

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

V SEMESTER (Oct-Jan 2024-25)

Advanced Java Programming Laboratory - CSL57

I.A. Marks: 50

Credits: 0:0:1

Exam Hours: 03

Exam Marks: 50

SL. No.	QUESTIONS	CO
1.	<p>a. Create and store three cookies with different attributes (such as name, value, expiration time, etc.). Retrieve and display the stored cookies using a second JSP program, extracting their names, values, and any additional attributes</p> <pre> <!-- setCookies.jsp --> <% @ page language="java" contentType="text/html; charset=UTF-8" pageEncoding="UTF-8"% > <!DOCTYPE html> <html> <head> <meta charset="UTF-8"> <title>Set Cookies</title> </head> <body> <h1>Setting Cookies</h1> <% Cookie cookie1 = new Cookie("cookie1", "value1"); Cookie cookie2 = new Cookie("cookie2", "value2"); Cookie cookie3 = new Cookie("cookie3", "value3"); cookie1.setMaxAge(60 * 60); // 1 hour cookie2.setMaxAge(60 * 60 * 24); // 1 day cookie3.setMaxAge(60 * 60 * 24 * 7); // 1 week response.addCookie(cookie1); response.addCookie(cookie2); response.addCookie(cookie3); out.println("<p>Cookies have been set.</p>"); %> Back to Home </body> </html> <!-- getCookies.jsp --> <% @ page language="java" contentType="text/html; charset=UTF-8" pageEncoding="UTF-8"% > <!DOCTYPE html> <html> <head> </pre>	CO3

	<pre> <meta charset="UTF-8"> <title>Get Cookies</title> </head> <body> <h1>Getting Cookies</h1> <% Cookie[] cookies = request.getCookies(); if (cookies != null) { out.println("<table border='1'><tr><th>Name</th><th>Value</th></tr>"); for (Cookie cookie : cookies) { out.println("<tr><td>" + cookie.getName() + "</td><td>" + cookie.getValue() + "</td></tr>"); } out.println("</table>"); } else { out.println("<p>No cookies found.</p>"); } %> Back to Home </body> </html> <!-- index.html --> <!DOCTYPE html> <html> <head> <meta charset="UTF-8"> <title>Cookie Example</title> </head> <body> <h1>Cookie Example</h1> Set Cookies

 Get Cookies </body> </html> </pre>	
	<p>b. Write a Servlet program that reads following information -> Employee's name, number of hours worked in week, hourly pay rate, tax (20%) from the user and prints a statement of payroll with employee's details.</p> <pre> // Payroll.java package myPack; import java.io.*; import jakarta.servlet.*; import jakarta.servlet.http.*; </pre>	CO2

```

public class Payroll extends HttpServlet {
    private static final long serialVersionUID = 1L;

    protected void doPost(HttpServletRequest request, HttpServletResponse response)
    throws ServletException, IOException {
        // Set content type
        response.setContentType("text/html");
        PrintWriter out = response.getWriter();

        // Retrieve input from the request
        String employeeName = request.getParameter("employeeName");
        int hoursWorked = Integer.parseInt(request.getParameter("hoursWorked"));
        double hourlyPayRate =
        Double.parseDouble(request.getParameter("hourlyPayRate"));
        double taxRate = 20.0; // 20%

        // Calculate payroll details
        double grossPay = hoursWorked * hourlyPayRate;
        double taxAmount = grossPay * (taxRate / 100);
        double netPay = grossPay - taxAmount;

        // Display payroll statement
        out.println("<!DOCTYPE html>");
        out.println("<html><head><title>Payroll Statement</title></head><body>");
        out.println("<h1>Payroll Statement</h1>");
        out.println("<p><strong>Employee Name:</strong> " + employeeName + "</p>");
        out.println("<p><strong>Hours Worked:</strong> " + hoursWorked + "</p>");
        out.println("<p><strong>Hourly Pay Rate:</strong> $" + hourlyPayRate + "</p>");
        out.println("<p><strong>Gross Pay:</strong> $" + grossPay + "</p>");
        out.println("<p><strong>Tax Amount (20%):</strong> $" + taxAmount + "</p>");
        out.println("<p><strong>Net Pay:</strong> $" + netPay + "</p>");
        out.println("<br><a href='payrollForm.html'>Go back to the form</a>");
        out.println("</body></html>");
    }
}

<!DOCTYPE html>
<html>
<head>
    <meta charset="UTF-8">
    <title>Employee Payroll Form</title>
</head>
<body>
    <h1>Employee Payroll Form</h1>
    <form action="Payroll" method="post">
        <label for="employeeName">Employee Name:</label>
        <input type="text" id="employeeName" name="employeeName"
        required><br><br>

