|  |  |
| --- | --- |
| **EXP NO : 9** | **Java server based web applications** |
| **DATE : 17/11/24** |

**1.AIM :**  
 To Develop a code for creating cookies with the name of the person and secret code at the server, after getting these details from the client using HTML form. Use another servlet program to get the information stored in the cookie and display the details.

**SOURCE CODE :**

Index.html

<!DOCTYPE html>

<html lang="en">

<head>

    <meta charset="UTF-8">

    <title>User Form</title>

</head>

<body>

    <fieldset>

        <legend>User details</legend>

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

            <label for="name">Name:

            <input type="text" name= "name" id="name">

            </label>

            <br><br>

            <label for = "secret">Secret Code:

                <input type ="text" name = "secret" id = "secret">

            </label>

            <br>

            <br>

            <input type = "submit" value ="Create Cookie">

        </form>

    </fieldset>

</body>

</html>

**Web.xml**

<web-app xmlns="http://java.sun.com/xml/ns/javaee"

         xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"

         xsi:schemaLocation="http://java.sun.com/xml/ns/javaee

         http://java.sun.com/xml/ns/javaee/web-app\_3\_0.xsd"

         version="3.0">

    <!-- Servlet1 Mapping -->

    <servlet>

        <servlet-name>Servlet1</servlet-name>

        <servlet-class>Servlet1</servlet-class>

    </servlet>

    <servlet-mapping>

        <servlet-name>Servlet1</servlet-name>

        <url-pattern>/create</url-pattern>

    </servlet-mapping>

    <!-- DisplayServlet1 Mapping -->

    <servlet>

        <servlet-name>DisplayServlet1</servlet-name>

        <servlet-class>DisplayServlet1</servlet-class>

    </servlet>

    <servlet-mapping>

        <servlet-name>DisplayServlet1</servlet-name>

        <url-pattern>/display</url-pattern>

    </servlet-mapping>

</web-app>

**Servlet1.java**

import javax.servlet.annotation.WebServlet;

import javax.servlet.http.Cookie;

import javax.servlet.http.HttpServlet;

import javax.servlet.http.HttpServletRequest;

import javax.servlet.http.HttpServletResponse;

import java.io.IOException;

import java.io.PrintWriter;

public class Servlet1 extends HttpServlet {

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

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

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

            Cookie cookie1 = new Cookie("name",name);

            Cookie cookie2 = new Cookie("secret", secret);

            cookie1.setMaxAge(60\*60);

            cookie2.setMaxAge(60\*60);

            response.addCookie(cookie1);

            response.addCookie(cookie2);

            PrintWriter out = response.getWriter();

            response.setContentType("text/html");

            out.println("<html>");

            out.println("<body>");

            out.println("<p>Cookies have been set successfully name : " +name + " </p>");

            out.println("<a href = '/DEMO/display'>Display Cookies</a>");

            out.println("</body>");

            out.println("</html>");

        }

}

**DisplayServlet.java**

import javax.servlet.annotation.WebServlet;

import javax.servlet.http.Cookie;

import javax.servlet.http.HttpServlet;

import javax.servlet.http.HttpServletRequest;

import javax.servlet.http.HttpServletResponse;

import java.io.IOException;

import java.io.PrintWriter;

public class DisplayServlet1 extends HttpServlet {

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

        Cookie[] cookies = request.getCookies();

        PrintWriter out = response.getWriter();

        String name = null, secret = null;

        for(Cookie cookie : cookies) {

            if(cookie.getName().equals("name")){

                name = cookie.getValue();            }

            else if(cookie.getName().equals("secret")){

                secret = cookie.getValue();            }       }

        out.println("<html>");

        out.println("<body>");

        out.println("<h1> Here are the cookies! </h1>");

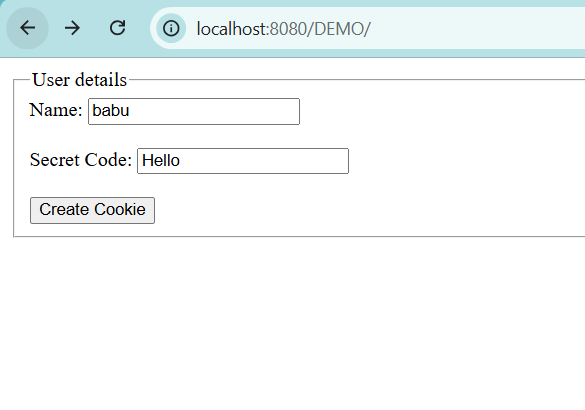
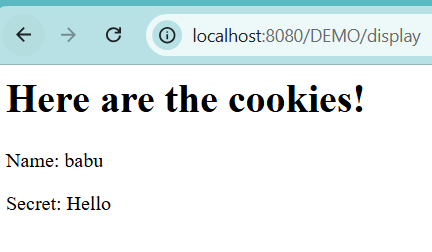
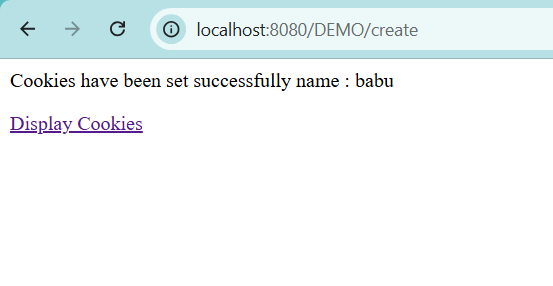
        out.println("<p> Name: " + name + "</p>");

