

EXP NO: 8

Client-Side Form Validation for a Library Management System Using JavaScript with Database Integration via Servlet/JSP

AIM:

Consider a Library Management System. Develop a JavaScript program that will validate the controls in the forms you have created for the application. State the assumptions you make (business logic you are taking into consideration). Note: Your application must access a database using Servlet/JSP.

CODE:

library_managemet_system.jsp

```
<% @ page import="java.sql.*" %>
<% @ page contentType="text/html; charset=UTF-8" language="java" %>
<html>
<head>
<title>Library Management - Add Book</title>
<style>
body {
    font-family: Arial, sans-serif;
    background-color: #f3f3f3;
    margin: 20px;
    padding: 20px;
}

h2 {
    color: #333;
}

form {
    background-color: #fff;
    padding: 20px;
    border-radius: 8px;
    box-shadow: 0 2px 5px rgba(0,0,0,0.1);
    width: 400px;
}

input[type="text"],
input[type="number"],
select {
    width: 100%;
    padding: 8px;
    margin: 6px 0 12px 0;
    border: 1px solid #ccc;
    border-radius: 4px;
}

input[type="submit"] {
    background-color: #4CAF50;
    color: white;
```

```

border: none;
padding: 10px 16px;
cursor: pointer;
border-radius: 4px;
}

input[type="submit"]:hover {
  background-color: #45a049;
}

p {
  font-size: 16px;
}

a {
  color: #007BFF;
  text-decoration: none;
}

a:hover {
  text-decoration: underline;
}
</style>

<script>

function validateForm() {
  const bookId = document.getElementById("bookId").value.trim();
  const title = document.getElementById("title").value.trim();
  const author = document.getElementById("author").value.trim();
  const year = document.getElementById("year").value.trim();
  const category = document.getElementById("category").value;
  const copies = document.getElementById("copies").value.trim();
  const currentYear = new Date().getFullYear();

  if (!/^[a-zA-Z0-9]+$/.test(bookId)) {
    alert("Book ID must be alphanumeric.");
    return false;
  }
  if (!/^[A-Za-z ]+$/.test(title)) {
    alert("Title must contain only letters.");
    return false;
  }
  if (!/^[A-Za-z ]+$/.test(author)) {
    alert("Author name must contain only letters.");
    return false;
  }
  if (!/^\d{4}$/.test(year) || parseInt(year) > currentYear) {
    alert("Year must be a valid 4-digit year.");
    return false;
  }

  if (category === "") {
    alert("Please select a category.");
    return false;
  }
}

```

```

    }
    if (isNaN(copies) || parseInt(copies) <= 0) {
        alert("Copies must be a positive number.");
        return false;
    }

    return true;
}
</script>
</head>
<body>
<h2>Add Book to Library</h2>
<form method="post" onsubmit="return validateForm()">
    Book ID: <input type="text" name="bookId" id="bookId"/><br/>
    Title: <input type="text" name="title" id="title"/><br/>
    Author: <input type="text" name="author" id="author"/><br/>
    Year: <input type="text" name="year" id="year"/><br/>
    Category:
    <select name="category" id="category">
        <option value="">--Select--</option>
        <option value="Science">Science</option>
        <option value="Fiction">Fiction</option>
        <option value="History">History</option>
    </select><br/>
    Copies: <input type="number" name="copies" id="copies"/><br/><br/>
    <input type="submit" value="Add Book"/>

<p>
<label>Book Details:-</label>
<a href="/display_books_79.jsp">Click Here</a>
</p>
</form>

<%

    // JSP Database logic

    // TODO:Change password before run the code
    // TODO: CREATE THE TABLE IN MYSQL
    /**
CREATE TABLE books (
    book_id VARCHAR(20) PRIMARY KEY,
    title VARCHAR(100),
    author VARCHAR(100),
    year INT,
    category VARCHAR(50),
    copies INT
);
**/

