

## **Assignment No. - 06**

### **TITLE**

JSP, Servlet and MySQL(Backend)

### **OBJECTIVES**

1. Understand about basic concepts of html, CSS
2. Understand the basic functionalities of JSP
3. Having the knowledge of SQL query to create the database

### **PROBLEM STATEMENTS**

Create Database table student\_info (student\_id, student\_name, class, division, city) using database like Oracle/MySQL, and display the table content using JSP.

### **OUTCOMES**

*Students will be able to,*

1. Develop a dynamic webpage using JSP, HTML and Servlet.
2. Write a server side java application called Servlet to catch the data sent from client, process it and store it on database (MySQL).
3. Write a server side java application called JSP to catch form data sent from client and store it on database (MySQL).

### **SOFTWARE NEEDED**

1. Any Operating System
  2. JDK 7 or later
  3. Editors; Netbeans/Eclipse
  4. Web browser
  5. Tomcat 7 or later
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## THEORY - CONCEPT

**Java Server Pages (JSP):** It is a server side programming technology that is used to create dynamic web-based applications. JSP have right to use the complete Java APIs, including the JDBC API to access the databases.

It is a technology that helps software developers to create dynamic web pages based on HTML, XML and other document types. It was released in 1999 by Sun Microsystems. It is just like a PHP and ASP, but it uses the Java programming language.

A JSP element is a type of java servlet that is designed to accomplish the role of a user interface for a java web application. Web developers write JSPs as text files that combine HTML or XHTML code, XML elements, and rooted JSP actions and commands.

Using JSP, you can collect input from users through webpage forms, current records from a database or another source and create web pages dynamically.

JSP tags can be used for different purposes, such as retrieving information from a database or registering user preferences, accessing JavaBeans components, passing control between pages, and sharing information between requests, pages etc.

### Why we need JSP?

JSP is used for the design of dynamic web page and servlet is used to code the logic that is present i.e. in the MVC (Model-View-Controller) architecture, the servlet is the controller and the JSP is the view.

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### Architecture of JSP

1. The request / response part of a JSP is defined in below architecture
2. The client initiated request for a JSP file using browser
3. Webs server (i.e, JSP Engine) invokes the JSP file and interpret the JSP file produce a java code. The created java code will be a Servlet.
4. Once Servlet is created, JSP engine compiles the servlet. Compilation errors will be detected in this phase.
5. Now servlet class is loaded by the container and executes it.
6. Engine sends the response back to the client.

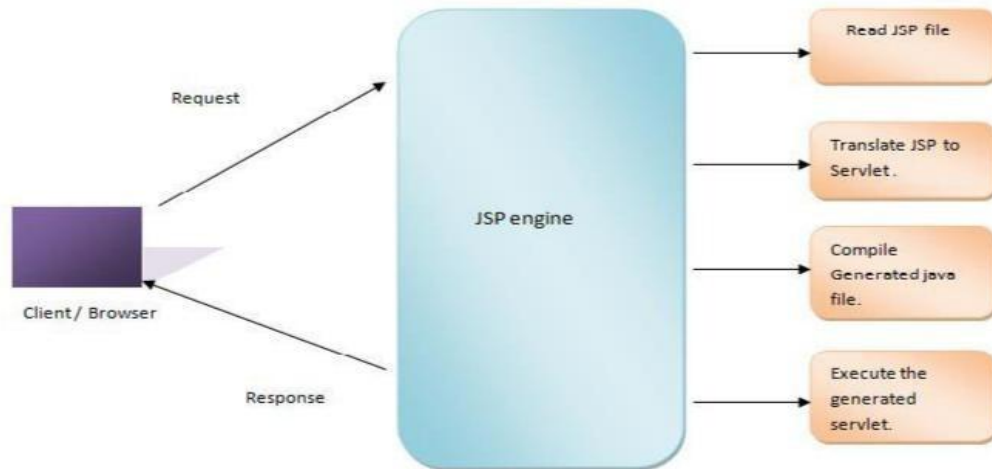


Figure.2: Architecture of JSP

### Syntax of JSP:

JSP [declarations](#) is used to declare variables and methods as shown below,

```
<% text %>
```

Following is the simple and first example for JSP:

```
//Hello.jsp
<html>
  <head>
<title> JSP File</title>
  </head>

  <body>
    <%
      out.println("Welcome to JSP Class");
    %>
  </body>
</html>
```

### Output:

Welcome to JSP Class

### Servlet:

A Servlet is a server side program and written in Java. Servlet is a web component that is deployed on the server for creating the dynamic web pages. A Java servlet is a Java program that extends the capabilities of a server. Although servlets can respond to any types of requests, they most commonly execute applications hosted on Web servers.

