# JSP Actions Intro

## Jakarta Servlet & JSP

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# JSP Actions

- Use constructs in XML syntax to control the behavior of the servlet engine

- JSP Standard Actions Syntax

```
<jsp:action_name attribute = "value" />
```

# JSP Actions Tags

| JSP 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. |
| jsp:plugin | embeds another components such as applet. |
| jsp:param | sets the parameter value. It is used in forward and include mostly. |
| jsp:fallback | can be used to print the message if plugin is working. It is used in jsp:plugin. |

# <jsp:forward> Action

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# <jsp:forward> Action

- Terminates the action of the current page
- Forwards the request to another resource
    - static page, another JSP or Java Servlet

- Syntax

```
<jsp:forward page = "Relative URL" />
```

```
<jsp:forward page="Relative URL">
  <jsp:param name=" " value=" "/>
  ...
  <jsp:param ... />
</jsp:forward>
```
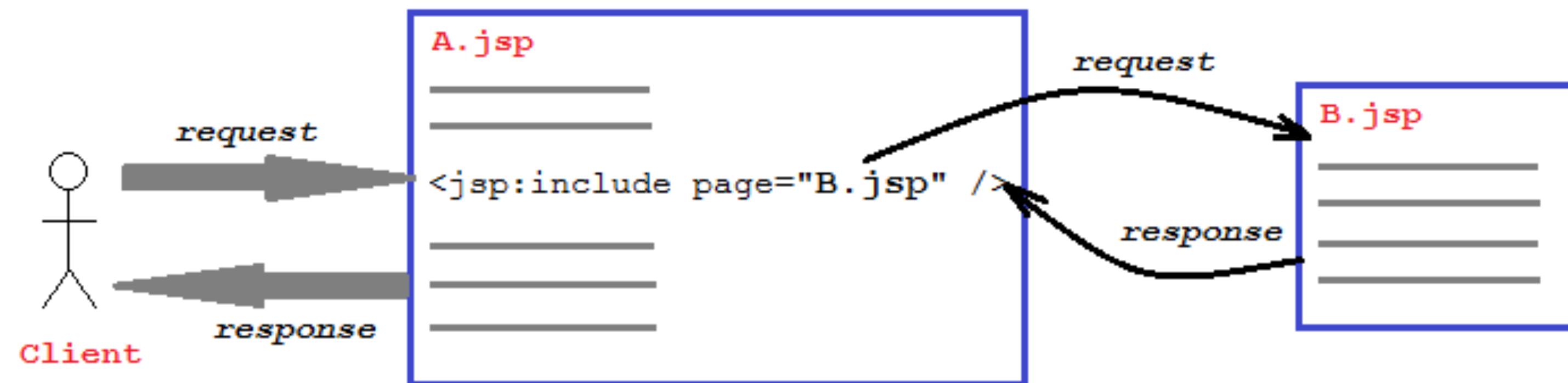
# <jsp:include> Action Demo

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# &lt;jsp:include&gt; Actions

- Inserts files at the time the page is being requested.

- Syntax

```
<jsp:include page="relative URL | <%= expression %>" flush="true" />
```

```
<jsp:include page="relativeURL | <%= expression %>">
  <jsp:param name="parametername" value="parametervalue | <%=expression%>" />
</jsp:include>
```

| Attribute | Description |
|---|---|
| **page** | The relative URL of the page to be included. |
| **flush** | The boolean attribute determines whether the included resource has its buffer flushed before it is included. Default is false.<br>**If set to true,** Because the output buffer must be flushed before processing a &lt;jsp:include&gt; tag, you cannot use certain behaviors after the tag. These behaviors include forwarding to another page, setting cookies, or setting other HTTP headers. |

# Behaviors of JSP Include Action

• When the servlet container encounters a <jsp:include> action, it requests the included page then adds the response into the current JSP page, where the <jsp:include> action is declared.

# Rules of JSP Include Action

•The included page cannot change response status code or set headers. The servlet container will ignore those attempts.
•The servlet container includes response (not source code) of the included page.
•Response of the included page is inserted in to the current JSP page at the position of the <jsp:include> action (position-sensitive).
•If URL of the included page starts with a slash (/), the servlet container will interpret the page as relative to the web application context path; if the URL starts without a slash, the container will treat the page as relative to the current JSP page (see the examples below).
•Value of the page URL can be a runtime expression that evaluates to a String.
•The servlet container will throw an exception if it could not find the included page.

# Difference between jsp include directive and include action

| JSP include directive<br>`<%@ include file="file name"%>` | JSP include action<br>`<jsp:include page="relative URL">` |
|---|---|
| includes resource at translation time. | includes resource at request time. |
| better for static pages. | better for dynamic pages. |
| includes the original content in the generated servlet. | calls the include method. |

# References

- https://www.codejava.net/java-ee/jsp/jsp-include-standard-action-examples

# JavaBean Demo

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# JavaBean

- A JavaBean is a Java class that should follow the following conventions:
  - It should have a no-arg constructor.
  - It should be Serializable.
  - It should provide methods to set and get the values of the properties, known as getter and setter methods.

# JavaBean Properties

- A JavaBean property is a named attribute that can be accessed by the user of the object. The attribute can be of any Java data type, including the classes that you define.

- A JavaBean property may be read, write, read only, or write only.

1. **getPropertyName ()**

   For example, if the property name is firstName, the method name would be getFirstName() to read that property. This method is called the accessor.

2. **setPropertyName ()**

   For example, if the property name is firstName, the method name would be setFirstName() to write that property. This method is called the mutator.

# Pros and Cons of JavaBean

- Advantages:
  - The JavaBean properties and methods can be exposed to another application.
  - It provides an easiness to reuse the software components.

- Disadvantages:
  - JavaBeans are mutable. So, it can't take advantages of immutable objects.
  - Creating the setter and getter method for each property separately may lead to the boilerplate code.

# jsp:usebean

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# jsp:useBean

- Used to locate or instantiate a bean class.
  - If the bean is already exists, doesn't create.

    `<jsp:useBean id= "instanceName" scope= "page | request | session | application"`
    `        class= "packageName.className" type= "packageName.className"`
    `        beanName="packageName.className | <%= expression >" >`
    `</jsp:useBean>`

  - Notes:
    - id: is used to identity a bean in specific scope
    - scope: default is page
    - class: instantiates the specified bean class
    - type: used together with "class" and "beanName" attributes to specify type.
    - beanName: instantiates the bean using the java.beans.Beans.instantiate() method.
    - class and beanName attributes CANNOT be together.

# jsp:setProperty
# jsp:getProperty

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# jsp:setProperty

- Sets a property value or values in a bean using the setter method.

  ```
  <jsp:setProperty name="instanceOfBean" property= "*" |
  property="propertyName" param="parameterName"  |
  property="propertyName" value="{ string | <%= expression %>}"
  />
  ```

- Special Usage: property= "*"

  ```
  <jsp:setProperty name="bean" property="*" />
  ```
  - Use if you have to set all the values of incoming request in the bean

# jsp:getProperty

- The jsp:getProperty action tag returns the value of the property.

```
<jsp:getProperty name="instanceOfBean" property="propertyName" />
```

# References

- https://www.javatpoint.com/jsp-useBean-action
- https://www.javatpoint.com/jsp-setProperty-and-jsp-getProperty-action-tag

# JSP Actions Summary

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