```

```

String bookId = request.getParameter("bookId");
if (bookId != null) {
    String title = request.getParameter("title");
    String author = request.getParameter("author");
    String year = request.getParameter("year");

```

```

String isbn = request.getParameter("isbn");
String category = request.getParameter("category");
String copies = request.getParameter("copies");

try {
    Class.forName("com.mysql.cj.jdbc.Driver");
    Connection conn = DriverManager.getConnection(
        "jdbc:mysql://localhost:3306/library_management_karthick", "root", "");
    PreparedStatement ps = conn.prepareStatement(
        "INSERT INTO books (book_id, title, author, year, category, copies) VALUES (?, ?, ?, ?, ?, ?)");
    ps.setString(1, bookId);
    ps.setString(2, title);
    ps.setString(3, author);
    ps.setInt(4, Integer.parseInt(year));
    ps.setString(5, category);
    ps.setInt(6, Integer.parseInt(copies));

    int result = ps.executeUpdate();
    if (result > 0) {
        %>
        <script>alert("Book Added Successfully!!")</script>
        <%
    } else {
        %>
        <script>alert("Failed to add book!!")</script>
        <%
        out.println("<p style='color:red;'>Failed to add book.</p>");
    }

    ps.close();
    conn.close();
} catch (Exception e) {
    out.println("<p style='color:red;'>Error: " + e.getMessage() + "</p>");
}
}
%>
</body>
</html>

```

display_books.jsp

```

<% @ page import="java.sql.*" %>
<% @ page contentType="text/html; charset=UTF-8" language="java" %>
<html>
<head>
    <title>Library Books List</title>
    <style>
        table {
            border-collapse: collapse;
            width: 90%;
            margin: 20px auto;
        }
        th, td {

```

```

        border: 1px solid #333;
        padding: 10px;
        text-align: center;
    }
    th {
        background-color: #f2f2f2;
    }
    h2 {
        text-align: center;
    }
</style>
</head>
<body>
<h2>All Books in Library</h2>
<%
    try {
        Class.forName("com.mysql.cj.jdbc.Driver");
        Connection conn = DriverManager.getConnection(
            "jdbc:mysql://localhost:3306/library_management_karthick", "root", "");

        Statement stmt = conn.createStatement();
        ResultSet rs = stmt.executeQuery("SELECT * FROM books");
        out.println("<table>");
        out.println("<tr><th>Book
ID</th><th>Title</th><th>Author</th><th>Year</th><th>Category</th><th>Copies</th></tr>");

        while (rs.next()) {
            out.println("<tr>");
            out.println("<td>" + rs.getString("book_id") + "</td>");
            out.println("<td>" + rs.getString("title") + "</td>");
            out.println("<td>" + rs.getString("author") + "</td>");
            out.println("<td>" + rs.getInt("year") + "</td>");
            out.println("<td>" + rs.getString("category") + "</td>");
            out.println("<td>" + rs.getInt("copies") + "</td>");
            out.println("</tr>");
        }

        out.println("</table>");
        rs.close();
        stmt.close();
        conn.close();
    } catch (Exception e) {
        out.println("<p style='color:red;text-align:center;'>Error: " + e.getMessage() + "</p>");
    }
    %>
</body>
</html>

```

The screenshot shows an IDE with a project explorer on the left and a code editor on the right. The project explorer displays a project named 'helloworld' with a 'src/main/webapp' directory containing 'library_management_system_79.jsp' and 'display_books_79.jsp'. The code editor shows the content of 'index.jsp', which is an HTML page with a title 'Library Management - Add Book', a form with a text input, a number input, and a submit button, and a select dropdown menu. The page uses a CSS style with a background color of #f3f3f3, a margin of 20px, and a padding of 20px. The form elements have a background color of #fff, a border-radius of 8px, and a box-shadow of 0 2px 5px rgba(0,0,0,0.1). The submit button has a background color of #4CAF50, a color of white, and a border of none. The page also includes a hover effect for the submit button, changing its background color to #450449.

