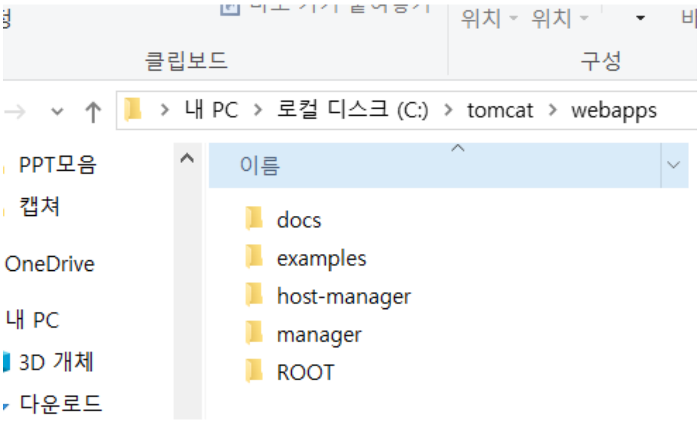
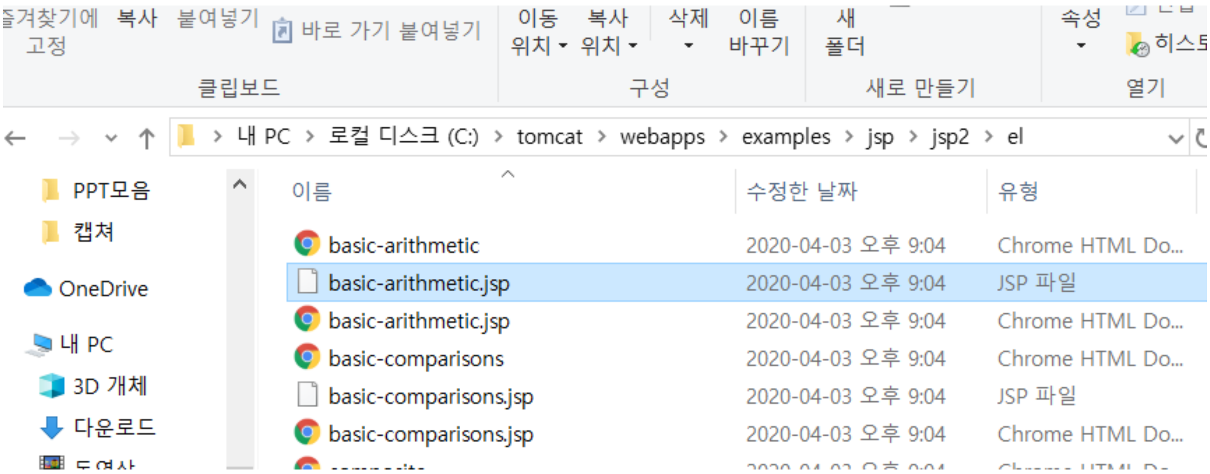
[0702]JSTL + EL



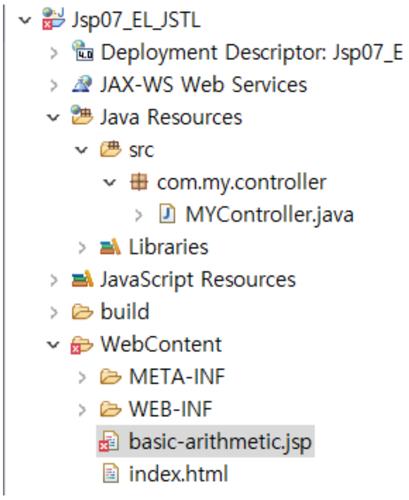
docs
examples
host-manager
manager
ROOT

여기에 프로젝트를 올려서 배포할 수 있다.



이름	수정한 날짜	유형
basic-arithmetic	2020-04-03 오후 9:04	Chrome HTML Do...
basic-arithmetic.jsp	2020-04-03 오후 9:04	JSP 파일
basic-arithmetic.jsp	2020-04-03 오후 9:04	Chrome HTML Do...
basic-comparisons	2020-04-03 오후 9:04	Chrome HTML Do...
basic-comparisons.jsp	2020-04-03 오후 9:04	JSP 파일
basic-comparisons.jsp	2020-04-03 오후 9:04	Chrome HTML Do...

