PrimeFaces: Themes (Skins)

Originals of slides and source code for examples: http://www.coreservlets.com/JSF-Tutorial/primefaces/
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Topics in This Section

- **Installing and specifying a default theme**
  - Standard themes
  - Custom themes
- **Changing themes at runtime with p:themeSwitcher**
- **Looking up current theme**
- **Changing themes at runtime without using p:themeSwitcher**
- **Best practices for making your apps adapt to themes**

Overview of Themes

- **All PrimeFaces components follow themes**
  - Font families, font sizes, colors, borders, icons, etc.
- **PrimeFaces provides many pre-built themes**
  - 37 themes as of PrimeFaces release 3.4. This includes the RichFaces and Trinidad themes, for easy migration.
- **Installing a theme is simple**
  - Download the JAR. Set a context-param in web.xml.
- **You can customize themes (with effort)**
  - Use ThemeRoller. Edit several files. Save JAR.
- **You can change themes at runtime**
  - Use p:themeSwitcher
  - Call PrimeFaces.changeTheme('theme-name') in JavaScript
- **CSS class names documented**
  - So you can write standard HTML that follows theme

Setting the Default Theme

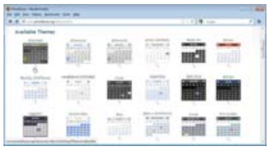
Installing a Theme: Summary

- **Browse themes and choose name**
  - http://www.primefaces.org/themes.html or
  - http://apps.jsf2.com/primefaces-themes/themes3.jsf
- **Download and install corresponding JAR**
  - http://repository.primefaces.org/org/primefaces/themes/
- **Specify theme as default in web.xml**

```
<context-param>
   <param-name>primefaces.THEME</param-name>
   <param-value>theme-name</param-value>
</context-param>
```

Installing a Theme: Details

- **Browse themes and choose name**
  - http://www.primefaces.org/themes.html
    - Click on magnifying glass at bottom, then browse to various showcase sections to see components displayed in that theme.



  - http://apps.jsf2.com/primefaces-themes/themes3.jsf
    - Choose theme from dropdown at top, and see many components all at once.

Installing a Theme: Details

- **Download JAR corresponding to name**
  - http://repository.primefaces.org/org/primefaces/themes/
    - Click on theme name, then latest version number, then click on JAR file (top entry) to download.
      - This tutorial uses version 1.0.8 of each of the themes, the latest version as of 12/2012.
    - Put JAR file in the WEB-INF/lib folder of your app, as with all JAR files.
  - Note: default is “aristo”
    - So, if your choice is aristo, you neither need to download the JAR nor specify it in web.xml
  - Customizing a theme
    - You can also use the jQuery UI “ThemeRoller” to interactively customize a theme, then save the results. It is a bit tedious, but far better than editing CSS files. For details, see Section 7.2 of the PrimeFaces 3.4 User’s Guide.

Installing a Theme: Details

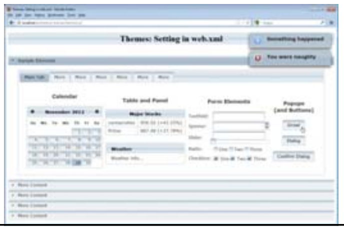
- **Specify theme as default in web.xml**
  - PrimeFaces looks for a context-param named primefaces.THEME
  - If that context-param exists and there is a JAR file with the required theme info, that theme is used. Otherwise “aristo” is used.
  - Example: make bluesky (the RichFaces theme) the default

```
<context-param>
    <param-name>primefaces.THEME</param-name>
    <param-value>bluesky</param-value>
 </context-param>
```

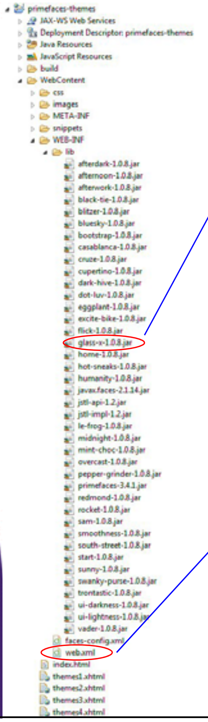
    - This assumes that http://repository.primefaces.org/org/primefaces/themes/bluesky/1.0.8/bluesky-1.0.8.jar installed in WEB-INF/lib

Example: Sample Elements Using glass-x

- **Made a page with several PrimeFaces components**
  - Accordion panels, tabbed panels, tables, panels, spinners, sliders, calendars, textfields, buttons, dialogs, confirmation dialogs, growl, etc. *All* components were described in earlier sections of this tutorial.
- **Set glass-x as default**
  - Set the primefaces.THEME context-param to glass-x
  - Installed the glass-x JAR file in WEB-INF/lib
- **Accessed the page**



