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## LAB 7

### WEB APP

### Practice

EX1:

The image displays two screenshots related to a database project. The top screenshot shows a web application titled "Product Management System" with a table of products and a bottom screenshot shows the SQL script used to create the database and insert data.

**Product Management System**

Buttons: Add New Product, Search products...

ID	Code	Name	Price	Quantity	Category	Actions
1	P001	Laptop Dell XPS 13	\$1299,99	10	Electronics	Edit Delete
2	P002	iPhone 15 Pro	\$999,99	25	Electronics	Edit Delete
3	P003	Samsung Galaxy S24	\$899,99	20	Electronics	Edit Delete
4	P004	Office Chair Ergonomic	\$199,99	50	Furniture	Edit Delete
5	P005	Standing Desk	\$399,99	15	Furniture	Edit Delete

**SQL Script:**

```
1 CREATE DATABASE product_management;
2 USE product_management;
3
4 CREATE TABLE products (
5     id BIGINT PRIMARY KEY AUTO_INCREMENT,
6     product_code VARCHAR(20) UNIQUE NOT NULL,
7     name VARCHAR(100) NOT NULL,
8     price DECIMAL(10,1) NOT NULL,
9     quantity INT DEFAULT 0,
10    category VARCHAR(50),
11    description TEXT,
12    created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP
13 );
14
15 -- Insert sample data
16 INSERT INTO products (product_code, name, price, quantity, category, description) VALUES
17 ('P001', 'Laptop Dell XPS 13', 1299.99, 10, 'Electronics', 'High-performance laptop with Intel i7'),
18 ('P002', 'iPhone 15 Pro', 999.99, 25, 'Electronics', 'Latest iPhone with A17 Pro chip'),
19 ('P003', 'Samsung Galaxy S24', 899.99, 20, 'Electronics', 'Flagship Android smartphone'),
20 ('P004', 'Office Chair Ergonomic', 199.99, 50, 'Furniture', 'Comfortable office chair with lumbar support'),
21 ('P005', 'Standing Desk', 399.99, 15, 'Furniture', 'Adjustable height standing desk');
```

**Output:**

#	Time	Action	Message	Duration / Fetch
8	09:43:29	CREATE TABLE products ( id BIGINT PRIMARY KEY AUTO_INCREMENT, product_code VARCHAR(20)	Error Code: 1050. Table 'products' already exists	0.000 sec
9	09:43:47	DROP DATABASE 'product_management'	1 row(s) affected	0.063 sec
10	09:43:50	CREATE DATABASE product_management	1 row(s) affected	0.000 sec
11	09:43:50	USE product_management	0 row(s) affected	0.000 sec
12	09:43:50	CREATE TABLE products ( id BIGINT PRIMARY KEY AUTO_INCREMENT, product_code VARCHAR(20)	0 row(s) affected	0.031 sec
13	09:43:50	INSERT INTO products (product_code, name, price, quantity, category, description) VALUES ('P001', 'Laptop ...	5 row(s) affected Records: 5 Duplicates: 0 Warnings: 0	0.000 sec

## EX2:

```
> main > java > com > example > product_management > entity > J Product.java > Product > Product()
9 public class Product {
10
11     @Id
12     @GeneratedValue(strategy = GenerationType.IDENTITY)
13     private Long id;
14
15     @Column(name = "product_code", unique = true, nullable = false, length = 20)
16     private String productCode;
17
18     @Column(nullable = false, length = 100)
19     private String name;
20
21     @Column(nullable = false, precision = 10, scale = 2)
22     private BigDecimal price;
23
24     @Column(nullable = false)
25     private Integer quantity;
26
27     @Column(length = 50)
28     private String category;
29
30     @Column(columnDefinition = "TEXT")
31     private String description;
32
33     @Column(name = "created_at", updatable = false)
34     private LocalDateTime createdAt;
```

```
@Repository
public interface ProductRepository extends JpaRepository<Product, Long> {

    // Spring Data JPA generates implementation automatically!

    // Custom query methods (derived from method names)
    List<Product> findByCategory(String category);


    List<Product> findByNameContaining(String keyword);

    List<Product> findByPriceBetween(BigDecimal minPrice, BigDecimal maxPrice);

    List<Product> findByCategoryOrderByPriceAsc(String category);

    boolean existsByProductCode(String productCode);
```

