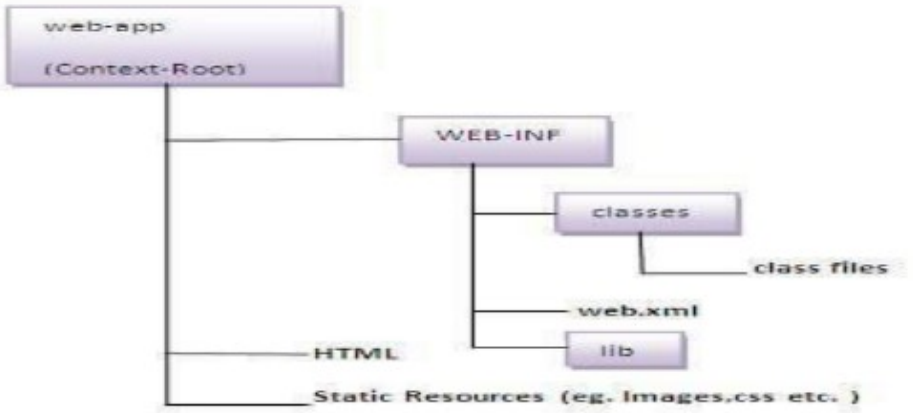
1. Create a directory structure
2. Create a Servlet
3. Compile the Servlet
4. Create a deployment descriptor
5. Start the server and deploy the project
6. Access the servlet

1)Create a directory structures

The **directory structure** defines that where to put the different types of files so that web container may get the information and respond to the client.The Sun Microsystem defines a unique standard to be followed by all the server vendors. Let's see the directory structure that must be followed to create the servlet.



1. Demo Servlet Program

DemoServlet.java

```
import javax.servlet.http.*;
import javax.servlet.*;
import java.io.*;
public class DemoServlet extends HttpServlet{
public void doGet(HttpServletRequest req,HttpServletResponseres)
throws ServletException,IOException {
res.setContentType("text/html");
PrintWriter out=res.getWriter();
 out.println("<html><body>");
out.println("<h1>Welcome to Http servlet</h1>");
out.println("</body></html>");
out.close();
}}
```

web.xml

```
<web-app>
  <servlet>
   <servlet-name>demo</servlet-name>
  <servlet-class>DemoServlet</servlet-class> </servlet>
  <servlet-mapping>
     <servlet-name>demo</servlet-name>
     <url-pattern>/demohttp </url-pattern>
  </servlet-mapping>
</web-app>
```

2. Reading Servlet Parameters

To read data from HTML file and print

```
<html>
<form method=“post” action=“s2”>
Enter Your Name
<input type=text name=“t1”>
<br>
<input type=“submit” value=“submit”>
</form>
</body>
</html>
```

ReadParameter.java (Servlet Code)

```
import java.io.*;
import javax.servlet.*;
public class ReadParameter extends HttpServlet {
 public void doPost(HttpServletRequest request, HttpServletResponse response)
throws ServletException, IOException
 {
response.setContentType("text/html");
String a= request.getParameter("t1");
PrintWriter out= response.getWriter();
out.print("<br>Your Name is: "+a);
 }
}
<web-app>
  <servlet>
   <servlet-name>demo</servlet-name>
  <servlet-class> ReadParameter </servlet-class>
</servlet>
  <servlet-mapping>
    <servlet-name>demo</servlet-name>
    <url-pattern>/demo </url-pattern>
  </servlet-mapping>
</web-app>
```

3. HttpSession

index.html

```
<form action="servlet1">
Name:<input type="text" name="userName"/><br/>
<input type="submit" value="go"/>
</form>
```

FirstServlet.java

```
import java.io.*;
import javax.servlet.*;
import javax.servlet.http.*;

 public class FirstServlet extends HttpServlet {
 public void doGet(HttpServletRequest request, HttpServletResponse response){
       try{
       response.setContentType("text/html");
      PrintWriter out = response.getWriter();
       String n=request.getParameter("userName");
      out.print("Welcome "+n);
     HttpSession session=request.getSession();
      session.setAttribute("uname",n);
       out.print("<a href='servlet2'>visit</a>");
        out.close();
            }catch(Exception e){System.out.println(e);}
  }
 }
```