Project Layout in Eclipse

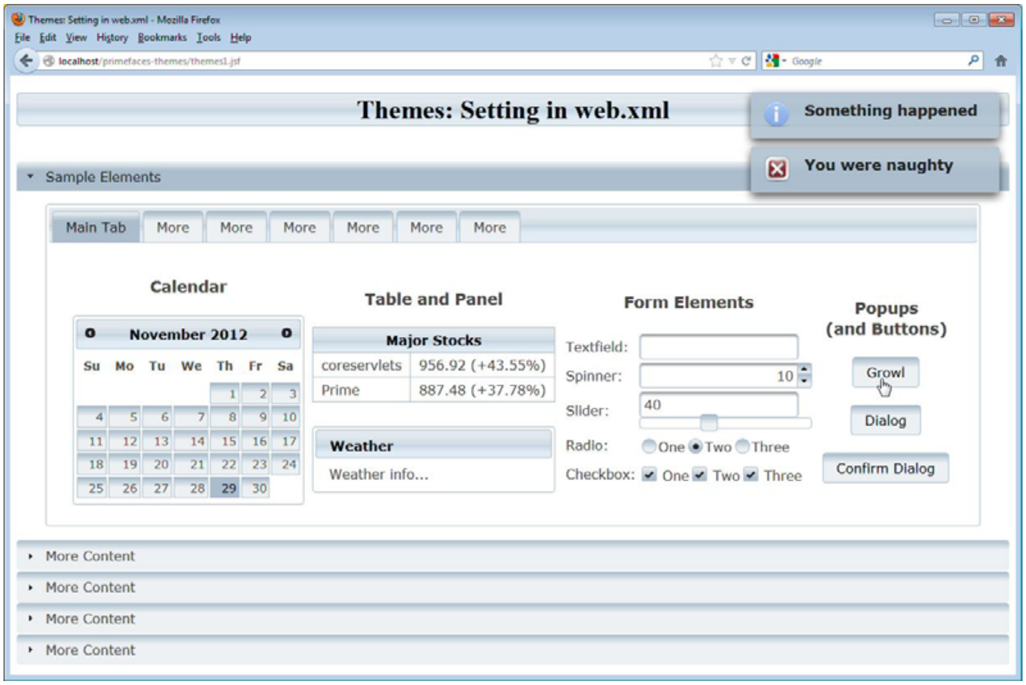


```
primefaces-themes
  JAX-WS Web Services
  Deployment Descriptor: primefaces-themes
  Java Resources
  JavaScript Resources
  build
  WebContent
    css
    images
    META-INF
    snippets
    WEB-INF
      lib
        afterdark-1.0.8.jar
        afternoon-1.0.8.jar
        afterwork-1.0.8.jar
        black-tie-1.0.8.jar
        blitzer-1.0.8.jar
        bluesky-1.0.8.jar
        bootstrap-1.0.8.jar
        casablanca-1.0.8.jar
        cruze-1.0.8.jar
        cupertino-1.0.8.jar
        dark-hive-1.0.8.jar
        dot-luv-1.0.8.jar
        eggplant-1.0.8.jar
        excite-bike-1.0.8.jar
        flick-1.0.8.jar
        glass-x-1.0.8.jar
        home-1.0.8.jar
        hot-sneaks-1.0.8.jar
        humanity-1.0.8.jar
        javax.faces-2.1.14.jar
        jstl-api-1.2.jar
        jstl-impl-1.2.jar
        le-frog-1.0.8.jar
        midnight-1.0.8.jar
        mint-choc-1.0.8.jar
        overcast-1.0.8.jar
        pepper-grinder-1.0.8.jar
        primefaces-3.4.1.jar
        redmond-1.0.8.jar
        rocket-1.0.8.jar
        sam-1.0.8.jar
        smoothness-1.0.8.jar
        south-street-1.0.8.jar
        start-1.0.8.jar
        sunny-1.0.8.jar
        swanky-purse-1.0.8.jar
        trontastic-1.0.8.jar
        ui-darkness-1.0.8.jar
        ui-lightness-1.0.8.jar
        vader-1.0.8.jar
      faces-config.xml
      web.xml
    index.html
    themes1.xhtml
    themes2.xhtml
    themes3.xhtml
    themes4.xhtml
```

Downloaded from http://repository.primefaces.org/org/primefaces/themes/bluesky/1.0.8/ (start at http://repository.primefaces.org/org/primefaces/themes/ and browse from there). JARs for the other themes are also installed because later examples will let user interactively choose among all available themes.

```
<?xml version="1.0" encoding="UTF-8"?>
<web-app …>
  <context-param>
    <param-name>primefaces.THEME</param-name>
    <param-value>glass-x</param-value>
  </context-param>
  <servlet>
    <servlet-name>Faces Servlet</servlet-name>
    <servlet-class>javax.faces.webapp.FacesServlet</servlet-class>
  </servlet>
  <servlet-mapping>
    <servlet-name>Faces Servlet</servlet-name>
    <url-pattern>*.jsf</url-pattern>
  </servlet-mapping>
  …
</web-app>
```