        out.println("<p> Secret: " + secret + "</p>");

        out.println("</body>");

        out.println("</html>");    }}

**OUPUT:**

**** ****

**2.AIM :**  
 To Develop a simple User Login system using Java Servlets. Design a registration page where users can enter their name, password, and email. Upon submission, the data will be stored in a database. After successful registration, it redirects to a login page where the users can enter their username and password which will be checked against the data in the database. If the details are valid, a session is created for the user and then the user's profile page will be displayed. When the user clicks the logout button, the user's session will be invalidated and redirected to the login page.

**SOURCE CODE:**

**Web.xml:**<web-app xmlns="http://java.sun.com/xml/ns/javaee"

         xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"

         xsi:schemaLocation="http://java.sun.com/xml/ns/javaee

         http://java.sun.com/xml/ns/javaee/web-app\_3\_0.xsd"

         version="3.0">

    <!-- SignupServlet Mapping -->

    <servlet>

    <servlet-name>DatabaseConnection</servlet-name>

    <servlet-class>DatabaseConnection</servlet-class>

</servlet>

<servlet-mapping>

    <servlet-name>DatabaseConnection</servlet-name>

    <url-pattern>/babu</url-pattern>

</servlet-mapping>

<servlet>

        <servlet-name>SignupServlet</servlet-name>

        <servlet-class>SignupServlet</servlet-class>

    </servlet>

    <servlet-mapping>

        <servlet-name>SignupServlet</servlet-name>

        <url-pattern>/signup</url-pattern>

    </servlet-mapping>

    <!-- Login Mapping -->

    <servlet>

        <servlet-name>Login</servlet-name>

        <servlet-class>Login</servlet-class>

    </servlet>

    <servlet-mapping>

        <servlet-name>Login</servlet-name>

        <url-pattern>/login</url-pattern>

    </servlet-mapping>

    <!-- UserProfile Mapping -->

    <servlet>

        <servlet-name>UserProfile</servlet-name>

        <servlet-class>UserProfile</servlet-class>

    </servlet>

    <servlet-mapping>

        <servlet-name>UserProfile</servlet-name>

        <url-pattern>/userdetails</url-pattern>

    </servlet-mapping>

</web-app>

**Signup.html**

<!DOCTYPE html>

<html lang="en">

<head>

    <meta charset="UTF-8">

    <title>User Registration</title>

</head>

<body>

    <fieldset>

        <legend>User Registration form</legend>

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

            <label for = "username"> Username:

                <input type = "text" id = "username" name = "username">

            </label> <br><br>

            <label for = "password"> Password:

                <input type = "password" id = "password" name = "password">

            </label> <br><br>

            <label for = "mail"> Email:

                <input type = "email" id = "mail" name = "mail">

            </label> <br><br>

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

        </form>

    </fieldset>

</body>

</html>

**Login.html**

<!DOCTYPE html>

<html lang="en">

<head>

    <meta charset="UTF-8">

    <title>Login</title>

</head>

<body>

<fieldset>

    <legend>Login</legend>

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

        <label for = "username"> Username:

            <input type = "text" id = "username" name = "username">

        </label> <br><br>

        <label for = "password"> Password:

            <input type = "password" id = "password" name = "password">

        </label> <br><br>

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

    </form>

</fieldset>

</body>

</html>

**Login.java**

import javax.servlet.annotation.WebServlet;

import javax.servlet.http.HttpServlet;

import javax.servlet.http.HttpServletRequest;

import javax.servlet.http.HttpServletResponse;

import javax.servlet.http.HttpSession;

import java.io.IOException;

import java.io.PrintWriter;

import java.sql.\*;

public class Login extends HttpServlet {

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

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

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

        Connection con = null;

        try{

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

            PrintWriter out = response.getWriter();

            response.setContentType("text/html");

            con = DriverManager.getConnection("jdbc:mysql://localhost:3306/servletUsers?useSSL=false&allowPublicKeyRetrieval=true&serverTimezone=UTC","root","");

