

Department of CSE

SSN College of Engineering

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UCS 1611 - Internet Programming Lab

Exercise 5: Profile Servlet Using Session and MySQL

Learning Objective:

Implement Profile Servlet using Http Sessions. The specifications are given below.

1. The login page should contain username, password, login button and logout button. On clicking login button, invoke the LoginServlet.
2. The LoginServlet should authenticate the user and store the username in session for viewing his profile and display a message “Welcome username”.
3. The LoginServlet should also display a link “View Profile in Detail”. The link when clicked, should invoke ProfileServlet.
4. ProfileServlet should display the username retrieved from the session with the message “Welcome username to the profile page”. Also retrieve and display the detail information of the user from the database in that page. It also displays a link to the Login page to logout.
5. When Logout button is pressed, invoke the LogoutServlet.
6. LogoutServlet should invalidate the user session and display “Successfully Logged out”.

Code - Login HTML:

```
1 <!DOCTYPE html>
2 <html>
3
4 <head>
5     <title>Profile Tracking</title>
6     <meta charset="utf-8">
7     <link rel="stylesheet" href="styles.css">
8 </head>
9
10 <body>
11     <h1 class='titleText'>Login To Your Account</h1>
12     <hr><br>
13
14     <div class="login">
15         <form id="loginform" action="LoginServlet">
16             <label for="uname">Username:</label>
17             <input type="text" name="uname" id="uname" required><br>
18
19             <label for="pass">Password:</label>
20             <input type="password" name="pass" id="pass" required><br>
21
22             <input type="submit" value="Login" class="btn" id="submit">
23             <input type="reset" value="Clear All" class="btn" id="reset">
24         </form>
25     </div>
26
27     <footer>
28         &copy; Vishakan Subramanian 2021
29     </footer>
30
31 </body>
32
33 </html>
```

Code - CSS Code:

```
1 @import url("https://fonts.googleapis.com/css2?family=Barlow+Semi+
   Condensed&display=swap");
2
3 body {
4     background: rgb(238,174,202);
5     background: radial-gradient(circle, rgba(238,174,202,1) 0%, rgba
   (148,187,233,1) 100%);
6     font-family: "Barlow Semi Condensed", -apple-system, "Segoe UI", sans-
   serif;
7 }
8
9 .titleText {
10     text-align: center;
11 }
12
13 .login {
14     width: 500px;
15     position: relative;
16     z-index: 1;
17     background: #ffffff;
18     max-width: 500px;
19     margin: 0 auto 100px;
20     padding: 45px;
21     text-align: left;
22     box-shadow: 0 0 20px 0 rgba(0, 0, 0, 0.2), 0 5px 5px 0 rgba(0, 0, 0,
   0.24);
23 }
24
25 .login input {
26     outline: 0;
27     background: #f2f2f2;
28     width: 100%;
29     border: 0;
30     margin: 15px 0px 15px 40px;
31     padding: 15px;
32     box-sizing: border-box;
33     font-size: 16px;
34     font-family: "Barlow Semi Condensed", sans-serif;
35 }
36
37 .login label {
38     font-weight: 650;
39 }
40
41 .login .btn,
42 .btn {
43     margin-left: 140px;
```

```

44     font-family: "Barlow Semi Condensed", sans-serif;
45     font-size: 16px;
46     font-weight: 300;
47     text-transform: uppercase;
48     outline: 0;
49     background: #4bd6f4;
50     width: 200px;
51     border: 0;
52     padding: 15px;
53     color: #000000;
54     transition: all 0.3 ease;
55     cursor: pointer;
56     user-select: none;
57 }
58
59 .btn:hover,
60 .btn:focus,
61 .btn:active {
62     font-weight: bold;
63     background: #32afc9;
64 }
65
66 footer {
67     position: fixed;
68     bottom: 0;
69     color: black;
70     font-weight: bold;
71     border-top: 3px solid black;
72     padding: 5px 5px 5px 5px;
73     text-align: center;
74     width: 100%;
75 }
76
77 table,
78 td,
79 th {
80     font-size: 25px;
81     border: 2px solid black;
82     padding: 5px;
83     border-collapse: collapse;
84     text-align: center;
85 }
86
87 table {
88     width: 75%;
89 }
90
91 tr:hover {
92     background-color: azure;
93 }
94

```

```
95 .links {
96     text-decoration: none;
97     cursor: pointer;
98     color: white;
99 }
100
101 .links:hover {
102     font-weight: bold;
103 }
```