basic-arithmetic.jsp 파일 복사하고 WebContent 밑에다가 붙여넣기 하기

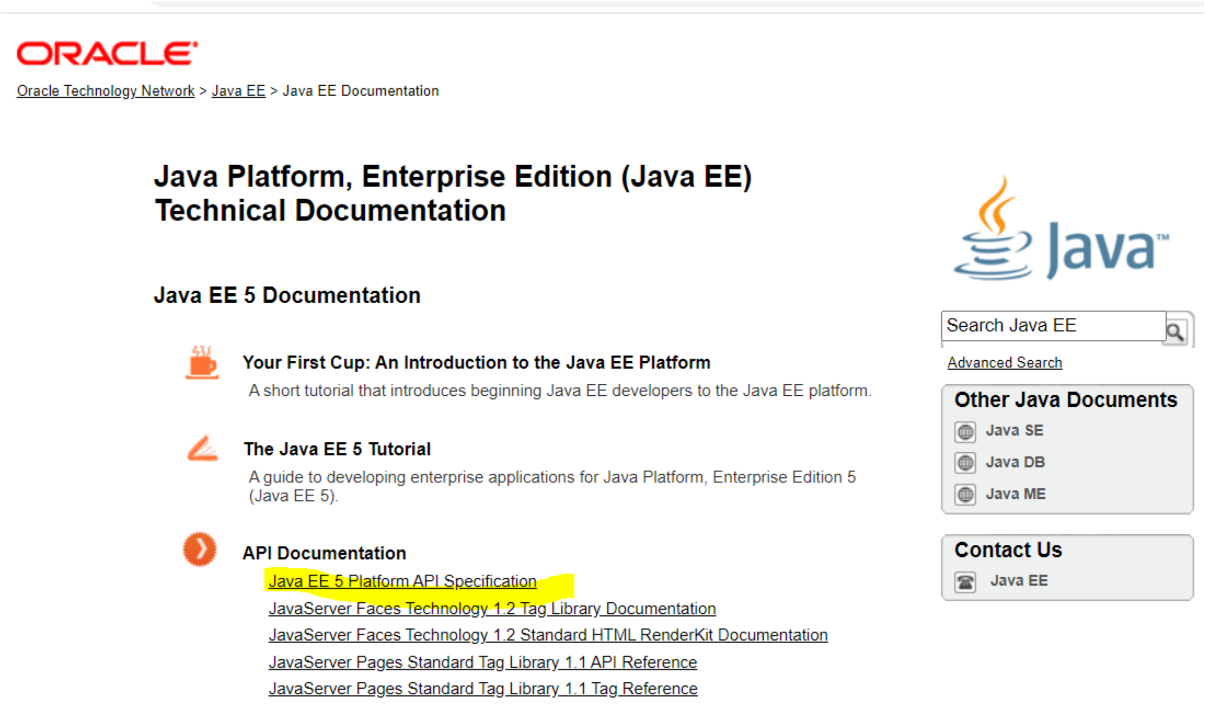


```
Jsp07_EL_JSTL
  Deployment Descriptor: Jsp07_E
  JAX-WS Web Services
  Java Resources
    src
      com.my.controller
        MYController.java
    Libraries
  JavaScript Resources
  build
  WebContent
    META-INF
    WEB-INF
    basic-arithmetic.jsp
    index.html
```

그럼 이런식으로 X 자가 뜬다

<td> ${3 div 4} </td> 에서 div 때문에 에러나는 것(신경 안써도 됨)

- EL과 JSTL을 사용하기 위한 설정



ORACLE

Oracle Technology Network > Java EE > Java EE Documentation

Java Platform, Enterprise Edition (Java EE) Technical Documentation

Java EE 5 Documentation

Your First Cup: An Introduction to the Java EE Platform

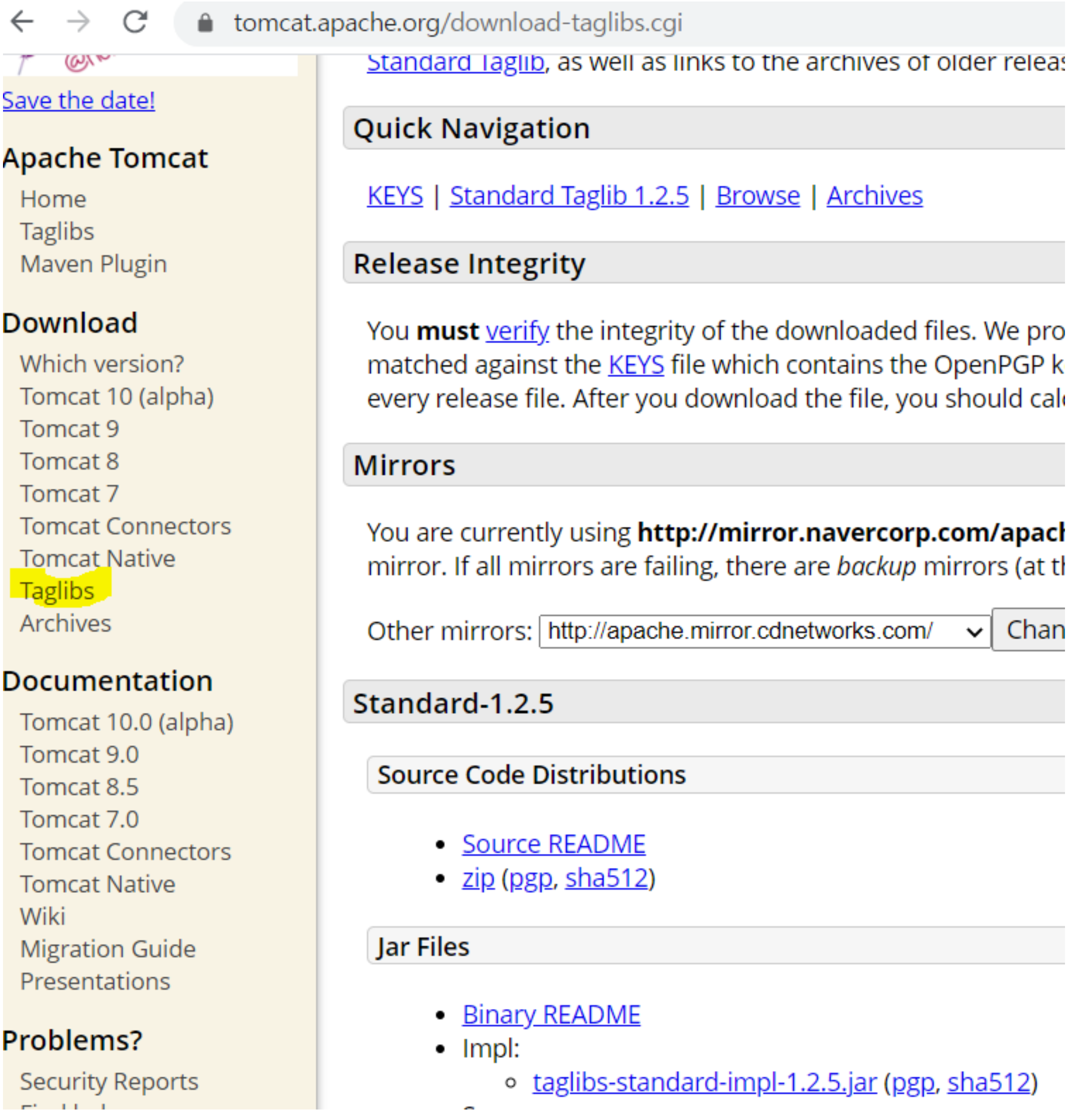
A short tutorial that introduces beginning Java EE developers to the Java EE platform.

