Best Practice of using ZK with JSP

ZK & JSP, How to use them together
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• Nowadays Web App Requirements
• EX: Instant Message Board
• Workbench Structure
• Plain old JSP Page Design
• Using ZK in JSP
• Using JSP in ZK
Page-based web programming

- Native HTML
- SEO friendly
- Stateless Content
Native HTML

Web App is urging more from Browser.

• Customization
  • CSS Styling
  • Native HTML structure.

• Integration
  • HTML Objects
  • 3\textsuperscript{rd} Party JS Lib
  • 3\textsuperscript{rd} Party View
SEO Friendly

Make your web page “Crawlable”.

• URL Decoration.
  • Permanent Link for content.
  • Extra meta-info.
  • HTTP Head.

• Content Arrangement.
  • Title
  • Content
  • Meta-info of image.
Stateless Content

Fast & Simple.

- Easy to design.
  - No complicate lifecycle.
  - Close to final HTML result.

- Better performance.
  - N complex page processing need to perform.
  - No Session memory usage
Desktop application programming

- Richer Widgets
- Asynchronous Request ability
Richer Widgets

Components that HTML doesn’t have.

• Component Composition
  • Grid & Listbox
  • Tabbox & Layout
  • Window(Dialog)

• Event Composition
  • Drag & Drop
  • Timer
Asynchronous Request Ability

The core value of Ajax technology

- Partial UI Lazy Load
  - Grid Paging
  - Tabbox

- Long Operation Handling
  - Blocking
  - None Blocking
Why JSP + ZK?

The reason of Combine these two technologies

• JSP is well-known to JEE Developers
• Page-flow is still required in your application
• Easy to train and find developer
• Good separation of Static & Dynamic content
EX: Instant Message board

- Message & Attendees will be updated instantly
- Highly customized View
- User can join and post new message
Application Architecture

Messageboard Servlet

Request

forward

messageboard.jsp

Static Message Content
User Button
Expansion Area
Attendees Ctrl
Message board Ctrl

Joined user

Join Dialog

Post Area
Workbench structure implementation

- Static Message Content
- Post Area
- Messageboard Control
- Expansion Area
- Join Dialog
- Attendees Control
Static Message Content

- JSTL + JSP include (/WEB-INF/_message.jsp)
- Using plan old Model 2 + EL for messages
- Extract Message HTML Structure to partial JSP

```xml
<c:forEach var="message" items="${requestScope.messageboard.messages}">
    <c:set var="message" value="${message}" scope="request"/>
    <jsp:include page="/WEB-INF/_message.jsp"></jsp:include>
    <c:remove var="message"/>
</c:forEach>
```
Using ZK in JSP

- Configure web.xml & zk.xml
- Copy all necessary ZK Jars into /lib
- JSP tag library definition in JSP page
- Use ZK in JSP

```jsp
<%@ taglib uri="http://www.zkoss.org/jsp/zul" prefix="z" %>
...
<head>
  <z:zkhead/>
</head>
...
<div>
  <z:page> .... </z:page>
</div>
```
Post Area Implementation

- Create MessageboardViewCtrl
- Composite Component Concept
  - extends ZK Component
  - Executions.createComponents()
  - Components.wireVariables()
  - Components.addForwards()

```java
public PostArea(){
    Executions.createComponents("/WEB-INF/_PostArea.zul", this, null);
    Components.wireVariables( this, this);
    Components.addForwards( this, this);
}
```
Messageboard Control

• Timer’s onTimer Event

• Instant Messageboard Model
  • Use timestamp to identify if there are any changes
  • While onTimer, check if last update date is still equals
  • If not, refresh the current view
Expansion Area

• Scoped Singleton pattern
  • Declare a desktop Attribute with specific name
  • Give a static getInstance() method of this class
  • Get Instance from current desktop by name

• Update method
  • Get a copy of newest messages
  • Remove same messages in stored messages from the copy
  • Render differential Messages in the Expansion area

• How to post? Using JSP in ZK
  • ZK <include> Component
Join Dialog

• Create AttendeesPanelViewCtrl
• userBtn’s onClick EventListener’s implementation
• Composite Component Impl of Join Dialog
Attendees Control

• Render Attendees using Grid
  • Get data from httpRequest
  • ListModel + RowRenderer

• Instant Update of Attendees Grid
  • Add trigger point while onTimer (MessageboardViewCtrl)
  • Scoped Singleton
  • Refresh Attendees Grid
Extra! How to use ZK Event Queue

• How did UserManager implement?
  • Another way of scoped Singleton
  • ZK EventQueue

• Render Post Area According to user state
  • While page request, render Post Area according to user
  • If user join, render Post Area
  • If user leave, detach Post Area
Technology Review

• How to use ZK in JSP
• How to use JSP in ZK
• Event Listen Model in ZK
• Design Pattern: Composite Component
• Design Pattern: Scoped Singleton
• ZK Event Queue(optional)
Q & A