

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", "");

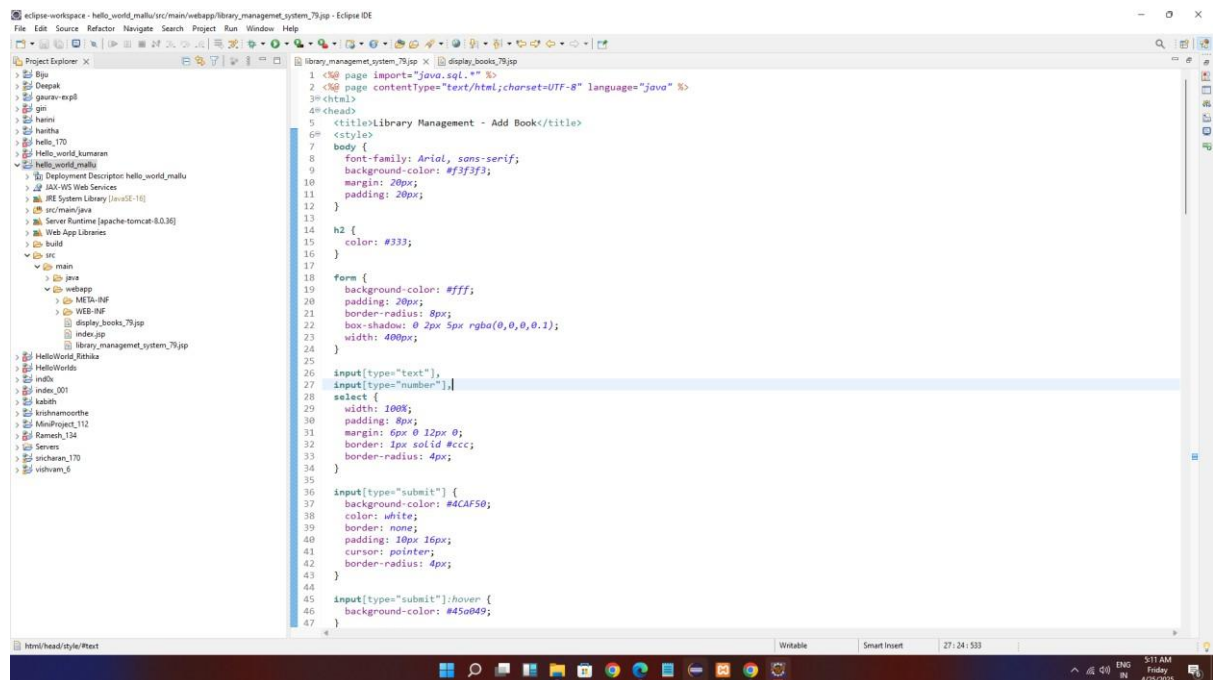
        Statement stmt = conn.createStatement();
        ResultSet rs = stmt.executeQuery("SELECT * FROM books");
        out.println("<table>");
        out.println("<tr><th>Book
ID</th><th>Title</th><th>Author</th><th>Year</th><th>Category</th><th>Copies</th></tr>");