```

	<pre> <label for="hoursWorked">Hours Worked in a Week:</label> <input type="number" id="hoursWorked" name="hoursWorked" required>

 <label for="hourlyPayRate">Hourly Pay Rate:</label> <input type="number" step="0.01" id="hourlyPayRate" name="hourlyPayRate" required>

 <button type="submit">Calculate Payroll</button> </form> </body> </html> </pre>	
2.	<p>a. Write a JSP program to retrieve and display Student Information. Create an <code>index.html</code> page to collect the USN (University Serial Number) of the student from the user. In <code>displayData.jsp</code>, connect to the database, and retrieve the student details based on the USN entered by the user. If the USN exists in the database, display the corresponding USN and Name. If the USN does not exist, display the message: "Invalid USN".</p> <pre> <!-- displayData.jsp --> <% @ page language="java" contentType="text/html; charset=UTF-8" pageEncoding="UTF-8"%> <% @ page import="java.sql.*" %> <!DOCTYPE html> <html> <head> <meta charset="UTF-8"> <title>Student Details</title> </head> <body> <h1>Student Details</h1> <% String URL = "jdbc:mysql://localhost:3306/dbName"; // Update this String User = "root"; // Update this String Pass = ""; // Update this String usn = request.getParameter("usn"); Connection conn = null; PreparedStatement pStmt = null; try { conn = DriverManager.getConnection(URL, User, Pass); String sql = "SELECT * FROM Student WHERE USN = ?"; pStmt = conn.prepareStatement(sql); pStmt.setString(1, usn); ResultSet rs = pStmt.executeQuery(); if (rs.next()) { String name = rs.getString("Name"); out.println("<p>USN: " + usn + "</p>"); out.println("<p>Name: " + name + "</p>"); } else { out.println("<p>Invalid USN</p>"); } } catch (SQLException e) { out.println("<p>Database Error: " + e.getMessage() + "</p>"); } %> </pre>	CO3

```

    }
    } catch (SQLException e) {
        e.printStackTrace();
    } finally {
        try {
            if (pStmt != null)
                pStmt.close();
            if (conn != null)
                conn.close();
        } catch (SQLException e) {
            e.printStackTrace();
        }
    }
}
%>
</body>
</html>

<!-- index.html -->

<!DOCTYPE html>
<html>
<head>
    <meta charset="UTF-8">
    <title>Student Details</title>
</head>
<body>
    <h1>Enter USN</h1>
    <form action="displayData.jsp" method="post">
        USN: <input type="text" name="usn" required><br><br>
        <input value="Submit" type="submit">
    </form>
</body>
</html>

```

- b. Write a Java Servlet Program to implement a simple calculator. Validate the input data and display appropriate messages.

CO2

CALCULATOR PROGRAM

First Number :

Second Number:

- ☐ Addition
- ☐ Subtraction
- ☐ Multiplication
- ☐ Division
- ☐ e^x

// Calculate.java

package myPack;

