Name :Kunal Sanjay Ekare

Batch/RollNo: B2-37

Subject : Software lab

Practical :4

Aim: Create a Java web application that uses servlets to capture three user preferences (e.g., preferred language, theme, and notification setting), store them in an HTTP session, and then display them in subsequent requests. The application should manage sessions, allowing users to persist their preferences across multiple interactions until the session expires or the user logs out. The servlet should accept three user preferences: preferred Language (e.g., English, Spanish, French) theme (e.g. ,Dark Mode, Light Mode) Notification Setting (e.g., Email, SMS, None)

Theory:

Here's an expanded version of your text with additional details and explanations:

Theory: HTTP Sessions in Java Servlets

Introduction to HTTP Sessions

HTTP is a stateless protocol, meaning that each request made to a web server is treated independently, without any memory of previous interactions. However, many web applications require maintaining user-specific data across multiple requests—for example, when a user logs in, adds items to a shopping cart, or customizes preferences. HTTP sessions provide a way to manage and maintain such state information in Java Servlets.

A session is a server-side mechanism that assigns a unique identifier (Session ID) to each user and stores relevant data throughout the session's lifespan. This ensures that a user's interactions remain consistent as they navigate through the application.

Methods in HTTP Sessions:

Setting Attributes: The setAttribute(String name, Object value) method allows developers to store objects in the session, associating them with a unique name. This enables the application to retain user-specific data, such as login information or preferences, throughout the user's session.

Getting Attributes: The getAttribute(String name) method retrieves the object associated with the specified name from the session. If no object is found, it returns null, allowing developers to check whether a particular attribute exists before using it.

Managing Sessions: The getSession() method of HttpServletRequest retrieves the current session associated with the request, creating a new one if none exists. This is crucial for tracking user interactions and maintaining continuity in web applications.

Code: **PreferencesServlet.java**

```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.io.PrintWriter;
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.ResultSet;
import java.sql.Statement;

@WebServlet("/Preferences")
public class PreferencesServlet extends HttpServlet {
    @Override
    protected void doPost(HttpServletRequest req, HttpServletResponse resp)
throws ServletException, IOException {
        String name = req.getParameter("name");
        String password = req.getParameter("password");
        String preferredLanguage = req.getParameter("preferredLanguage");
        String theme = req.getParameter("theme");
        String notificationSetting = req.getParameter("notificationSetting");
```

```java
        String url="jdbc:mysql://localhost:3306/Login_info";
        String user = "root";
        String pass = "pass123";
        PrintWriter pr = resp.getWriter();
        try{
            Class.forName("com.mysql.jdbc.Driver");
            try(Connection conn = DriverManager.getConnection(url, user, pass)){
                Statement stmt = conn.createStatement();
                String sql = "select * from login where u_name='" + name + "' and
password='" + password + "'";
                ResultSet rs = stmt.executeQuery(sql);
                if(rs.next()){
                    HttpSession session = req.getSession(true);
                    session.setAttribute("name", name);
                    session.setAttribute("password", password);
                    session.setAttribute("preferredLanguage", preferredLanguage);
                    session.setAttribute("theme", theme);
                    session.setAttribute("notificationSetting", notificationSetting);
                    System.out.println("The entered data is \nName: "+name+"
\nPassword: "+password+" \nPreferred Language: "+preferredLanguage+"
\nTheme: "+theme);
                    resp.sendRedirect("DisplayPreferences");
                }
                else{
                    resp.sendRedirect("New_file.html");
                }
            }
            catch (Exception e){
                e.printStackTrace();
            }
        }
        catch(Exception e){
            e.printStackTrace();
        }

    }
}
```

