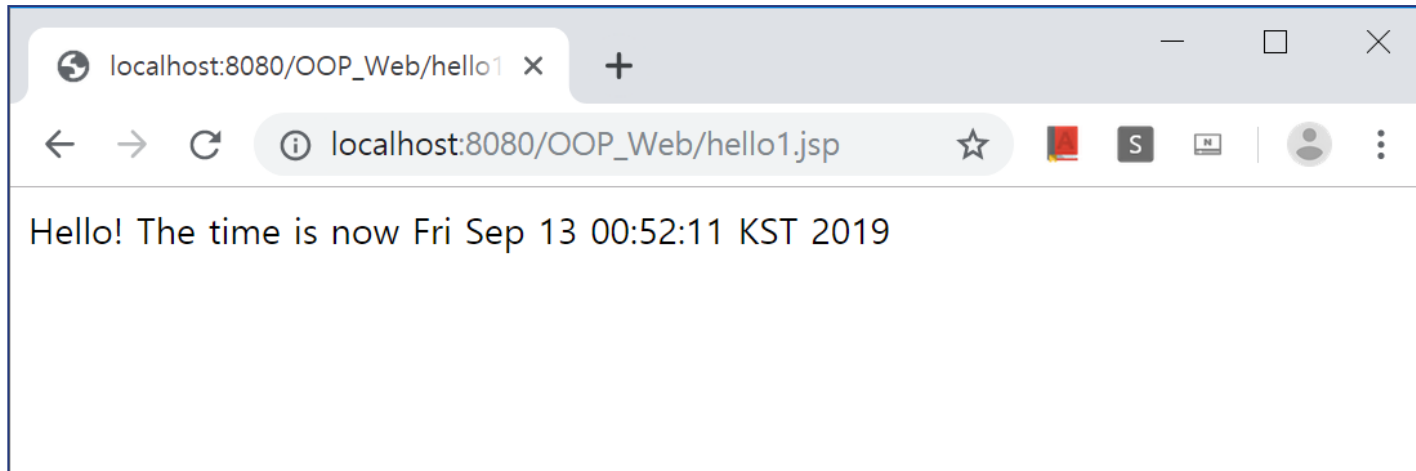


JSP (Java Server Page)

JSP

- ❖ A JSP page consists of HTML tags and JSP tags

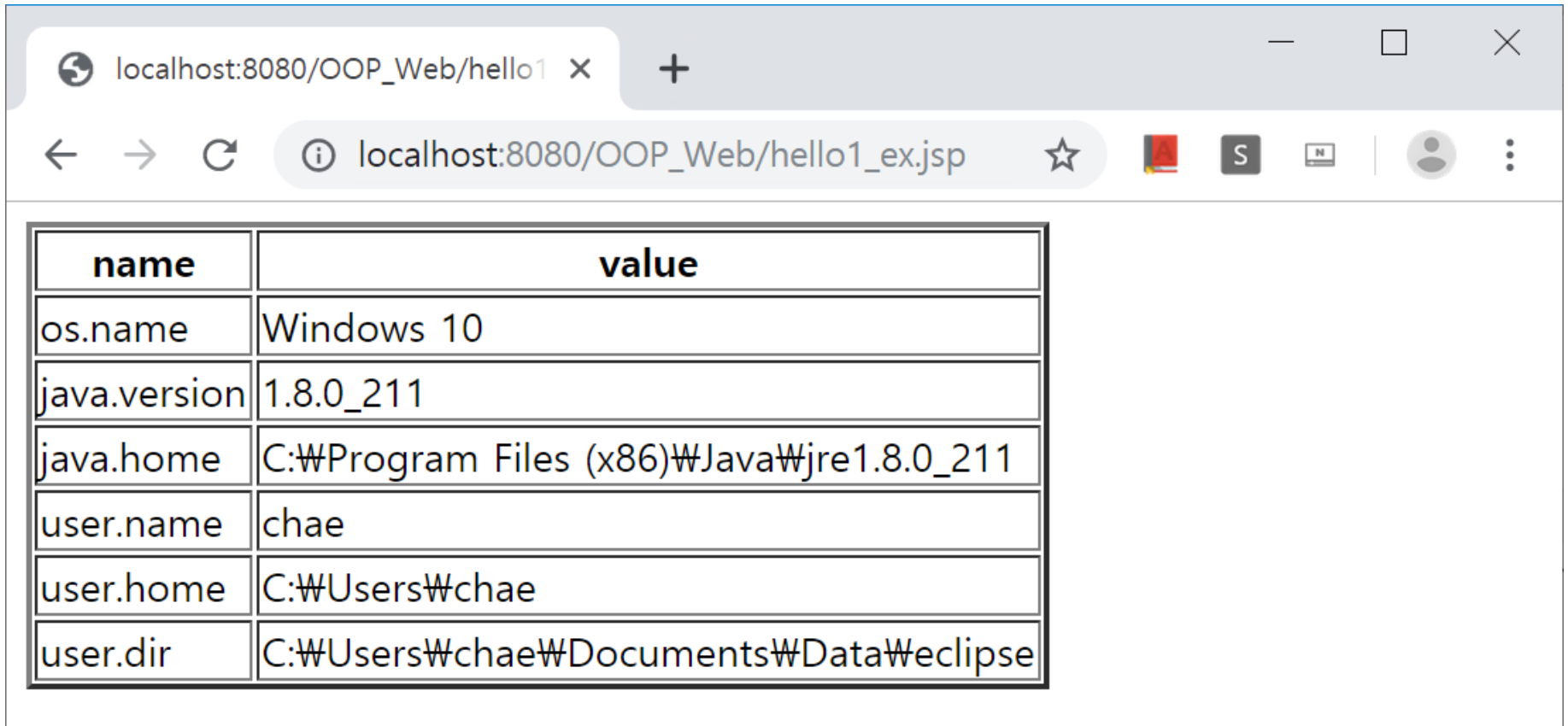
```
<%-- hello1.jsp --%>  
<HTML>  
<BODY>  
Hello! The time is now <%= new java.util.Date() %>  
</BODY>  
</HTML>
```



