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24MCA0242

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WEB APPLICATION DEVELOPMENT USING J2EE TECHNOLOGIES

01. Assume the existence of database named "**Inventory**" which contains the following tables:
    a. "Product" with necessary information like Product ID (varchar), Product name (varchar), supplier ID (varchar), stock available(number), opening stock (number), last supply date (Date), unit price (number).
    b. "Supplier" containing Supplier ID (varchar), Suppler Name (varchar), Email (varchar), Mobile Phone number (varchar)
    c. "User" containing UserId (varchar), Username (varchar), password (varchar), role (varchar- Allowed values are {DEO,POS,MGR})
02. Develop a web application facilitating
    a. DEO to add new product. Prevent duplication of Product ID and entering non existing supplier ID.
    b. POS Staff to make sales. Sales would let fetch product based on ID, make unit based sales, show the total price and reduce the available stock
    c. Manager (MGR) to view the list of products for which stock available is less than 50
03. Home page of the application enables the user to provide only the "UserID" and "Password"
04. On successful login, **show the relevant functionalities as per the role.**
05. **Display the username** , say **Welcome SAM**, in each of the page navigation.
06. This Web application should make proper use of Servlets, JSP, Beans and JDBC technologies.

CODES:

ADDPRODUCT.JSP:

```
<%@ page language="java" contentType="text/html; charset=UTF-8" pageEncoding="UTF-8"%>
```

```
<!DOCTYPE html>
```

```
<html>
```

```
<head>
```

```html
    <title>Add Product</title>
</head>
<body>
    <h2>Add New Product</h2>
    <form action="addProductAction.jsp" method="post">
        Product ID: <input type="text" name="productID" required><br>
        Product Name: <input type="text" name="productName" required><br>
        Supplier ID: <input type="text" name="supplierID" required><br>
        Stock Available: <input type="number" name="stockAvailable" required><br>
        Opening Stock: <input type="number" name="openingStock" required><br>
        Last Supply Date: <input type="date" name="lastSupplyDate" required><br>
        Unit Price: <input type="number" step="0.01" name="unitPrice" required><br>
        <input type="submit" value="Add Product">
    </form>
</body>
</html>
```

ADDPRODUCTACTION.JSP:

```jsp
<%@ page language="java" contentType="text/html; charset=UTF-8" pageEncoding="UTF-8"%>
<%@ page import="java.sql.*" %>


<!DOCTYPE html>
<html>
<head>
```

```jsp
    <title>Add Product Action</title>
</head>

<body>

  <%

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

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

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

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

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

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

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


      Connection conn = null;

      PreparedStatement ps = null;

      ResultSet rs = null;


      try {

          Class.forName("org.apache.derby.jdbc.ClientDriver");

          conn = DriverManager.getConnection("jdbc:derby://localhost:1527/akb_db", "user1",
"user1");


          ps = conn.prepareStatement("SELECT * FROM Product WHERE ProductID = ?");

          ps.setString(1, productID);

          rs = ps.executeQuery();
```

```java
    if (rs.next()) {

        out.println("Product ID already exists.");

    } else {

        ps = conn.prepareStatement("SELECT * FROM Supplier WHERE SupplierID = ?");

        ps.setString(1, supplierID);

        rs = ps.executeQuery();


        if (!rs.next()) {

            out.println("Supplier ID does not exist.");

        } else {

            ps = conn.prepareStatement("INSERT INTO Product VALUES (?, ?, ?, ?, ?, ?, ?)");

            ps.setString(1, productID);

            ps.setString(2, productName);

            ps.setString(3, supplierID);

            ps.setInt(4, stockAvailable);

            ps.setInt(5, openingStock);

            ps.setDate(6, Date.valueOf(lastSupplyDate));

            ps.setDouble(7, unitPrice);

            ps.executeUpdate();

            out.println("Product added successfully.");

        }

    }

} catch (Exception e) {

    e.printStackTrace();

} finally {
```

```
            if (rs != null) try { rs.close(); } catch (SQLException e) { e.printStackTrace(); }

            if (ps != null) try { ps.close(); } catch (SQLException e) { e.printStackTrace(); }

            if (conn != null) try { conn.close(); } catch (SQLException e) { e.printStackTrace(); }

        }

    %>

</body>

</html>
```

DEOHOME.JSP:

```jsp
<%@ page language="java" contentType="text/html; charset=UTF-8" pageEncoding="UTF-8"%>

<!DOCTYPE html>

<html>

<head>

    <title>DEO Home</title>

</head>

<body>

    <h2>Welcome, <%= session.getAttribute("username") %></h2>

    <a href="addProduct.jsp">Add New Product</a><br>

    <a href="index.html">Logout</a>

</body>

</html>
```

