Custom Tag Libraries-

JavaServer Pages (JSP) custom tag libraries are a powerful feature in Java web development that allows you to create custom tags and use them within your JSP pages. These custom tags can encapsulate complex logic, making your JSP pages cleaner and more maintainable. Custom tag libraries are often used to separate the presentation layer from the business logic.

Custom tags can be divided into two main categories:

1. **Tag Handlers:** These are Java classes that define the tag's behavior and logic. They implement the `javax.servlet.jsp.tagext.Tag` interface or extend one of its derived classes.

2. **Tag Library Descriptor (TLD):** This is an XML file that defines the custom tags and their usage within JSP pages. It describes the tag's attributes, behavior, and how it should be used in JSP pages.

Here's a step-by-step explanation with two code examples:

1. Creating a Custom Tag Handler:

Let's create a simple custom tag handler that generates a custom greeting message based on an attribute provided in the JSP page.

CustomTagHandler.java:
```java
package com.example.tags;

import javax.servlet.jsp.JspException;
import javax.servlet.jsp.JspWriter;
import javax.servlet.jsp.tagext.TagSupport;

public class CustomTagHandler extends TagSupport {
    private String name;

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

    @Override
    public int doStartTag() throws JspException {
        try {
            JspWriter out = pageContext.getOut();
            out.println("Hello, " + name + "!");
        } catch (Exception e) {
```

```
        throw new JspException(e);
    }
    return SKIP_BODY;
    }
}
```

2. Creating a Tag Library Descriptor (TLD):

Create a TLD file to define your custom tag and provide information about how to use it.

custom-tag-lib.tld:
```xml
<?xml version="1.0" encoding="UTF-8" ?>
<!DOCTYPE taglib PUBLIC "-//Sun Microsystems, Inc.//DTD JSP Tag Library 1.2//EN"
"http://java.sun.com/j2ee/dtds/web-jsptaglibrary_1_2.dtd">
<taglib>
    <tlib-version>1.0</tlib-version>
    <short-name>custom</short-name>
    <uri>http://example.com/custom-tag-lib</uri>
    <tag>
        <name>customGreeting</name>
        <tag-class>com.example.tags.CustomTagHandler</tag-class>
        <body-content>empty</body-content>
        <attribute>
            <name>name</name>
            <required>true</required>
            <rtexprvalue>true</rtexprvalue>
        </attribute>
    </tag>
</taglib>
```

3. Using the Custom Tag in a JSP Page:

Now, you can use the custom tag in your JSP page.

index.jsp:
```jsp
<%@ page language="java" contentType="text/html; charset=UTF-8" pageEncoding="UTF-8"
%>
<%@ taglib uri="http://example.com/custom-tag-lib" prefix="custom" %>
<!DOCTYPE html>
<html>
```

```
<head>
    <title>Custom Tag Example</title>
</head>
<body>
    <custom:customGreeting name="John" />
</body>
</html>
```

In this example, we've created a custom tag library with a single custom tag "customGreeting." When you access `index.jsp`, it will render a greeting message using the custom tag, as defined in the `CustomTagHandler` class.

To use custom tag libraries in your web application, make sure you package the custom tag class and TLD file in a JAR file and include the JAR in your web application's `WEB-INF/lib` directory. Additionally, you should declare the tag library in the JSP using the `<%@ taglib %>` directive.