

Q1. Write a JSP program that demonstrates the use of JSP declaration, scriptlet, directives, expression, header, and footer.

Code:

Index.jsp

```
<% @ page language="java" contentType="text/html; charset=UTF-8"
pageEncoding="UTF-8"%>
<% @ include file="header.jsp" %> <!-- Including header -->

<!DOCTYPE html>
<html>
<head>
    <title>JSP Example</title>
</head>
<body>
    <h1>JSP Program Demonstration</h1>
    <!-- JSP Declaration -->
    <%!
        int addNumbers(int a, int b) {
            return a + b;
        }
    %>
    <!-- JSP Scriptlet -->
    <%
        int num1 = 5;
        int num2 = 10;
        int sum = addNumbers(num1, num2);
    %>
    <!-- JSP Expression -->
    <p>Sum of <%= num1 %> and <%= num2 %> is: <%= sum %></p>

    <p>Current Date and Time: <%= new java.util.Date() %></p>

</body>
</html>

<% @ include file="footer.jsp" %> <!-- Including footer -->
```

header.jsx

code:

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

```
<html>
<head>
<meta charset="UTF-8">
<title>Insert title here</title>
</head>
<body>
<div style="background-color: lightgray; padding: 10px;">
  <h2>Header Section</h2>
  <p>This is the header content.</p>
</div>

</body>
</html>
```

footer.jsp

code:

```
<% @ page language="java" contentType="text/html; charset=UTF-8"
    pageEncoding="UTF-8"% >
<!DOCTYPE html>
<html>
<head>
<meta charset="UTF-8">
<title>Insert title here</title>
</head>
<body>
<div style="background-color: lightgray; padding: 10px; margin-top: 20px;">
  <h2>Footer Section</h2>
  <p>This is the footer content.</p>
</div>
</body>
</html>
```

Output:

Header Section

This is the header content.

JSP Program Demonstration

Sum of 5 and 10 is: 15

Current Date and Time: Mon Nov 18 19:09:52 IST 2024

Footer Section

This is the footer content.

Q2.Create a Telephone directory using JSP and store all the information within a database, so that later can be retrieved as per the requirement. Make your own assumptions.

Code:

Index.jsp

```
<% @ page language="java" contentType="text/html; charset=ISO-8859-1"
pageEncoding="ISO-8859-1"%>
<% @ include file="dbConnection.jsp" %>
<!DOCTYPE html>
<html>
<head>
<meta charset="ISO-8859-1">
<title>Add New Contact</title>
</head>
<body>
<h2>Add New Contact</h2>
<form action="saveContact.jsp" method="post">
  <label for="name">Name:</label><br>
  <input type="text" id="name" name="name" required><br><br>
  <label for="phone">Phone Number:</label><br>
  <input type="text" id="phone" name="phone" required><br><br>
  <label for="email">Email:</label><br>
  <input type="email" id="email" name="email"><br><br>
  <input type="submit" value="Add Contact">
</form>
<a href="viewContacts.jsp">View All Contacts</a>
</body>
</html>
```

dbConnection.jsp

code:

```
<% @ page language="java" contentType="text/html; charset=ISO-8859-1"
pageEncoding="ISO-8859-1"%>
<!DOCTYPE html>
<% @ page import="java.sql.*" %>
<html>
<head>
<meta charset="ISO-8859-1">
<title>Database Connection</title>
</head>
<body>
```

```

<%!
    public Connection getConnection() {
        Connection con = null;
        try {
            Class.forName("com.mysql.cj.jdbc.Driver");
            con =
DriverManager.getConnection("jdbc:mysql://localhost:3306/telephone_directory", "root",
"password");
        } catch (ClassNotFoundException e) {
            e.printStackTrace();
        } catch (SQLException e) {
            e.printStackTrace();
        }
        return con;
    }
%>
</body>
</html>