        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>

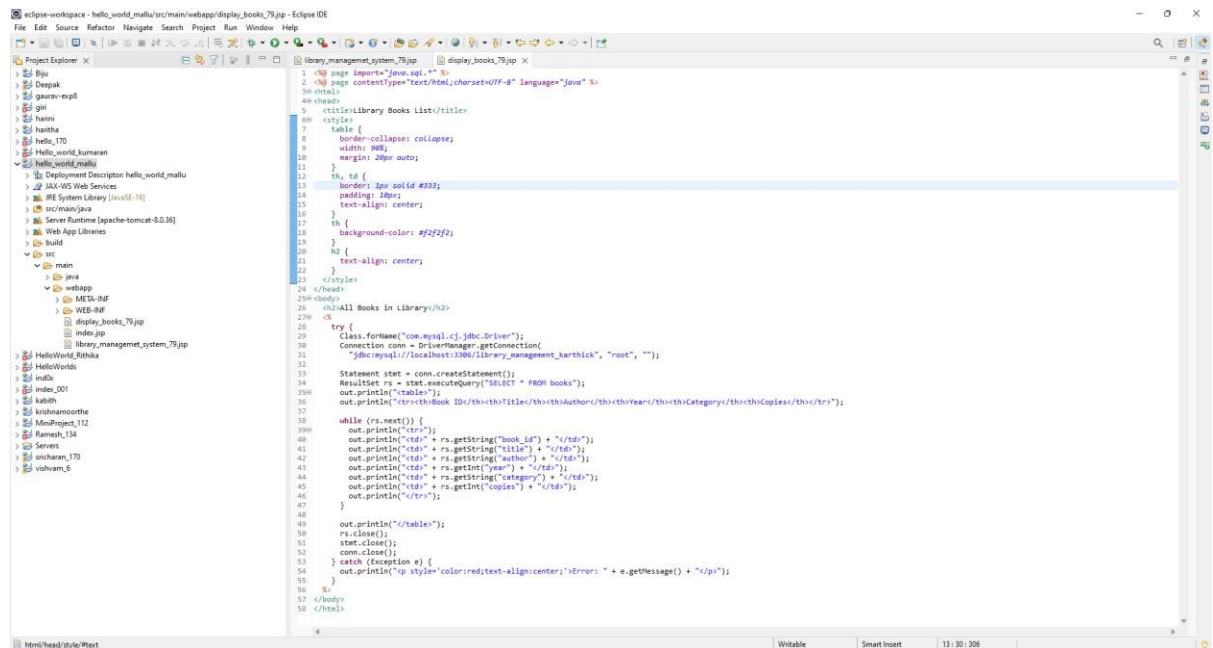
```

OUTPUT:



The screenshot shows the Eclipse IDE with the 'display_books_79.jsp' file open. The Project Explorer on the left shows the project structure, including 'src/main/webapp' and 'library_management_system_79.jsp'. The main editor displays the following HTML code:

```
1 <% page imports="java.sql.*" %>
2 <% page contentType="text/html; charset=UTF-8" language="java" %>
3 <html>
4 <head>
5 <title>Library Management - Add Book</title>
6 <style>
7 body {
8     font-family: Arial, sans-serif;
9     background-color: #f3f3f3;
10    margin: 20px;
11    padding: 20px;
12 }
13
14 h2 {
15     color: #333;
16 }
17
18 form {
19     background-color: #fff;
20     padding: 20px;
21     border-radius: 8px;
22     box-shadow: 0 2px 5px rgba(0,0,0,0.1);
23     width: 400px;
24 }
25
26 input[type="text"],
27 input[type="number"],
28 select {
29     width: 100%;
30     padding: 8px;
31     margin: 6px 0 12px 0;
32     border: 1px solid #ccc;
33     border-radius: 4px;
34 }
35
36 input[type="submit"] {
37     background-color: #4CAF50;
38     color: white;
39     border: none;
40     padding: 10px 16px;
41     cursor: pointer;
42     border-radius: 4px;
43 }
44
45 input[type="submit"]:hover {
46     background-color: #450049;
47 }
```



The screenshot shows the Eclipse IDE with the 'display_books_79.jsp' file open. The Project Explorer on the left shows the project structure, including 'src/main/webapp' and 'library_management_system_79.jsp'. The main editor displays the following Java code:

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