JSP Scripting Elements

Kind	Notation	Description
expression tag	<code><%= ... %></code>	written to the output stream of the response
scriptlet tag	<code><% ... %></code>	used to execute java source code
declaration tag	<code><%! ...%></code>	used to declare fields and methods

hello1_ex.jsp



name	value
os.name	Windows 10
java.version	1.8.0_211
java.home	C:\Program Files (x86)\Java\jre1.8.0_211
user.name	chae
user.home	C:\Users\chae
user.dir	C:\Users\chae\Documents\Data\weclipse

Expression tag: hello1_ex.jsp

```
<html>
<body>
  <table border="2">
    <thead>
      <tr> <th>name </th> <th>value</th> </tr>
    </thead>
    <tbody>
      <tr> <td>os.name</td> <td><%= System.getProperty("os.name") %> </td> </tr>
      <tr> <td>java.version</td> <td><%= System.getProperty("java.version") %> </td> </tr>
      <tr> <td>java.home</td> <td><%= System.getProperty("java.home") %> </td> </tr>
      <tr> <td>user.name</td> <td><%= System.getProperty("user.name") %> </td> </tr>
      <tr> <td>user.home</td> <td><%= System.getProperty("user.home") %> </td> </tr>
      <tr> <td>user.dir</td> <td><%= System.getProperty("user.dir") %> </td> </tr>
    </tbody>
  </table>
</body>
</html>
```

Scriptlets

- ❖ You can write blocks of Java code inside the JSP.
- ❖ You do this by placing your Java code between `<%` and `%>` characters (just like expressions, but without the `=` sign at the start of the sequence.)
- ❖ This block of code is known as a "scriptlet".
- ❖ By itself, a scriptlet doesn't contribute any HTML
- ❖ A scriptlet contains Java code that is executed every time the JSP is invoked

hello2.jsp

```
<HTML>
<BODY>
<%
    // This is a scriptlet. Notice that the "date"
    // variable we declare here is available in the
    // embedded expression later on.
    java.util.Date date = new java.util.Date();
%>
Hello! The time is now <%= date %>
</BODY>
</HTML>
```

hello2_ex.jsp

```
<HTML> <BODY>
```

```
<%
```

```
// This is a scriptlet. Notice that the "date"  
// variable we declare here is available in the  
// embedded expression later on.  
java.util.Date date = new java.util.Date();
```

```
%>
```

```
Hello! The time is now
```

- If a scriptlet wants to generate HTML, it can use a variable called "out".
- The "out" variable is of type [javax.servlet.jsp.JspWriter](#)

```
<%
```

```
// This scriptlet generates HTML output  
out.println( String.valueOf( date ));
```

```
%>
```