The screenshot shows the Eclipse IDE interface. The left sidebar contains the Project Explorer, showing a project named 'library_management_system_79.jsp'. The main editor displays the content of 'display_books_79.jsp', which is a JSP page. The code includes a page directive, a content type, a title, and a table structure. The table has a single row with a header 'All Books in Library' and a body containing a list of books. The code uses JDBC to connect to a database and fetch book details.

```

1 <% page import="java.sql.*" %>
2 <% page contentType="text/html; charset=UTF-8" language="java" %>
3 <html>
4 <head>
5 <title>Library Books List</title>
6
7 <style>
8
9 border-collapse: collapse;
10 width: 80%;
11 margin: 20px auto;
12
13 <table>
14
15 border: 1px solid #333;
16 padding: 10px;
17 text-align: center;
18
19 <tr>
20
21 background-color: #f2f2f2;
22
23 <td>
24
25 <h3>All Books in Library</h3>
26
27 <table>
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29 <tr>
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31 <td colspan="5">
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```

```
eclipse-workspace - hello_world_mallu/src/main/webapp/library_managemet_system_79.jsp - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help

Project Explorer X
src
  webapp
    META-INF
    WEB-INF
      display_books_79.jsp
      index.jsp
    library_managemet_system_79.jsp
  HelloWorld_Rishika
  HelloWorlds
  index
  index_001
  kabhi
  Krishnamoorthi
  MiniProject_112
  Ramesh_134
  Servers
  srinivasan_170
  srinivasan_6

src
  main
    java
      webapp
        META-INF
        WEB-INF
          display_books_79.jsp
          index.jsp
        library_managemet_system_79.jsp
    HelloWorld_Rishika
    HelloWorlds
    index
    index_001
    kabhi
    Krishnamoorthi
    MiniProject_112
    Ramesh_134
    Servers
    srinivasan_170
    srinivasan_6

library_managemet_system_79.jsp X display_books_79.jsp
149 p {
150     font-size: 16px;
151 }
152
153 a {
154     color: #007BFF;
155     text-decoration: none;
156 }
157
158 a:hover {
159     text-decoration: underline;
160 }
161 </style>
162
163 <script>
164
165 function validateForm() {
166     const bookId = document.getElementById("bookId").value.trim();
167     const title = document.getElementById("title").value.trim();
168     const author = document.getElementById("author").value.trim();
169     const year = document.getElementById("year").value.trim();
170     const category = document.getElementById("category").value;
171     const copies = document.getElementById("copies").value.trim();
172     const currentYear = new Date().getFullYear();
173
174     if (/^[a-zA-Z0-9]+$/.test(bookId)) {
175         alert("Book ID must be alphanumeric.");
176         return false;
177     }
178     if (/^[A-Za-z ]+$/.test(title)) {
179         alert("Title must contain only letters.");
180         return false;
181     }
182     if (/^[A-Za-z ]+$/.test(author)) {
183         alert("Author name must contain only letters.");
184         return false;
185     }
186     if (/^[d4]+$/.test(year) || parseInt(year) > currentYear) {
187         alert("Year must be a valid 4-digit year.");
188         return false;
189     }
190
191     if (category == "") {
192         alert("Please select a category.");
193         return false;
194     }
195     if (isNaN(copies) || parseInt(copies) <= 0) {
```

```
eclipse-workspace - hello_world_mallu/src/main/webapp/library_managemet_system_79.jsp - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help