import jakarta.servlet.*;

```

import jakarta.servlet.http.*;
import java.io.*;
//import jakarta.servlet.annotation.*;

@WebServlet("/Calculate")
public class Calculate extends HttpServlet {
    private static final long serialVersionUID = 1L;

    protected void doPost(HttpServletRequestRequest req, HttpServletResponse res) throws
ServletException, IOException {
        String n1 = req.getParameter("n1"), n2 = req.getParameter("n2"), op =
req.getParameter("op");
        res.setContentType("text/html");
        PrintWriter out = res.getWriter();
        double r= 0, a = Double.parseDouble(n1), b = Double.parseDouble(n2);
        if (op.equals("Addition")) {
            r = a + b;
        } else if (op.equals("Subtraction")) {
            r = a - b;
        } else if (op.equals("Multiplication")) {
            r = a * b;
        } else if (op.equals("Division")) {
            if (b!= 0) {
                r = a / b;
            } else {
                r = Double.MAX_VALUE;
            }
        } else if (op.equals("e^x")) {
            r = Math.exp(a);
        }
        out.println("<html><body>");
        out.println("<h1>Result is: " + String.valueOf(r) + "</h1>");
        out.println("</body></html>");
    }
}

<!-- index.html -->

<!DOCTYPE html>
<html>
    <head>
        <meta charset="UTF-8">
        <title>Calculator</title>
    </head>
    <body>
        <form action = "Calculate" method = "POST">
            <label>First Number (x): </label>
            <input type = "text" name = "n1" required><br><br>
            <label>Second Number:</label>
            <input type = "text" name = "n2"><br>

```

	<pre> <p>Select operation: </p> <input type="radio" name = "op" value = "Addition"> <label>Addition</label>
 <input type="radio" name = "op" value = "Subtraction"> <label>Subtraction</label>
 <input type = "radio" name = "op" value = "Multiplication"> <label>Multiplication</label>
 <input type = "radio" name = "op" value = "Division"> <label>Division</label>
 <input type = "radio" name = "op" value = "e^x"> <label>e^x</label>

 <input type = "submit" value = "Submit"> </form> </body> </html> </pre>	
3.	<p>a. Write a java servlet program to create 4 cookies. Set 2 cookies with 1 minute of expiry date. Display all the cookies when the servlet is loaded for the first time. Refresh the page and display the remaining 2 cookies.</p> <pre> // Cookies.java package myPack; import java.io.*; import jakarta.servlet.*; import jakarta.servlet.annotation.*; import jakarta.servlet.http.*; @WebServlet("/Cookies") public class Cookies extends HttpServlet { private static final long serialVersionUID = 1L; protected void doGet(HttpServletRequest request, HttpServletResponse response) throws ServletException, IOException { response.setContentType("text/html"); PrintWriter out = response.getWriter(); Cookie cookie1 = new Cookie("cookie1", "value1"); Cookie cookie2 = new Cookie("cookie2", "value2"); Cookie cookie3 = new Cookie("cookie3", "value3"); Cookie cookie4 = new Cookie("cookie4", "value4"); cookie1.setMaxAge(60); cookie2.setMaxAge(60); response.addCookie(cookie1); response.addCookie(cookie2); response.addCookie(cookie3); response.addCookie(cookie4); out.println("<html><body>"); out.println("<h2>All Cookies:</h2>"); Cookie[] cookies = request.getCookies(); </pre>	CO2

	<pre> if (cookies != null) { for (Cookie cookie : cookies) { out.println("Name: " + cookie.getName() + ", Value: " + cookie.getValue() + "
"); } } else { out.println("No cookies found.
"); } out.println("</body></html>"); } } <!-- index.html --> <!DOCTYPE html> <html> <head> <meta charset="UTF-8"> <title>Cookies</title> </head> <body> <h1>Cookie Servlet Example</h1> <form action="Cookies" method="get"> <button type="submit">Load Servlet</button> </form> </body> </html> </pre>	
	<p>b. Write a java servlet program to implement a web page to check if the voter is eligible or not. User will enter his first name, last name, email id and date of birth. Check if he is eligible to vote or not. Validate the page before displaying the details.</p> <pre> // Voting.java package myPack; import jakarta.servlet.*; import jakarta.servlet.http.*; import java.io.*; //import jakarta.servlet.annotation.*; @WebServlet("/Voting") public class Voting extends HttpServlet { private static final long serialVersionUID = 1L; protected void doPost(HttpServletRequest request, HttpServletResponse response) throws ServletException, IOException { String fname = request.getParameter("fname"); String lname = request.getParameter("lname"); String age = request.getParameter("age"); response.getWriter().println("<html><body>"); if (Integer.parseInt(age) >= 18) { response.getWriter().println("<h1>You are eligible, " + fname + " " + lname + "!</h1>"); </pre>	CO2


```

    } else {
        response.getWriter().println("<h1>You are not eligible, " + fname + " " +
lname + "!</h1>");
    }
    response.getWriter().println("</body></html>");
}
}

<!-- index.html -->

<!DOCTYPE html>
<html lang="en">
    <head>
        <meta charset="UTF-8">
        <title>Vote</title>
    </head>
    <body>
        <h1>Voting Page</h1>
        <form action="Voting" method="POST">
            <label for="fname">First Name:</label>
            <input type="text" id="fname" name="fname" required>
            <label for="lname">Last Name:</label>
            <input type="text" id="lname" name="lname" required>
            <label for="mail">E-mail:</label>
            <input type="text" id="mail" name="mail" required>
            <label for="age">Age:</label>
            <input type="text" id="age" name="age" required>
            <input type="submit" value="Submit">
        </form>
    </body>
</html>