DisplayPreferencesServlet.java

```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.io.PrintWriter;
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.ResultSet;
import java.sql.Statement;

@WebServlet("/Preferences")
public class PreferencesServlet extends HttpServlet {
  @Override
  protected void doPost(HttpServletRequest req, HttpServletResponse resp)
throws ServletException, IOException {
      String name = req.getParameter("name");
      String password = req.getParameter("password");
      String preferredLanguage = req.getParameter("preferredLanguage");
      String theme = req.getParameter("theme");
      String notificationSetting = req.getParameter("notificationSetting");
      String url="jdbc:mysql://localhost:3306/Login_info";
      String user = "root";
      String pass = "pass123";
      PrintWriter pr = resp.getWriter();
      try{
        Class.forName("com.mysql.jdbc.Driver");
        try(Connection conn = DriverManager.getConnection(url, user, pass)){
          Statement stmt = conn.createStatement();
          String sql = "select * from login where u_name='" + name + "' and
password='" + password + "'";
          ResultSet rs = stmt.executeQuery(sql);
          if(rs.next()){
              HttpSession session = req.getSession(true);
```

```java
                session.setAttribute("name", name);
                session.setAttribute("password", password);
                session.setAttribute("preferredLanguage", preferredLanguage);
                session.setAttribute("theme", theme);
                session.setAttribute("notificationSetting", notificationSetting);
                System.out.println("The entered data is \nName: "+name+"
\nPassword: "+password+" \nPreferred Language: "+preferredLanguage+"
\nTheme: "+theme);
                resp.sendRedirect("DisplayPreferences");
            }
            else{
                resp.sendRedirect("New_file.html");
            }
        }
        catch (Exception e){
            e.printStackTrace();
        }
    }
    catch(Exception e){
        e.printStackTrace();
    }


    }
}
```

login.java

```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.io.PrintWriter;

@WebServlet("/Login")
public class Login extends HttpServlet {
```

```java
    @Override
    protected void doGet(HttpServletRequest req, HttpServletResponse resp)
throws ServletException, IOException {
        String namerec = req.getParameter("name");
        String passwordrec = req.getParameter("password");
        String rolerec = req.getParameter("role");

        PrintWriter pr = resp.getWriter();
        resp.setContentType("text/html");

        if (namerec != null && namerec.equals("Kunal") && passwordrec != null &&
passwordrec.equals("123456") && namerec.equals("Kunal") &&
passwordrec.equals("123456") && rolerec.equals("Student")) {
            HttpSession hps = req.getSession(true);
            hps.setAttribute("Username", namerec);
            hps.setAttribute("Password", passwordrec);
            hps.setAttribute("Role", rolerec);

            pr.print("<html>");
            pr.print("<body>");
            pr.print("<h1>Hello " + namerec + "</h1>");
            pr.print("<a href='Aboutus' action='Aboutus' method ='get'>About
us</a><br>");
            //pr.print("<a href='Session/Aboutus_white.html'>About us</a><br>");
            pr.print("<a href='Logout'>Logout</a>");
            pr.print("</body>");
            pr.print("</html>");
        } else {
            System.out.println("Incorrect Credentials");
            pr.print("Invalid, please try again");
            resp.sendRedirect("Login.html"); // Adjust this path as necessary
        }
    }
}
```

Logout.java

```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.io.PrintWriter;
@WebServlet("/Logout")
public class Logout extends HttpServlet {
  @Override
  protected void doGet(HttpServletRequest req, HttpServletResponse resp)
throws ServletException, IOException {
    resp.setContentType("text/html");
    HttpSession hps2 = req.getSession(false);
    String Session_username = (String) hps2.getAttribute("name");
    PrintWriter pr = resp.getWriter();
    pr.print("Hi "+Session_username);
    if(hps2!=null){
      hps2.invalidate();
    }
    pr.print("<html>");
    pr.print("<body>");
    pr.print("<h3><p>You have successfully Logged out</p>");
    pr.print("<p>To again login,Click here</p>");
    pr.print("<a href='New_file.html'>Login</a></h3>");
    pr.print("</body>");
    pr.print("</html>");
  }
}
```