Code - Logout JavaScript:

```
1 redirectToHome = () => {
2     //redirect to home page
3     location.href="index.html";
4 }
```

Code - Web XML:

```
1 <web-app>
2   <servlet>
3     <servlet-name>LoginServlet</servlet-name>
4     <servlet-class>LoginServlet</servlet-class>
5   </servlet>
6
7   <servlet>
8     <servlet-name>ProfileServlet</servlet-name>
9     <servlet-class>ProfileServlet</servlet-class>
10  </servlet>
11
12  <servlet>
13    <servlet-name>LogoutServlet</servlet-name>
14    <servlet-class>LogoutServlet</servlet-class>
15  </servlet>
16
17  <servlet-mapping>
18    <servlet-name>LoginServlet</servlet-name>
19    <url-pattern>/LoginServlet</url-pattern>
20  </servlet-mapping>
21
22  <servlet-mapping>
23    <servlet-name>ProfileServlet</servlet-name>
24    <url-pattern>/ProfileServlet</url-pattern>
25  </servlet-mapping>
26
27  <servlet-mapping>
28    <servlet-name>LogoutServlet</servlet-name>
29    <url-pattern>/LogoutServlet</url-pattern>
30  </servlet-mapping>
31
32  <welcome-file-list>
33    <welcome-file>index.html</welcome-file>
34  </welcome-file-list>
35
36 </web-app>
```

Code - Login Servlet:

```
1 import java.io.*;
2 import java.util.*;
3 import javax.servlet.*;
4 import javax.servlet.http.*;
5 import java.sql.*;
6
7 public class LoginServlet extends HttpServlet{
8     public void doGet(HttpServletRequest req, HttpServletResponse res)
9     throws ServletException, IOException{
10         String JDBC_DRIVER = "com.mysql.cj.jdbc.Driver";
11         String DB_URL = "jdbc:mysql://localhost:3306/mysql?autoReconnect=
true&useSSL=false";
12         String USER = "admin";
13         String PASS = "password";
14
15         PrintWriter out = res.getWriter();
16         String uname = req.getParameter("uname");
17         String pass = req.getParameter("pass");
18
19         try{
20             Class.forName(JDBC_DRIVER);
21             Connection conn = DriverManager.getConnection(DB_URL, USER,
PASS);
22             String query = "SELECT pass from Profile where uname = \" +
uname + \"\"";
23             Statement stmt = conn.createStatement();
24
25             ResultSet rs = stmt.executeQuery(query);
26
27             out.println("<!DOCTYPE html>");
28             out.println("<html><head><title>Profile Tracking</title><link
rel='stylesheet' href='styles.css'></head><body>");
29
30             if(rs.next()){
31                 res.setContentType("text/html");
32                 String dbpass = rs.getString("pass");
33
34                 if(dbpass.equals(pass)){ //validate to profile page
35                     HttpSession sesh = req.getSession();
36                     sesh.setAttribute("uname", uname);
37                     out.println("<h1 class='titleText'>Welcome " + uname +
"!</h1>");
38                     out.println("<div class='login'><form id='profileform'
action='ProfileServlet'>");
39                     out.println("<input type='submit' id='submit' class='
btn' value='View Your Profile'></form></div>");
40                 }
```

```

41
42         else{    //redirect back to the homepage
43             out.println("<h1 class='titleText'>Invalid Password!</
44 h1>");
45             out.println("<div class='login'><button id='home'
46 class='btn' onclick='redirectToHome()'>Go To Home</button></div>");
47             out.println("<script src='scripts/logout.js'></script>
48 ");
49         }
50     }
51     else{    //redirect back to the homepage
52         out.println("<h1 class='titleText'>Invalid Username!</h1>"
53 );
54         out.println("<div class='login'><button id='home' class='
55 btn' onclick='redirectToHome()'>Go To Home</button></div>");
56         out.println("<script src='scripts/logout.js'></script>");
57     }
58     out.println("<footer>&copy; Vishakan Subramanian 2021</footer
59 ></body></html>");
60
61     stmt.close();
62     conn.close();
63 }
64
65 catch(SQLException se){
66     se.printStackTrace();
67     out.println(se);
68 }
69
70 catch(Exception e){
71     e.printStackTrace();
72     out.println(e);
73 }
74 }
75 }