FETCHPRODUCT.JSP:

```jsp
<%@ page language="java" contentType="text/html; charset=UTF-8" pageEncoding="UTF-8"%>

<!DOCTYPE html>
```

```html
<html>

<head>

    <title>Fetch Product</title>

</head>

<body>

    <h2>Fetch Product</h2>

    <form action="fetchProductAction.jsp" method="post">

        Product ID: <input type="text" name="productID" required><br>

        <input type="submit" value="Fetch Product">

    </form>

</body>

</html>
```

FETCHPRODUCTACTION.JSP:

```jsp
<%@ page language="java" contentType="text/html; charset=UTF-8" pageEncoding="UTF-8"%>

<%@ page import="java.sql.*" %>


<!DOCTYPE html>

<html>

<head>

    <title>Fetch Product Action</title>

</head>

<body>

    <%
```

```java
String productID = request.getParameter("productID");

Connection conn = null;

PreparedStatement ps = null;

ResultSet rs = null;

try {

    Class.forName("org.apache.derby.jdbc.ClientDriver");

    conn = DriverManager.getConnection("jdbc:derby://localhost:1527/akb_db", "user1",
"user1");

    ps = conn.prepareStatement("SELECT * FROM Product WHERE ProductID = ?");

    ps.setString(1, productID);

    rs = ps.executeQuery();

    if (rs.next()) {

        out.println("<h2>Product Details</h2>");

        out.println("Product ID: " + rs.getString("ProductID") + "<br>");

        out.println("Product Name: " + rs.getString("ProductName") + "<br>");

        out.println("Supplier ID: " + rs.getString("SupplierID") + "<br>");

        out.println("Stock Available: " + rs.getInt("StockAvailable") + "<br>");

        out.println("Opening Stock: " + rs.getInt("OpeningStock") + "<br>");

        out.println("Last Supply Date: " + rs.getDate("LastSupplyDate") + "<br>");

        out.println("Unit Price: " + rs.getDouble("UnitPrice") + "<br><br>");
```

```java
        out.println("<form action='MakeSaleServlet' method='post'>");

        out.println("Product    ID:    <input    type='text'    name='productID'    value='"    +
rs.getString("ProductID") + "' readonly><br>");

        out.println("Quantity: <input type='number' name='quantity' required><br>");

        out.println("<input type='submit' value='Make Sale'>");

        out.println("</form>");

      } else {

        out.println("Product not found.");

      }

    } catch (Exception e) {

      e.printStackTrace();

    } finally {

      if (rs != null) try { rs.close(); } catch (SQLException e) { e.printStackTrace(); }

      if (ps != null) try { ps.close(); } catch (SQLException e) { e.printStackTrace(); }

      if (conn != null) try { conn.close(); } catch (SQLException e) { e.printStackTrace(); }

    }

  %>
</body>
</html>
```

INDEX.HTML:

```html
<!DOCTYPE html>
<html>
<head>
  <title>Product Login</title>
```

```
</head>

<body>

    <h2>Login</h2>

    <form action="LoginServlet" method="post">

        UserID: <input type="text" name="userId" required><br>

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

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

    </form>

</body>

</html>
```

MGRHOME.JSP

```
<%@ page language="java" contentType="text/html; charset=UTF-8" pageEncoding="UTF-8"%>

<!DOCTYPE html>

<html>

<head>

    <title>Manager Home</title>

</head>

<body>

    <h2>Welcome, <%= session.getAttribute("username") %></h2>

    <a href="viewLowStockProducts.jsp">View Low Stock Products</a><br>

    <a href="index.html">Logout</a>

</body>

</html>
```

POSHOME.JSP:

```jsp
<%@ page language="java" contentType="text/html; charset=UTF-8" pageEncoding="UTF-8"%>

<!DOCTYPE html>

<html>

<head>

    <title>POS Home</title>

</head>

<body>

    <h2>Welcome, <%= session.getAttribute("username") %></h2>

    <a href="fetchProduct.jsp">Make Sale</a><br>

    <a href="index.html">Logout</a>

</body>

</html>
```

