

CS320 Web and Internet Programming
Java Beans

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Problems with Scripting Elements

- ◆ Mixing presentation and processing
 - hard to debug
 - hard to maintain
- ◆ No clean and easy way to reuse code
- ◆ Solution – separate out Java code
 - Bean
 - Custom taglib

Java Beans

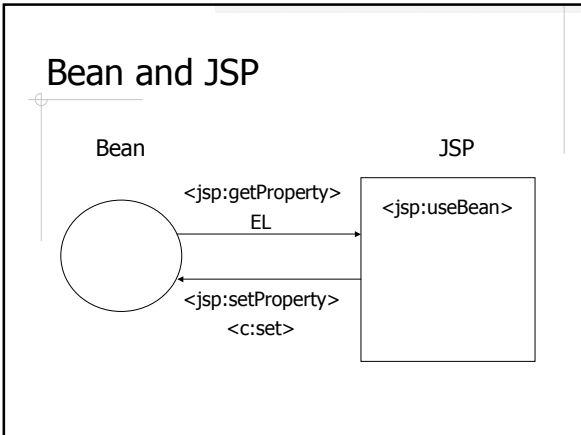
- ◆ Initially designed for GUI builders
- ◆ Beans support
 - Introspection
 - Customization
 - Events
 - Properties
 - Persistence

Java Beans for Dummies

- ◆ A zero-argument constructor
- ◆ No public class variables
- ◆ Properties
 - Properties are defined by *getter* and/or *setters*, e.g. `getFoo()` and `setFoo()`
 - Properties != Class variables

About Bean Properties

- ◆ Property naming conventions
 - 1st letter is always in lower case
 - 1st letter must be capitalized in *getter* (*accessor*) and/or *setter* (*mutator*)
- ◆ Property types
 - read-only property: only *getter*
 - write-only property: only *setter*
 - read/write property: both



Bean Tags and Attributes

- ◆ `jsp:useBean`
 - n class
 - n id
 - n scope
 - w page (default)
 - w request
 - w session
 - w application
- ◆ `jsp:getProperty`
 - n name
 - n property
- ◆ `jsp:setProperty`
 - n name
 - n property
 - n value
 - n param

Bean in JSP Example

- ◆ `BGBean.java`
- ◆ `BGColor2.jsp`

```
<jsp:useBean id="bg" class="cs320.stu31.BGBean" />

<jsp:setProperty name="bg" property="r" value="255" />
<jsp:setProperty name="bg" property="r" param="r" />
<jsp:setProperty name="bg" property="r" />
```

More About `<jsp:setProperty>`

- ◆ Note the auto-conversion from *parameter string* to *property type*
 - n e.g. "255" 255
 - n What if auto-conversion fails??
- ◆ What if a parameter is not specified??

A Few More Ways to `setProperty`

```
<!-- Use JSP expression for the value attribute --%>
<jsp:setProperty name="fb" property="fname"
value="<%= request.getParameter("fname") %>"/>

<!-- Use <jsp:attribute> for value attribute --%>
<jsp:setProperty name="fb" property="age">
  <jsp:attribute name="value" trim="true">
    <%= request.getParameter("age") %>
  </jsp:attribute>
</jsp:setProperty>

<!-- Set all properties --%>
<jsp:setProperty name="fb" property="*" />
```

Example: Form Bean

- ◆ Set all properties
- ◆ And an easier way to "get property":

First name: `${ fb.fname }`
Last name: `${ fb.lname }`

Expression
Language

Scopes and Data Sharing

- ◆ page scope – data is valid within current page
 - n include
- ◆ request scope – data is valid throughout the processing of the request
 - n forward
- ◆ session scope – data is valid throughout the session
 - n redirect, multiple separate requests
- ◆ application scope – data is valid throughout the life cycle of the web application