```


Code - Profile Servlet:

```
1 import java.io.*;
2 import java.util.*;
3 import javax.servlet.*;
4 import javax.servlet.http.*;
5 import java.sql.*;
6
7 public class ProfileServlet extends HttpServlet{
8     public void doGet(HttpServletRequest req, HttpServletResponse res)
9     throws ServletException, IOException{
10         String JDBC_DRIVER = "com.mysql.cj.jdbc.Driver";
11         String DB_URL = "jdbc:mysql://localhost:3306/mysql?autoReconnect=
true&useSSL=false";
12         String USER = "admin";
13         String PASS = "password";
14
15         PrintWriter out = res.getWriter();
16         HttpSession sesh = req.getSession();
17         String uname = (String) sesh.getAttribute("uname");
18
19         try{
20             Class.forName(JDBC_DRIVER);
21             Connection conn = DriverManager.getConnection(DB_URL, USER,
PASS);
22             String query = "SELECT * from Profile where uname = \" +
uname + \"\"";
23             Statement stmt = conn.createStatement();
24
25             ResultSet rs = stmt.executeQuery(query);
26
27             out.println("<!DOCTYPE html>");
28             out.println("<html><head><title>Profile Tracking</title><link
rel='stylesheet' href='styles.css'></head><body>");
29             out.println("<h1 class='titleText'>" + uname + "'s Profile
Page</h1><hr><br>");
30
31             if(rs.next()){ //display the user's full profile details
32                 res.setContentType("text/html");
33                 String uid = rs.getString("uid");
34                 int age = rs.getInt("age");
35                 String name = rs.getString("name");
36                 String location = rs.getString("location");
37
38                 out.println("<table align='center'>");
39                 out.println("<tr><th>Username: </th><td>" + uname + "</td
></tr>");
40                 out.println("<tr><th>User ID: </th><td>" + uid + "</td></
tr>");
```

```

41         out.println("<tr><th>Name: </th><td>" + name + "</td></tr>
");
42         out.println("<tr><th>Age: </th><td>" + age + "</td></tr>");
43         out.println("<tr><th>Location: </th><td>" + location + "</
td></tr>");
44     }
45
46     else{           //error in retrieval
47         out.println("<h2 class='titleText'>Sorry, your records are
not updated with us!</h2>");
48     }
49
50     out.println("</table>");
51     out.println("<br><br><br><div class='login'><form id='logout'
action='LogoutServlet'>");
52     out.println("<input type='submit' value='Logout' id='submit'
class='btn'>");
53     out.println("</form></div>");
54     out.println("<footer>&copy; Vishakan Subramanian 2021</footer
></body></html>");
55
56     stmt.close();
57     conn.close();
58 }
59
60 catch(SQLException se){
61     se.printStackTrace();
62     out.println(se);
63 }
64
65 catch(Exception e){
66     e.printStackTrace();
67     out.println(e);
68 }
69 }
70 }

```

Code - Logout Servlet:

```
1 import java.io.*;
2 import java.util.*;
3 import javax.servlet.*;
4 import javax.servlet.http.*;
5
6 public class LogoutServlet extends HttpServlet{
7     public void doGet(HttpServletRequest req, HttpServletResponse res)
8     throws ServletException, IOException{
9         PrintWriter out = res.getWriter();
10
11         out.println("<!DOCTYPE html>");
12         out.println("<html><head><title>Profile Tracking</title><link rel
13         ='stylesheet' href='styles.css'></head><body>");
14
15         try{
16             HttpSession sesh = req.getSession();
17
18             if(sesh.getAttribute("uname") != null){
19                 String uname = (String) sesh.getAttribute("uname");
20                 sesh.invalidate(); //Invalidate the HttpSession
21                 out.println("<h1 class='titleText'>" + uname + " was
22                 logged out successfully.</h1><hr><br>");
23             }
24
25             catch(Exception e){
26                 e.printStackTrace();
27                 out.println(e);
28             }
29
30             out.println("<div class='login'><button id='home' class='btn'
31             onclick='redirectToHome()'>Go To Home</button></div>");
32             out.println("<script src='scripts/logout.js'></script>");
33             out.println("<footer>&copy; Vishakan Subramanian 2021</footer></
34             body></html>");
35         }
36     }
```