```

Voting Page

First Name:

Last Name:

E-Mail ID:

Date of Birth:

Submit

4.	<p>a. Write a JSP program that takes the user's name and age from a form. Echo back the name and age along with a message stating the price of movie tickets. The price is determined by the age passed to the JSP.</p> <ul style="list-style-type: none"> If the age is greater than 62, the movie ticket price is Rs.50. If the user is less than 10 years old, the price is Rs.30. <p>For everyone else, the price is Rs.80.</p>	CO3
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<pre> <% @ page import="java.io.,java.util." %> <% // Retrieve the name and age from the request String name = request.getParameter("name"); String ageString = request.getParameter("age"); // Parse the age as an integer int age = Integer.parseInt(ageString); // Initialize ticket price variable int ticketPrice = 0; // Determine the ticket price based on the age if (age > 60) { ticketPrice = 50; // Senior citizens } else if (age < 18) { ticketPrice = 30; // Children } else { ticketPrice = 80; // Adults } %> <!DOCTYPE html> <html lang="en"> <head> <meta charset="UTF-8"> <meta name="viewport" content="width=device-width, initial-scale=1.0"> <title>Movie Ticket Price</title> </head> <body> <h2>Movie Ticket Information</h2> <p>Welcome <%= name %>.</p> <p>Your age is: <%= age %> years.</p> <p>The price of the movie ticket is Rs. <%= ticketPrice %>.</p>
 Go back to the form </body> </html> </pre>	
<p>b. Write a Java Servlet program that loads area and phone no. of police station of that area from a database. It takes area or phone number as input and prints the details in a separate page. Create police_station table with appropriate fields.</p> <pre> // Police.java package myPack; import java.io.*; import java.sql.*; import jakarta.servlet.*; import jakarta.servlet.http.*; //import jakarta.servlet.annotation.*; </pre>	CO2

```
//@WebServlet("/Police")
public class Police extends HttpServlet {
    private static final long serialVersionUID = 1L;

    private static final String DB_URL = "jdbc:mysql://localhost:3306/dbName"; // Update this
    private static final String USER = "root"; // Update this
    private static final String PASS = ""; // Update this

    protected void doPost(HttpServletRequest request, HttpServletResponse response) throws
    ServletException, IOException {
        response.setContentType("text/html");
        PrintWriter out = response.getWriter();

        String area = request.getParameter("area");
        String phoneNumber = request.getParameter("phoneNumber");

        Connection conn = null;
        PreparedStatement pStmt = null;

        try {
            //Class.forName("com.mysql.cj.jdbc.Driver");

            conn = DriverManager.getConnection(DB_URL, USER, PASS);

            String sql = "SELECT * FROM police_station WHERE area = ? OR phone_number =
            ?";
            pStmt = conn.prepareStatement(sql);
            pStmt.setString(1, area);
            pStmt.setString(2, phoneNumber);

            ResultSet rs = pStmt.executeQuery();

            if (rs.next()) {
                out.println("<h2>Police Station Details:</h2>");
                out.println("Area: " + rs.getString("area") + "<br>");
                out.println("Phone Number: " + rs.getString("phone_number") + "<br>");
                out.println("Address: " + rs.getString("address") + "<br>");
            } else {
                out.println("<h2>No police station found for the given area or phone number.</h2>");
            }

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

	<pre> } } <!-- index.html --> <!DOCTYPE html> <html> <head> <meta charset="UTF-8"> <title>Police Station</title> </head> <body> <h1>Police Station</h1> <form action="Police" method="post"> Area: <input type="text" name="area">

 Phone Number: <input type="text" name="phoneNumber">

 <button type="submit">Lookup</button> </form> </body> </html> </pre>	
5	<p>a. Write a servlet program that uses JDBC to display the subjects allotted for the faculty. Subjects Table should have Sub_ID, Sub_Name and Faculty_ID as the fields. Update subject details for a faculty and display how many rows are updated</p> <pre> // Subjects.java package myPack; import java.io.*; import java.sql.*; import jakarta.servlet.*; import jakarta.servlet.http.*; //import jakarta.servlet.annotation.*; @WebServlet("/Subjects") public class Subjects extends HttpServlet { private static final long serialVersionUID = 1L; private static final String DB_URL = "jdbc:mysql://localhost:3306/dbName"; // Update this private static final String USER = "root"; // Update this private static final String PASS = ""; // Update this protected void doPost(HttpServletRequest request, HttpServletResponse response) throws ServletException, IOException { response.setContentType("text/html"); PrintWriter out = response.getWriter(); String facultyId = request.getParameter("facultyId"); String subName = request.getParameter("subName"); conn = null; PreparedStatement pstmt = null; try { </pre>	CO2