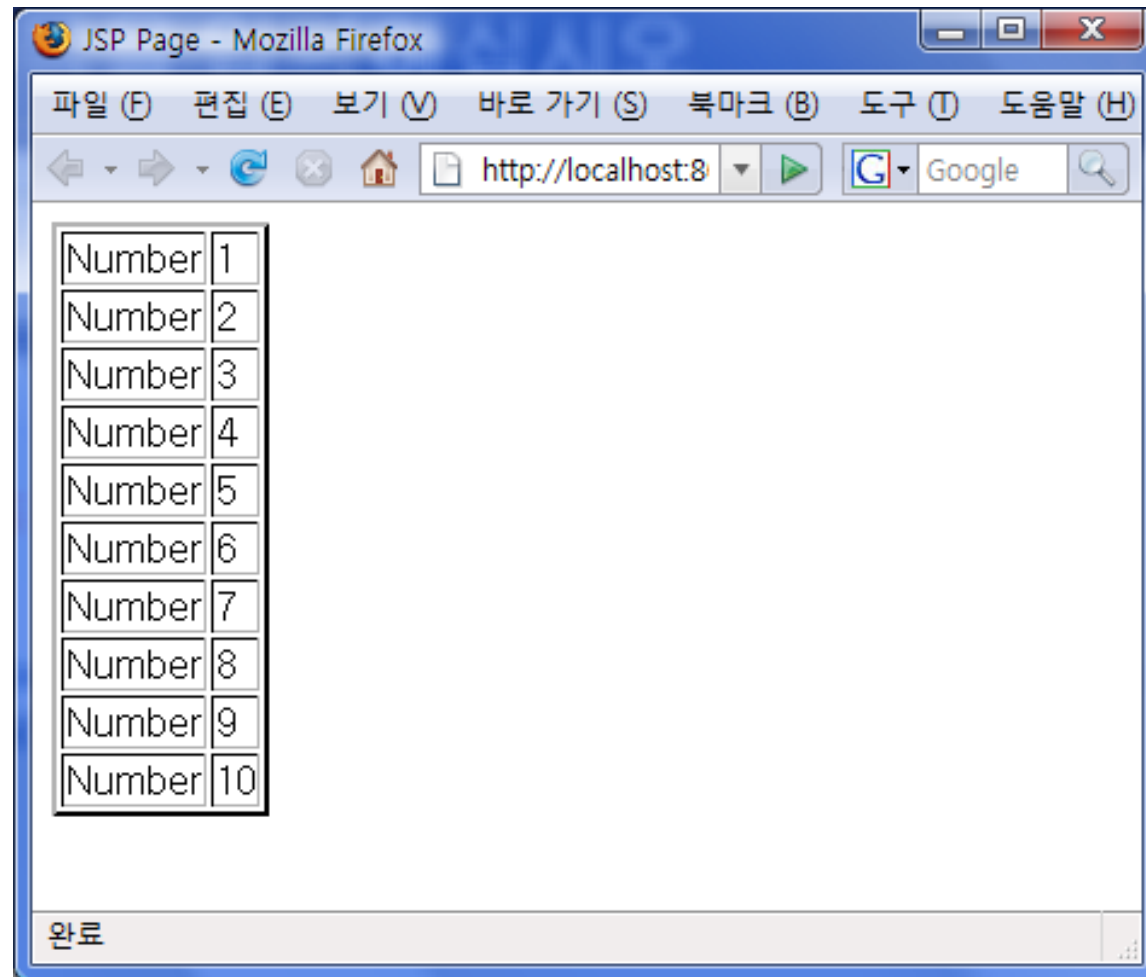
```
</BODY>
```

```
</HTML>
```


hello2_ex2.jsp

```
<HTML>
<BODY>
<%
    // This scriptlet declares and initializes "date"
    System.out.println( "Evaluating date now" );
    java.util.Date date = new java.util.Date();
%>
Hello!  The time is now
<%
    out.println( date );
    out.println( "<BR>Your machine's address is " );
    out.println( request.getRemoteHost());
%>
</BODY>
</HTML>
```