welcome.java

```java
import javax.servlet.ServletException;
import javax.servlet.annotation.WebServlet;
import javax.servlet.http.HttpServlet;
```
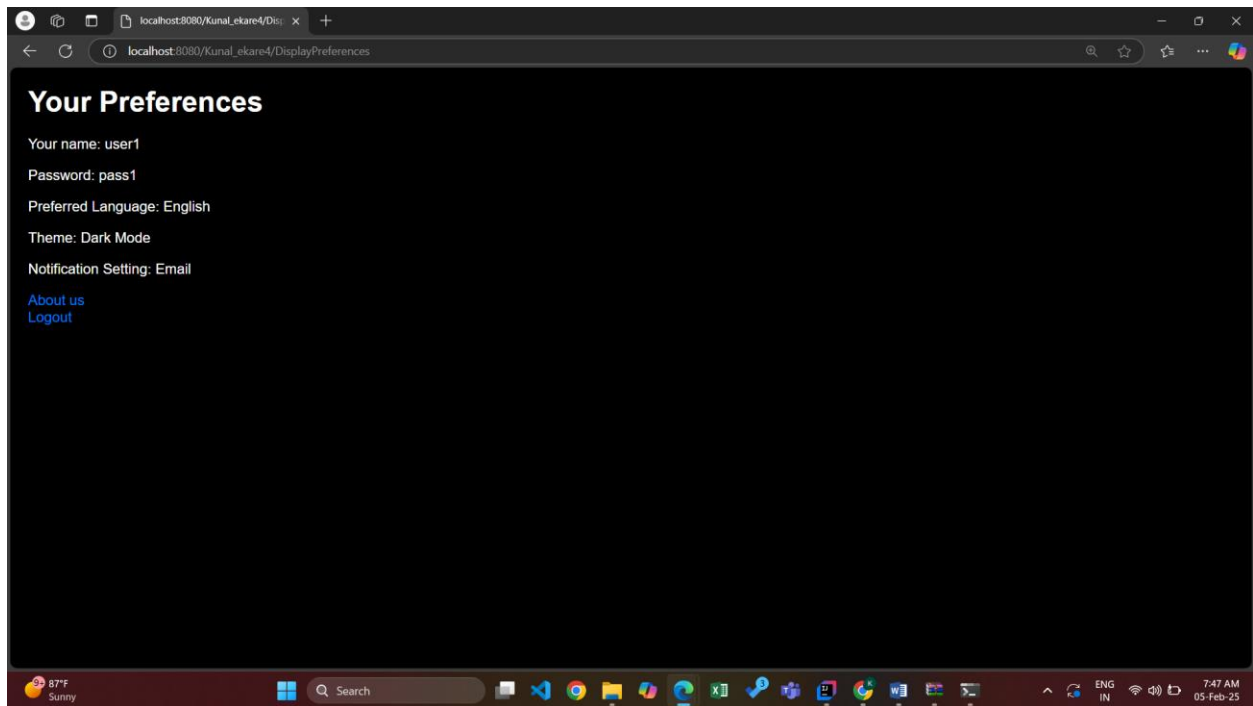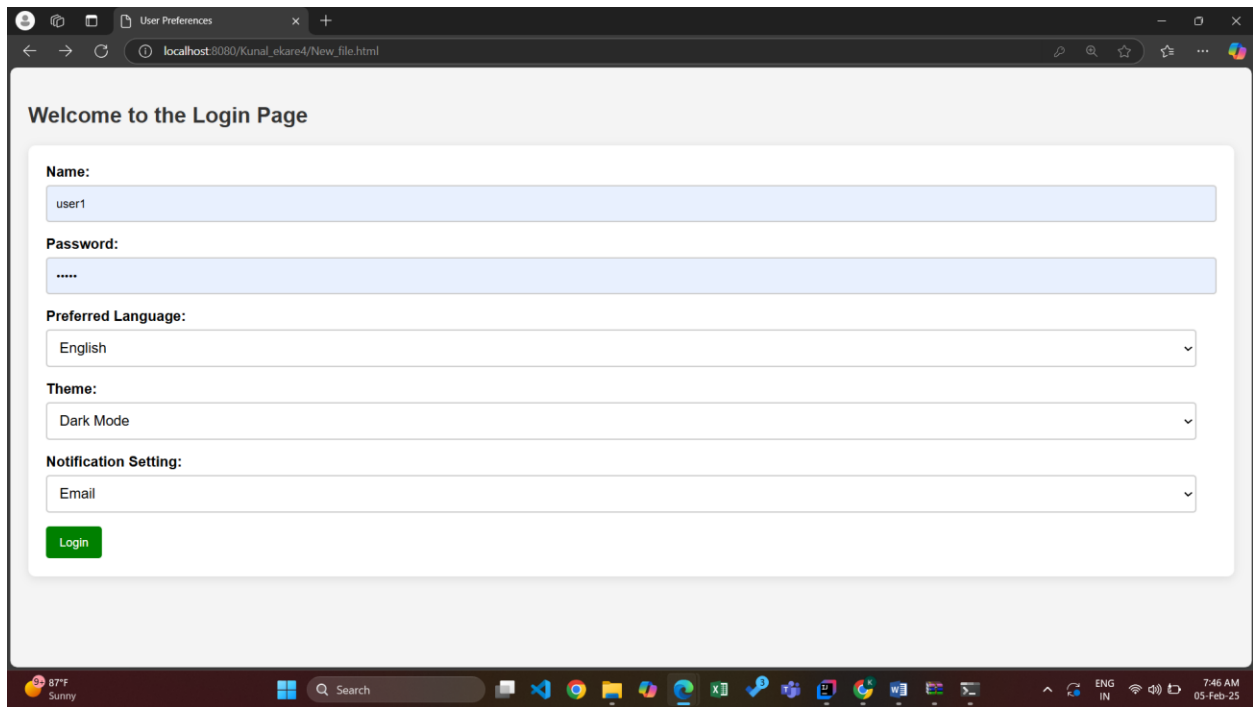
```java
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;
import javax.servlet.http.HttpSession;
import java.io.IOException;
import java.io.PrintWriter;
@WebServlet("/Aboutus")
public class Welcome extends HttpServlet {
    @Override
    protected void doGet(HttpServletRequest req, HttpServletResponse resp)
throws ServletException, IOException {
        HttpSession hps2 = req.getSession(false);
        String Session_username = (String) hps2.getAttribute("Username");
        String Session_Pass = (String) hps2.getAttribute("Password");
        String Session_Role = (String) hps2.getAttribute("Role");
        PrintWriter pr = resp.getWriter();
        pr.print("<h1> Hi "+Session_username+" </h1>");
        pr.print("<h2>Username "+Session_username+" Password
"+Session_Pass+"</h2>");
        pr.print("<a href = 'Aboutus'>About us</a>");
        pr.print("<a href = 'Logout' action = 'Logout' method = 'get'>Logout</a>");

    }
}
```

