Department of Statistics & Computer Science

University of Kelaniya

ACADEMIC YEAR -2023/2024(Semester ii)

Full-Stack Software Development

Lab Sheet 04

Scenario:

Implement a Product Management REST API using DTOs, input validation, and meaningful responses.

1. **How can we define a DTO class to transfer product data between client and server?**

- Create a ProductDTO class that will be used to send and receive product data.
- Decide which fields are required for a product:
    o Product name
    o Category
    o Price
    o Quantity
- Which validation annotations should be applied to ensure:
    o Product name and category are not empty (@NotBlank)
    o Price and quantity are positive values (@Min(1))

2. **Create the DTO to the entity/model class?**

- Create a Product entity class representing the product in the database.
- Map the fields from ProductDTO to the Product entity:
    o productName → productName
    o category → category
    o price → price
    o quantity → quantity

3. **How can we define repository methods to interact with the database?**

- Create a ProductRepository interface extending JpaRepository<Product, Long>.
- Define methods to support common operations:
  - Find by category (findByCategoryIgnoreCase)
  - Find by product name (findByProductNameIgnoreCase)

4. **How can we implement a service layer to handle business logic?**

- Create a ProductService interface defining methods:
  - addProduct(ProductDTO productDTO)
  - getAllProducts()
  - searchProducts(String name)
  - deleteProductByName(String name)
- Implement these methods in ProductServiceImpl.

5. **How can we implement a REST controller to expose endpoints?**

- Create a ProductController class with endpoints:
  - POST /products → Add a new product using ProductDTO with validation
  - GET /products → Retrieve all products
  - GET /products/category/{category} → Retrieve products by category
  - DELETE /products/{name} → Delete product by name
  - Test the endpoints using postman

Submission Guidelines:

• Prepare a Word document named "PS/XXXX/XXX_Tutorial04" or
"EC/XXXX/XXX_Tutorial04".
• Include the following elements:
▪ Header with your student number, Tutorial Number and course code.
▪ Footer with page number