```

conn = DriverManager.getConnection(DB_URL, USER, PASS);

String updateSQL = "UPDATE Subjects SET Sub_Name = ? WHERE Faculty_ID = ?";
pStmt = conn.prepareStatement(updateSQL);
pStmt.setString(1, subName);
pStmt.setInt(2, Integer.parseInt(facultyId));
int rowsUpdated = pStmt.executeUpdate();

out.println("<h2>Number of rows updated: " + rowsUpdated + "</h2>");

String querySQL = "SELECT * FROM Subjects WHERE Faculty_ID = ?";
pStmt = conn.prepareStatement(querySQL);
pStmt.setInt(1, Integer.parseInt(facultyId));
ResultSet rs = pStmt.executeQuery();

out.println("<h2>Subjects Allotted for Faculty ID: " + facultyId + "</h2>");
out.println("<table
border='1'><tr><th>Sub_ID</th><th>Sub_Name</th><th>Faculty_ID</th></tr>");
while (rs.next()) {
    out.println("<tr><td>" + rs.getInt("Sub_ID") + "</td><td>"
rs.getString("Sub_Name") + "</td><td>" + rs.getInt("Faculty_ID") + "</td></tr>");
}
    out.println("</table>");
} catch (SQLException e) {
    e.printStackTrace();
} finally {
    try {
        if (pStmt != null)
            pStmt.close();
        if (conn != null)
            conn.close();
    } catch (SQLException e) {
        e.printStackTrace();
    }
}
}

<!-- index.html -->

<!DOCTYPE html>
<html>
<head>
    <meta charset="UTF-8">
    <title>Update Faculty Subjects</title>
</head>
<body>
    <h1>Update Faculty Subjects</h1>
    <form action="Subjects" method="post">
        Faculty ID: <input type="text" name="facultyId" required><br><br>
        Subject Name: <input type="text" name="subName" required><br><br>
        <button type="submit">Update Subject</button>
    </form>
</body>
</html>

```

b. Write a Java Servlet Program to display how many times a visitor is visiting the webpage using session object. If the user is visiting for the first time, display Welcome message, else display the number of times he is visiting the page.

CO2

```
// VisitCount.java

package myPack;

import jakarta.servlet.*;
import jakarta.servlet.http.*;
import java.io.*;
//import jakarta.servlet.annotation.*;

@WebServlet("/VisitCount")
public class VisitCount extends HttpServlet {
    private static final long serialVersionUID = 1L;

    protected void doGet(HttpServletRequest request, HttpServletResponse response) throws
    ServletException, IOException {
        response.setContentType("text/html");
        PrintWriter out = response.getWriter();

        HttpSession session = request.getSession();
        Integer visitCount = (Integer) session.getAttribute("visitCount");

        out.println("<html><body>");
        if (visitCount == null) {
            visitCount = 1;
            session.setAttribute("visitCount", visitCount);
            out.println("<h2>Welcome! This is your first visit.</h2>");
        } else {
            visitCount++;
            session.setAttribute("visitCount", visitCount);
            out.println("<h2>Welcome back! You have visited this page " + visitCount + "
times.</h2>");
        }
        out.println("</body></html>");
    }
}

<!-- index.html -->

<!DOCTYPE html>
<html>
<head>
    <meta charset="UTF-8">
    <title>Visit Counter</title>
</head>
<body>
    <h1>Visit Counter Example</h1>
    <form action="VisitCount" method="get">
        <button type="submit">Check Visit Count</button>
    </form>
</body>
```

	</html>	
6	<p>a. Develop a JSP application that has the following pages. The index page register.html contains 2 text boxes for entering username and password. Provide a button "Register". Once the Register button is clicked the page should be redirected to welcome.jsp. In welcome.jsp validate username and password and display welcome message for a valid user (Use Sessions).</p> <pre> <% @ page import="javax.servlet.,java.io." %> <% String username = request.getParameter("username"); String password = request.getParameter("password"); HttpSession sess = request.getSession(); sess.setAttribute("username", username); sess.setAttribute("password", password); if (username != null && password != null && !username.isEmpty() && !password.isEmpty()) { %> <p>Welcome <%= sess.getAttribute("username") %></p> <% } else { %> <p>Enter valid details</p> <% } %> <!DOCTYPE HTML> <html> <head> <title> Registration Using Session </title> </head> <body> <h2>Welcome to Registration Page</h2> <form action="welcome.jsp" method="POST"> <label for="username">Username:</label> <input type="text" name="username" id="username">

 </pre>	CO3

	<pre> <label for="password">Password:</label> <input type="password" name="password" id="password">

 <input type="submit" value="Register"> </form> </body> </html> </pre>	
	<p>b. Write a java servlet program to implement a web page to check if the voter is eligible or not. User will enter his first name, last name, email id and date of birth. Check if he is eligible to vote or not. Validate the page before displaying the details.</p> <pre> // Voting.java package myPack; import jakarta.servlet.*; import jakarta.servlet.http.*; import java.io.*; //import jakarta.servlet.annotation.*; @WebServlet("/Voting") public class Voting extends HttpServlet { private static final long serialVersionUID = 1L; protected void doPost(HttpServletRequest request, HttpServletResponse response) throws ServletException, IOException { String fname = request.getParameter("fname"); String lname = request.getParameter("lname"); String age = request.getParameter("age"); response.getWriter().println("<html><body>"); if (Integer.parseInt(age) >= 18) { response.getWriter().println("<h1>You are eligible, " + fname + " " + lname + "!</h1>"); } else { response.getWriter().println("<h1>You are not eligible, " + fname + " " + lname + "!</h1>"); } response.getWriter().println("</body></html>"); } } <!-- index.html --> <!DOCTYPE html> <html lang="en"> <head> <meta charset="UTF-8"> <title>Vote</title> </head> <body> </pre>	CO3

	<pre> <h1>Voting Page</h1> <form action="Voting" method="POST"> <label for="fname">First Name:</label> <input type="text" id="fname" name="fname" required> <label for="lname">Last Name:</label> <input type="text" id="lname" name="lname" required> <label for="mail">E-mail:</label> <input type="text" id="mail" name="mail" required> <label for="age">Age:</label> <input type="text" id="age" name="age" required> <input type="submit" value="Submit"> </form> </body> </html> </pre>	
--	--	--

Note: Student is required to answer one full question which contains PART-(a) and PART-(b). The questions are allotted based on lots.

Marks Distribution:

Conduction and Result	Write-Up	Execution(35)		Viva/Demo	Change of Program	Total
	8	Part-(a)	Part-(b)	7	-10 Marks	50 Marks
		18	17			