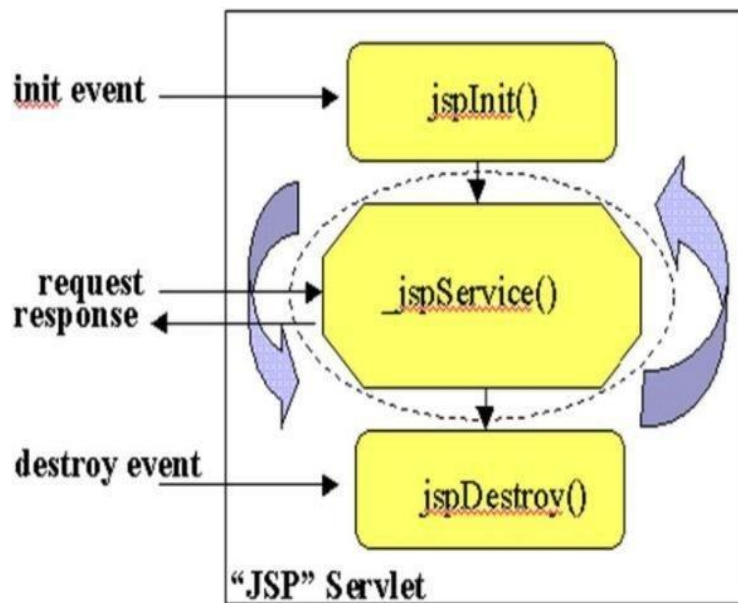


Figure.3: Functions of Servlet

## TECHNOLOGY/TOOL IN BRIEF

1. JSP and Servlets
2. IDE: NetBeans 7.0 or Later
3. Databases: MySQL

**NetBeans:** NetBeans is an IDE, used for quickly and easily developing java desktop, mobile, and web applications, as well as HTML5 applications with HTML, JavaScript, and CSS. Also provides a huge set of tools for PHP and C/C++ developers. It is free and open source tool and has a great community of users and developers around the world.

**MySQL:** MySQL is a freely available open source Relational Database Management System (RDBMS). It uses the Structured Query Language (SQL).

SQL is the most popular language for adding, accessing and managing data in a database. It is most noted for its quick processing, proven reliability, ease and flexibility of use. MySQL is an essential part of almost every open source PHP application. Good examples for PHP & MySQL-based scripts are WordPress, Joomla, Magento and Drupal.

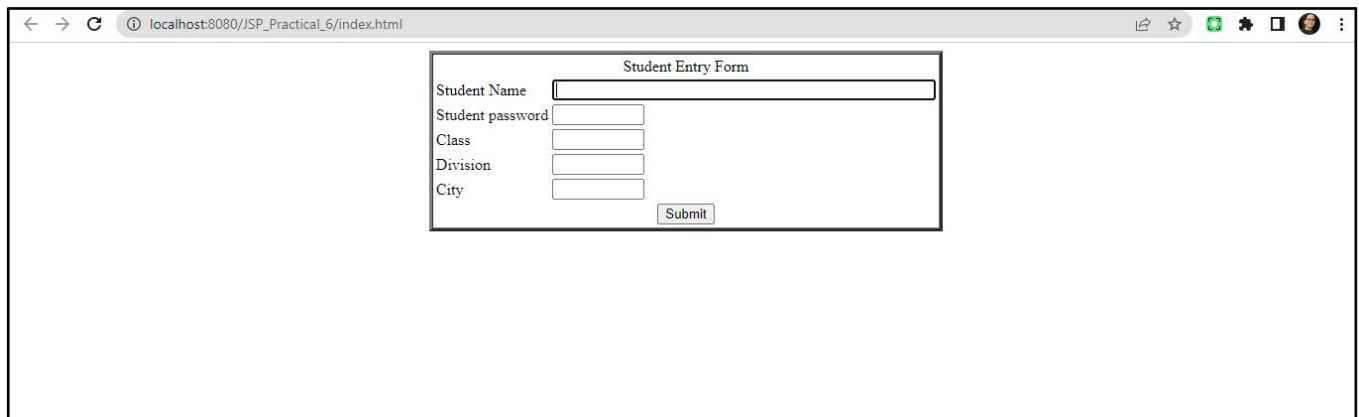
**DESIGN / EXECUTION STEPS**

Following steps are used to Create and Execute web applications,

1. Design html and jsp files with an extension of .html and .jsp
2. Set MySQL username, password and database name in database connection page
3. Start the Tomcat Server with port number
4. Open the browser and type localhost:8084

**TEST CASES**

Manual testing is used to validate the fields like student\_id, student\_name, class, division, city of the student entered by user with the database.