SecondServlet.java

```
import java.io.*;
import javax.servlet.*;
import javax.servlet.http.*;

public class SecondServlet extends HttpServlet {
 public void doGet(HttpServletRequest request, HttpServletResponse response)
       try{
       response.setContentType("text/html");
       PrintWriter out = response.getWriter();
```

```
        HttpSession session=request.getSession(false);
        String n=(String)session.getAttribute("uname");
        out.print("Hello "+n);

        out.close();
              }catch(Exception e){System.out.println(e);}
    }

  }
```

web.xml

```
<web-app>

<servlet>
<servlet-name>s1</servlet-name>
<servlet-class>FirstServlet</servlet-class>
</servlet>

<servlet-mapping>
<servlet-name>s1</servlet-name>
<url-pattern>/servlet1</url-pattern>
</servlet-mapping>

<servlet>
<servlet-name>s2</servlet-name>
<servlet-class>SecondServlet</servlet-class>
</servlet>

<servlet-mapping>
<servlet-name>s2</servlet-name>
<url-pattern>/servlet2</url-pattern>
</servlet-mapping>
  </web-app>
```

4. Cookies in Servlet

index.html

```
<form action="servlet1" method="post">
Name:<input type="text" name="userName"/><br/>
<input type="submit" value="go"/>
</form>
```

FirstServlet.java

```
import java.io.*;
import javax.servlet.*;
import javax.servlet.http.*;

public class FirstServlet extends HttpServlet {

 public void doPost(HttpServletRequest request, HttpServletResponse response){
   try{
     response.setContentType("text/html");
   PrintWriter out = response.getWriter();

   String n=request.getParameter("userName");
   out.print("Welcome "+n);
   Cookie ck=new Cookie("uname",n);//creating cookie object
   response.addCookie(ck);//adding cookie in the response
    //creating submit button
   out.print("<form action='servlet2'>");
   out.print("<input type='submit' value='go'>");
   out.print("</form>");
   out.close();
        }catch(Exception e){System.out.println(e);}
  }
}
```

SecondServlet.java

```
import java.io.*;
import javax.servlet.*;
import javax.servlet.http.*;

public class SecondServlet extends HttpServlet {
 public void doPost(HttpServletRequest request, HttpServletResponse response){
   try{
    response.setContentType("text/html");
   PrintWriter out = response.getWriter();
     Cookie ck[]=request.getCookies();
   out.print("Hello "+ck[0].getValue());
    out.close();
        }catch(Exception e){System.out.println(e);}
   }
}
```

web.xml

```
<web-app>
<servlet>
<servlet-name>s1</servlet-name>
<servlet-class>FirstServlet</servlet-class>
</servlet>
 <servlet-mapping>
<servlet-name>s1</servlet-name>
<url-pattern>/servlet1</url-pattern>
</servlet-mapping>
<servlet>
<servlet-name>s2</servlet-name>
<servlet-class>SecondServlet</servlet-class>
</servlet>
 <servlet-mapping>
<servlet-name>s2</servlet-name>
<url-pattern>/servlet2</url-pattern>
</servlet-mapping>

</web-app>
```

5. Reading Initialization Parameters in Servlet

DemoServlet.java

```
import java.io.*;
import javax.servlet.*;
import javax.servlet.http.*;

public class DemoServlet extends HttpServlet {
public void doGet(HttpServletRequest request, HttpServletResponse response)
   throws ServletException, IOException {

   response.setContentType("text/html");
   PrintWriter out = response.getWriter();
    ServletConfig config=getServletConfig();
   String driver=config.getInitParameter("driver");
   out.print("Driver is: "+driver);
   out.close();
   }
}
```

web.xml

```
<web-app>
<servlet>
<servlet-name>DemoServlet</servlet-name>
<servlet-class>DemoServlet</servlet-class>
<init-param>
<param-name>driver</param-name>
<param-value>sun.jdbc.odbc.JdbcOdbcDriver</param-value>
</init-param>
<servlet>
<servlet-mapping>
<servlet-name>DemoServlet</servlet-name>
<url-pattern>/servlet1</url-pattern>
</servlet-mapping>

</web-app>
```

JSP

1. JSP Reading Parameter

Request Object:

The request is an implicit object of type HttpServletRequest. It was created for each jsp request by the web container.

It can be used to get request information from web page or document.