Project Explorer X
src
  webapp
    META-INF
    WEB-INF
      display_books_79.jsp
      index.jsp
    library_managemet_system_79.jsp
  HelloWorld_Rishika
  HelloWorlds
  index
  index_001
  kabhi
  Krishnamoorthi
  MiniProject_112
  Ramesh_134
  Servers
  srinivasan_170
  srinivasan_6

src
  main
    java
      webapp
        META-INF
        WEB-INF
          display_books_79.jsp
          index.jsp
        library_managemet_system_79.jsp
    HelloWorld_Rishika
    HelloWorlds
    index
    index_001
    kabhi
    Krishnamoorthi
    MiniProject_112
    Ramesh_134
    Servers
    srinivasan_170
    srinivasan_6

library_managemet_system_79.jsp X display_books_79.jsp
196     if (isNaN(copies) || parseInt(copies) <= 0) {
197         alert("Copies must be a positive number.");
198         return false;
199     }
200     return true;
201 }
202 </script>
203 </head>
204 <body>
205     <h2>Add Book to Library</h2>
206     <form method="post" onsubmit="return validateForm()">
207         Book ID: <input type="text" name="bookId" id="bookId"/><br/>
208         Title: <input type="text" name="title" id="title"/><br/>
209         Author: <input type="text" name="author" id="author"/><br/>
210         Year: <input type="text" name="year" id="year"/><br/>
211         Category:
212         <select name="category" id="category">
213             <option value="">--Select--</option>
214             <option value="Science">Science</option>
215             <option value="Fiction">Fiction</option>
216             <option value="History">History</option>
217         </select><br/>
218         Copies: <input type="number" name="copies" id="copies"/><br/>
219         <input type="submit" value="Add Book"/>
220
221         <p>
222             <label>Book Details:</label>
223             <a href="/display_books.jsp">Click Here</a>
224         </p>
225     </form>
226
227 <!--
228 // JSP Database logic
229
230 // TODO: Change password before run the code
231 // TODO: CREATE THE TABLE IN MYSQL
232
233 **
234 CREATE TABLE books (
235     book_id VARCHAR(20) PRIMARY KEY,
236     title VARCHAR(100),
237     author VARCHAR(100),
238     year INT,
239     category VARCHAR(50),
240     copies INT
241 );
```

```
eclipse-workspace - hello_world_mallu/src/main/webapp/library_management_system_79.jsp - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help

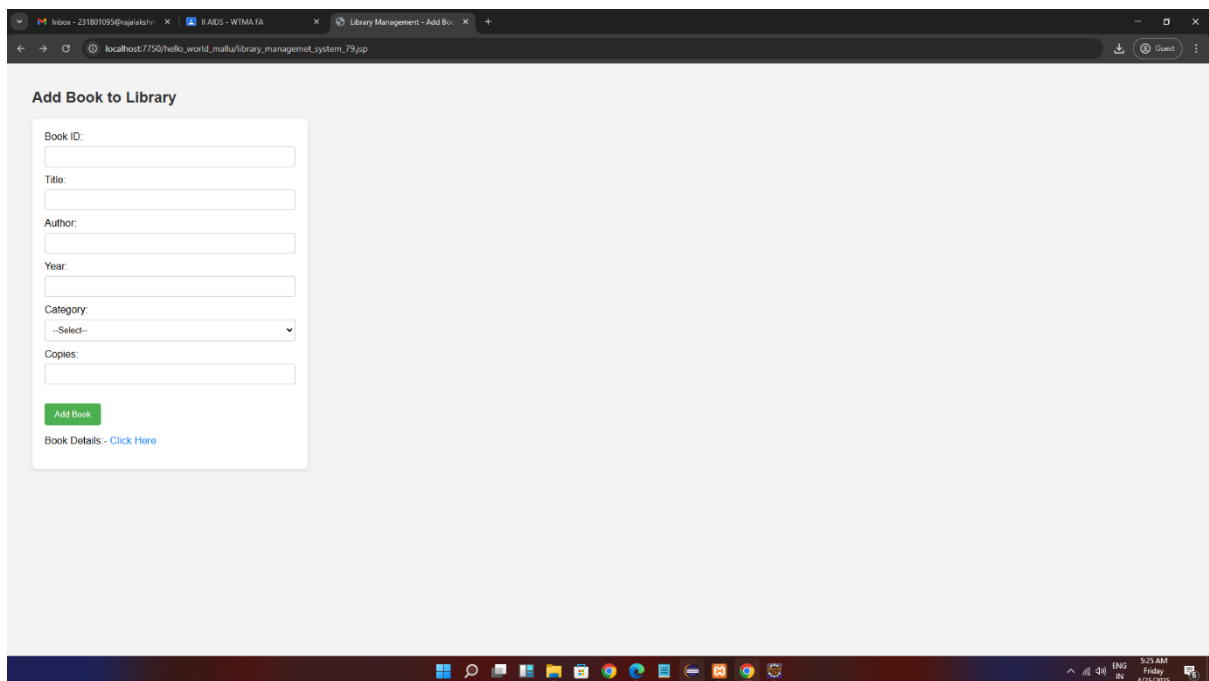
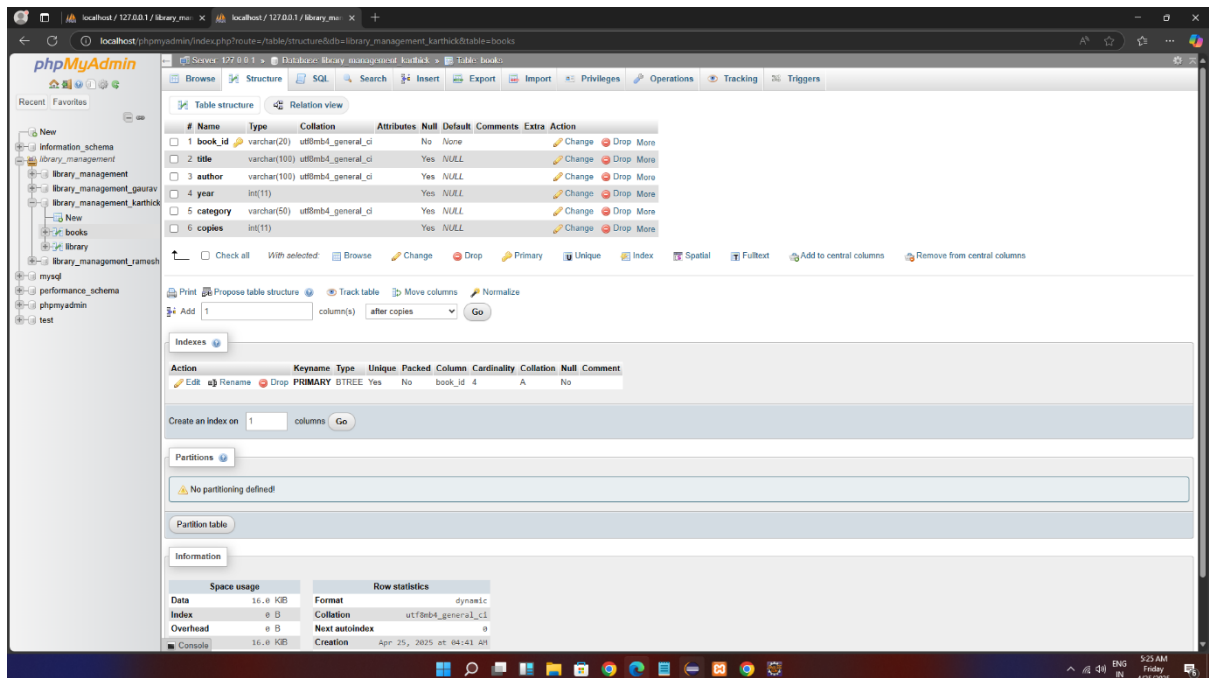
Project Explorer X
> Biji
> Deepak
> gaurav-esp8
> gini
> hanni
> haatha
> hello_170
> Hello_world_kumarani
> hello_world_mallu
  > Deployment Descriptor: hello_world_mallu
  > JAX-WS Web Services
  > JRE System Library [jre1.8.0_16]
  > src/main/java
  > Server Runtime [apache-tomcat-8.0.36]
  > Web App Libraries
  > build
  > src
    > main
      > java
        > webapp
          > META-INF
          > WEB-INF
            > display_books_79.jsp
            > index.jsp
            > library_management_system_79.jsp
    > HelloWorld_Rishika
    > HelloWorlds
    > index
    > index_001
    > kabini
    > Krishnamoorthi
    > MinProject_112
    > Ramesh_134
    > Servers
    > srinivasan_170
    > srinivasan_170
    > srinivasan_170

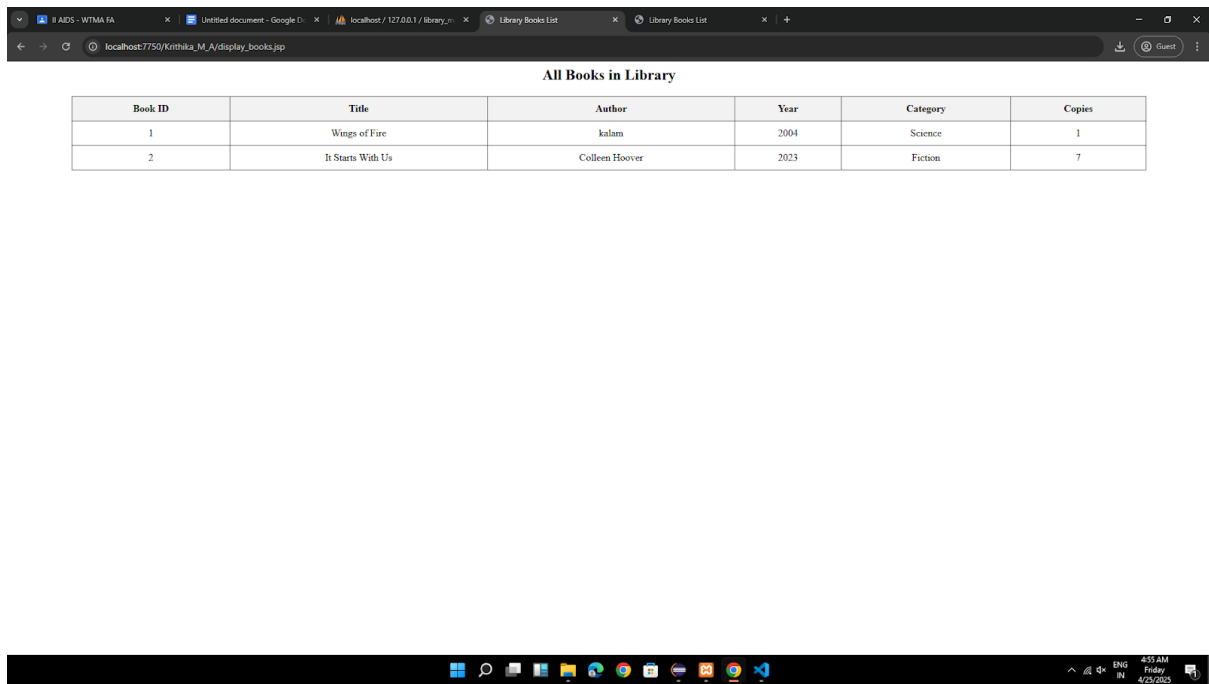
library_management_system_79.jsp X display_books_79.jsp
141 }
142 }
143
144 String bookId = request.getParameter("bookId");
145 if (bookId != null) {
146     String title = request.getParameter("title");
147     String author = request.getParameter("author");
148     String year = request.getParameter("year");
149     String isbn = request.getParameter("isbn");
150     String category = request.getParameter("category");
151     String copies = request.getParameter("copies");
152
153     try {
154         Class.forName("com.mysql.cj.jdbc.Driver");
155         Connection conn = DriverManager.getConnection(
156             "jdbc:mysql://localhost:3306/library_management", "root", "");
157         PreparedStatement ps = conn.prepareStatement(
158             "INSERT INTO books (book_id, title, author, year, category, copies) VALUES (?, ?, ?, ?, ?, ?)");
159         ps.setString(1, bookId);
160         ps.setString(2, title);
161         ps.setString(3, author);
162         ps.setInt(4, Integer.parseInt(year));
163         ps.setString(5, category);
164         ps.setInt(6, Integer.parseInt(copies));
165
166         int result = ps.executeUpdate();
167         if (result > 0) {
168             %<script>alert("Book Added Successfully!!")</script>
169             %<script>alert("Failed to add book!!")</script>
170         } else {
171             %<script>alert("Failed to add book!!")</script>
172             %<script>alert("Failed to add book!!")</script>
173             out.println("<p style='color:red;'>Failed to add book.</p>");
174         }
175         ps.close();
176         conn.close();
177     } catch (Exception e) {
178         out.println("<p style='color:red;'>Error: " + e.getMessage() + "</p>");
179     }
180 }
181 %</body>
182 %</html>
183
184 %</body>
185 %</html>
186
187
```

