- Students can freely design the style

**Page Layout:**

**Input Form (top section):**

- ProductID (TextField)
- Name (TextField)
- Price (TextField)
- Supplier (ComboBox – loaded from the suppliers table), Button **Suppliers**
- Buttons: **Add, Update**

**Product List (bottom section):**

- Columns: ID, ProductID, Name, Price, Supplier, CreatedBy, CreatedAt, UpdatedAt
- Each row includes **Edit** and **Delete** buttons

**Display the username** of the logged-in user at the top-right corner of the Product Management page.

**Logout** button located at the top-left corner.

### **Pagination Requirement**

- Product Management Page must support **pagination** when displaying the product list.
- Each page displays **5 products**.
- Use **Spring Data JPA Paging and Sorting** (Pageable, PageRequest).
- The UI must include navigation controls: **Previous / Next**
- **Manager view** (Top 5 by highest Price) is **not paginated**.
- **Staff view** (CRUD) uses pagination to manage all products.

### **Validation Requirement**

- Use **Spring Validation** with annotations such as:

- @NotBlank, @Size, @Min, @Max, @NotNull, @Valid
  - Display clear error messages on the UI when input is invalid.
  - Validation applies to both **Add** and **Update** forms.
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## Task 2. CRUD + Authentication Features

### Entity & JPA Mapping

- Map products → suppliers using a **Many-to-One** relationship
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### Login & Authentication

- Login using username and password (via HttpSession)
  - Only accounts with roles **Manager** or **Staff** are allowed to access the system
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### Authorization

Role	Permission
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Manager	View product list ( top 5 by highest Price), CRUD Suppliers
Staff	CRUD products

Not logged in Redirect to login page

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### Add Product

#### Validation:

- name: 5–50 characters
- price  $\geq 0.0$

#### When adding:

created\_at = updated\_at = current\_date, created\_by = logged-in username

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### Update Product

- Same validation rules as adding
  - Can **only update** products created by the current user
  - When updating, set updated\_at = current\_date
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## Delete Product

- Can **only delete** products created by the current user

## Logout Function

- When clicked → remove session info and redirect to login page

## Add Suppliers

- **Validation:** suppliername: 5-50 characters
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## Task 3. Spring Data JPA Requirements

1. Entity Mapping & Validation
2. Repository Layer
3. Paging & Sorting
4. CRUD qua Repository

Ensure proper Entity mapping, build standard JPA repositories, support pagination, sorting and perform CRUD operations through Service → Repository.

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## 4. NOTES

- The user\_accounts table must contain predefined data for login (at least **1 Managers, 2 Staff and 1 Guest**) to test role-based restrictions.
- Use **HttpSession** to manage login and authorization.
- Use an **Interceptor** to block all requests except /login and /.
- **UI:** Students can freely design a suitable interface. User's role is manager need to login first to create Suppliers