## EX3:

src > main > java > com > example > product\_management > service >  ProductService.java > ...

```
1  package com.example.product_management.service;
2
3  import com.example.product_management.entity.Product;
4
5  import java.util.List;
6  import java.util.Optional;
7
8  public interface ProductService {
9
10     List<Product> getAllProducts();
11
12     Optional<Product> getProductById(Long id);
13
14     Product saveProduct(Product product);
15
16     void deleteProduct(Long id);
17
18     List<Product> searchProducts(String keyword);
19
20     List<Product> getProductsByCategory(String category);
21 }
22
```

```
1
2 @Service
3 @Transactional
4 public class ProductServiceImpl implements ProductService {
5
6     private final ProductRepository productRepository;
7
8     @Autowired
9     public ProductServiceImpl(ProductRepository productRepository) {
10         this.productRepository = productRepository;
11     }
12
13     @Override
14     public List<Product> getAllProducts() {
15         return productRepository.findAll();
16     }
17
18     @Override
19     public Optional<Product> getProductById(Long id) {
20         return productRepository.findById(id);
21     }
22
23     @Override
24     public Product saveProduct(Product product) {
25         // Validation logic can go here
26         return productRepository.save(product);
27     }
28
29     @Override
30     public void deleteProduct(Long id) {
31         productRepository.deleteById(id);
32     }
33 }
```


```

27
28     @Override
29     public Optional<Product> getProductById(Long id) {
30         return productRepository.findById(id);
31     }
32
33     @Override
34     public Product saveProduct(Product product) {
35         // Validation logic can go here
36         return productRepository.save(product);
37     }
38
39     @Override
40     public void deleteProduct(Long id) {
41         productRepository.deleteById(id);
42     }
43
44     @Override
45     public List<Product> searchProducts(String keyword) {
46         return productRepository.findByNameContaining(keyword);
47     }
48
49     @Override
50     public List<Product> getProductsByCategory(String category) {
51         return productRepository.findByCategory(category);
52     }
53 }
54

```

EX4:

UI:



## Product Management System

[Add New Product](#)

ID	Code	Name	Price	Quantity	Category	Actions
1	P001	Laptop Dell XPS 13	\$1299,99	10	Electronics	<a href="#">Edit</a> <a href="#">Delete</a>
2	P002	iPhone 15 Pro	\$999,99	25	Electronics	<a href="#">Edit</a> <a href="#">Delete</a>
3	P003	Samsung Galaxy S24	\$899,99	20	Electronics	<a href="#">Edit</a> <a href="#">Delete</a>
4	P004	Office Chair Ergonomic	\$199,99	50	Furniture	<a href="#">Edit</a> <a href="#">Delete</a>
5	P005	Standing Desk	\$399,99	15	Furniture	<a href="#">Edit</a> <a href="#">Delete</a>
7	P009	iPhone17ProMax	\$20,99	3	Electronics	<a href="#">Edit</a> <a href="#">Delete</a>

Create Product:





## Product Management System

Product updated successfully!

 Add New Product

Search products...

 Search

ID	Code	Name	Price	Quantity	Category	Actions
1	P001	Laptop Dell XPS 13	\$1299,99	10	Electronics	 Edit  Delete
2	P002	iPhone 15 Pro	\$999,99	25	Electronics	 Edit  Delete
3	P003	Samsung Galaxy S24	\$899,99	20	Electronics	 Edit  Delete
4	P004	Office Chair Ergonomic	\$199,99	50	Furniture	 Edit  Delete
5	P005	Standing Desk	\$399,99	15	Furniture	 Edit  Delete
6	P008	LAPTOP	\$19,19	3	Electronics	 Edit  Delete

Activate Windows

Update:















## Product Management System

Product updated successfully!

 Add New Product

Search products...

 Search

ID	Code	Name	Price	Quantity	Category	Actions
1	P001	Laptop Dell XPS 13	\$1299,99	10	Electronics	 Edit  Delete
2	P002	iPhone 15 Pro	\$999,99	25	Electronics	 Edit  Delete
3	P003	Samsung Galaxy S24	\$899,99	20	Electronics	 Edit  Delete
4	P004	Office Chair Ergonomic	\$199,99	50	Furniture	 Edit  Delete
5	P005	Standing Desk	\$399,99	15	Furniture	 Edit  Delete
6	P008	LAPTOP	\$19,19	7	Electronics	 Edit  Delete
7	P009	iPhone17ProMax	\$20,99	3	Electronics	 Edit  Delete

Activate Windows  
Go to Settings to activate Windows.

Delete Product:



## Product Management System

Product deleted successfully!

[+ Add New Product](#)

[Search](#)

ID	Code	Name	Price	Quantity	Category	Actions
1	P001	Laptop Dell XPS 13	\$1299,99	10	Electronics	<a href="#">Edit</a> <a href="#">Delete</a>
2	P002	iPhone 15 Pro	\$999,99	25	Electronics	<a href="#">Edit</a> <a href="#">Delete</a>
3	P003	Samsung Galaxy S24	\$899,99	20	Electronics	<a href="#">Edit</a> <a href="#">Delete</a>
4	P004	Office Chair Ergonomic	\$199,99	50	Furniture	<a href="#">Edit</a> <a href="#">Delete</a>
5	P005	Standing Desk	\$399,99	15	Furniture	<a href="#">Edit</a> <a href="#">Delete</a>
7	P009	iPhone17ProMax	\$20,99	3	Electronics	<a href="#">Edit</a> <a href="#">Delete</a>

Activate Windows

Go to Settings to activate Windows.