```

viewConatcts.jsp

code:

```

<% @page import="java.sql.ResultSet"%>
<% @page import="java.sql.Statement"%>
<% @page import="java.sql.DriverManager"%>
<% @page import="java.sql.Connection"%>
<% @ page language="java" contentType="text/html; charset=ISO-8859-1"
pageEncoding="ISO-8859-1"%>
<!DOCTYPE html>
<html>
<head>
<style>
    table {
        width: 50%;
        border-collapse: collapse;
    }
    th, td {
        border: 1px solid black;
        padding: 8px;
        text-align: left;
    }
    th {
        background-color: #f2f2f2;
    }

```

```
</style>
<meta charset="ISO-8859-1">
<title>Contact List</title>
</head>
<body>
<h2>Contact List</h2>
<table>
  <thead>
    <tr>
      <th>Name</th>
      <th>Phone</th>
      <th>Email</th>
    </tr>
  </thead>
  <tbody>
    <%
String driverNm = "com.mysql.cj.jdbc.Driver";
String url = "jdbc:mysql://localhost:3306/telephone_directory";
try {
  Class.forName(driverNm);
  Connection con = DriverManager.getConnection(url, "root", "");
  Statement stmt = con.createStatement();
  String sql = "SELECT * FROM contacts";
  ResultSet rs = stmt.executeQuery(sql);
  while (rs.next()) {
    String name = rs.getString("name");
    String phone = rs.getString("phone");
    String email = rs.getString("email");
    <%>
    <tr>
      <td><%= name %></td>
      <td><%= phone %></td>
      <td><%= email %></td>
    </tr>
    <%
  }
  rs.close();
  stmt.close();
  con.close();
} catch (Exception e) {
  out.println("<p>Error: " + e.getMessage() + "</p>");
}
    <%>
  </tbody>
</table>
<br>
<a href="index.jsp">Add Another Contact</a>
</body>
```

</html>

saveContacts.jsp code:

```
<% @ page language="java" contentType="text/html; charset=ISO-8859-1"
pageEncoding="ISO-8859-1"%>
<% @ page import="java.sql.*" %>
<!DOCTYPE html>
<html>
<head>
<meta charset="ISO-8859-1">
<title>Add Contact</title>
</head>
<body>
<%
    String name = request.getParameter("name");
    String phone = request.getParameter("phone");
    String email = request.getParameter("email");
    Connection con = null;
    Statement stmt = null;

    try {
        Class.forName("com.mysql.cj.jdbc.Driver");
        con =
DriverManager.getConnection("jdbc:mysql://localhost:3306/telephone_directory", "root",
        "");
        stmt = con.createStatement();
        String sql = "INSERT INTO contacts (name, phone, email) VALUES (" + name +
        "", "" + phone + "", "" + email + " )";
        int noOfRowsAffected = stmt.executeUpdate(sql);
        if (noOfRowsAffected > 0) {
            out.println("<p>Contact added successfully!</p>");
        } else {
            out.println("<p>Failed to add contact.</p>");
        }
    } catch (SQLException e) {
        e.printStackTrace();
        out.println("<p>Error while adding contact: " + e.getMessage() + "</p>");
    } catch (Exception e) {
        e.printStackTrace();
        out.println("<p>Unexpected error occurred: " + e.getMessage() + "</p>");
    } finally {
        try { if (stmt != null) stmt.close(); } catch (SQLException e) { e.printStackTrace(); }
        try { if (con != null) con.close(); } catch (SQLException e) { e.printStackTrace(); }
    }
%>
```

```

<a href="index.jsp">Add Another Contact</a> | <a href="viewContacts.jsp">View All
Contacts</a>
</body>
</html>

```

Output:

Add New Contact

Name:

Phone Number:

Email:

[View All Contacts](#)

Contact added successfully!

[Add Another Contact](#) | [View All Contacts](#)

Contact List

Name	Phone	Email
Pritesh	9405059038	bhuravanepritesh@gmail.com

[Add Another Contact](#)

Q3. Implement a custom tag that calculates and displays the square and square-root of two numbers entered by the user on a JSP form.