            String sql = "select \* from users where username = ? and password = ?";

            PreparedStatement ps = con.prepareStatement(sql);

            ps.setString(1, username);

            ps.setString(2, password);

            ResultSet rs = ps.executeQuery();

            if(rs.next()){

                HttpSession session = request.getSession();

                session.setAttribute("username", username);

                out.println("Login Successful<br>");

                out.println("Go to <a href = '/P2/userdetails'>User Profile</a> ");

            }

            else{

                out.println("Login Credentials does not exist");

            }

        }catch (SQLException e) {

            response.getWriter().println("Database error: " + e.getMessage());

            e.printStackTrace();

        } catch (Exception e) {

            response.getWriter().println("Error: " + e.getMessage());

            e.printStackTrace();        }    }}

**UserProfile.java**

import javax.servlet.annotation.WebServlet;

import javax.servlet.http.HttpServlet;

import javax.servlet.http.HttpServletRequest;

import javax.servlet.http.HttpServletResponse;

import javax.servlet.http.HttpSession;

import java.io.IOException;

import java.io.PrintWriter;

import java.sql.\*;

public class UserProfile extends HttpServlet {

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

        HttpSession session = request.getSession();

        response.setContentType("text/html");

        PrintWriter out = response.getWriter();

        String username = (String) session.getAttribute("username");

        Connection con = null;

        try{

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

            con = DriverManager.getConnection("jdbc:mysql://localhost:3306/servletUsers?useSSL=false&allowPublicKeyRetrieval=true&serverTimezone=UTC","root","");

            String sql = "select \* from users where username=?";

            PreparedStatement ps = con.prepareStatement(sql);

            ps.setString(1,username);

            ResultSet rs = ps.executeQuery();

            String email = "";

            if(rs.next()){

                email = rs.getString("email");

            }

            out.println("<div border = 'black 1px'>");

            out.println("<h1>"+ "User Details" +"</h1>");

            out.println("Username: "+username);

            out.println("<br><br>Email: "+email);

           // out.println("<br> Go to <a href = '/Servlet/products'>Products</a>");

            out.println("</div>");

        }catch (SQLException e) {

            response.getWriter().println("Database error: " + e.getMessage());

            e.printStackTrace();

        } catch (Exception e) {

            response.getWriter().println("Error: " + e.getMessage());

            e.printStackTrace();

        }

    }

}

**SignupServlet.java**

import java.io.Console;

import javax.servlet.annotation.WebServlet;

import javax.servlet.http.HttpServlet;

import javax.servlet.http.HttpServletRequest;

import javax.servlet.http.HttpServletResponse;

import java.io.IOException;

import java.sql.Connection;

import java.sql.DriverManager;

import java.sql.PreparedStatement;

import java.sql.SQLException;

public class SignupServlet extends HttpServlet {

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

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

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

        String email = request.getParameter("mail");

        response.getWriter().println("Page Loaded");

        Connection con = null;

        try{

            response.setContentType("text/html");

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

            con = DriverManager.getConnection("jdbc:mysql://localhost:3306/servletUsers?useSSL=false&allowPublicKeyRetrieval=true&serverTimezone=UTC","root", "");

            response.getWriter().println("Connection Established!");

            String insertSql = "insert into users values(?,?,?)";

            PreparedStatement ps = con.prepareStatement(insertSql);

            ps.setString(1, username);

            ps.setString(2, password);

            ps.setString(3, email);

            ps.executeUpdate();

            response.getWriter().println("<p color='green'>User Registered Successfully</p><br><a href = '/P2/login.html'>Go to Login</a><br>");

            con.close();

        }catch (SQLException e) {

            response.getWriter().println("Database error: " + e.getMessage());

            e.printStackTrace();

        } catch (Exception e) {

            response.getWriter().println("Error: " + e.getMessage());