html file provide in file.

Output :

localhost:8080/Kunal_ekare4/New_file.html

Welcome to the Login Page

Name:

user1

Password:

•••••

Preferred Language:

English

Theme:

Dark Mode

Notification Setting:

Email

Login

---

localhost:8080/Kunal_ekare4/DisplayPreferences

Your Preferences

Your name: user1

Password: pass1

Preferred Language: English

Theme: Dark Mode

Notification Setting: Email

About us

Logout

About Us

Hello, this is about us page.

Java Servlets are the Java programs that run on the Java-enabled web server or application server. They are used to handle the request obtained from the web server, process the request, produce the response, and then send a response back to the web server.

Logout   Show Credentials


```
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> create database Login_info;
Query OK, 1 row affected (0.04 sec)

mysql> use Login_info;
Database changed
mysql> create table login;
ERROR 4028 (HY000): A table must have at least one visible column.
mysql> create table login(varchar(40) u_name,varchar(40) password);
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near 'v
archar(40) u_name,varchar(40) password)' at line 1
mysql> CREATE TABLE login (
    ->     u_name VARCHAR(40),
    ->     password VARCHAR(40)
    -> );
Query OK, 0 rows affected (0.08 sec)

mysql> INSERT INTO login (u_name, password) VALUES
    -> ('user1', 'pass1'),
    -> ('user2', 'pass2'),
    -> ('user3', 'pass3'),
    -> ('user4', 'pass4'),
    -> ('user5', 'pass5');
Query OK, 5 rows affected (0.02 sec)
Records: 5  Duplicates: 0  Warnings: 0

mysql>
```
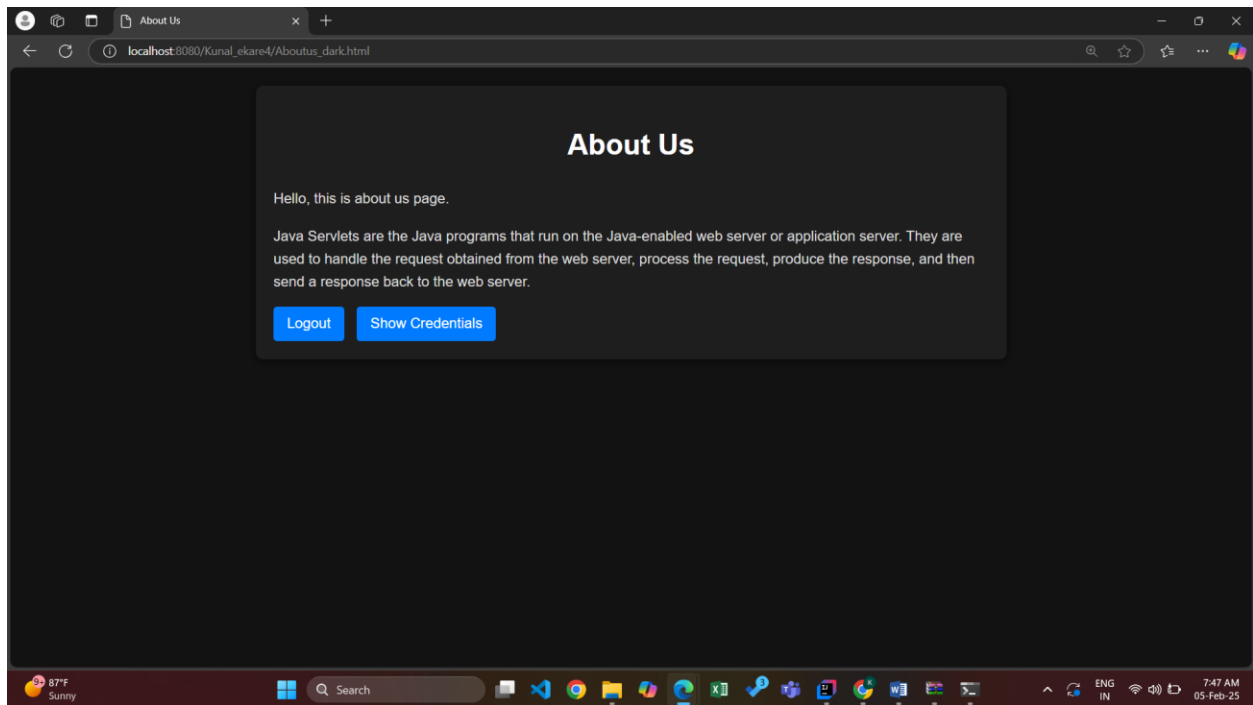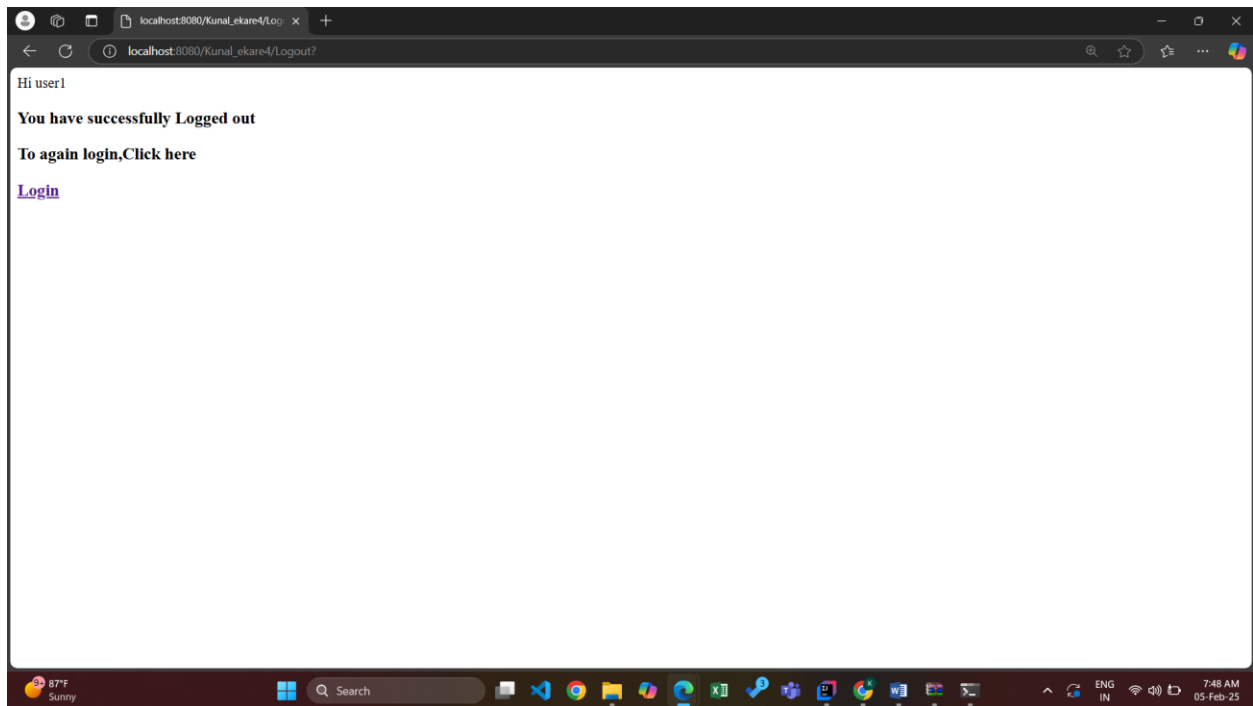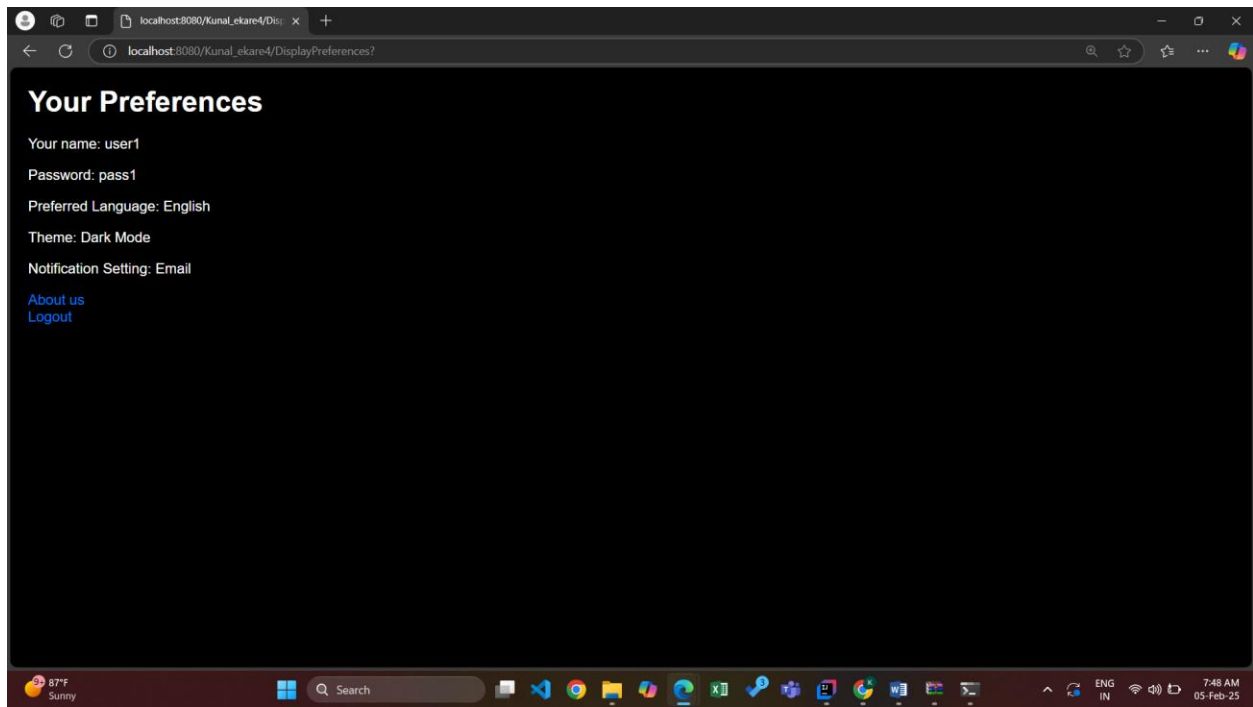
Conclusion: I have Successfully created HTTP Sessions, manage Sessions , passing parameter from one session to another, end the session using invalidate method