VIEWLOWSTOCKPRODUCTS.JSP:

```jsp
<%@ page language="java" contentType="text/html; charset=UTF-8" pageEncoding="UTF-8"%>

<%@ page import="java.sql.*" %>


<!DOCTYPE html>

<html>

<head>

    <title>Low Stock Products</title>

</head>
```

```
<body>
  <h2>Low Stock Products</h2>
  <%
    Connection conn = null;

    PreparedStatement ps = null;

    ResultSet rs = null;


    try {

      Class.forName("org.apache.derby.jdbc.ClientDriver");

      conn = DriverManager.getConnection("jdbc:derby://localhost:1527/akb_db", "user1",
"user1");


      ps = conn.prepareStatement("SELECT * FROM Product WHERE StockAvailable <
50");

      rs = ps.executeQuery();


      while (rs.next()) {

        out.println("Product ID: " + rs.getString("ProductID") + "<br>");

        out.println("Product Name: " + rs.getString("ProductName") + "<br>");

        out.println("Stock Available: " + rs.getInt("StockAvailable") + "<br><br>");

      }
    } catch (Exception e) {

      e.printStackTrace();

    } finally {

      if (rs != null) try { rs.close(); } catch (SQLException e) { e.printStackTrace(); }

      if (ps != null) try { ps.close(); } catch (SQLException e) { e.printStackTrace(); }
```

```
            if (conn != null) try { conn.close(); } catch (SQLException e) { e.printStackTrace(); }

        }

    %>

</body>

</html>
```

LOGINSERVLET.JSP:

```
import java.io.IOException;

import java.sql.*;

import javax.servlet.ServletException;

import javax.servlet.annotation.WebServlet;

import javax.servlet.http.HttpServlet;

import javax.servlet.http.HttpServletRequest;

import javax.servlet.http.HttpServletResponse;


@WebServlet("/LoginServlet")

public class LoginServlet extends HttpServlet {

    @Override

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

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

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


        try              (Connection              conn              =
DriverManager.getConnection("jdbc:derby://localhost:1527/akb_db", "user1", "user1")) {
```

```java
String query = "SELECT Username, Role FROM User1 WHERE UserId = ? AND
Password = ?";

PreparedStatement stmt = conn.prepareStatement(query);

stmt.setString(1, userId);

stmt.setString(2, password);

ResultSet rs = stmt.executeQuery();


if (rs.next()) {

    String username = rs.getString("Username");

    String role = rs.getString("Role");

    request.getSession().setAttribute("username", username);

    request.getSession().setAttribute("role", role);


    switch (role) {

        case "DEO":

            response.sendRedirect("deoHome.jsp");

            break;

        case "POS":

            response.sendRedirect("posHome.jsp");

            break;

        case "MGR":

            response.sendRedirect("mgrHome.jsp");

            break;

    }

} else {
```

```java
            response.sendRedirect("index.html");

        }

    } catch (SQLException e) {

        e.printStackTrace();

    }

  }

}
```

MAKESALESERVLET.JSP:

```java
import java.io.IOException;

import java.sql.*;

import javax.servlet.ServletException;

import javax.servlet.annotation.WebServlet;

import javax.servlet.http.HttpServlet;

import javax.servlet.http.HttpServletRequest;

import javax.servlet.http.HttpServletResponse;


@WebServlet("/MakeSaleServlet")

public class MakeSaleServlet extends HttpServlet {

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

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

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


        Connection conn = null;
```

```java
        PreparedStatement ps = null;

        ResultSet rs = null;


    try {

        Class.forName("org.apache.derby.jdbc.ClientDriver");

        conn = DriverManager.getConnection("jdbc:derby://localhost:1527/akb_db", "user1",
"user1");


        ps = conn.prepareStatement("SELECT StockAvailable, UnitPrice FROM Product
WHERE ProductID = ?");

        ps.setString(1, productID);

        rs = ps.executeQuery();


        if (rs.next()) {

            int stockAvailable = rs.getInt("StockAvailable");

            double unitPrice = rs.getDouble("UnitPrice");


            if (quantity > stockAvailable) {

                response.getWriter().println("Insufficient stock available.");

            } else {

                int newStock = stockAvailable - quantity;

                ps = conn.prepareStatement("UPDATE Product SET StockAvailable = ? WHERE
ProductID = ?");

                ps.setInt(1, newStock);

                ps.setString(2, productID);

                ps.executeUpdate();
```

```java
                double totalPrice = quantity * unitPrice;

                response.getWriter().println("Sale successful. Total Price: " + totalPrice);

            }

        } else {

            response.getWriter().println("Product not found.");

        }

    } catch (Exception e) {

        e.printStackTrace();

    } finally {

        if (rs != null) try { rs.close(); } catch (SQLException e) { e.printStackTrace(); }

        if (ps != null) try { ps.close(); } catch (SQLException e) { e.printStackTrace(); }

        if (conn != null) try { conn.close(); } catch (SQLException e) { e.printStackTrace(); }

    }

  }

}
```