

CS320 Web and Internet Programming

Java Beans

Chengyu Sun
California State University, Los Angeles

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
- ◆ Property *foo*
 - read property *foo*: `getFoo()` or `isFoo()`
 - set property *foo*: `setFoo()`

About Bean Properties

- ◆ Property naming conventions
 - 1st letter is always in lower case
 - 1st letter must be capitalized in *accessor (getter)* and/or *mutator (setter)*
- ◆ A property does not have to be a class variable
- ◆ Property types
 - read-only property: only *getter*
 - write-only property: only *setter*
 - read/write property: both

Bean Example

- ◆ BGBean.java
 - package!

Bean Tags and Attributes

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

Bean in JSP Example

◆ 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" />

<jsp:getProperty name="bg" property="r" />
```

More About `<jsp:setProperty>`

- ◆ Note the auto-conversion from *parameter string to property type*
 - e.g. "255" → 255
 - 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
 - include
- ◆ request scope – data is valid throughout the processing of the request
 - forward
- ◆ session scope – data is valid throughout the session
 - redirect, multiple separate requests
- ◆ application scope – data is valid throughout the life cycle of the web application

Session Bean Examples

- ◆ WelcomeYou.jsp
- ◆ User bean in Heather