
<JSTORM>

J S P



JSTORM
<http://www.jstorm.pe.kr>

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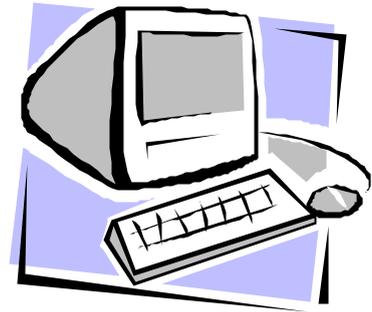
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J S P

Wrox Java Server Programming 7 “In
roducing JavaServer Pages”
가
. , JSP JS
P
.
:
.



1. Java Server Pages

JSP
Java 2 Enterprise Edition

JavaServer Pages 가? HTML
XML markup . page JSP
JSP , ,

(, JavaBeans). 가
가
가 .

☞ JSP
☞ JSP
☞ JavaBean JSP
☞

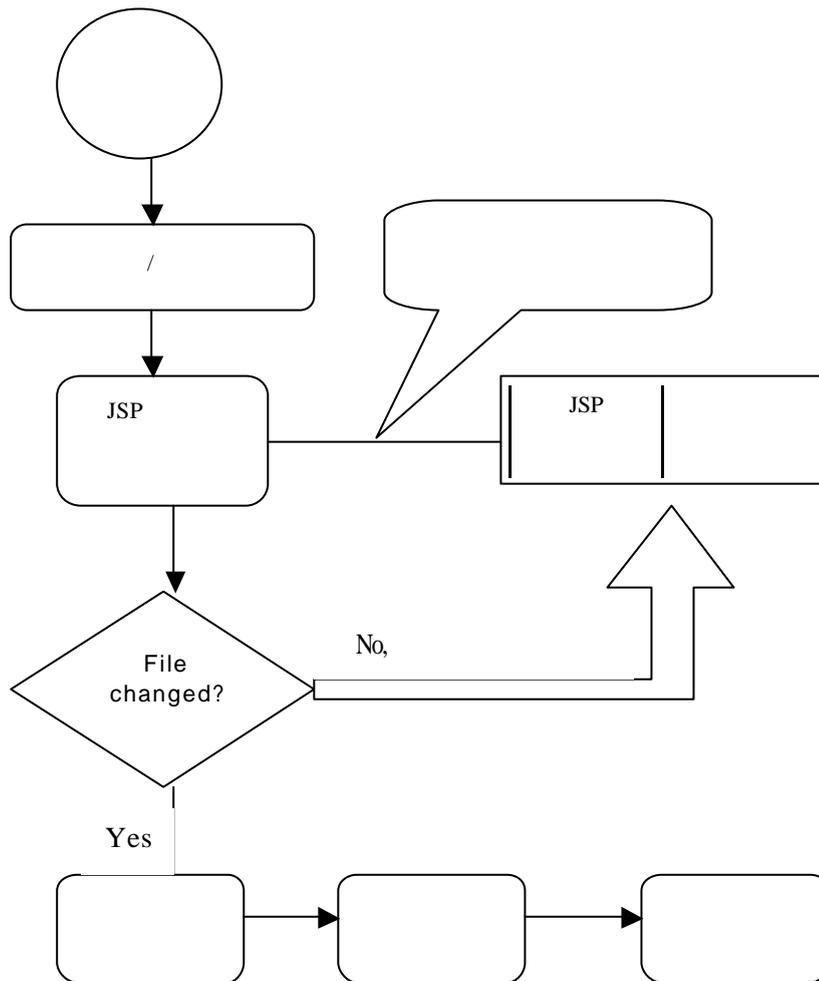
2. JSP Architecture

JSP HTML XML JSP
JSP 가
가 JSP 가
가

, Jrun
jrun/jsm-default/services/jse/servlets/jsp JSP 가

JSP
JSP가
_jspService(HttpServletRequest request, HttpServletResponse response) 가
JSP
JSP가

JSPPage HttpJspPage
jspInit() . jspDestroy() ,
가



3. JSP Elements

page . . .
Directives : page
() import , error handling page , page session
* Java .
Declaratives :
Scriptlets : page
Expressions : page

```
 , JSP .  
  
<html>  
<head><title>Demo of a JSP page</title></head>  
<body>  
<!-- Directives : page -->  
<%@ page language="java" %>  
  
<!-- Declaratives : char -->  
<%! char c=0; %>  
  
<!-- Scriptlet : -->  
<%  
for (int i=0; i<26; i++){  
    for ( int j=0; j<26; j++){  
        c=(char)(0x41 + (26-i+j)%26);  
    }  
}%>  
  
<!-- Expression : HTML page c.toString() -->  
<%= c %>  
  
<% } %>  
<br>  
<% } %>  
</body>  
</html>
```