Results



Themes: Setting in web.xml - Mozilla Firefox
File Edit View History Bookmarks Tools Help
localhost/primefaces-themes/themes1.jsf
Google

Themes: Setting in web.xml

Something happened

You were naughty

Sample Elements
Main Tab
More
More
More
More
More
More

Calendar

November 2012

Su	Mo	Tu	We	Th	Fr	Sa
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

Table and Panel

Major Stocks	
coreservlets	956.92 (+43.55%)
Prime	887.48 (+37.78%)

Weather

Weather info…

Form Elements

Textfield:

Spinner: 10

Slider: 40

Radio: ○ One ● Two ○ Three

Checkbox: ☑ One ☑ Two ☑ Three

Popups (and Buttons)

Result after moving the slider and spinner, clicking one radio button, then clicking “Growl” button.

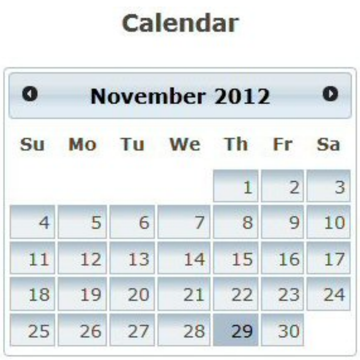
Main Page: Facelets

```
<p:accordionPanel>
<p:tab title="Sample Elements">
<p:tabView>
<p:tab title="Main Tab">
<h:panelGrid columns="4">
  <ui:include src="/snippets/calendar.xhtml"/>
  <ui:include src="/snippets/table-and-panel.xhtml"/>
  <ui:include src="/snippets/form-elements.xhtml"/>
  <ui:include src="/snippets/popups.xhtml"/>
</h:panelGrid>
</p:tab>
<p:tab title="More">
  <ui:include src="/snippets/filler.xhtml"/>
</p:tab>
...
</p:tabView>
</p:tab>
<p:tab title="More Content">
  <ui:include src="/snippets/filler.xhtml"/>
</p:tab>
...
</p:accordionPanel>
```

All four of these content sections contain elements that were covered in earlier parts of this PrimeFaces tutorial. And, none of them have any real server-side behavior. So, if you have already gone through earlier parts of this tutorial, you probably want to skip or skim the next few slides in this sub-section that show the code for the four content regions.

Calendar: Facelets

```
<h:panelGrid>
<h3 align="center">Calendar</h3>
<h:form>
<p:calendar mode="inline"/>
</h:form>
</h:panelGrid>
```



Calendar

November 2012

Su	Mo	Tu	We	Th	Fr	Sa
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

This and the other three content sections are each wrapped inside ui:composition so that they can be inserted with ui:include.

Table and Panel: Facelets

```
<h:panelGrid>
<h3 align="center">Table and Panel</h3>
<p:panelGrid columns="2">
  <f:facet name="header">Major Stocks</f:facet>
  coreservlets
  <h:outputText value="#{financeBean.coreservlets}"/>
  Prime
  <h:outputText value="#{financeBean.prime}"/>
</p:panelGrid>
<br/>
<p:panel header="Weather">
  Weather info...
</p:panel>
</h:panelGrid>
```

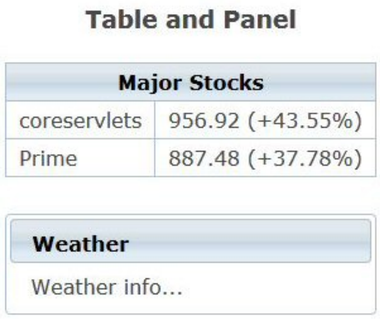


Table and Panel

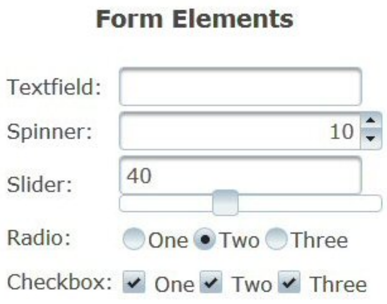
Major Stocks	
coreservlets	956.92 (+43.55%)
Prime	887.48 (+37.78%)

Weather

Weather info...