By using this request object ,we can able read values from input elements in JSP.

Example: "requestobj.html"

```
<html>
 <head>
 <title>Request Object</title>
 </head>
 <body>
<form action="requestobj.jsp">
<input type="text" name="uname">
<input type="submit" value="go"><br/>
</form>
 </body>
</html>
```

requestobj.jsp

```
<%
String name=request.getParameter("uname");
out.print("welcome "+name);
%>
```

2. JSP Session

Session Object:

In JSP, session is an implicit object of type HttpSession. We can use this object to set, get or remove attribute or to get session information.

Example:

Session.html

```
<html>
<body>
<form action="welcome.jsp">
<input type="text" name="uname">
<input type="submit" value="go">
</form>
</body>
</html>
```

session.jsp

```
<html>
<body>
<%
String name=request.getParameter("uname");
out.print("Welcome "+name);
session.setAttribute("user",name);
%>
<br/>
<a href="second.jsp">Next Page</a>
</body>
</html>
```

second.jsp

```
<html>
<body>
<%
 String name=(String)session.getAttribute("user");
out.print("Hello "+name);
 %>
</body>
</html>
```

3. JSP Cookies

cookiedemo.html

```
<html>
<head>
<title>Cookie Demo</title>
</head>
<body>
<form method="post" action="setcookie.jsp">
<p><b>Enter Your Name: </b>
<input type="text" name="username"><br>
<input type="submit" value="Submit">
</form>
</body>
</html>
```

setcookie.jsp

```
<%
String uname=request.getParameter("username");
Cookie ck = new Cookie ("username",uname);
ck.setMaxAge(1* 60);
response.addCookie(ck);
%>
<html>
<body>
<h3>Cookie Saved</h3>
<p><a href="showcookie.jsp“>View the cookie value</a><p>
</body>
</html>
```

showcookie.jsp

```
<html>
<body>
<h3>Reading the cookies</h3>
<%
Cookie[] array= request.getCookies();
for(int i=0; i<array.length; i++)
{
if(array[i].getName().equals("username"))
{
out.println("<br/>");
out.println("Name of the cookie : " + array[i].getName() + "<br/>");
out.println("Value in cookie : " + array[i].getValue());
}
}
%>
</body>
</html>
```

4. Using Beans in JSP Pages

Example: "Employee.java"

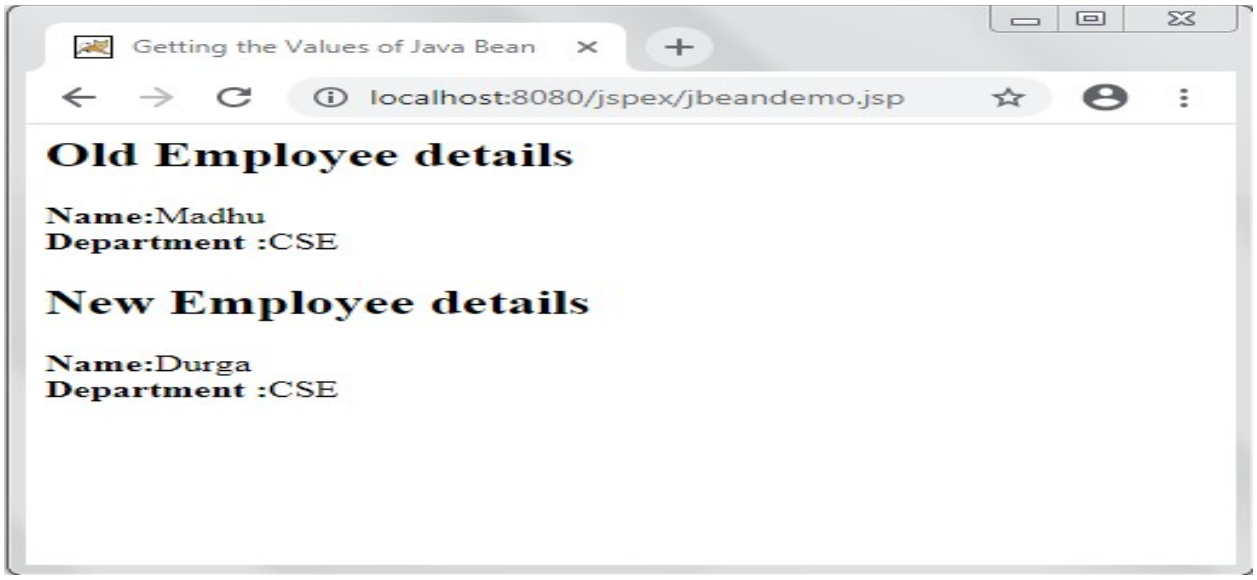
Step 1: Create Java Bean

```
package college;
public class Employee {
   private String name = "Madhu";
   private String department = "CSE";
   public String getName() {
      return name;
   }
   public void setName(String name) {
      this.name = name;
   }
   public String getDepartment() {
      return department;
   }
   public void setDepartment(String department) {
      this.department = department;
   }
}
```