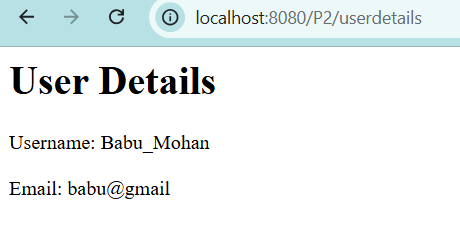
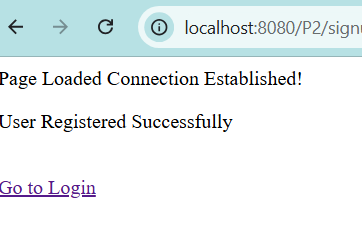
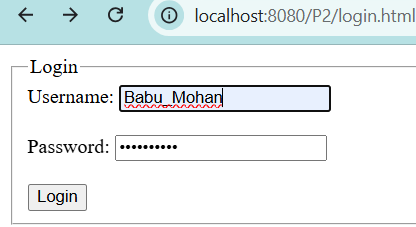
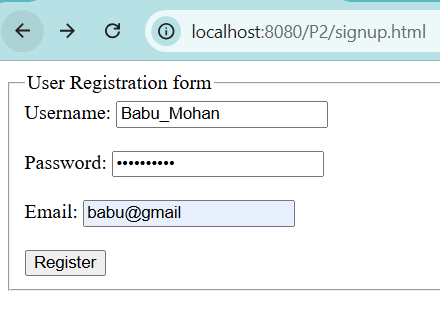
            e.printStackTrace();

        }

    }

}

**OUTPUT:**

****

**3.AIM :**

To Create a Shopping Cart System using Java Servlets that allows users to:

View products from a product catalog.

Add products to their shopping cart.

View and modify their cart (update quantity or remove items).

Checkout by providing their details, which will be stored in the database.

**SOURCE CODE:**

**Web.xml**

<web-app xmlns="http://java.sun.com/xml/ns/javaee"

         xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"

         xsi:schemaLocation="http://java.sun.com/xml/ns/javaee

         http://java.sun.com/xml/ns/javaee/web-app\_3\_0.xsd"

         version="3.0">

    <servlet>

        <servlet-name>SignupServlet</servlet-name>

        <servlet-class>SignupServlet</servlet-class>

    </servlet>

    <servlet-mapping>

        <servlet-name>SignupServlet</servlet-name>

        <url-pattern>/signup</url-pattern>

    </servlet-mapping>

    <servlet>

        <servlet-name>Login</servlet-name>

        <servlet-class>Login</servlet-class>

    </servlet>

    <servlet-mapping>

        <servlet-name>Login</servlet-name>

        <url-pattern>/login</url-pattern>

    </servlet-mapping>

    <servlet>

        <servlet-name>UserProfile</servlet-name>

        <servlet-class>UserProfile</servlet-class>

    </servlet>

    <servlet-mapping>

        <servlet-name>UserProfile</servlet-name>

        <url-pattern>/userdetails</url-pattern>

    </servlet-mapping>

    <servlet>

        <servlet-name>ProductServlet</servlet-name>

        <servlet-class>ProductServlet</servlet-class>

    </servlet>

    <servlet-mapping>

        <servlet-name>ProductServlet</servlet-name>

        <url-pattern>/products</url-pattern>

    </servlet-mapping>

    <servlet>

        <servlet-name>CartServlet</servlet-name>

        <servlet-class>CartServlet</servlet-class>

    </servlet>

    <servlet-mapping>

        <servlet-name>CartServlet</servlet-name>

        <url-pattern>/cart</url-pattern>

    </servlet-mapping>

    <servlet>

        <servlet-name>ViewCartServlet</servlet-name>

        <servlet-class>ViewCartServlet</servlet-class>

    </servlet>

    <servlet-mapping>

        <servlet-name>ViewCartServlet</servlet-name>

        <url-pattern>/viewcart</url-pattern>

    </servlet-mapping>

    <servlet>

        <servlet-name>CheckoutServlet</servlet-name>

        <servlet-class>CheckoutServlet</servlet-class>

    </servlet>

    <servlet-mapping>

        <servlet-name>CheckoutServlet</servlet-name>

        <url-pattern>/checkout</url-pattern>

    </servlet-mapping>

    <servlet>

        <servlet-name>ConfirmationServlet</servlet-name>

        <servlet-class>ConfirmationServlet</servlet-class>

    </servlet>

    <servlet-mapping>

        <servlet-name>ConfirmationServlet</servlet-name>

        <url-pattern>/confirmation</url-pattern>

    </servlet-mapping>

    <servlet>

        <servlet-name>EditCartServlet</servlet-name>

        <servlet-class>EditCartServlet</servlet-class>

    </servlet>

    <servlet-mapping>

        <servlet-name>EditCartServlet</servlet-name>

        <url-pattern>/editcart</url-pattern>

    </servlet-mapping>

</web-app>

**CartServlet.java**

import javax.servlet.annotation.WebServlet;

import javax.servlet.http.HttpServlet;

import javax.servlet.http.HttpServletRequest;

import javax.servlet.http.HttpServletResponse;

import java.sql.Connection;

import java.sql.DriverManager;

import java.sql.PreparedStatement;

import java.sql.ResultSet;

public class CartServlet extends HttpServlet {

    protected void doPost(HttpServletRequest request, HttpServletResponse response){

        String username= request.getSession().getAttribute("username").toString();

        Connection con = null;

        response.setContentType("text/html");

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

        try {

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

            con = DriverManager.getConnection("jdbc:mysql://localhost:3306/servletUsers","root","");

            String sql = "insert into cart values(?, ? ,?)";

            PreparedStatement ps = con.prepareStatement(sql);

            for (int i = 1; i <= count; i++) {

                String quantity = request.getParameter("quantity"+i);

                if("0".equals(quantity)){

                    continue;

                }

                String pid = request.getParameter("pid"+i);

                PreparedStatement psq = con.prepareStatement("select \* from cart where pid = ? and username = ?");

                psq.setInt(1, Integer.parseInt(pid));

                psq.setString(2, username);

                ResultSet rs = psq.executeQuery();

                if(rs.next()) {

                    continue;

                }

                String price = request.getParameter("price"+i);

                ps.setString(1, username);

                ps.setInt(2, Integer.parseInt(pid));

                ps.setInt(3, Integer.parseInt(quantity));

                ps.executeUpdate();

            }

            response.getWriter().println("Items added to the card successfully");

            response.getWriter().println("Go to <a href = '/DEMO/viewcart'>Cart</a>");

        }catch (Exception e){}

    }

}

**CheckoutServlet.java**

import javax.servlet.annotation.WebServlet;

import javax.servlet.http.HttpServlet;

import javax.servlet.http.HttpServletRequest;

import javax.servlet.http.HttpServletResponse;

import javax.servlet.http.HttpSession;

import java.io.IOException;

import java.io.PrintWriter;

import java.sql.\*;

public class CheckoutServlet extends HttpServlet {

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

        response.setContentType("text/html");

        PrintWriter out = response.getWriter();

        HttpSession session = request.getSession();

        String username = (String) session.getAttribute("username");

        try (Connection con = DriverManager.getConnection("jdbc:mysql://localhost:3306/servletUsers", "root", "")) {

            String query = "SELECT p.name, p.description, p.price, c.quantity, (p.price \* c.quantity) AS total\_price " +

                    "FROM products p INNER JOIN cart c ON p.pid = c.pid WHERE c.username = ?";

            PreparedStatement ps = con.prepareStatement(query);

            ps.setString(1, username);

            ResultSet rs = ps.executeQuery();

            out.println("<h2>Checkout Page</h2>");

            out.println("<table border='1'><tr><th>Product</th><th>Description</th><th>Price</th><th>Quantity</th><th>Total</th></tr>");

            int grandTotal = 0;

            while (rs.next()) {

                String name = rs.getString("name");

                String description = rs.getString("description");

                int price = rs.getInt("price");

                int quantity = rs.getInt("quantity");

                int totalPrice = rs.getInt("total\_price");

                out.println("<tr><td>" + name + "</td><td>" + description + "</td><td>" + price + "</td><td>" + quantity + "</td><td>" + totalPrice + "</td></tr>");

                grandTotal += totalPrice;

            }

            out.println("</table>");

            out.println("<h3>Grand Total: Rs." + grandTotal + "</h3>");

            out.println("<form action='confirmation' method='post'>");

            out.println("Full Name: <input type='text' name='fullName' required><br>");

            out.println("Address: <input type='text' name='address' required><br>");

            out.println("Email: <input type='email' name='email' required><br>");

            out.println("<input type='hidden' name='grandTotal' value='" + grandTotal + "'>");

            out.println("<input type='submit' value='Confirm and Checkout'>");

            out.println("</form>");

        } catch (SQLException e) {

            e.printStackTrace(out);

        }

    }

}

**Confirmation.java**

import javax.servlet.annotation.WebServlet;

import javax.servlet.http.HttpServlet;

import javax.servlet.http.HttpServletRequest;

import javax.servlet.http.HttpServletResponse;

import java.io.IOException;

import java.io.PrintWriter;

public class ConfirmationServlet extends HttpServlet {

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

        response.setContentType("text/html");

        PrintWriter out = response.getWriter();

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

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

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

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

        out.println("<h2>Order Confirmation</h2>");

        out.println("<p>Thank you, <b>" + fullName + "</b>, for your order!</p>");

        out.println("<p>Shipping to: " + address + "</p>");

        out.println("<p>Email: " + email + "</p>");

        out.println("<p><b>Total Amount Paid: Rs." + grandTotal + "</b></p>");

        out.println("<p>Your order has been confirmed and will be processed shortly.</p>");

    }

}

**EditCartServlet.java**

import javax.servlet.ServletException;

import javax.servlet.annotation.WebServlet;

import javax.servlet.http.HttpServlet;

import javax.servlet.http.HttpServletRequest;

import javax.servlet.http.HttpServletResponse;

import javax.servlet.http.HttpSession;

import java.io.IOException;

import java.sql.Connection;

import java.sql.DriverManager;

import java.sql.PreparedStatement;

import java.sql.ResultSet;

public class EditCartServlet extends HttpServlet {

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

        HttpSession session = request.getSession();

        String username = (String) session.getAttribute("username");

        Connection con = null;

        response.setContentType("text/html");

        response.getWriter().println("<h1>Edit Cart</h1>");

        response.getWriter().println("<form action='editcart' method='post'>");

        response.getWriter().println("<table border='1'>");

        response.getWriter().println("<tr><th>Product Name</th><th>Description</th><th>Price</th><th>Quantity</th><th>Total</th><th>Actions</th></tr>");

        try {

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

            con = DriverManager.getConnection("jdbc:mysql://localhost:3306/servletUsers", "root", "");

            String sql = "SELECT p.pid, p.name, p.description, p.price, c.quantity, (p.price \* c.quantity) AS total " +

                    "FROM cart c JOIN products p ON c.pid = p.pid WHERE c.username = ?";

            PreparedStatement ps = con.prepareStatement(sql);

            ps.setString(1, username);

            ResultSet rs = ps.executeQuery();

            while (rs.next()) {

                int pid = rs.getInt("pid");

                String name = rs.getString("name");

                String description = rs.getString("description");

                double price = rs.getDouble("price");

                int quantity = rs.getInt("quantity");

                double productTotal = rs.getDouble("total");

                response.getWriter().println("<tr>");

                response.getWriter().println("<td>" + name + "</td>");

                response.getWriter().println("<td>" + description + "</td>");

                response.getWriter().println("<td>" + price + "</td>");

                response.getWriter().println("<td><input type='number' name='quantity\_" + pid + "' value='" + quantity + "' min='0'></td>");

                response.getWriter().println("<td>" + productTotal + "</td>");

                response.getWriter().println("<td><button type='submit' name='remove' value='" + pid + "'>Remove</button></td>");

                response.getWriter().println("</tr>");

            }

            response.getWriter().println("</table>");

            response.getWriter().println("<button type='submit' name='update' value='true'>Update Cart</button>");

            response.getWriter().println("</form>");

        } catch (Exception e) {

            e.printStackTrace();

            response.getWriter().println("<p>Error loading cart.</p>");

        }

    }

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

        HttpSession session = request.getSession();

        String username = (String) session.getAttribute("username");

        Connection con = null;

        try {

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

            con = DriverManager.getConnection("jdbc:mysql://localhost:3306/servletUsers", "root", "");

            if (request.getParameter("remove") != null) {

                int pidToRemove = Integer.parseInt(request.getParameter("remove"));

                String deleteSql = "DELETE FROM cart WHERE username = ? AND pid = ?";

                PreparedStatement deleteStmt = con.prepareStatement(deleteSql);

                deleteStmt.setString(1, username);

                deleteStmt.setInt(2, pidToRemove);

                deleteStmt.executeUpdate();

            } else if ("true".equals(request.getParameter("update"))) {

                String getPidsSql = "SELECT pid FROM cart WHERE username = ?";

                PreparedStatement getPidsStmt = con.prepareStatement(getPidsSql);

                getPidsStmt.setString(1, username);

                ResultSet pidsResult = getPidsStmt.executeQuery();

                while (pidsResult.next()) {

                    int pid = pidsResult.getInt("pid");

                    String quantityParam = request.getParameter("quantity\_" + pid);

                    if (quantityParam != null) {

                        int newQuantity = Integer.parseInt(quantityParam);

                            String updateSql = "UPDATE cart SET quantity = ? WHERE username = ? AND pid = ?";

                            PreparedStatement updateStmt = con.prepareStatement(updateSql);

                            updateStmt.setInt(1, newQuantity);

                            updateStmt.setString(2, username);

                            updateStmt.setInt(3, pid);

                            updateStmt.executeUpdate();

                    }

                }

            }

            response.sendRedirect("/DEMO/viewcart");

        } catch (Exception e) {

            e.printStackTrace();

            response.getWriter().println("<p>Error updating cart.</p>");

        }

    }

}

**ProductServlet.java**

import javax.servlet.ServletException;

import javax.servlet.annotation.WebServlet;

import javax.servlet.http.HttpServlet;

import javax.servlet.http.HttpServletRequest;

import javax.servlet.http.HttpServletResponse;

import java.io.IOException;

import java.io.PrintWriter;

import java.sql.Connection;

import java.sql.DriverManager;

import java.sql.PreparedStatement;

import java.sql.ResultSet;

public class ProductServlet extends HttpServlet {

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

        response.setContentType("text/html");

        PrintWriter out = response.getWriter();

        out.println("<html><head><title>Product Page</title></head><body>");

        out.println("<h1>Product List</h1>");

        out.println("<form action='cart' method='post'>");

        out.println("<table border='1'><tr><th>Product ID</th><th>Name</th><th>Description</th><th>Price</th><th>Quantity</th></tr>");

        try {

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

            Connection con = DriverManager.getConnection("jdbc:mysql://localhost:3306/servletUsers", "root", "");

            String query = "SELECT \* FROM products";

            PreparedStatement ps = con.prepareStatement(query);

            ResultSet rs = ps.executeQuery();

            int i = 1;

            while (rs.next()) {

                int pid = rs.getInt("pid");

                String name = rs.getString("name");

                String description = rs.getString("description");

                int price = rs.getInt("price");

                out.println("<tr>");

                out.println("<td>" + pid + "</td>");

                out.println("<td>" + name + "</td>");

                out.println("<td>" + description + "</td>");

                out.println("<td>" + price + "</td>");

                out.println("<td>");

                out.println("<input type='hidden' name='pid" + i+"' value='" + pid + "'>");

                out.println("<input type='hidden' name='price" + i +"' value='" + price + "'>");

                out.println("<input type='number' name='quantity" + i+"' value='0' min='0'>");

                out.println("</td>");

                out.println("</tr>");

                i++;

            }

            out.println("</table>");

            i = i-1;

            out.println("<input type = 'hidden' name = 'count' value = '" + i  + "'>");

            out.println("<input type = 'submit' name = 'submit' value='Add to Cart'>");

            out.println("</form>");

            out.println("</body></html>");

        } catch (Exception e) {

            e.printStackTrace();

            out.println("<p>Error retrieving products.</p>");

        } finally {

            out.close();

        }

    }

}

**viewCartServlet.java**

import javax.servlet.annotation.WebServlet;

import javax.servlet.http.HttpServlet;

import javax.servlet.http.HttpServletRequest;

import javax.servlet.http.HttpServletResponse;

import java.io.IOException;

import java.io.PrintWriter;

import java.sql.Connection;

import java.sql.DriverManager;

import java.sql.PreparedStatement;

import java.sql.ResultSet;

public class ViewCartServlet extends HttpServlet {

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

        Connection con = null;

        double totalCartPrice = 0;

        PrintWriter out = response.getWriter();

        response.setContentType("text/html");

        out.println("<h1>Shopping Cart</h1>");

        out.println("<table border='1'>");

        out.println("<tr><th>Product Name</th><th>Description</th><th>Price</th><th>Quantity</th><th>Total</th></tr>");

        String username = request.getSession().getAttribute("username").toString();

        try {

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

            con = DriverManager.getConnection("jdbc:mysql://localhost:3306/servletUsers", "root", "");

            String sql = "SELECT p.name, p.description, p.price, c.quantity, (p.price \* c.quantity) AS total " +

                    "FROM cart c JOIN products p ON c.pid = p.pid WHERE c.username = ?";

            PreparedStatement ps = con.prepareStatement(sql);

            ps.setString(1, username);

            ResultSet rs = ps.executeQuery();

            while (rs.next()) {

                String name = rs.getString("name");

                String description = rs.getString("description");

                double price = rs.getDouble("price");

                int quantity = rs.getInt("quantity");

                double productTotal = rs.getDouble("total");

                totalCartPrice += productTotal;

                response.getWriter().println("<tr>");

                response.getWriter().println("<td>" + name + "</td>");

                response.getWriter().println("<td>" + description + "</td>");

                response.getWriter().println("<td>" + price + "</td>");

                response.getWriter().println("<td>" + quantity + "</td>");

                response.getWriter().println("<td>" + productTotal + "</td>");

                response.getWriter().println("</tr>");

            }

            response.getWriter().println("</table>");

            response.getWriter().println("<h3>Total Cart Price: " + totalCartPrice + "</h3>");

            out.println("<a href = '/DEMO/editcart'>Edit Cart</a>");

            out.println("<a href = '/DEMO/checkout'>Checkout</a>");