JSP element type action ,
XML syntax .
, <jsp:useBean ???? />
가 bean JSP 1.1
tag action tags tag

4. JSP Directives

JSP directive page JSP syntax <%@
directive { attribute="value" } %> directive attribute
가 * 가

Attribute and possible values	
Language="java"	language가 Java JSP syntax , Java가
Extends="package.class"	
* import="package.* , package.class"	JSP top import (,) import packages classes
Session="true false"	가 page 가 true
isThreadSafe="true false"	JSP true가 JSP coder page false 가 page access single thread model
info="text"	Page Servlet.getServletInfo() 가 page
* errorPage="pathToErrorPage"	
isErrorPage="true false"	page가 error page true
* ContentType="text/html; charset=euc-kr"	JSP mime type character non-euc-kr characters가

5. JSP Declarations

```
JSP Declaration page
    <%! Declaration %>

    <%!
    String ;
    int count = 0;

    private void incrementCount(){
        count++;
    }
    %>

    jspInit() jspDestroy()
```

6. JSP Scriptlets

```
Scriptlets <% %>
    _jspService() . Scriptlet
    servlet
    beans

    scriptlet 가 objects
```

Implicit Object	
Request	HttpServletRequest request
response	HttpServletResponse JSP page response
pageContext	Page attributes implicit objects page JSP API 가
Session	Request HTTP session object
application	getServletConfig().getContext() return servlet context
Out	output stream object
Config	Page ServletConfig object
Page	page page
exception	Throwable

7. JSP Expressions

JSP expression HTML Primitive String
String Primitive String
expression
JSP expression out.println()

The current price of item A100 is <%= quest.getParameter("price") %>

JSP scriplet HTML HTML
가
<% %>
<%
for(int i=0; i<10; i++){
%>

Counter value is <%= i %>
<%
}
%>

8. Coding JSP Page

JSP HTML HTML JSP 가 , JSP
JSP Bean() , Component
OOP
reference JSP implementation 가 bean
recompile Bean reload bean
restart

9. Using JavaBeans Components with JSP

JSP , 가

10. What is a JavaBean?

(javabeen)

Public class
Argument 7+ Public constructor
Property public set method get method
Property , property
getXXX() setXXX() . XXX property
(bean) bean import
bean
JSP page , bean .

```
// beanTest.java
package com.wrox.jspexamples;

import java.awt.Color;
import java.util.*;

public class AlphabetCode{
    HashMap map;
    char c = 0;
    Integer colorNumber;
    static int FIRST_LETTER = 0x41;
    static int ALPHABET_LENGTH = 26;
    float a = 0.9f;
    float b = 0.9f;
    public AlphabetCode(){
        this.map = new HashMap(ALPHABET_LENGTH);
        for (int i=0; i<ALPHABET_LENGTH; i++){
            this.c = (char)(FIRST_KETTER + i);
            float h = (float)i/ALPHABET_LENGTH;
            this.map.put(new Character(c),
                Color.getHSBColor(h,s,b) );
        }
    }
}
```



```

        Character thisChar = new Character(c);
        letterColor.setCharacter(thisChar.toString());
    %>
    <font color= <%=letterColor.getColor() %> >
    <%= letterColor.getCharacter() %>
    </font>
    <%
        }
    %>
    <br>
    <%
        }
    %>
</body>
</html>

```

straight JSP page bean setCharacter(), getCharacter(), getColor() syntax <jsp:useBean .../>

```

<jsp:useBean id="letterColor" scope="application" class="com.wrox-
jspexamples.AlphabetCode" />

```

jsp:useBean scope class bean instance CLASSPATH package useBean attribute JSP page scope

UseBean Attributes	
id="name"	bean page
scope="page"	bean
class="package.class"	bean class full name import 가

Scope	
Page	page가
Request	bean instance client request instance ServletRequest object named bean attribute

	servlet/JSP page	request	.
Session	bean HttpSession.getValue(name)	session	,
	, page directive	session false	scope
application	ServletContext object	attribute	bean instance

jsp:getProperty jsp:setProperty - 가 JSP 가 -

```

<% -- beanTest2.jsp -- >
<html>
<head><title>Color Demo 2</title></head>
<body>
<%@ page language="Java"%>
<%! char c = 0; %>
<jsp:useBean id="letterColor" scope="application"
class="com.wrox.jspexamples.AlphabetCode" />
<%
for (int i=0 ; i<26; i++){
for(int j=0; j<26; j++){
c=(char)(0x41+(26-i+j)%26);
Character thisChar = new Character(c);
letterColor.setCharacter(thisChar.toString());
%>
<jsp:setProperty name="letterColor" property="character"
value=<%=thisChar.toString() %> />
<font color= <jsp:getProperty name="letterColor" property="Color" /> >
<jsp:getProperty name="letterColor" property="character" />
</font>
<%
}
%>
<br>
<%

```

```
}  
>  
</body>  
</html>
```

```
<jsp:setProperty .../> bean name, property name  
value, property name setXXX() XXX  
<jsp:getProperty .../> bean name property name  
, property name getXXX() XXX
```

11. Browsing and Querying Databases

JSP 가 ,
bean JSP

12. Ask the Right Question

```
page request . DataList.jsp  
page , right page  
<% -- DataList.jsp --% >  
<%@ page language="Java" errorPage="ErrorPage.jsp" %>  
<%  
    if (request.getParameterNames().hasMoreElements() == false){  
>  
<jsp:forward page="List1.jsp" />  
<% } %>
```

가 <http://localhost/DataList.jsp> , DataList.jsp가
Request object URL 가 ,
List1.jsp page <jsp:forward .../>
context/application URL

```
<% -- List1.jsp --% >  
<html>  
<head><title>DataBase Search</title></head>  
<body>  
<%@ page language="Java" errorPage="ErrorPage.jsp" %>  
Choose database:
```

```
<form method="get" action="DataList.jsp">
Database URL : <select name=dbURL size=1 >
<option>jdbc:odbc:employee
<option>jdbc:odbc:techlib
<option>jdbc:odbc:this_should_break
</select>
<p>
Database driver:<select name=dbDriver size=1">
<option>sun.jdbc.odbc.JdbcOdbcDriver
<option>com.imaginary.sql.mssql.MsqliDriver
</select>
<p>
Input SQL if you know your query:
<p>
<input type=text name=inputSQL size=40>
<p>
<input type=submit>
</form>
</body>
</html>
```

List1.jsp page
(query)

HTML

.(HTML)

가

13. Querying a Database

```
가 List1.jsp DataList.jsp request page
query ResultSet .

DataList.jsp . 가 else if .

<% -- DataList.jsp --% >
<%@ page language="Java" errorPage="ErrorPage.jsp" %>
<%
if (request.getParameterNames().hasMoreElements() == false){
```

```
%>
<jsp:forward page="List1.jsp" />
<%
}else if ( (request.getPatameter("dbDriver") != null) &&
           (request.getPatameter("dbURL") != null) &&
           (request.getPatameter("inputSQL") != null) ){
%>
<jsp:forward page="List3.jsp" />
<%
}
%>
```

bean , 가 URL

```
package com.wrox.jspexamples;
import java.sql.*;
import java.io.*;

public class DbBean{
    String dbURL;
    String dbDriver = "sun.jdbc.odbc.JdbcOdbcDriver";
    private Connection dbCon;

    public DbBean(){
        super();
    }
    public boolean connect() throws ClassNotFoundException, SQLException{
        Class.forName(this.getDbDriver());
        dbCon = DriverManager.getConnection(this.getDbURL());
        return true;
    }
    public void close() throws SQLException{
        dbCon.close();
    }
    public ResultSet execSQL(String sql) throws SQLException{
        statement s = dbCon.createStatement();
        ResultSet r = s.executeQuery(sql);
        return (r==null) ? null: r;
    }
}
```

```
// set method
public void setDbDriver(String newValue){
    this.dbDriver=newValue;
}
public void setDbURL(String newValue){
    this.dbURL = newValue;
}

// get method
public String getDbDriver(){
    return this.dbDriver;
}
public String getDbURL(){
    return this.dbURL;
}
}

(?) throws ,

import java.sql.*;
import com.wrox.jspexamples.DbBean;

public class TestDbBean{
public static void main(String[] args){
    DbBean mtDbBean = new DbBean();
    myDbBean.setDbDriver("sun.jdbc.odbc.JdbcOdbcDriver");
    myDbBean.setDbURL("jdbc:odbc:techlib");
    int numColumns = 0;
    String sql = "select authid, lasstname, firstname form authors";
    ResultSet rs = null;
    ResultSetMetaData rsmd = null;

    try{
        myDbBean.connect();
    }catch(ClassNotFoundException e){
        System.out.println("connect() ClassNotFoundException:" + e)
    }catch(SQLException e){
        System.out.println("connect() SQLException : "+e);
    }
}
```

```
try{
    rs.myDbBean.execSQL(sql);
}catch(SQLException){
    System.out.println("execSQL() SQLException : "+e);
}
try{
    rsmd= rs.getMetaData();
    numColumns = rsmd.getColumnCount();

    for(int column=1; column<=numColumns; column++){
        System.out.println(rsmd.getColumnName(column));
    }

    while (rs.next()){
        for(int column=1; column<=numColumns; column++){
            System.out.println(rs.getString(column));
        }
    }

    myDbBean.close();

}catch(SQLException){
    System.out.println("Problems with the database - SQLException : "+e);
}
}
```

가 가

가 , JSP 가? 가

ClassNotFoundException

dbURL DriverManager.getConnection() .

execSQL() SQLException .

List3.jsp .

<html>

```
<head><title>Database Search</title></head>
<body>
<%@ page language="Java" import="java.sql.*"
errorPage="ErrorPage.jsp" %>
<jsp:useBean id="db" scope="request"
class="com.wrox.jspexamples.DbBean" />
<jsp:setProperty name="db" property="*" />
<%!
    int numColumns;
    ResultSet rs = null;
    ResultSetMetadata rsmd = null;
%>
<center>
<h2> Result from</h2>
<h2><%=request.getParameter("inputSQL") %></h2>
<hr>
<br><br>
<table border="1" bgcolor="#cccc99" bordercolor="#003366">
<tr>
<%
    String sql = request.getParameter("inputSQL");

    try{
        db.connect();
    }catch(ClassNotFoundException e){
        throw new ServletException("Database drivers not available",e);
    }catch(SQLException e){
        throw new ServletException("Database URL is wrong",e);
    }

    try{
        rs = db.execSQL(sql);
    }catch(SQLException e){
        throw new ServletException("Your query isn't working. " +
            "Do you want to browse the database?" +
            "If so, leave the SQL input empty", e);
    }

    try{
        rsmd = rs.getMetaData();
        numColumns = rsmd.getColumnCount();
```

```
        for (int column = 1; column<=numColumns; column++){
    %>
    <th><%= rsmd.getColumnname(column) %> </th>
    <%    } %>
</tr>
<%    while (rs.next()){ %>
<tr>
<%        for(int column=1; column<=numcolumns; column++){ %>
<td><%= rs.getString(column) %></td>
<%            } %>
</tr>
}
rs.close();
db.close();
%>
<%
    }catch(SQLException e){
        throw new ServletException("Database error. The query worked,"+
            "but the display didn't", e);
    }
%>
</table>
</center>
<p>
<form method="get" action="DataList.jsp">
<input type="hidden" name="dbDriver" value=
<%=request.getParameter("dbDriver")%> >
<input type="hidden" name="dbURL" value=
<%=request.getParameter("dbURL")%> >
Input SQL<input type="text" name="inputSQL" size="40">
<p>
<input type="submit">
</form>
</body>
</html>
```

가 가 . jsp:setProperty

<jsp:setProperty name="db" property="*" />

```
<jsp:setProperty name="beanName" property="propertyName" param=parameterName />
shorthand ( propertyName parameterName ), request
db bean property . DriverManager DbURL
, request
(request) 가
DbURL DriverManager hidden input , SQL
```

```
<input type="hidden" name="dbDriver" value=
<%=request.getParameter("dbDriver")%> >
<input type="hidden" name="dbURL" value=
<%=request.getParameter("dbURL")%> >
Input SQL<input type="text" name="inputSQL" size="40">
```

```
page , ,
ServletException ErrorPage.jsp
isErrorPage page directive true
exception 가
가 가
```

```
<html>
<head><title>DataList Error Page</title></head>
<body>
<%@ page language="Java" isErrorPage="true" import="java.util.* ,
java.sql.*" %>
<br>
<h4>Exception Details:</h4>
<p>
<%=exception.toString() %>
<br>
<%=exception.getMessage() %>
<p>
<a href="DataList.jsp">Want to try again?</a>
<p>
<%! Enumeration parameterList; %>
<%! Enumeration attributeList; %>
<p><h4>Parameter listing: </h4><p>
<%
parameterList = request.getParameterName();
while (parameterList.hasMoreElements()){
%>
<%=parameterList.nextElement().toString() %><br>
```

```
<% } %>
<p><h4>Attribute listing:</h4><p>
<%
Enumeration attributeList = request.getAttributeName();
while (attributeList.hasMoreElements()){
%>
<%=attributeList.nextElement().toString()%><br>
<% } %>
</body>
</html>
```