Code - SQL Script:

```
1 /* Profile Table Creation */
2
3 USE mysql;
4
5 DROP TABLE Profile;
6
7 CREATE TABLE Profile(
8     uid          CHAR(5) UNIQUE,
9     uname        VARCHAR(40) PRIMARY KEY,
10    pass          VARCHAR(20),
11    name          VARCHAR(40),
12    age           NUMERIC(3),
13    location      VARCHAR(100)
14 );
15
16 /* Inserting Dummy Records */
17
18 INSERT INTO Profile VALUES(
19     "P2001",
20     "chris_p2k",
21     "sunnyday",
22     "Chris Paley",
23     25,
24     "Scranton"
25 );
26
27 INSERT INTO Profile VALUES(
28     "P2002",
29     "rickrolled",
30     "youtube",
31     "Rick Astley",
32     30,
33     "Harrow"
34 );
35
36 INSERT INTO Profile VALUES(
37     "P2003",
38     "universe_boss",
39     "westindian",
40     "Chris Gayle",
41     34,
42     "Trinidad & Tobago"
43 );
44
45 INSERT INTO Profile VALUES(
46     "P2004",
47     "ironman",
```

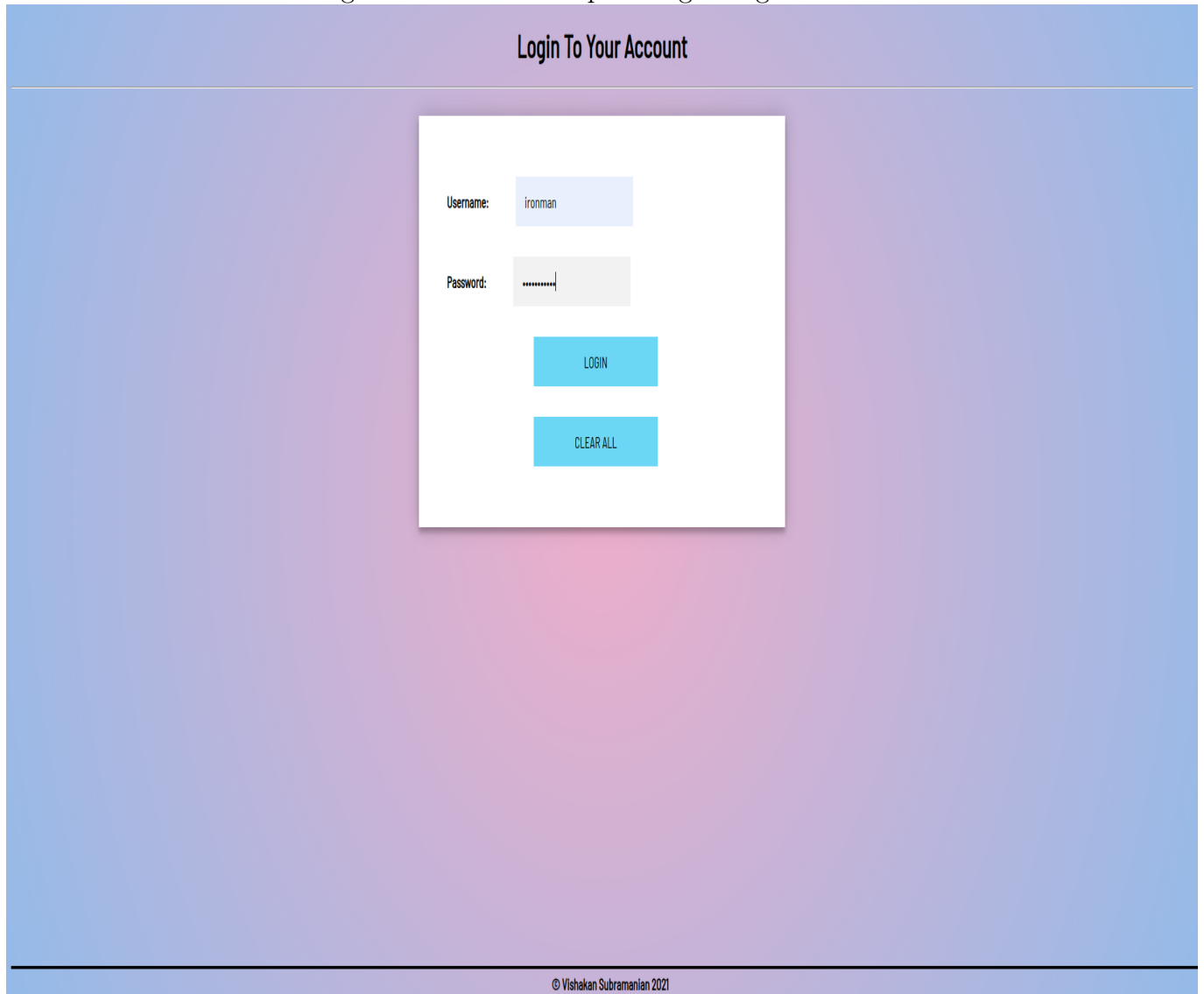
```

48     "pepperpotts",
49     "Anthony Stark",
50     40,
51     "Malibu"
52 );
53
54 INSERT INTO Profile VALUES(
55     "P2005",
56     "kal_el",
57     "justiceleague",
58     "Clark Kent",
59     44,
60     "Smallville"
61 );
62
63 INSERT INTO Profile VALUES(
64     "P2006",
65     "heywood",
66     "manofsteel",
67     "Nathaniel",
68     32,
69     "Waverider"
70 );
71
72 INSERT INTO Profile VALUES(
73     "P2007",
74     "saulgoodman",
75     "wexlermcgill",
76     "James M. McGill",
77     37,
78     "Albuquerque"
79 );
80
81 /*USAGE: source path_to_script/script.sql */

```

Output - Login Page:

Figure 1: Browser Output: Login Page.



The image shows a web browser output of a login page. The page has a light blue header with the title "Login To Your Account". Below the header is a white login form. The form contains two input fields: "Username:" with the value "ironman" and "Password:" with a masked password ".....". Below the password field are two buttons: "LOGIN" and "CLEAR ALL". The background of the page is a light blue gradient.

Username: ironman

Password:

LOGIN

CLEAR ALL

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Output - Welcome Page:

Figure 2: Browser Output: Welcome Page.



Output - Profile Page:

Figure 3: Browser Output: Profile Page.

ironman's Profile Page

Username:	ironman
User ID:	P2004
Name:	Anthony Stark
Age:	40
Location:	Malibu

LOGOUT

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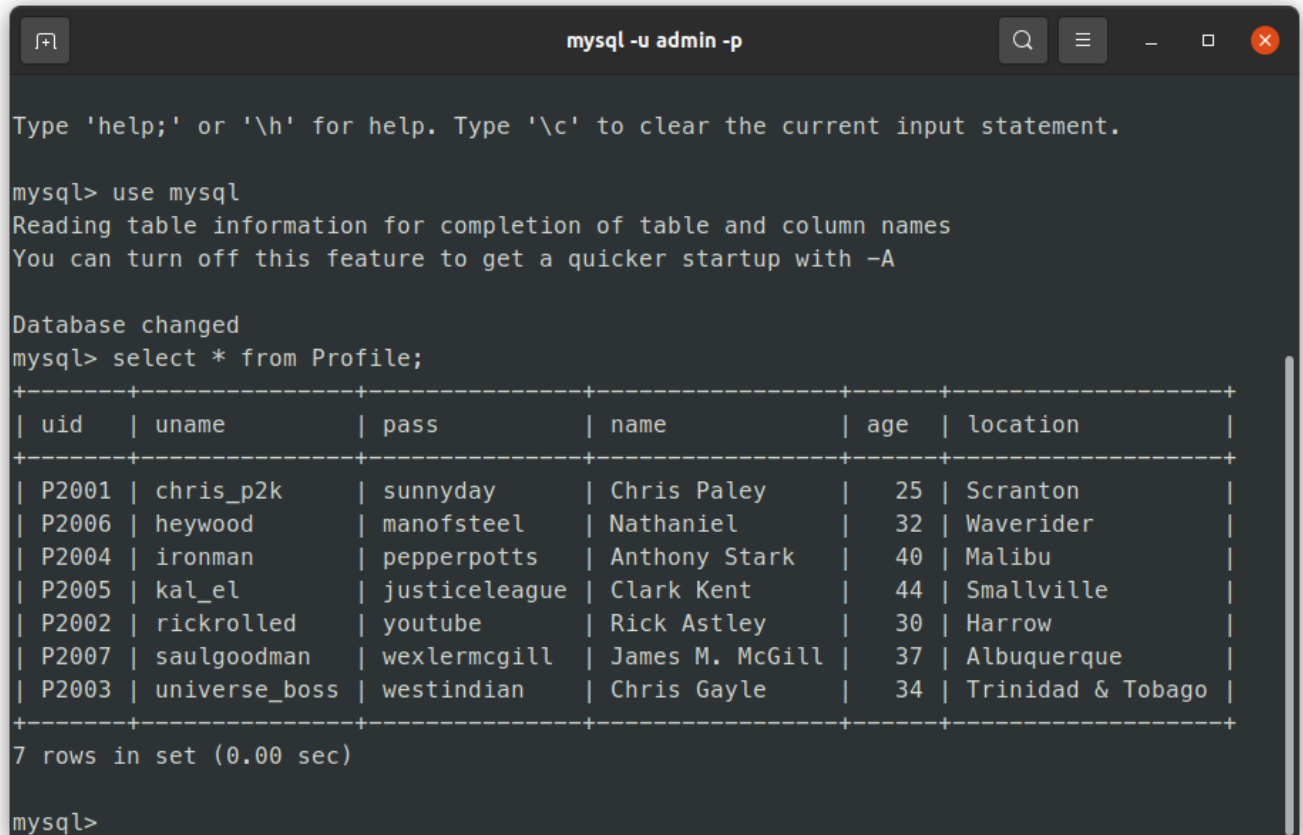
Output - Logout Page:

Figure 4: Browser Output: Logout Page.



Output - SQL Table:

Figure 5: Browser Output: SQL Table.



The screenshot shows a terminal window titled "mysql -u admin -p". The prompt is "Type 'help;' or '\h' for help. Type '\c' to clear the current input statement." The user enters "mysql> use mysql", and the response is "Reading table information for completion of table and column names" and "You can turn off this feature to get a quicker startup with -A". The user then enters "mysql> select * from Profile;", and the result is displayed as a table with 7 rows and 6 columns: uid, uname, pass, name, age, and location. The table is enclosed in a box with dashed lines. Below the table, it says "7 rows in set (0.00 sec)". The prompt "mysql>" is visible at the bottom.

```
mysql -u admin -p
Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> use mysql
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

Database changed
mysql> select * from Profile;
+-----+-----+-----+-----+-----+-----+
| uid   | uname      | pass      | name      | age  | location      |
+-----+-----+-----+-----+-----+-----+
| P2001 | chris_p2k  | sunnyday  | Chris Paley | 25   | Scranton      |
| P2006 | heywood    | manofsteel | Nathaniel  | 32   | Waverider     |
| P2004 | ironman    | pepperpotts | Anthony Stark | 40   | Malibu        |
| P2005 | kal_el     | justiceleague | Clark Kent | 44   | Smallville    |
| P2002 | rickrolled | youtube   | Rick Astley | 30   | Harrow        |
| P2007 | saulgoodman | wexlermcgill | James M. McGill | 37   | Albuquerque   |
| P2003 | universe_boss | westindian | Chris Gayle | 34   | Trinidad & Tobago |
+-----+-----+-----+-----+-----+-----+
7 rows in set (0.00 sec)

mysql>
```

Learning Outcome:

- From the experiment, I learnt to implement basic **Java Servlets**.
- I learnt about the working of a Java Servlet.
- I understood that Servlets are executed in the server-side in response to an HTML event like a submit event, and handles actions through a Request-Response mechanism.
- I was able to serve a dynamic web page using Java Servlet programming.
- I learnt how to extract HTML Form data from Servlets submitted using the GET query.
- I was able to create and use a **HTTPSession** object using server-side Java programming during user login.
- I used the stored HTTPSession details to retrieve user profile details on user navigation to his/her profile page.
- I successfully implemented a working **HTTP Session** using Java Servlet programming and deployed it using the **Tomcat 9.0 Container**.
- I refreshed my SQL concepts.
- I learnt how to integrate MySQL to Java using JDBC Driver.
- I was able to create a database for User Profiles using MySQL.
- I successfully implemented JDBC connectivity to MySQL.
- I implemented credential verification for the login credentials entered by the user in the front-end and verified it with my back-end MySQL storage using a Java Servlet.
- I learnt to redirect to another page using JavaScript.
- I understood how to handle basic SQLExceptions with the help of the try-catch block in Java.
- I understood how to display records dynamically with the help of ResultSet Object in Java and <table> element in HTML.
- I was able to invalidate an HTTPSession on user logout.
- I was able to successfully implement a working **Profile Tracking System** according to the given specifications with Java Servlets and MySQL.