hello3.jsp



hello3.jsp

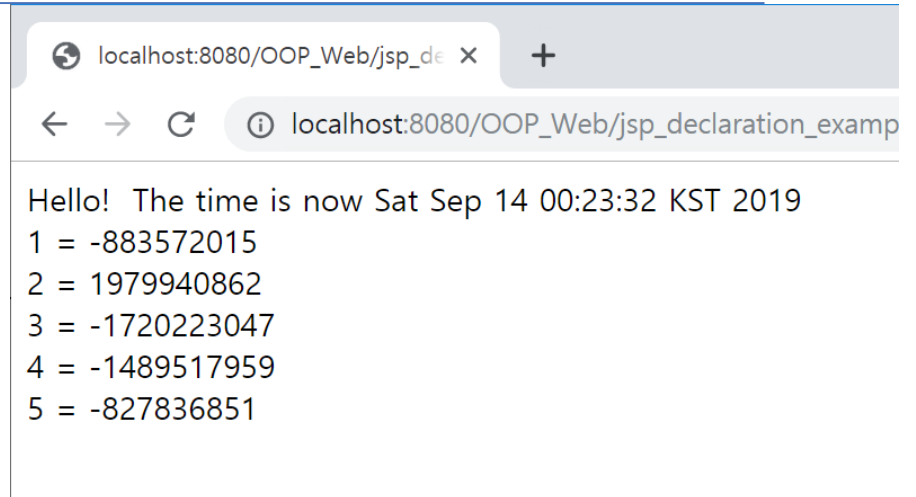
```
<HTML>
<BODY>
  <TABLE BORDER=2>
    <%
      int n = 10 ;
      for ( int i = 0; i < n; i++ ) {
        <TR>
          <TD>Number</TD>
          <TD><%= i+1 %></TD>
        </TR>
      <%
    }
  %>
  </TABLE>
</BODY>
</HTML>
```

Declaration Tag

The JSP declaration tag is used to declare fields and methods.


```
<%@ page import="java.util.*" %>
<HTML> <BODY>
<%!
    Date getDate() {
        Date theDate = new Date();
        return theDate;
    }
    int getRandom() {
        return new Random().nextInt();
    }
%>
```

```
Hello! The time is now <%= getDate() %> <br>
<%
    for ( int i=0; i < 5; i++ ) {
        <%= i+1 %> = <%= getRandom() %> <br>
    }
%>
</BODY>
</HTML>
```



REQUEST OBJECT

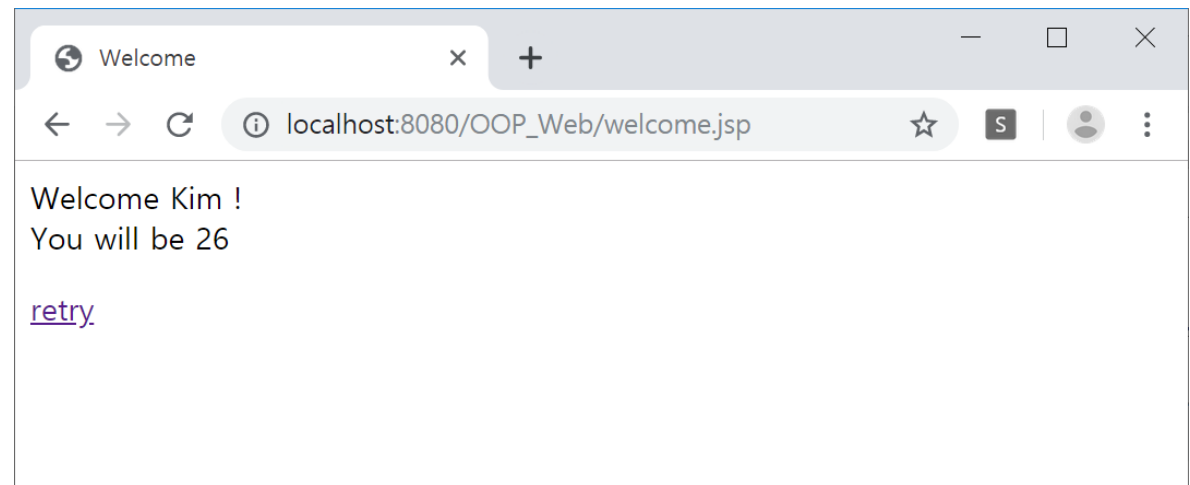
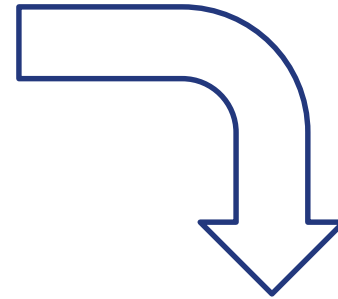
Form



Enter your name and age:

Name:

Age:



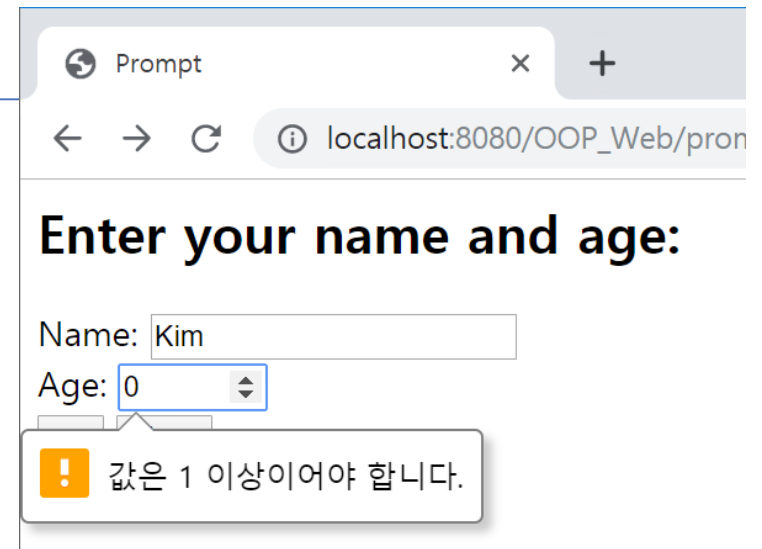
Welcome

Welcome Kim !
You will be 26

[retry](#)

prompt_name_age.jsp

```
<html>
<head>
<title>Prompt</title>
</head>
<body>
  <h2> Enter your name and age:</h2>
  <form action="welcome.jsp" method="post">
    Name: <input type="text" name="username"> <br>
    Age: <input type="number" name="age" min="1" max="200"> <br>
    <input type="submit" value="go">
    <input type="reset" value="clear"> <br/>
  </form>
</body>
</html>
```



Prompt

localhost:8080/OOP_Web/pron

Enter your name and age:

Name:

Age:

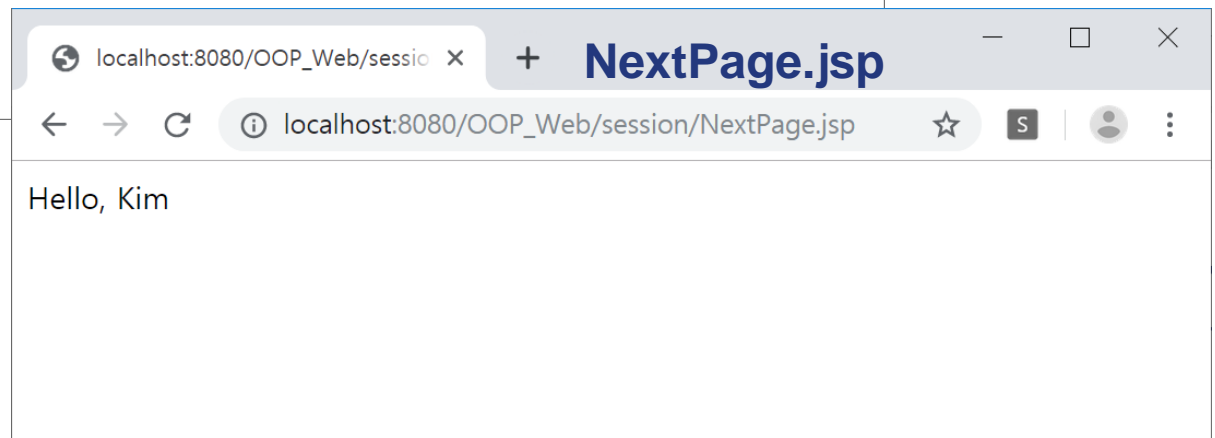
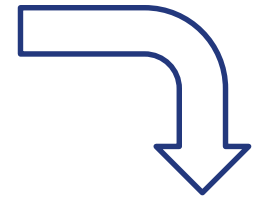
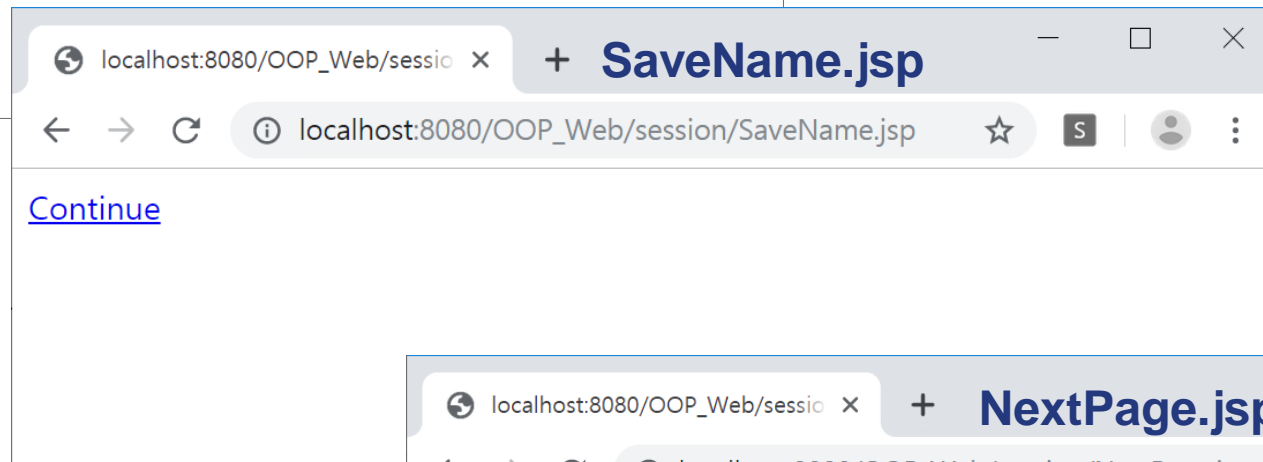
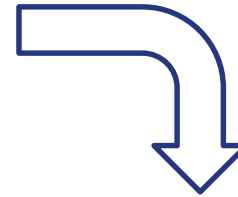
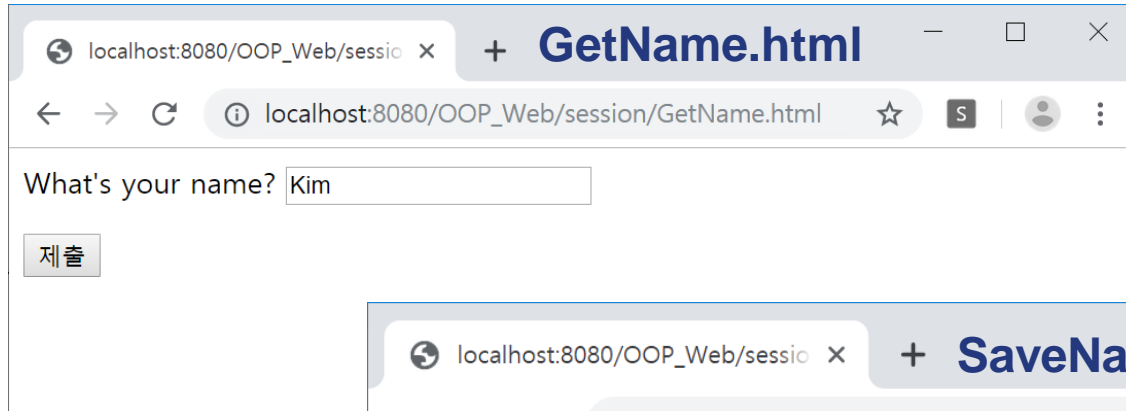
! 값은 1 이상이어야 합니다.