The Java EE 5 Tutorial

A guide to developing enterprise applications for Java Platform, Enterprise Edition 5 (Java EE 5).

API Documentation

Java EE 5 Platform API Specification
JavaServer Faces Technology 1.2 Tag Library Documentation
JavaServer Faces Technology 1.2 Standard HTML RenderKit Documentation
JavaServer Pages Standard Tag Library 1.1 API Reference
JavaServer Pages Standard Tag Library 1.1 Tag Reference



tomcat.apache.org/download-taglibs.cgi

Save the date!

Apache Tomcat
Home
Taglibs
Maven Plugin

Download
Which version?
Tomcat 10 (alpha)
Tomcat 9
Tomcat 8
Tomcat 7
Tomcat Connectors
Tomcat Native
Taglibs
Archives

Documentation
Tomcat 10.0 (alpha)
Tomcat 9.0
Tomcat 8.5
Tomcat 7.0
Tomcat Connectors
Tomcat Native
Wiki
Migration Guide
Presentations

Problems?
Security Reports

Standard Taglib, as well as links to the archives of older releas

Quick Navigation

KEYS | Standard Taglib 1.2.5 | Browse | Archives

Release Integrity

You **must** verify the integrity of the downloaded files. We pro
matched against the KEYS file which contains the OpenPGP k
every release file. After you download the file, you should cal

Mirrors

You are currently using **http://mirror.navercorp.com/apach**
mirror. If all mirrors are failing, there are *backup* mirrors (at th

Other mirrors: http://apache.mirror.cdnetworks.com/ Chan

Standard-1.2.5

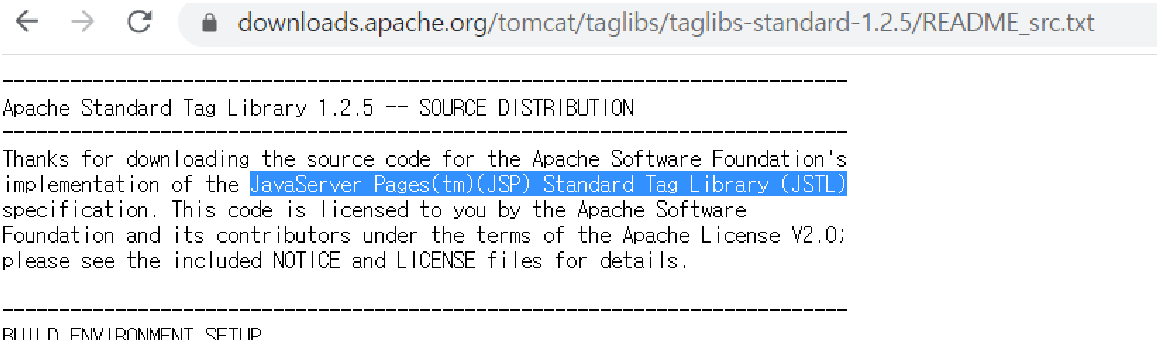
Source Code Distributions

- Source README
- zip (pgp, sha512)

Jar Files

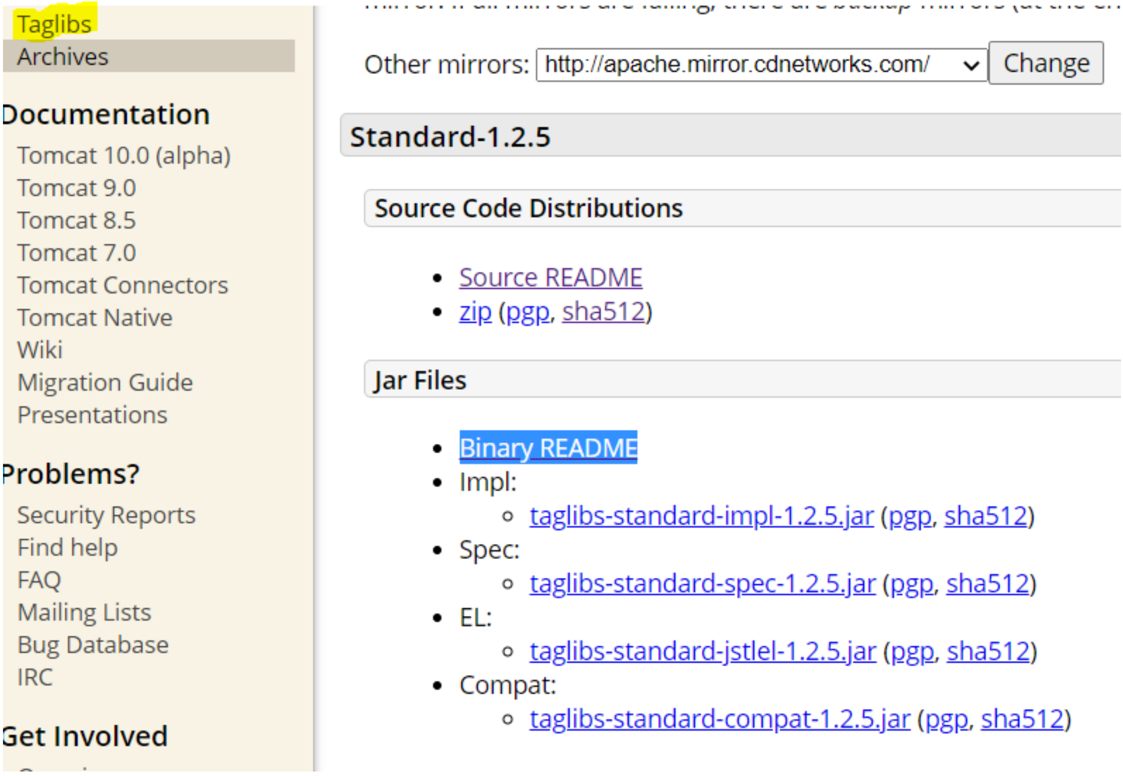
- Binary README
- Impl:
  - taglibs-standard-impl-1.2.5.jar (pgp, sha512)