Code:

SquareRootTag.java

```

package mypack;
import jakarta.servlet.jsp.JspException;
import jakarta.servlet.jsp.JspWriter;
import jakarta.servlet.jsp.tagext.SimpleTagSupport;
import java.io.IOException;

public class SquareRootTag extends SimpleTagSupport {
    private double num1;
    private double num2;

    public void setNum1(double num1) {
        this.num1 = num1;
    }
}

```

```

public void setNum2(double num2) {
    this.num2 = num2;
}

public void doTag() throws JspException, IOException {
    JspWriter out = getJspContext().getOut();

    out.println("<table border='1'>");
    out.println("<tr><th>Number</th><th>Square</th><th>Square Root</th></tr>");

    out.println("<tr>");
    out.println("<td>" + num1 + "</td>");
    out.println("<td>" + (num1 * num1) + "</td>");
    out.println("<td>" + Math.sqrt(num1) + "</td>");
    out.println("</tr>");

    out.println("<tr>");
    out.println("<td>" + num2 + "</td>");
    out.println("<td>" + (num2 * num2) + "</td>");
    out.println("<td>" + Math.sqrt(num2) + "</td>");
    out.println("</tr>");

    out.println("</table>");
}
}

```

myTLDFile.tld

code:

```

<?xml version="1.0" encoding="UTF-8"?>
<taglib version="2.1">
    <tlib-version>1.0</tlib-version>
    <short-name>mathTag</short-name>
    <uri>/WEB-INF/myTLDFile.tld</uri>

    <tag>
        <name>squareRoot</name>
        <tag-class>mypack.SquareRootTag</tag-class>
        <body-content>empty</body-content>
        <attribute>
            <name>num1</name>
            <required>true</required>
            <rtexprvalue>true</rtexprvalue>
        </attribute>
    </tag>

```



```

        <name>num2</name>
        <required>true</required>
        <rtexprvalue>true</rtexprvalue>
    </attribute>
</tag>
</taglib>

```

Index.jsp

Code:

```

<% @ page language="java" contentType="text/html; charset=UTF-8"
pageEncoding="UTF-8"%>
<% @ taglib uri="/WEB-INF/myTLDFile.tld" prefix="math" %>
<!DOCTYPE html>
<html>
<head>
    <title>Square and Square Root Calculator</title>
</head>
<body>
    <h2>Enter Two Numbers</h2>
    <form action="index.jsp" method="post">
        <label>Number 1: <input type="text" name="number1" required></label><br>
        <label>Number 2: <input type="text" name="number2" required></label><br>
        <input type="submit" value="Calculate">
    </form>

    <%
String num1Str = request.getParameter("number1");
String num2Str = request.getParameter("number2");

if (num1Str != null && num2Str != null) {
    try {
        double num1 = Double.parseDouble(num1Str);
        double num2 = Double.parseDouble(num2Str);
    %>
        <math:squareRoot num1="<%= num1 %>" num2="<%= num2 %>" />
    <%
    } catch (NumberFormatException e) {
        out.println("Please enter valid numbers.");
    }
}
    %>
</body>
</html>

```

Output:

Enter Two Numbers

Number 1:

Number 2:

Enter Two Numbers

Number 1:

Number 2:

Number	Square	Square Root
16.0	256.0	4.0
4.0	16.0	2.0

Q4. Build an online shopping cart using JSP. Each time a user adds an item to the cart, store the items in the session. Display the items in the cart on a separate page.

Code:**Index.jsp**

```

<!DOCTYPE html>
<html>
<head>
  <title>Online Shopping Cart</title>
</head>
<body>
  <h1>Online Shopping Cart</h1>
  <form action="addToCart.jsp" method="post">
    <label for="product">Select Product:</label>
    <select name="product" id="product">
      <option value="Laptop">Laptop - 1000Rs</option>
      <option value="Phone">Phone - 800Rs</option>
      <option value="Headphones">Headphones - 200Rs</option>
      <option value="Keyboard">Keyboard - 100Rs</option>
    </select>
    <br><br>
    <label for="quantity">Enter Quantity:</label>
    <input type="number" name="quantity" id="quantity" min="1" required>
    <br><br>
    <button type="submit">Add to Cart</button>
  </form>
  <br>
  <a href="viewCart.jsp">View Cart</a>