welcome.jsp

```
<html>
<head>
<title>Welcome</title>
</head>
<body>
<%
    String name = request.getParameter("username");
    int age = Integer.valueOf(request.getParameter("age"));
    out.println("Welcome " + name + " !");
    out.println("<br>");
    out.print("You will be " + (age+1));
    out.println("<p>");
%>
<a href="prompt_name_age.jsp"> retry </a>
</body>
</html>
```

SESSION OBJECT

JSP Sessions



JSP Sessions

GetName.html

```
<HTML>
<BODY>
<FORM METHOD=POST ACTION="SaveName.jsp">
What's your name?
<INPUT TYPE=TEXT NAME=username SIZE=20> <P>
<INPUT TYPE=SUBMIT>
</FORM>
</BODY>
</HTML>
```

JSP Sessions

- **session** is an implicit object of type HttpSession.
- **session** is used to set,get or remove attribute or to get session information.

SaveName.jsp

```
<%  
    String name = request.getParameter( "username" );  
    session.setAttribute( "theName", name );  
%>  
<HTML>  
<BODY>  
<A HREF="NextPage.jsp">Continue</A>  
</BODY>  
</HTML>
```

JSP Sessions

NextPage.jsp

```
<HTML>  
<BODY>  
Hello, <%= session.getAttribute( "theName" ) %>  
</BODY>  
</HTML>
```

JSP Directives

- ❖ The jsp directives are messages that tells the web container how to translate a JSP page into the corresponding servlet.
 - `<%@ directive attribute="value" %>`

- ❖ There are three types of directives:
 - page directive defines attributes that apply to an entire JSP page
 - include directive
 - includes the original content of the included resource
 - `<%@ include file="resourceName" %>`
 - taglib directive

JSP Directives: Example

```
<html>
<body>
<H1> Page Header</H1>
</body>
</html>
```