"jbeandemo.jsp"

Step 2: Create JSP

```
<html>
<head> <title> Java Bean Demo</title></head>
<body>
<jsp:useBean id="employee" class="college.Employee" />
<h2> Employee details </h2>
Name: <jsp:getProperty name="employee" property="name" /><br/>
Department :<jsp:getProperty name="employee" property="department" />
<jsp:setProperty name="employee" property="name" value="Durga" />
<jsp:setProperty name="employee" property="department" value="CSE" />
<h2> New Employee details </h2>
Name:<jsp:getProperty name="employee" property="name" /><br/>
Department :<jsp:getProperty name="employee" property="department" />
</body>
</html>
```


Getting the Values of Java Bean
localhost:8080/jspex/jbeandemo.jsp
Old Employee details
Name:Madhu
Department :CSE
New Employee details
Name:Durga
Department :CSE

5. Retrieve Data from MySQL table

```
<%@ page import="java.sql.*" %>

<!DOCTYPE html>
<html>
<body>
   <%
      String url = "jdbc:mysql://localhost:3306/demoDB";
       Connection conn=null;
   try {
         Class.forName("com.mysql.jdbc.Driver");
         conn = DriverManager.getConnection(url, "root", "");
         Statement st = conn.createStatement();
         String query = "SELECT * FROM employee";
         ResultSet rs = st.executeQuery(query);
         while(rs.next())
        {
         out.println("Emp_Id : " + rs.getInt("emp_id"));
         out.println("<br> FirstName: " + rs.getString("first_name"));
         out.println("<br> LastName: " + rs.getString("last_name"));
       }
            }
   catch (Exception e)
     {
         out.println("Error: " + e.getMessage());
      }
   finally
    {
         if (conn != null) {
            conn.close();
         }
      }    %>
</body>   </html>
```

PHP

1.Creating a Session

```
<?php
session_start();
?>
<!DOCTYPE html>
<html>
<body>
<?php
// Set session variables
$_SESSION["name"] = "Educative";
$_SESSION["ID"] = "123";
?>
</body>
</html>
```

Retrieve session variables in PHP

```
<?php
session_start();
?>
<!DOCTYPE html>
<html>
<body>
<?php
// Echo session variables that were set on previous page
echo "Company name is " . $_SESSION["name"] . ".<br>";
echo "Company ID is " . $_SESSION["ID"] . ".";
?>
</body> </html>
?>
```

2.Accessing Cookies Values

```
<?php
// Setting a cookie
setcookie("username", "John Carter", time()+30*24*60*60);
?>
<?php
// Verifying whether a cookie is set or not
if(isset($_COOKIE["username"]))
{
echo "Hi " . $_COOKIE["username"];
}
else
{
echo "Welcome Guest!";
}
?>
```

3. Retrieve Data

```
<html>
<body>
<?php
$servername = "localhost";
$username = "username";
$password = "password";
$dbname = "myDB";

$conn = mysqli_connect($servername, $username, $password, $dbname);
if (!$conn) {
    die("Connection failed: " . mysqli_connect_error());
}

$sql = "SELECT id, firstname, lastname FROM MyGuests";
$result = mysqli_query($conn, $sql);

if (mysqli_num_rows($result) > 0) {
        while($row = mysqli_fetch_assoc($result)) {
        echo "id: " . $row["id"]. " - Name: " . $row["firstname"]. " " .
$row["lastname"]. "<br>";
    }
} else {
    echo "0 results";
}
mysqli_close($conn);
?> </body>
</html>
```