```
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

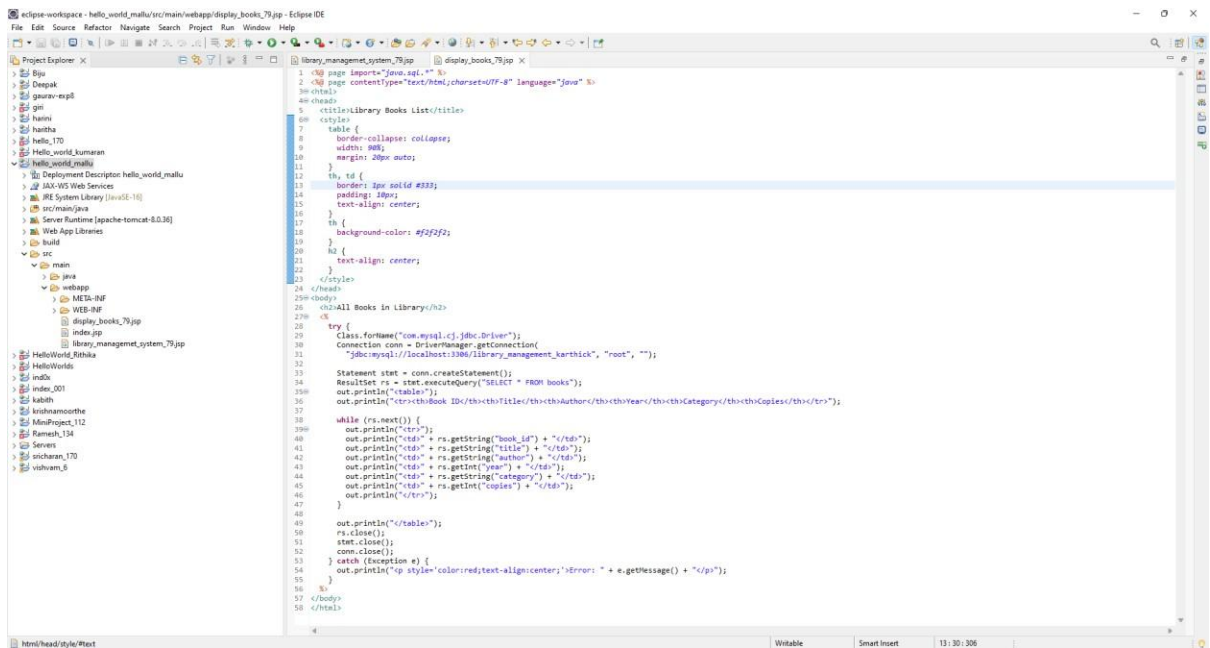
Project Explorer X
> Bps
> Deepak
> gaurav-esp8
> gini
> hansi
> hantha
> hello_170
> Hello_world_kumarani
> Hello_world_mallu
  > Deployment Descriptor: hello_world_mallu
  > JAX-WS Web Services
  > JRE System Library [jre1.8.0_102]
  > src/main/java
  > Server Runtime [apache-tomcat-8.0.36]
  > Web-App Libraries
  > build
  > src
    > java
      > webapp
        > META-INF
        > WEB-INF
          > display_books_79.jsp
          > index.jsp
          > library_managemet_system_79.jsp
      > HelloWorld_Rishika
      > HelloWorlds
      > index
      > index_001
      > kabini
      > krishnamoorthi
      > Madhuprakash_112
      > Ramesh_134
      > Servers
      > srinivasan_170
      > srinivasan_6