```

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

addToCart.jsp

code:

```
<% @ page import="java.util.ArrayList" %>
<%
    String product = request.getParameter("product");
    String quantity = request.getParameter("quantity");

    ArrayList<String> cart = (ArrayList<String>) session.getAttribute("cart");
    if (cart == null) {
        cart = new ArrayList<>();
    }
    cart.add(product + " (x" + quantity + ")");
    session.setAttribute("cart", cart);
    response.sendRedirect("index.jsp");
%>
```

viewCart.jsp

code:

```
<% @ page import="java.util.ArrayList" %>
<!DOCTYPE html>
<html>
<head>
    <title>View Cart</title>
</head>
<body>
    <h1>Your Shopping Cart</h1>

    <%
        ArrayList<String> cart = (ArrayList<String>) session.getAttribute("cart");
        if (cart == null || cart.isEmpty()) {
    %>
        <p>Your cart is empty!</p>
        <a href="index.jsp">Go Back to Shopping</a>
    <%
        } else {
    %>
        <ul>
            <% for (String item : cart) { %>
                <li><%= item %></li>
            <% } %>
        </ul>
    %>
```

```

</ul>
<a href="index.jsp">Continue Shopping</a>
<br><br>
<form action="clearCart.jsp" method="post">
  <button type="submit">Clear Cart</button>
</form>
<%
  }
%>
</body>
</html>

```

clearCart.jsp code:

```

<%
  session.invalidate();
  response.sendRedirect("index.jsp");
%>

```

Output:

<h2 style="text-align: center;">Online Shopping Cart</h2> <p>Select Product: <input type="text" value="Laptop - 1000Rs"/></p> <p>Enter Quantity: <input type="text" value="1"/></p> <p><input type="button" value="Add to Cart"/></p> <p>View Cart</p>	<h2 style="text-align: center;">Your Shopping Cart</h2> <ul style="list-style-type: none"> • Laptop (x1) <p style="text-align: center;">Continue Shopping</p> <p style="text-align: center;"><input type="button" value="Clear Cart"/></p>
--	---

Your Shopping Cart

Your cart is empty!

[Go Back to Shopping](#)

Q5. Write a JSP program that demonstrates the use of JSP declaration, scriptlet, directives, expression, header, and footer.

Code:

Index.jsp

```
<% @ page language="java" contentType="text/html; charset=UTF-8"
pageEncoding="UTF-8"%>
<% @ include file="header.jsp" %> <!-- Including header -->

<!DOCTYPE html>
<html>
<head>
    <title>JSP Example</title>
</head>
<body>
    <h1>JSP Program Demonstration</h1>
    <!-- JSP Declaration -->
    <%!
        int addNumbers(int a, int b) {
            return a + b;
        }
    %>
    <!-- JSP Scriptlet -->
    <%
        int num1 = 5;
        int num2 = 10;
        int sum = addNumbers(num1, num2);
    %>
    <!-- JSP Expression -->
    <p>Sum of <%= num1 %> and <%= num2 %> is: <%= sum %></p>

    <p>Current Date and Time: <%= new java.util.Date() %></p>

</body>
</html>

<% @ include file="footer.jsp" %><!-- Including footer -->
```

header.jsx

code:

```
<% @ page language="java" contentType="text/html; charset=UTF-8"
    pageEncoding="UTF-8"% >
<!DOCTYPE html>
<html>
<head>
<meta charset="UTF-8">
<title>Insert title here</title>
</head>
<body>
<div style="background-color: lightgray; padding: 10px;">
    <h2>Header Section</h2>
    <p>This is the header content.</p>
</div>

</body>
</html>
```

footer.jsp

code:

```
<% @ page language="java" contentType="text/html; charset=UTF-8"
    pageEncoding="UTF-8"% >
<!DOCTYPE html>
<html>
<head>
<meta charset="UTF-8">
<title>Insert title here</title>
</head>
<body>
<div style="background-color: lightgray; padding: 10px; margin-top: 20px;">
    <h2>Footer Section</h2>
    <p>This is the footer content.</p>
</div>
</body>
</html>
```

Output:

