Echo2 Web Development Framework

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Echo2

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```java
Button button = new Button("Save");
button.setActionCommand("save");
button.addActionListener(new ActionListener()
{
    public void actionPerformed(ActionEvent e)
    {
        ... }
});
```

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Anatomy of Application
Application framework

Parts of an application.

**Servlet** A servlet instance that is used to initialise the ApplicationInstance.
Application framework

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**ContentPane** The ContentPane that is used to display the UI Components.
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**Components**  The Component objects that are used to build the UI.
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**ApplicationInstance** The application instance that is used to display a Window.

**ContentPane** The ContentPane that is used to display the UI Components.

**Components** The Component objects that are used to build the UI.

**ActionListeners** The event listeners that are triggered by user interaction with the UI Components displayed in the Window.
<table>
<thead>
<tr>
<th>Layout Components</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>WindowPane</strong></td>
</tr>
<tr>
<td>A floating window component.</td>
</tr>
</tbody>
</table>
**Layout Components**

**WindowPane**  A floating window component.

**SplitPane**  Used to split the ContentPane into separate areas.
Layout Components

**WindowPane**  A floating window component.

**SplitPane**  Used to split the ContentPane into separate areas.

**Column**  A container component used to hold child components stacked vertically.

**Row**  A container component used to hold child components stacked horizontally.

**Grid**  A container component used to hold child components in tabular format.
UI Components

**Button**  Used to trigger action events similar to AWT/Swing.

**Label**  Used to display text.

**TextField/TextArea**  Used to display single or multi-line editable text. PasswordField is available to capture masked input.

**SelectField/CheckBox/ListBox**  Used to display multiple selectable values to user. Backed by their own data model.

**Table**  Used to display tabular data. Backed by data model.
Third Party Components

Some components provided by EchoPointNG:

**MenuBar/Menu/MenuItem** Used to build menu systems.

**DateChooser/DateField** Used to display calendar to user.

**DirectHtml** Used to display raw HTML.

**RichTextArea** Text area with HTML editor capability.

**Tree** Used to display objects in a tree.

**AutolookupTextField** A TextField that supports JavaScript and AJAX lookups to match text input into field.
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**SortableTable** Enhanced Table implementation for displaying sortable tabular data.

**PageableSortableTable** Enhanced Table implementation for displaying pageable and sortable tabular data.
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Look & Feel

Styles are used to control look and feel for components:

**Style Attributes**

- **Color**  Foreground and background color properties for components.
- **Font**   Font types and sizes to be applied to components.
- **Border** Borders to be applied to components.
- **Size & Postition**  Size and position of components.
- **Image**  Fill images for component background.
Echo2 offers three techniques for applying styles to components.

### Style Techniques

<table>
<thead>
<tr>
<th>Component</th>
<th>Style properties can be directly specified for each component.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MutableStyle</td>
<td>Custom objects used to capture style properties and applied directly to target component.</td>
</tr>
<tr>
<td>StyleSheet</td>
<td>A class used to maintain a mapping of style names to style classes. Used to facilitate easy sharing of style objects. A custom StyleSheet loader that initialises itself from an XML file is also provided.</td>
</tr>
</tbody>
</table>
Component styling

```java
Button button = new Button("Save");
button.setFont(new Font(Font.HELVETICA, Font.PLAIN, new Extent(12)));
button.setForeground(Color.BLACK);
button.setAlignment(Alignment.ALIGN_CENTER);
```
Style Class

```java
Button button = new Button( "Save" );
button.setStyle( new ButtonStyle() );

public class ButtonStyle extends MutableStyle
{
    ...
    setProperty( Component.PROPERTY_FONT,
                new Font( Font.HELVETICA, Font.PLAIN,
                        new Extent( 12 ) );
    setProperty( Component.PROPERTY_FOREGROUND, Color.BLACK );
    setProperty( Component.PROPERTY_ALIGNMENT, Alignment.CENTER
```
Application.getActive().setStyleSheet(
    new StyleSheet()
);
Button button = new Button("Save");
button.setStyleName("General.Button");

public class StyleSheet extends MutableStyleSheet{
    ...
    ButtonStyle bs = new ButtonStyle();
    addStyle(Button.class, null, bs);
    addStyle(Button.class, "General.Button", bs);
}
Custom Component Sub-class of Echo2 Component class.

CustomComponentPeer Rendering peer implementation.

CustomComponent.js Client side message processor to notify server of client interactions with components.
Sample Applications

SPTWebMail  java.net project to provide webmail access.

Password  Simple application to manage UNIX system account passwords.

SPTCMS  Work in progress to create a simple Wiki/CMS.

PRS  Performance Review System to be released on java.net

RAD  A framework for Rapid Application Development through code generators, automatic view initialisation and automatic bi-direction binding.
Advantages of using Echo2 and related extras:

**API familiarity**  The API should be familiar to most Java developers.
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**IDE plugin** EchoStudio Eclipse plugin available for easy interface development.
Disadvantages of using Echo2 and related extras:

**Developers needed** Applications can be maintained and updated only by developers.
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**No deep linking** You cannot bookmark or go directly to a screen within an application.
## Echo2 vs GWT

Comparison with another Java based web development framework.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Echo2</th>
<th>GWT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Java API based</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Java API</td>
<td>Full</td>
<td>Limited</td>
</tr>
<tr>
<td>Easy to modify JavaScript</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>AJAX abstraction</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Server runtime</td>
<td>Heavy</td>
<td>Light</td>
</tr>
<tr>
<td>Client runtime</td>
<td>Light</td>
<td>Heavy</td>
</tr>
<tr>
<td>Development</td>
<td>Light</td>
<td>Heavy</td>
</tr>
<tr>
<td>Company</td>
<td>Small</td>
<td>Huge</td>
</tr>
</tbody>
</table>