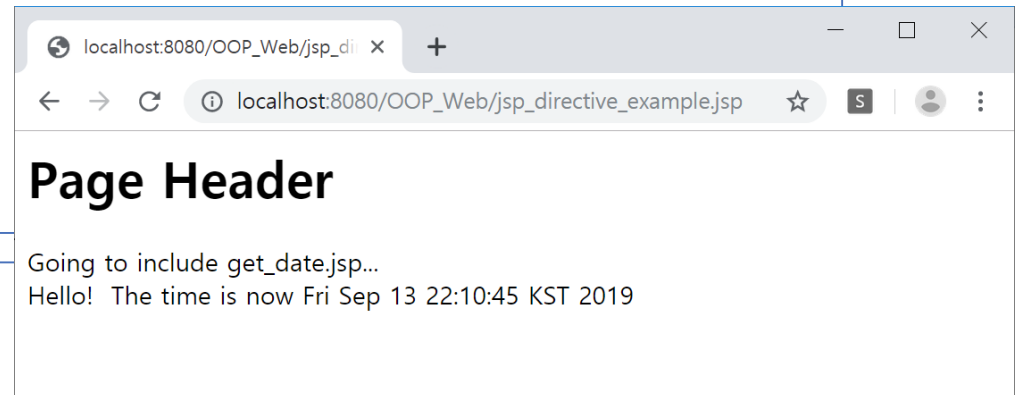
header.html

```
<%@ page import="java.util.*" %>
<HTML> <BODY>
<%
    Date date = new Date();
%>
Hello! The time is now <%= date %>
</BODY>
</HTML>
```

get_date.jsp

```
<HTML> <BODY>
<%@ include file="header.html" %>
Going to include get_date.jsp...<BR>
<%@ include file="get_date.jsp" %>
</BODY>
</HTML>
```

jsp_directive_example.jsp



JSP ACTION TAGS

Action Tags

- ❖ Each JSP action tag is used to perform some specific tasks.

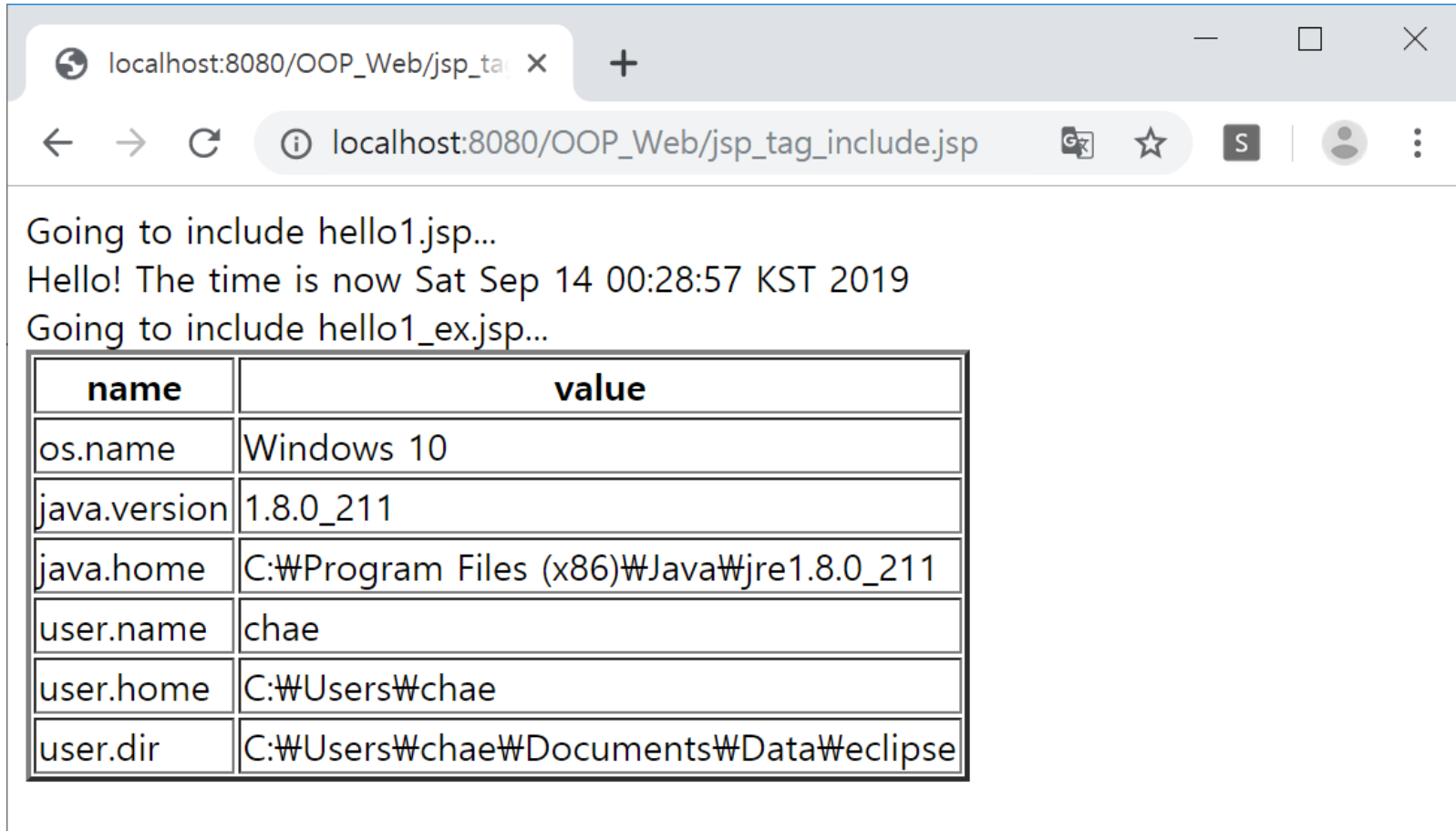
Action Tags	Description
jsp:forward	forwards the request and response to another resource.
jsp:include	includes another resource.
jsp:useBean	creates or locates bean object.
jsp:setProperty	sets the value of property in bean object.
jsp:getProperty	prints the value of property of the bean.