Binary README 를 보면 JSTL에 대한 설명을 읽을 수 있다.



downloads.apache.org/tomcat/taglibs/taglibs-standard-1.2.5/README_src.txt

```
---------------------------------------------------------------------------
Apache Standard Tag Library 1.2.5 -- SOURCE DISTRIBUTION
---------------------------------------------------------------------------
Thanks for downloading the source code for the Apache Software Foundation's
implementation of the JavaServer Pages(tm)(JSP) Standard Tag Library (JSTL)
specification. This code is licensed to you by the Apache Software
Foundation and its contributors under the terms of the Apache License V2.0;
please see the included NOTICE and LICENSE files for details.

---------------------------------------------------------------------------
BUILD ENVIRONMENT SETUP
```



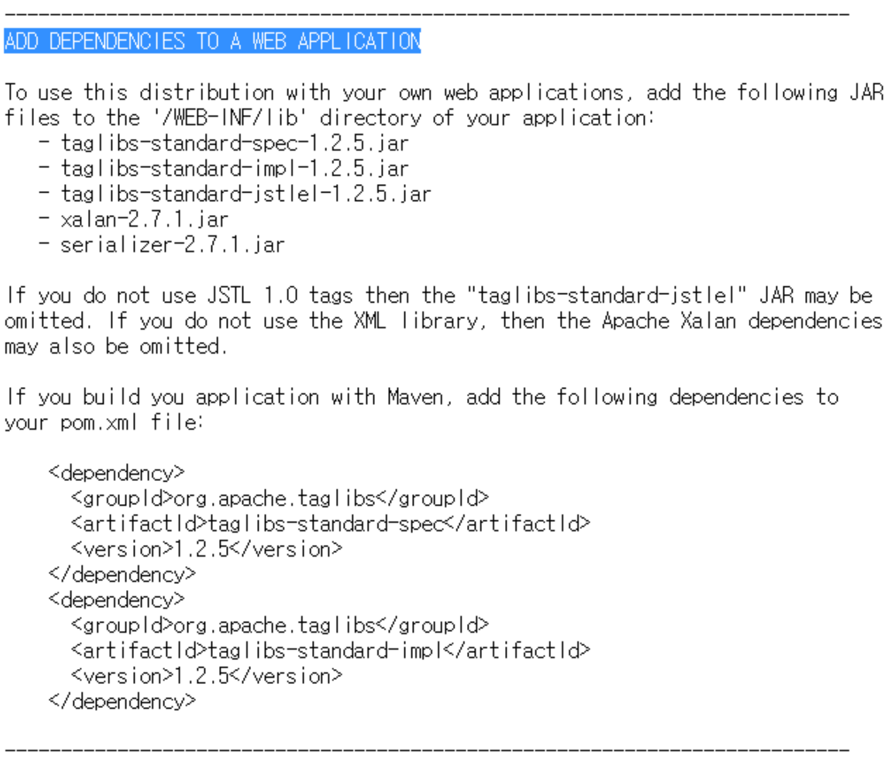
Standard-1.2.5

Source Code Distributions

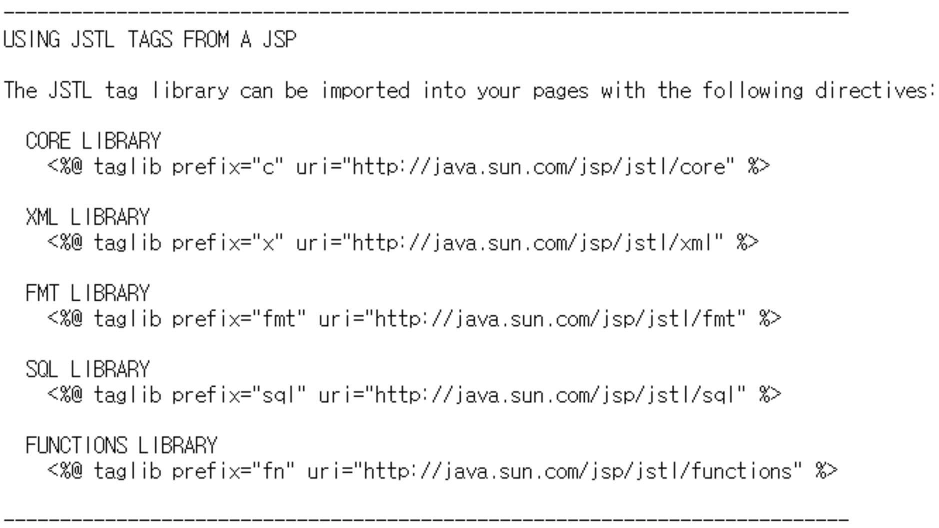
- Source README
- zip (pgp, sha512)

