

## Lab Sheet 05

### Task 01 – Database Setup

#### 1.1. Create the Database and Tables

```
CREATE DATABASE stock_control;
```

```
USE stock_control;
```

```
CREATE TABLE stock (  
    id INT AUTO_INCREMENT PRIMARY KEY,  
    product_name VARCHAR(255) NOT NULL,  
    quantity INT NOT NULL,  
    price DECIMAL(10, 2) NOT NULL  
);
```

```
CREATE TABLE users (  
    id INT AUTO_INCREMENT PRIMARY KEY,  
    username VARCHAR(50) NOT NULL,  
    password VARCHAR(255) NOT NULL  
);
```

```
INSERT INTO stock (product_name, quantity, price) VALUES  
('Laptop', 10, 800.00);
```

```
INSERT INTO stock (product_name, quantity, price) VALUES  
('Smartphone', 20, 400.00);
```

```
INSERT INTO users (username, password) VALUES ('admin',  
'admin123');
```

Stock Management

localhost / 127.0.0.1 / stock\_co

localhost/phpmyadmin/index.php?route=/sql&db=stock\_control&table=stock&pos=0

Server: 127.0.0.1 - Database: stock\_control - Table: stock

Browse Structure SQL Search Insert Export Import Privileges Operations Tracking Triggers

Showing rows 0 - 1 (2 total, Query took 0.0004 seconds)

SELECT \* FROM `stock`

Profiling [ Edit inline ] [ Edit ] [ Explain SQL ] [ Create PHP code ] [ Refresh ]

Show all Number of rows: 25 Filter rows: Search this table Sort by key: None

Extra options

	id	product_name	quantity	price
<input type="checkbox"/>	1	Laptop	10	800.00
<input type="checkbox"/>	2	Smartphone	20	400.00

Check all With selected: Edit Copy Delete Export

Show all Number of rows: 25 Filter rows: Search this table Sort by key: None

Query results operations

Print Copy to clipboard Export Display chart Create view

Bookmark this SQL query

Label:  ☐ Let every user access this bookmark

Bookmark this SQL query

Console

localhost / 127.0.0.1 / stock\_co

localhost/phpmyadmin/index.php?route=/sql&pos=0&db=stock\_control&table=users

Server: 127.0.0.1 - Database: stock\_control - Table: users

Browse Structure SQL Search Insert Export Import Privileges Operations Tracking Triggers

Showing rows 0 - 0 (1 total, Query took 0.0553 seconds)

SELECT \* FROM `users`

Profiling [ Edit inline ] [ Edit ] [ Explain SQL ] [ Create PHP code ] [ Refresh ]

Show all Number of rows: 25 Filter rows: Search this table

Extra options

	id	username	password
<input type="checkbox"/>	1	admin	admin123

Check all With selected: Edit Copy Delete Export

Show all Number of rows: 25 Filter rows: Search this table

Query results operations

Print Copy to clipboard Export Display chart Create view

Bookmark this SQL query

Label:  ☐ Let every user access this bookmark

Bookmark this SQL query

Console

## 1.2. Database Configuration

### **DatabaseUtil.java**

```
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.SQLException;

public class DatabaseUtil {

    public static Connection getConnection() throws
SQLException {
        String url = "jdbc:mysql://localhost:3306/stock_control";

        String username = "root"; // Modify for your MySQL username
        String password = ""; // Modify for your MySQL password
        return DriverManager.getConnection(url, username,
password);
    }
}
```

## Task 02 - Implementing User Authentication with Session Management and Cookies

### Login Form (login.html)

```
<!DOCTYPE html>
<html>

    <head><title>Login</title></head>

<body>

    <h2>Login to Stock Control System</h2>

    <form action="login" method="POST">

        Username: <input type="text" name="username"
required><br>

        Password: <input type="password" name="password"
required><br>

        <input type="submit" value="Login">

    </form>

</body>

</html>
```

## LoginServlet.java

```
import javax.servlet.ServletException;

import javax.servlet.annotation.WebServlet;

import javax.servlet.http.*;

import java.io.IOException;

import java.sql.*;

@WebServlet("/login")

public class LoginServlet extends HttpServlet {

    protected void doPost(HttpServletRequest request,
        HttpServletResponse response) throws ServletException,
        IOException {

        String username =
            request.getParameter("username");

        String password =
            request.getParameter("password");

        try (Connection conn =
            DatabaseUtil.getConnection()) {

            PreparedStatement stmt =
                conn.prepareStatement("SELECT * FROM users WHERE
                username = ? AND password = ?");

            stmt.setString(1, username);

            stmt.setString(2, password);

            ResultSet rs = stmt.executeQuery();

            if (rs.next()) {

                HttpSession session = request.getSession();
```

```
        session.setAttribute("username", username);

        Cookie userCookie = new Cookie("username",
username);

        userCookie.setMaxAge(60 * 60 * 24 * 7); // 1
week

        response.addCookie(userCookie);

        response.sendRedirect("stockManagement");
    } else {

        response.getWriter().println("Invalid
credentials. Please try again.");

    }
} catch (SQLException e) {

    e.printStackTrace();

    response.getWriter().println("Database error.");

}

}

}
```