        } catch (Exception e) {

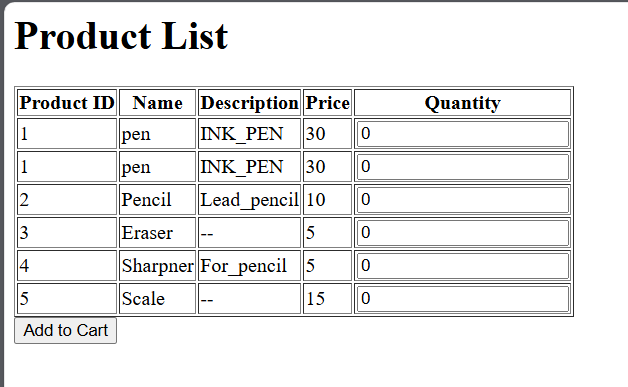
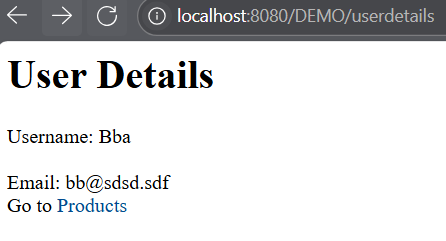
            e.printStackTrace();

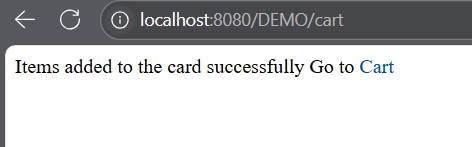
        }

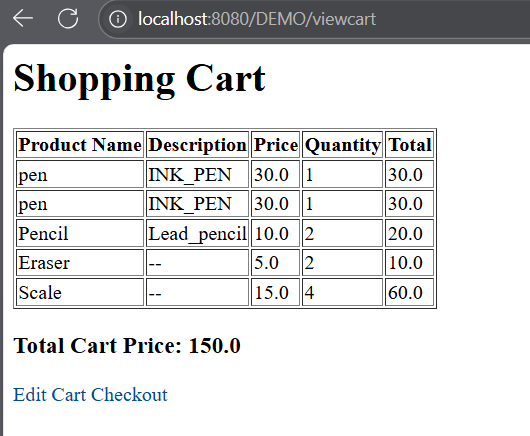
    }

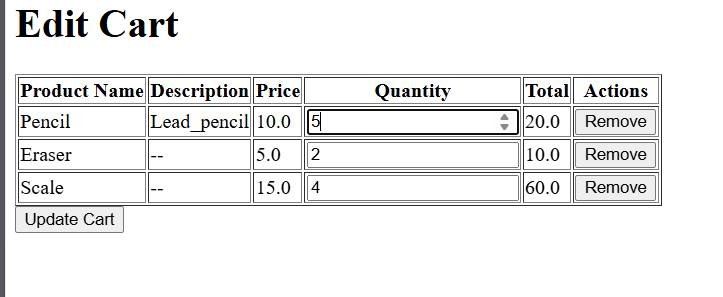
}

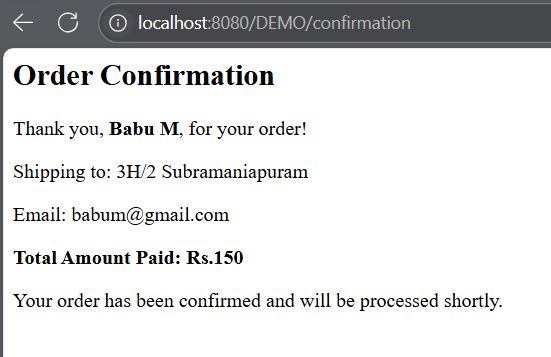
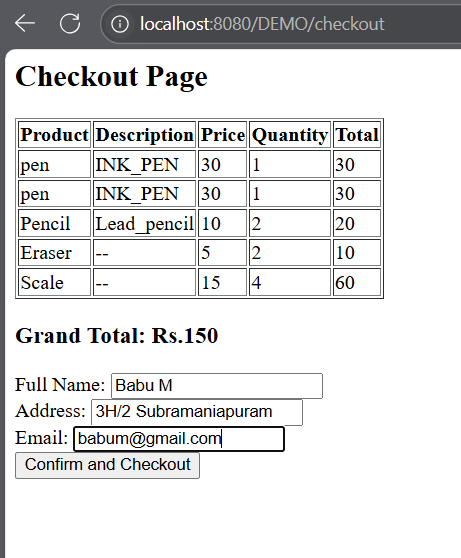
**OUTPUT:**











|  |  |  |
| --- | --- | --- |
| **Course outcomes** | **Observation** | **Record** |
| CO1 : Ability for problem definition and realization | **NA** | **…../10** |
| CO2: Ability to design and analysis | **NA** | **…../10** |
| CO3: Ability to implement and validate | **NA** | **…../10** |

**Result :**

Hence Java server based web applications implemented successfully.