Jar Files

- Binary README
- Impl:
  - taglibs-standard-impl-1.2.5.jar (pgp, sha512)
- Spec:
  - taglibs-standard-spec-1.2.5.jar (pgp, sha512)
- EL:
  - taglibs-standard-jstlel-1.2.5.jar (pgp, sha512)
- Compat:
  - taglibs-standard-compat-1.2.5.jar (pgp, sha512)

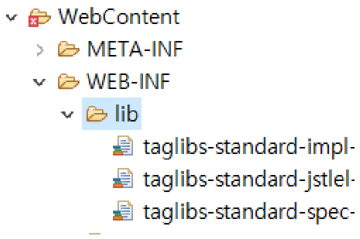


```
---------------------------------------------------------------------------
ADD DEPENDENCIES TO A WEB APPLICATION

To use this distribution with your own web applications, add the following JAR
files to the '/WEB-INF/lib' directory of your application:
   - taglibs-standard-spec-1.2.5.jar
   - taglibs-standard-impl-1.2.5.jar
   - taglibs-standard-jstlel-1.2.5.jar
   - xalan-2.7.1.jar
   - serializer-2.7.1.jar

If you do not use JSTL 1.0 tags then the "taglibs-standard-jstlel" JAR may be
omitted. If you do not use the XML library, then the Apache Xalan dependencies
may also be omitted.

If you build you application with Maven, add the following dependencies to
your pom.xml file:

    <dependency>
      <groupId>org.apache.taglibs</groupId>
      <artifactId>taglibs-standard-spec</artifactId>
      <version>1.2.5</version>
    </dependency>
    <dependency>
      <groupId>org.apache.taglibs</groupId>
      <artifactId>taglibs-standard-impl</artifactId>
      <version>1.2.5</version>
    </dependency>

---------------------------------------------------------------------------
```



```
--------------------------------------------------------------------------
USING JSTL TAGS FROM A JSP

The JSTL tag library can be imported into your pages with the following directives:

  CORE LIBRARY
    <%@ taglib prefix="c" uri="http://java.sun.com/jsp/jstl/core" %>

  XML LIBRARY
    <%@ taglib prefix="x" uri="http://java.sun.com/jsp/jstl/xml" %>

  FMT LIBRARY
    <%@ taglib prefix="fmt" uri="http://java.sun.com/jsp/jstl/fmt" %>

  SQL LIBRARY
    <%@ taglib prefix="sql" uri="http://java.sun.com/jsp/jstl/sql" %>

  FUNCTIONS LIBRARY
    <%@ taglib prefix="fn" uri="http://java.sun.com/jsp/jstl/functions" %>

--------------------------------------------------------------------------
```

위에서부터 3가지 파일 다 다운로드 받아서 WEB-INF > lib 파일에 넣어주기



```
WebContent
  META-INF
  WEB-INF
    lib
      taglibs-standard-impl-
      taglibs-standard-jstlel-
      taglibs-standard-spec-
```

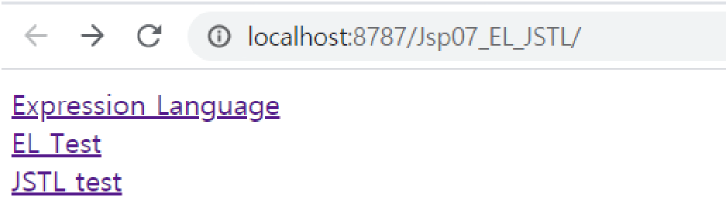
- Score.java

```
package com.my.score;

public class Score {
  private String name;
  private int math;
  private int eng;
  private int kor;
  private int sum;
  private double avg;
  private String grade;

  public Score() {

  }

  public Score(String name, int math, int eng, int kor, int sum, double avg, String grade) {
    super();
    this.name = name;
    this.math = math;
    this.eng = eng;
    this.kor = kor;
    this.sum = sum;
    this.avg = avg;
    this.grade = grade;
  }


  public Score(String name, int math, int eng, int kor) {
    super();
    this.name = name;
    this.math = math;
    this.eng = eng;
    this.kor = kor;
  }

  public String getName() {
    return name;
  }

  public void setName(String name) {
    this.name = name;
  }

  public int getMath() {
    return math;
  }

  public void setMath(int math) {
    this.math = math;
  }

  public int getEng() {
    return eng;
  }

  public void setEng(int eng) {
    this.eng = eng;
  }

  public int getKor() {
    return kor;
  }

  public void setKor(int kor) {
    this.kor = kor;
  }

  public int getSum() {
    return kor+math+eng;
  }

  public void setSum(int sum) {
    this.sum = sum;
  }

  public double getAvg() {
    return getSum()/3;
  }

  public void setAvg(double avg) {
    this.avg = avg;
  }

  public String getGrade() {

    int res = (int) Math.floor(getAvg()/10);

    switch(res) {
    case 10 : grade = "A";
        break;
    case 9 : grade = "B";
    case 8 : grade = "B";
        break;
    case 7 : grade = "C";
        break;
    case 6 : grade ="D"; break;
    default : grade = "F";

    }

    return grade;
  }

  public void setGrade(String grade) {
    this.grade = grade;
  }

  @Override
  public String toString() {
    return "Score [name=" + name + ", math=" + math + ", eng=" + eng + ", kor=" + kor + ", sum=" + sum + ", avg="
        + avg + ", grade=" + grade + "]";
  }
}
```

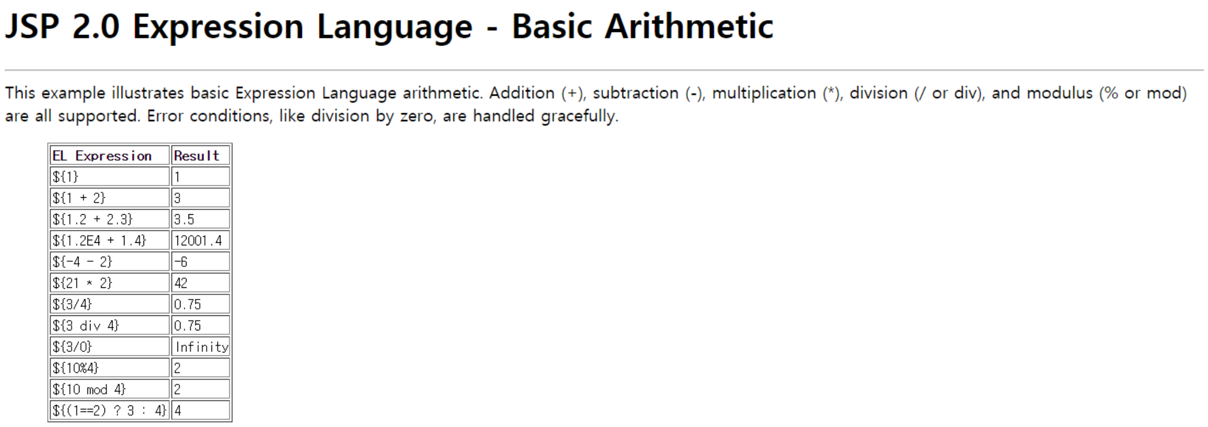
- Controller.java

```
package com.my.controller;

import java.io.IOException;
import java.util.ArrayList;
import java.util.List;

import javax.servlet.RequestDispatcher;
import javax.servlet.ServletException;
import javax.servlet.annotation.WebServlet;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;

import com.my.score.Score;

/**
 * Servlet implementation class MYController
 */
@WebServlet("/mycontroller.do")
public class MYController extends HttpServlet {
  private static final long serialVersionUID = 1L;


  protected void doGet(HttpServletRequest request, HttpServletResponse response) throws ServletException, IOException {
    doPost(request,response);
  }

  protected void doPost(HttpServletRequest request, HttpServletResponse response) throws ServletException, IOException {
    request.setCharacterEncoding("utf-8");
    response.setContentType("text/html; charset=utf-8");

    String command = request.getParameter("command");
    System.out.println("["+command+"]");
    if(command.equals("basic")) {
      response.sendRedirect("basic-arithmetic.jsp");
    }else if(command.equals("eltest")) {
      Score score = new Score("홍길동",90,90,90);
      request.setAttribute("score", score);
      RequestDispatcher dispatch = request.getRequestDispatcher("eltest.jsp");
      dispatch.forward(request, response);
    }else if(command.equals("jstltest")) {
      List<Score> res = new ArrayList<>();
      for(int i=10; i<50; i+=10) {
        Score sc = new Score("이름"+i, 50+i, 50+i, 50+i);
        res.add(sc);
      }
      request.setAttribute("list", res);
      RequestDispatcher dispatch = request.getRequestDispatcher("jstltest.jsp");
      dispatch.forward(request, response);
    }
  }

}
```

Expression **L**anguage 클릭하면 밑의 화면으로 이동하게 된다
EL에 대한 기본적인 설명과 사용법이다.


localhost:8787/Jsp07_EL_JSTL/

Expression Language
EL Test
JSTL test



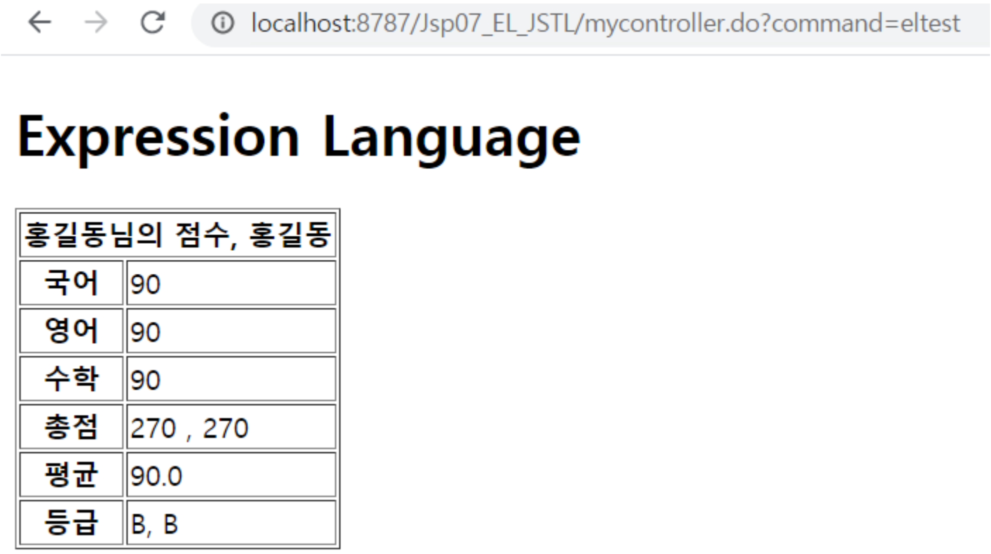
JSP 2.0 Expression Language - Basic Arithmetic

This example illustrates basic Expression Language arithmetic. Addition (+), subtraction (-), multiplication (*), division (/ or div), and modulus (% or mod) are all supported. Error conditions, like division by zero, are handled gracefully.

EL Expression	Result
${1}	1
${1 + 2}	3
${1.2 + 2.3}	3.5
${1.2E4 + 1.4}	12001.4
${-4 - 2}	-6
${21 * 2}	42
${3/4}	0.75
${3 div 4}	0.75
${3/0}	Infinity
${10%4}	2
${10 mod 4}	2
${(1==2) ? 3 : 4}	4

- eltest.jsp

```
<%@page import="com.my.score.Score"%>
<%@ page language="java" contentType="text/html; charset=UTF-8"
    pageEncoding="UTF-8"%>
<%
  request.setCharacterEncoding("UTF-8");
    response.setContentType("text/html; charset=UTF-8");
%>
<!DOCTYPE html>
<html>
<head>
<meta charset="UTF-8">
<title>Insert title here</title>
<%
  Score sc = (Score)request.getAttribute("score");
%>
</head>
<body>
  <h1>Expression Language</h1>
  <table border="1">
    <tr>
      <th colspan="2">${score.name }님의 점수, <%=sc.getName() %></th>
      <!--
       pageContext->request->session->application 순서대로 객체 안에 score라는 객체가 있는지 확인
       score.getName();
        -->
    </tr>
    <tr>
      <th>국어</th>
      <td>${score.kor }</td>
    </tr>
    <tr>
      <th>영어</th>
      <td>${score.eng }</td>
    </tr>
    <tr>
      <th>수학</th>
      <td>${score.math } </td>
    </tr>
    <tr>
      <th>총점</th>
      <td>${score.sum } , <%=sc.getSum() %></td>
    </tr>
    <tr>
      <th>평균</th>
      <td>${score.avg }</td>
    </tr>
    <tr>
      <th>등급</th>
      <td>${score.grade }, <%=sc.getGrade() %></td>
    </tr>
  </table>
</body>
</html
```



Expression Language

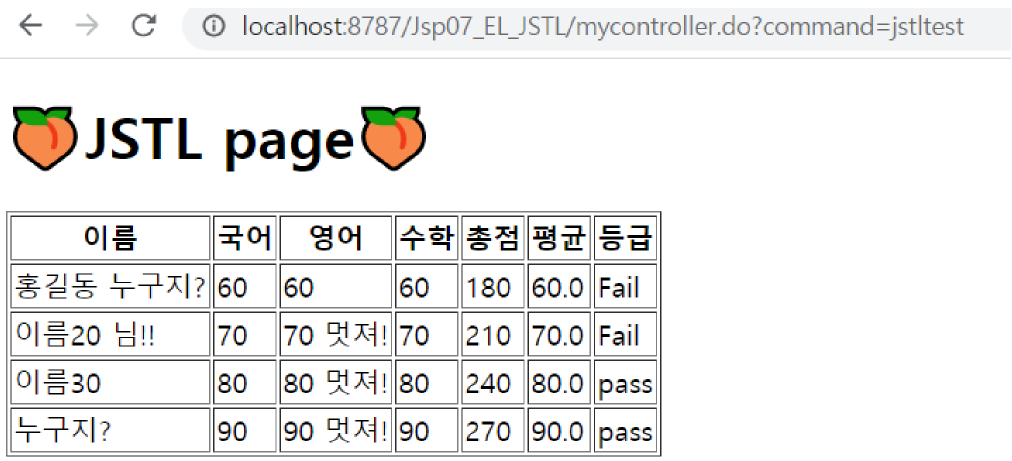
홍길동님의 점수, 홍길동	
국어	90
영어	90
수학	90
총점	270 , 270
평균	90.0
등급	B, B

💡 JSTL을 사용해서 영어점수가 70점 이상이면 점수 옆에 멋져! 라고 출력하기
Grade가 A이거나 B 이면 pass 라고 출력 그 이외에는 fail 이라고 출력하기

JSTL을 사용하기전 taglib 설정을 확인하자

- jstltest.jsp

```
<%@ page language="java" contentType="text/html; charset=UTF-8"
    pageEncoding="UTF-8"%>
<%
  request.setCharacterEncoding("UTF-8");
    response.setContentType("text/html; charset=UTF-8");
%>

<%@ taglib prefix="c" uri="http://java.sun.com/jsp/jstl/core" %>
<!DOCTYPE html>
<html>
<head>
<meta charset="UTF-8">
<title>Insert title here</title>
</head>
<body>
  <h1>🍑JSTL page🍑</h1>
  <!-- Jsp Standard Tag Library -->

  <table border="1">
    <tr>
      <th>이름</th>
      <th>국어</th>
      <th>영어</th>
      <th>수학</th>
      <th>총점</th>
      <th>평균</th>
      <th>등급</th>
    </tr>
    <c:forEach items="${list }" var="score">
      <tr>
        <td>
          <c:if test="${score.name eq '이름10' }">
            <c:out value="홍길동"></c:out>
          </c:if>

          <c:choose>
            <c:when test ="${score.name eq '이름20' }">
              <c:out value="${score.name } 님!!"></c:out>
            </c:when>
            <c:when test="${score.name eq '이름30' }">
              <c:out value="${score.name }"></c:out>
            </c:when>
            <c:otherwise>
              <c:out value="누구지?"></c:out>
            </c:otherwise>
          </c:choose>
        </td>
        <td>${score.kor }</td>
        <td>
          <c:choose >
            <c:when test="${score.eng ge 70 }">
              <c:out value="${score.eng } 멋져!"></c:out>
            </c:when>
            <c:otherwise>
              <c:out value="${score.eng }"></c:out>
            </c:otherwise>
          </c:choose>
        </td>
        <td>${score.math }</td>
        <td>${score.sum }</td>
        <td>${score.avg }</td>
        <td>
          <c:choose>
            <c:when test="${score.grade eq 'A' or score.grade eq 'B' }">
              <c:out value="pass"></c:out>
            </c:when>
          <%--  <c:when test="${score.grade  eq 'B' }">
              <c:out value="pass"></c:out>
            </c:when>
          --%>
            <c:otherwise>
              <c:out value="Fail"></c:out>
            </c:otherwise>
          </c:choose>
        </td>
      </tr>
    </c:forEach>
  </table>
</body>
</html>
```



localhost:8787/Jsp07_EL_JSTL/mycontroller.do?command=jstltest

🍑JSTL page🍑

이름	국어	영어	수학	총점	평균	등급
홍길동 누구지?	60	60	60	180	60.0	Fail
이름20 님!!	70	70 멋져!	70	210	70.0	Fail
이름30	80	80 멋져!	80	240	80.0	pass
누구지?	90	90 멋져!	90	270	90.0	pass