```
eclipse-workspace - hello_world_mallu/src/main/webapp/display_books_79.jsp - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help

Project Explorer X
> Biji
> Deepak
> gaurav-esp8
> gini
> hanni
> haatha
> hello_170
> Hello_world_kumarani
> hello_world_mallu
  > Deployment Descriptor: hello_world_mallu
  > JAX-WS Web Services
  > JRE System Library [jre1.8.0_16]
  > src/main/java
  > Server Runtime [apache-tomcat-8.0.36]
  > Web App Libraries
  > build
  > src
    > main
      > java
        > webapp
          > META-INF
          > WEB-INF
            > display_books_79.jsp
            > index.jsp
            > library_management_system_79.jsp
    > HelloWorld_Rishika
    > HelloWorlds
    > index
    > index_001
    > kabini
    > Krishnamoorthi
    > MinProject_112
    > Ramesh_134
    > Servers
    > srinivasan_170
    > srinivasan_170
    > srinivasan_170

library_management_system_79.jsp X display_books_79.jsp
1 <% page imports="java.sql.*" %>
2 <% page contentType="text/html; charset=UTF-8" language="java" %>
3 <html>
4 <head>
5 <title>Library Books List</title>
6 <style>
7 table {
8 border-collapse: collapse;
9 width: 80%;
10 margin: 20px auto;
11 }
12 th, td {
13 border: 1px solid #333;
14 padding: 5px;
15 text-align: center;
16 }
17 th {
18 background-color: #f2f2f2;
19 }
20 h2 {
21 text-align: center;
22 }
23 </style>
24 </head>
25 <body>
26 <h2>All Books in Library</h2>
27 <%
28
29 try {
30     Class.forName("com.mysql.cj.jdbc.Driver");
31     Connection conn = DriverManager.getConnection(
32         "jdbc:mysql://localhost:3306/library_management", "root", "");
33     Statement stmt = conn.createStatement();
34     ResultSet rs = stmt.executeQuery("SELECT * FROM books");
35     out.println("<table>");
36     out.println("<tr><th>Book ID</th><th>Title</th><th>Author</th><th>Year</th><th>Category</th><th>Copies</th></tr>");
37
38     while (rs.next()) {
39         out.println("<tr>");
40         out.println("<td> " + rs.getString("book_id") + "</td>");
41         out.println("<td> " + rs.getString("title") + "</td>");
42         out.println("<td> " + rs.getString("author") + "</td>");
43         out.println("<td> " + rs.getString("year") + "</td>");
44         out.println("<td> " + rs.getString("category") + "</td>");
45         out.println("<td> " + rs.getString("copies") + "</td>");
46         out.println("</tr>");
47     }
48
49     out.println("</table>");
50     rs.close();
51     stmt.close();
52     conn.close();
53 } catch (Exception e) {
54     out.println("<p style='color:red;text-align:center;'>Error: " + e.getMessage() + "</p>");
55 }
56 %>
57 </body>
58 </html>
59
```



RESULT:

Thus, form validation using JavaScript and database access through JSP/Servlet was successfully demonstrated by creating a Library Management form.