14. Browsing Database

```
database driver SQL query
SQL query table details 가 SQL query
가
,
. java.sql.DatabaseMetaData
connection metadata가
```

```
Private DatabaseMetaData dbMetaData;
Static String[] tableTypes = {"TABLES"};
...
dbMetaData.getTables(catalog, schema, tableName, tableTypes)
dbMetaData.getColumns(catalog, schema, tableName, columnName)
```

```
tableType dbMetaData JSP ResultSet
DbBean 가 SQLException
```

```
Public ResultSet getTables() throws SQLException{
DbMetaData = dbCon.getMetaData();
Return dbMetaData.getTables(null,null,null,tableTypes);
}
Public ResultSet getTable(String tableName) throws SQLException{
DbMetaData = dbCon.getMetaData();
Return dbMetaData.getColumns(null,null,null,tableName,null);
```

```
DbBean 가
```

```
while (rs.next() ){
```

```
for (int column = 1; column <= numColumns; column--){
    System.out.println(rs.getString(column));
}
catch(SQLException e){
    System.out.println("Problems with the database – SQLException:" + e);
}
//Text for List2.jsp
ResultSet tables = null;
try{
    tables = myDbBean.getTables();
}catch(SQLException e){
    System.out.println("getTables() SQLException : " + e)
}
try{
    while (tables.next()){
        String current_table = tables.getString("TABLE_NAME");
        System.out.println(current_table + " ");
        ResultSet table = myDbBean.gettable(current_table);
        while ( table.next() ){
            System.out.println(table.getString("COLUMN_NAME "));
        }
        System.out.println(" ");
    }
    myDbBean.close();
}catch(SQLException e){
    System.out.println("Table listing failed : " + e );
}
}
```

List2.jsp ..

```
<html>
<head><title>Database Details</title></head>
<body>
<%@ page language="Java" import="java.sql.*"
errorPage="ErrorPage.jsp" %>
<jsp:useBean id="db" scope="request" class="com.wrox.jspexamples.DbBean" />
<jsp:setProperty name="db" property="*" />
<%!
    int numColumns;
```

```
String current_table;
%>
The database ( <%=request.getParameter("dbURL") %> ) you have selected
has the following tables:
<%
try{
    db.connect();
}catch(ClassNotFoundException e){
    throw new ServletException("Database drivers not available",e);
}catch(Exception e){
    throw new ServletException("Database URL is wrong",e);
}

try{
    ResultSet tables = db.getTables();
    while(tables.next()){
        current_table = tables.getString("TABLES_NAMES");
%>
<p>
<h4><%= current_table %></h4>
<table border="1" bgcolor="#cccc99" bordercolor="#003366">
<tr>
<%
        ResultSet table = db.getTable(current_table);
        while(table.next()){
%>
<td><%=table.getString("COLUMN_NAME")%></td>
<% } %>
</tr>
</table>
<%
        table.close();
    }
    tables.close();
    db.close();
}catch(SQLException e){
    throw new ServletException("Database problems",e);
}
%>
<p>
<form method="get" action="DataList.jsp">
```

```
<input type="hidden" name="dbDriver"
value="<%=request.getParameter("dbDriver") %>">
<input type="hidden" name="dbURL"
value="<%=request.getParameter("dbURL") %>">
Input SQL:<input type="text" name="inputSQL" size="40">
<p>
<input type="submit">
</form>
</body>
</html>
```

```
가
.
가
empty
string
가
가
가
가
InputSQL SQL
가 non-empty string
DataList.jsp 가 DataList.jsp
```

```
<% -- DataList.jsp --% >
<%@ page language="Java" errorPage="ErrorPage.jsp" %>
<%!
boolean emptySQL(String sql){
    if (sql!=null){
        if(sql.trim().length()==0) return true;
        else return false;
    }
    return true;
}
%>
<%
if (request.getParameterNames().hasMoreElements() == false){
%>
<jsp:forward page="List1.jsp" />
<%
}else if ( (request.getParameter("dbDriver") != null) &&
(request.getParameter("dbURL") != null) &&
(emptySQL( request.getParameter("inputSQL") ) ) ){
%>
<jsp:forward page="List2.jsp" />
<%
```

```
}else if ( (request.getParameter("dbDriver") != null) &&  
           (request.getParameter("dbURL") != null) &&  
           (emptySQL( request.getParameter("inputSQL") ) == false)){  
%>  
<jsp:forward page="List3.jsp" />  
<% } %>
```

15. Summary

JavaServer Pages

HTML

server-side

JSP Java World 가

JSP markup tags, content, JSP directives, JSP declaration, JSP scriptlets

actions tags

JSP

JSP

JavaBeans

JSP

, OOP