JSTL 연산자 정리

eq 또는 ==
<c:if test="${null eq score.math}">
ne 또는 ! =
<c:if test="${score.math ≠ score.eng}">
< 또는 lt
> 또는 gt
< = 또는 le
> = 또는 ge

```
<c:if test="${score.name eq '이름10' }">
        <c:out value="홍길동"></c:out>
</c:if>
```

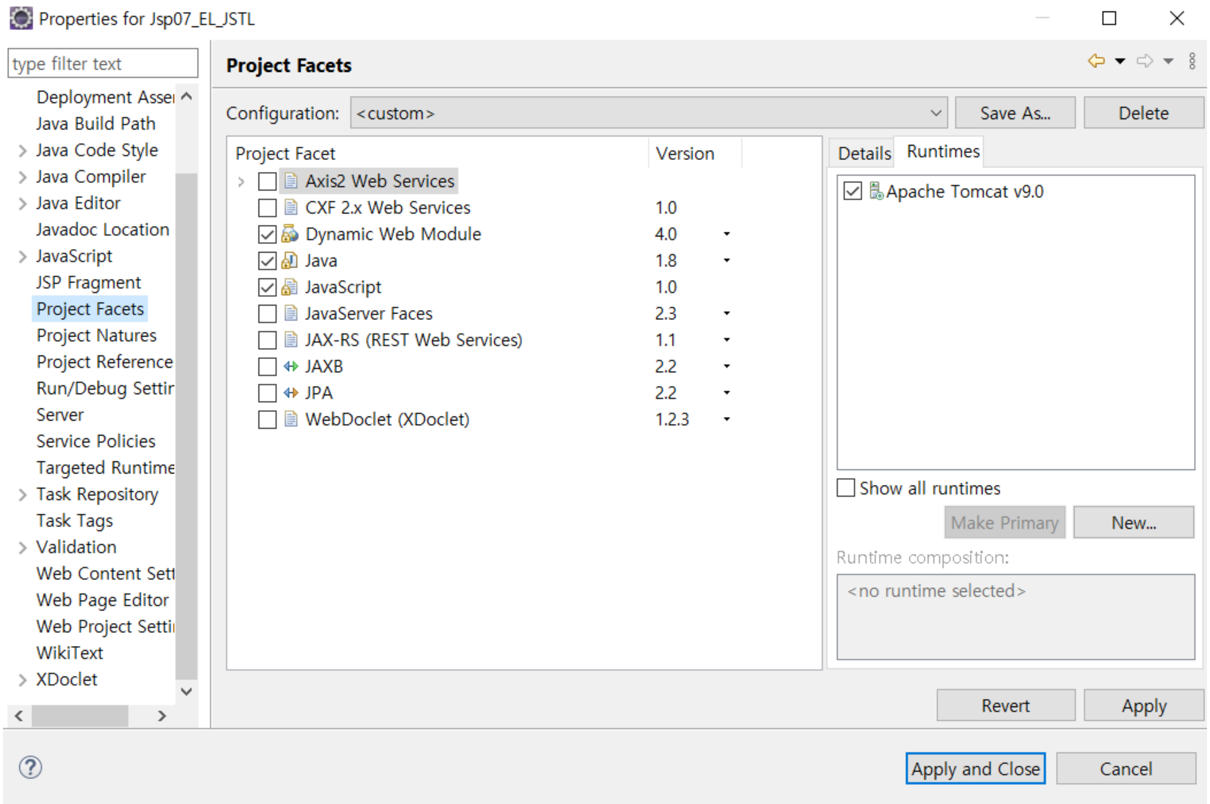
⟶ Java의 if 태그와 동일

```
<c:choose>
        <c:when test ="${score.name eq '이름20' }">
                <c:out value="${score.name } 님!!"></c:out>
        </c:when>
        <c:when test="${score.name eq '이름30' }">
                <c:out value="${score.name }"></c:out>
        </c:when>
        <c:otherwise>
                <c:out value="누구지?"></c:out>
        </c:otherwise>
</c:choose>
```

⟶ Java의 switch 문과 비슷하다고 생각하면 된다.

★개 중 요★

처음에 tomcat(server)가 잘 연결이 되어있는지 확인
프로젝트 우클릭 → properties → Project Facets 확인!!!!!!!!!!!!!!!!



Properties for Jsp07_EL_JSTL

Project Facets

Configuration: <custom>

Project Facet	Version
□ Axis2 Web Services	
□ CXF 2.x Web Services	1.0
☑ Dynamic Web Module	4.0
☑ Java	1.8
☑ JavaScript	1.0
□ JavaServer Faces	2.3
□ JAX-RS (REST Web Services)	1.1
□ JAXB	2.2
□ JPA	2.2
□ WebDoclet (XDoclet)	1.2.3

Runtimes: ☑ Apache Tomcat v9.0

□ Show all runtimes

Runtime composition: <no runtime selected>