**SAMPLE OUTPUT**

Student Entry Form

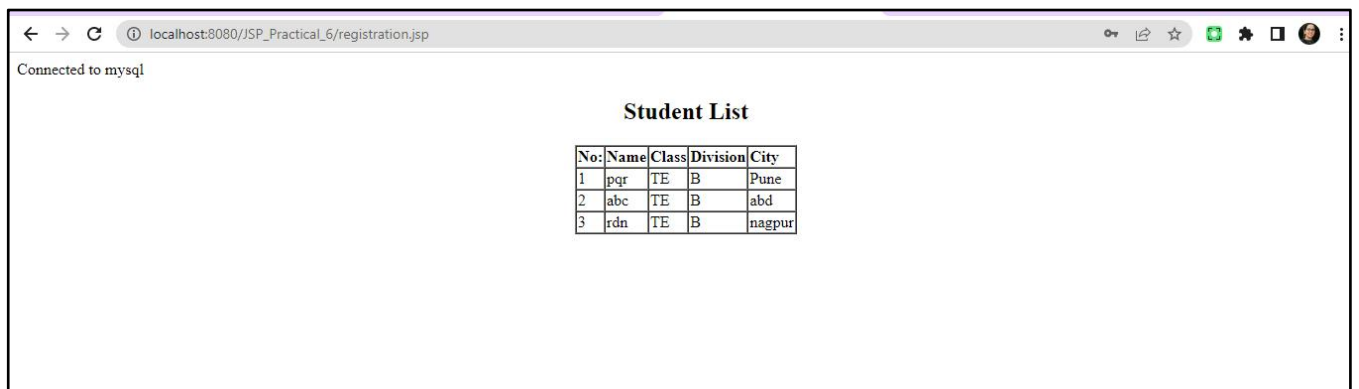
Student Name

Student password

Class

Division

City



Connected to mysql

Student List

No:	Name	Class	Division	City
1	pqr	TE	B	Pune
2	abc	TE	B	abd
3	rdn	TE	B	nagpur

## CONCLUSION / ANALYSIS

Hence, we have performed the dynamic web application using JSP, and MySQL.

## VIVA QUESTIONS

1. What is JSP and why do we need it?
2. What are the JSP lifecycle phases?
3. What are JSP lifecycle methods?
4. Which JSP lifecycle methods can be overridden?
5. How can we avoid direct access of JSP pages from client browser?
6. What are different types of comments in JSP?
7. What is Scriptlet, Expression and Declaration in JSP?
8. What are JSP implicit objects?
9. Can we use JSP implicit objects in a method defined in JSP Declaration?
10. Which implicit object is not available in normal JSP pages?
11. What are the benefits of PageContext implicit object?
12. How do we configure init params for JSP?
13. Why use of scripting elements in JSP is discouraged?
14. Can we define a class in a JSP Page?
15. How can we disable java code or scripting in JSP page?
16. Explain JSP Action Elements or Action Tags?
17. What is difference between include directive and jsp:include action?
18. What is JSP Expression Language and what are its benefits?
19. What are JSP EL implicit objects and how it's different from JSP implicit Objects?
20. How to use JSP EL to get HTTP method name?
21. What is JSP Standard Tag Library, provide some example usage?
22. What are the types of JSTL tags?
23. What is JSP Custom Tag and what are its components?
24. Give an example where you need JSP Custom Tag?
25. Why don't we need to configure JSP standard tags in web.xml?
26. How can we handle exceptions thrown by JSP service method?
27. How do we catch exception and process it using JSTL?
28. How do we print "<br> creates a new line in HTML" in JSP?
29. What is jsp-config in deployment descriptor?
30. How to ignore the EL expression evaluation in a JSP?
31. When will Container initialize multiple JSP/Servlet Objects?
32. Can we use JavaScript with JSP Pages?
33. How can we prevent implicit session creation in JSP?
34. What is difference between JspWriter and Servlet PrintWriter?
35. How can we extend JSP technology?
36. Provide some JSP Best Practices?