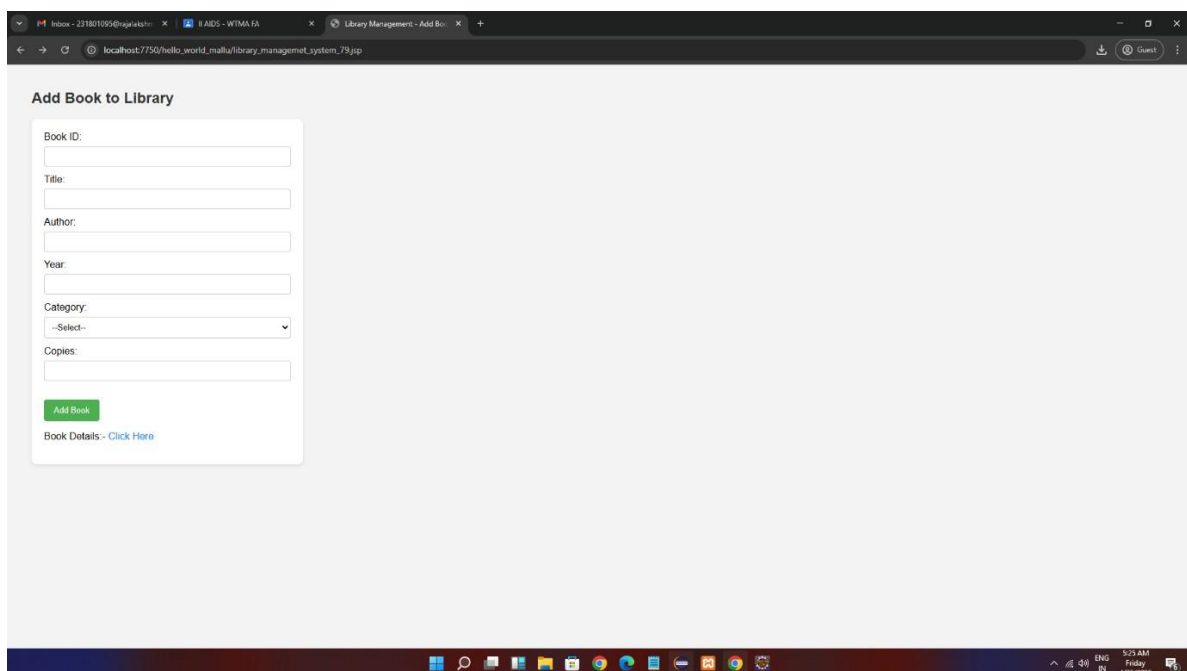
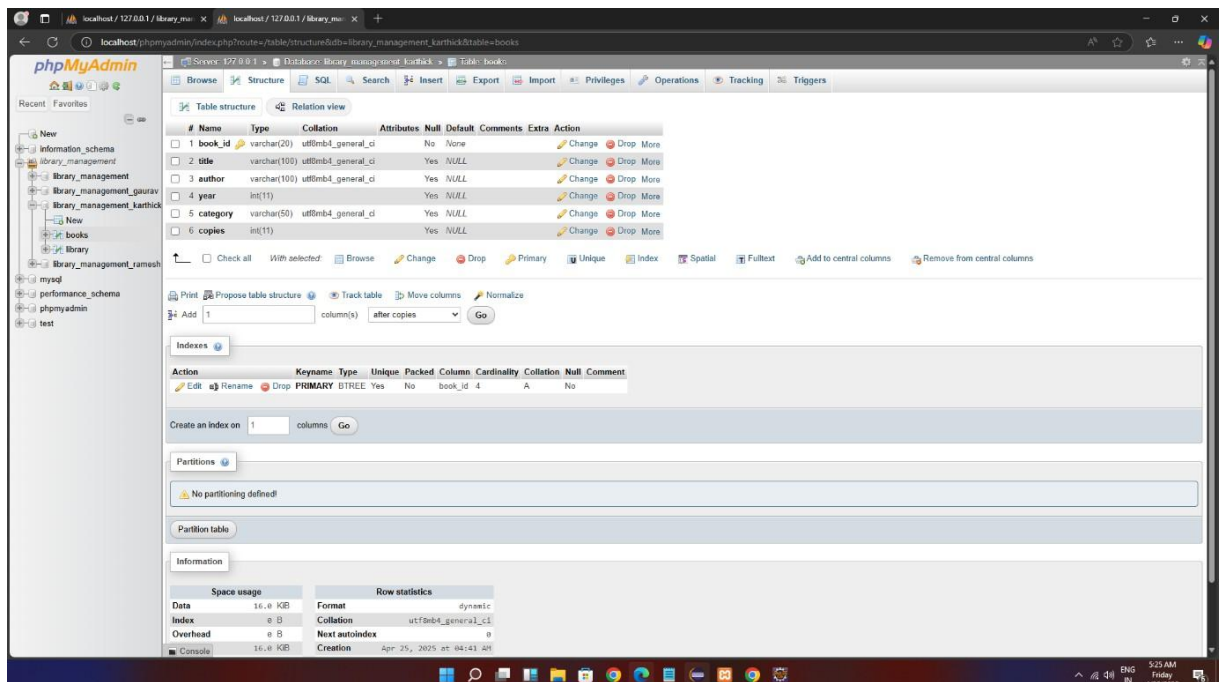
library_managemet_system_79.jsp X display_books_79.jsp
50 p {
51   font-size: 16px;
52 }
53
54 a {
55   color: #0078FF;
56   text-decoration: none;
57 }
58 a:hover {
59   text-decoration: underline;
60 }
61 </style>
62
63 <script>
64
65   function validateForm() {
66     const bookId = document.getElementById("bookId").value.trim();
67     const title = document.getElementById("title").value.trim();
68     const author = document.getElementById("author").value.trim();
69     const year = document.getElementById("year").value.trim();
70     const category = document.getElementById("category").value;
71     const copies = document.getElementById("copies").value.trim();
72     const currentYear = new Date().getFullYear();
73
74     if (/^[a-zA-Z0-9]+$/.test(bookId)) {
75       alert("Book ID must be alphanumeric.");
76       return false;
77     }
78     if (/^[A-Za-z ]+$/.test(title)) {
79       alert("Title must contain only letters.");
80       return false;
81     }
82     if (/^[A-Za-z ]+$/.test(author)) {
83       alert("Author name must contain only letters.");
84       return false;
85     }
86     if (/^\d{4}$/.test(year) || parseInt(year) > currentYear) {
87       alert("Year must be a valid 4-digit year.");
88       return false;
89     }
90
91     if (category == "") {
92       alert("Please select a category.");
93       return false;
94     }
95     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
> Bps
> Deepak
> gaurav-esp8
> gini
> hansi
> hantha
> hello_170
> Hello_world_kumarani
> Hello_world_mallu
  > Deployment Descriptor: hello_world_mallu
  > JAX-WS Web Services
  > JRE System Library [jre1.8.0_102]
  > src/main/java
  > Server Runtime [apache-tomcat-8.0.36]
  > Web-App Libraries
  > build
  > src
    > java
      > webapp
        > META-INF
        > WEB-INF
          > display_books_79.jsp
          > index.jsp
          > library_managemet_system_79.jsp
      > HelloWorld_Rishika
      > HelloWorlds
      > index
      > index_001
      > kabini
      > krishnamoorthi
      > Madhuprakash_112
      > Ramesh_134
      > Servers
      > srinivasan_170
      > srinivasan_6