Action Tag - jsp:include

- ❖ include the content of a resource it may be jsp/html or servlet.

```
<html>
<body>
  Going to include hello1.jsp...<BR>
  <jsp:include page="hello1.jsp"/>
  <BR> Going to include hello1_ex.jsp...
  <jsp:include page="hello1_ex.jsp"/>
  </body>
</html>
```

Action Tag - jsp:include



The screenshot shows a web browser window with the address bar displaying `localhost:8080/OOP_Web/jsp_tag_include.jsp`. The page content is as follows:

Going to include hello1.jsp...

Hello! The time is now Sat Sep 14 00:28:57 KST 2019

Going to include hello1_ex.jsp...

name	value
os.name	Windows 10
java.version	1.8.0_211
java.home	C:\Program Files (x86)\Java\jre1.8.0_211
user.name	chae
user.home	C:\Users\chae
user.dir	C:\Users\chae\Documents\Data\ eclipse

What if “forward” instead of “include” ?

JAVA BEAN

JSP Action Tag - useBean

The image displays three overlapping browser window screenshots illustrating a JSP form workflow using the useBean action tag.

Top Window: The browser address bar shows `localhost:8080/OOP_Web/javabean/GetName2.ht...`. The page content includes three input fields with labels: "What's your name?" (containing "Kim"), "What's your e-mail address?" (containing "kim@korea.com"), and "What's your age?" (containing "50"). A button labeled "제출" (Submit) is visible at the bottom left.

Middle Window: The browser address bar shows `localhost:8080/OOP_Web/javabean/SaveName2.jsp`. The page content displays a blue link labeled "Continue".

Bottom Window: The browser address bar shows `localhost:8080/OOP_Web/javabean/NextPage2.jsp`. The page content displays the submitted data: "You entered", "Name: Kim", "Email: kim@korea.com", and "Age: 50".

JSP Action Tag - useBean

GetName2.html

```
<HTML>
<BODY>
<FORM METHOD=POST ACTION="SaveName2.jsp">
What's your name? <INPUT TYPE=TEXT NAME=username SIZE=20>
<BR>What's your e-mail address? <INPUT TYPE=TEXT NAME=email SIZE=20>
<BR> What's your age? <INPUT TYPE=TEXT NAME=age SIZE=4> <P>
<INPUT TYPE=SUBMIT>
</FORM>
</BODY>
</HTML>
```

JSP Action Tag - useBean

SaveName2.jsp

```
<jsp:useBean id="user" class="user.UserData" scope="session"/>
<jsp:setProperty name="user" property="*" />
<HTML>
<BODY>
<A HREF="NextPage2.jsp">Continue</A>
</BODY>
</HTML>
```

Java Bean

user\UserData.java

```
package user;
public class UserData {
    private String username;
    private String email;
    private int age;

    public void setUsername( String value ) { username = value; }
    public void setEmail( String value ) { email = value; }
    public void setAge( int value ) { age = value; }
    public String getUsername() { return username; }
    public String getEmail() { return email; }
    public int getAge() { return age; }
}
```


JSP Action Tag - useBean

NextPage2.jsp

```
<jsp:useBean id="user" class="user.UserData" scope="session"/>
<HTML>
<BODY>
You entered<BR> Name: <%= user.getUsername() %>
<BR> Email: <%= user.getEmail() %>
<BR> Age: <%= user.getAge() %> <BR>
</BODY>
</HTML>
```