## Task 03 - Stock Management System (CRUD Operations)

### StockManagementServlet.java

```
import javax.servlet.ServletException;

import javax.servlet.annotation.WebServlet;

import javax.servlet.http.*;

import java.io.IOException;

import java.sql.*;

@WebServlet("/stockManagement")

public class StockManagementServlet extends HttpServlet {

    protected void doGet(HttpServletRequest request,
        HttpServletResponse response) throws ServletException,
        IOException {

        HttpSession session = request.getSession(false);

        if (session == null || session.getAttribute("username") == null)
        {

            response.sendRedirect("login");

            return;

        }

        try (Connection conn = DatabaseUtil.getConnection()) {

            Statement stmt = conn.createStatement();

            ResultSet rs = stmt.executeQuery("SELECT * FROM stock");

            response.setContentType("text/html");

            PrintWriter out = response.getWriter();

            out.println("<h2>Stock List</h2>");
```

```
out.println("<table border='1'><tr><th>Product  
Name</th><th>Quantity</th><th>Price</th><th>Actions</th></tr>");  
  
while (rs.next()) {  
  
    String productName = rs.getString("product_name");  
  
    int quantity = rs.getInt("quantity");  
  
    double price = rs.getDouble("price");  
  
    out.println("<tr><td>" + productName + "</td><td>" + quantity +  
"</td><td>" + price + "</td>");  
  
    out.println("<td><a href='updateStock?id=" + rs.getInt("id") +  
'>Update</a> | <a href='deleteStock?id=" + rs.getInt("id") +  
'>Delete</a></td></tr>");  
  
}  
  
out.println("</table>");  
  
} catch (SQLException e) {  
  
    e.printStackTrace();  
  
    response.getWriter().println("Database error.");  
  
}  
  
}  
  
}
```



## **addStock.html**

```
<!DOCTYPE html>

<html>

    <head><title>Add Stock</title></head>

<body>

    <h2>Add New Stock Item</h2>

    <form action="addStock" method="POST">

        Product Name: <input type="text" name="product_name"
required><br>

        Quantity: <input type="number" name="quantity"
required><br>

        Price: <input type="number" step="0.01" name="price"
required><br>

        <input type="submit" value="Add Stock">

    </form>

</body>

</html>
```

### **AddStockServlet.java**

```
import javax.servlet.ServletException;
import javax.servlet.annotation.WebServlet;
import javax.servlet.http.*;
import java.io.IOException;
import java.sql.*;

@WebServlet("/addStock")

public class AddStockServlet extends HttpServlet {

    protected void doPost(HttpServletRequest request,
        HttpServletResponse response) throws ServletException,
        IOException {

        HttpSession session = request.getSession(false);

        if (session == null ||
            session.getAttribute("username") == null) {

            response.sendRedirect("login");

            return;

        }

        String productName =
            request.getParameter("product_name");

        int quantity =
            Integer.parseInt(request.getParameter("quantity"));

        double price =
            Double.parseDouble(request.getParameter("price"));

        try (Connection conn = DatabaseUtil.getConnection()) {

            PreparedStatement stmt =
                conn.prepareStatement("INSERT INTO stock
                    (product_name, quantity, price) VALUES (?, ?, ?)");

            stmt.setString(1, productName);

            stmt.setInt(2, quantity);

            stmt.setDouble(3, price);

        }
```

```
        stmt.executeUpdate();

        response.sendRedirect("stockManagement"); //
Redirect to stock management page after adding
    } catch (SQLException e) {
        e.printStackTrace();
        response.getWriter().println("Database error.");
    }
}
}
```

## Task 04 - Managing User Preferences with Cookies

### Setting User Preferences in Cookie (in LoginServlet.java):

```
Cookie themeCookie = new Cookie("theme", "dark"); // Example
theme preference

themeCookie.setMaxAge(60 * 60 * 24 * 30); // 30 days

response.addCookie(themeCookie);
```

### Retrieving User Preferences (in StockManagementServlet.java):

```
Cookie[] cookies = request.getCookies();

for (Cookie cookie : cookies) {
    if ("theme".equals(cookie.getName())) {
        String theme = cookie.getValue();
        response.getWriter().println("Current theme: " +
            theme);
    }
}
```