library_managemet_system_79.jsp X display_books_79.jsp
94   }
95   if (isNaN(copies) || parseInt(copies) <= 0) {
96     alert("Copies must be a positive number.");
97     return false;
98   }
99   return true;
100 }
101 </script>
102 </head>
103 <body>
104   <h2>Add Book to Library</h2>
105   <form method="post" onsubmit="return validateForm()">
106     Book ID: <input type="text" name="bookId" id="bookId"/><br/>
107     Title: <input type="text" name="title" id="title"/><br/>
108     Author: <input type="text" name="author" id="author"/><br/>
109     Year: <input type="text" name="year" id="year"/><br/>
110     Category:
111     <select name="category" id="category">
112       <option value="">--Select--</option>
113       <option value="Science">Science</option>
114       <option value="Fiction">Fiction</option>
115       <option value="History">History</option>
116     </select><br/>
117     Copies: <input type="number" name="copies" id="copies"/><br/><br/>
118     <input type="submit" value="Add Book"/>
119
120
121   <p>
122     <label>Book Details:</label>
123     <a href="/display_books.jsp">Click Here</a>
124   </p>
125   </form>
126
127 </body>
128
129 // JSP Database logic
130
131 // TODO: Change password before run the code
132 // TODO: CREATE THE TABLE IN MYSQL
133 /**
134  * CREATE TABLE books (
135  *   book_id VARCHAR(20) PRIMARY KEY,
136  *   title VARCHAR(100),
137  *   author VARCHAR(100),
138  *   year INT,
139  *   category VARCHAR(50),
140  *   copies INT
```





All Books in Library

Book ID	Title	Author	Year	Category	Copies
001	WTMA	Mallu	2006	Science	95
002	Phy	Karthick	2006	Science	79
003	Crime and Punishment	Fyodor Dostoevsky	1866	Fiction	84
004	No Longer Human	Osamu Dazai	1948	Fiction	79

RESULT:

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