Form Elements: Facelets

```
<h:panelGrid>
<h3 align="center">Form Elements</h3>
<h:form>
<h:panelGrid columns="2">
Textfield: <p:inputText/>
Spinner: <p:spinner/>
Slider: <h:panelGroup>
          <p:inputText id="sliderField"/>
          <p:slider for="sliderField"/>
        </h:panelGroup>
Radio: <p:selectOneRadio>
         <f:selectItem itemLabel="One"/>
         <f:selectItem itemLabel="Two"/>
         <f:selectItem itemLabel="Three"/>
       </p:selectOneRadio>
Checkbox: <p:selectManyCheckbox>
            <f:selectItem itemLabel="One"/>
            <f:selectItem itemLabel="Two"/>
            <f:selectItem itemLabel="Three"/>
          </p:selectManyCheckbox>
</h:panelGrid>
</h:form>
</h:panelGrid>
```



Form Elements

Textfield:

Spinner: 10

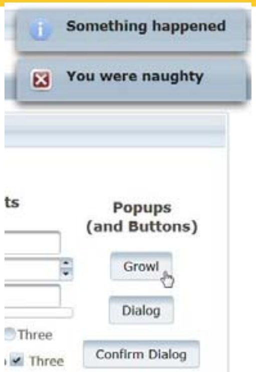
Slider: 40

Radio: ○ One ● Two ○ Three

Checkbox: ☑ One ☑ Two ☑ Three

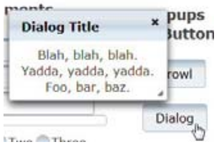
Popups: Facelets

```
<h:panelGrid>
<h3 align="center">Popups<br/>(and Buttons)</h3>
<h:form>
<div align="center">
<p:commandButton value="Growl"
                 action="#{growlBean.makeMessages}"
                 update="growl"/>
<p:growl id="growl"/>
<br/><br/>
<p:commandButton value="Dialog" onclick="dlg.show()"/>
<p:dialog header="Dialog Title" widgetVar="dlg">
Blah, blah, blah.<br/>
Yadda, yadda, yadda.<br/>
Foo, bar, baz.
</p:dialog>
<br/><br/>
<p:commandButton value="Confirm Dialog" onclick="confirmation.show()"/>
<p:confirmDialog header="Please Confirm"
                 message="Are You Sure?"
                 severity="info"
                 widgetVar="confirmation">
    <p:commandButton value="Yes" onclick="confirmation.hide()"/>
    <p:commandButton value="No" onclick="confirmation.hide()"/>
</p:confirmDialog>
</div>
</h:form>
</h:panelGrid>
```



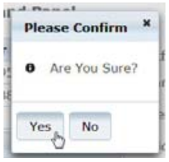
Something happened

You were naughty



Dialog Title

Blah, blah, blah.
Yadda, yadda, yadda.
Foo, bar, baz.

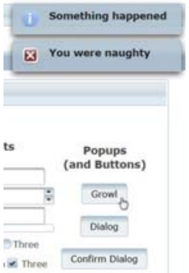


Please Confirm

Are You Sure?

Popups: GrowlBean

```
@ManagedBean
public class GrowlBean {
  public String makeMessages() {
    FacesContext context = FacesContext.getCurrentInstance();
    FacesMessage message1 =
        new FacesMessage("Something happened");
    // Default severity is INFO
    context.addMessage(null, message1);
    FacesMessage message2 =
        new FacesMessage("You were naughty");
    message2.setSeverity(FacesMessage.SEVERITY_ERROR);
    context.addMessage(null, message2);
    return(null);
  }
}
```



Something happened

You were naughty

p:themeSwitcher – Changing Theme at Runtime

Idea

- **Install JARs for several themes**
  - I installed JARs for all 36 non-default themes
    - aristo is built in
- **Use p:themeSwitcher**
  - Syntax is almost identical to that of h:selectOneMenu except no bean property for the user selection (handled by JavaScript on the client). Very simple to use.
  - f:selectItems refers to the themes.
    - String[] – Should contain the theme names in lower case
    - List<String> – again, theme names in lower case
    - Map<String,String> – the keys are arbitrary display values and the values are the theme names in lower case
    - SelectItem[] or List<SelectItem> – Display part of each SelectItem is arbitrary, values are theme names

Issue: Theme Switcher Fires on Change (like h:selectOneMenu)

- **Problem**
  - Themes changed only when menu selection *changes*
    - So, if top entry is a theme that does not match the current theme, there is no way to select it without changing to another theme in between.
- **Solution 1**
  - Put dummy value (e.g., "—Choose Theme—") as top value of menu. If value is empty string, p:themeSwitcher will ignore it if selected. This means that any initial selection of a theme will be a change.
    - This point was also discussed in general JSF2 tutorial when discussing h:selectOneMenu.
- **Solution 2**
  - Put current theme first in the list. (Next section)

Example: Facelets

Dummy value so that any theme name selected will be a change.

```
<div align="center">
<h:form>
<p:themeSwitcher>
  <f:selectItem itemLabel="--Choose Theme--"
                itemValue=""/>
  <f:selectItems value="#{themeChoices.themes}"/>
</p:themeSwitcher>
</h:form>
</div>
```

Returns an array of the theme names.

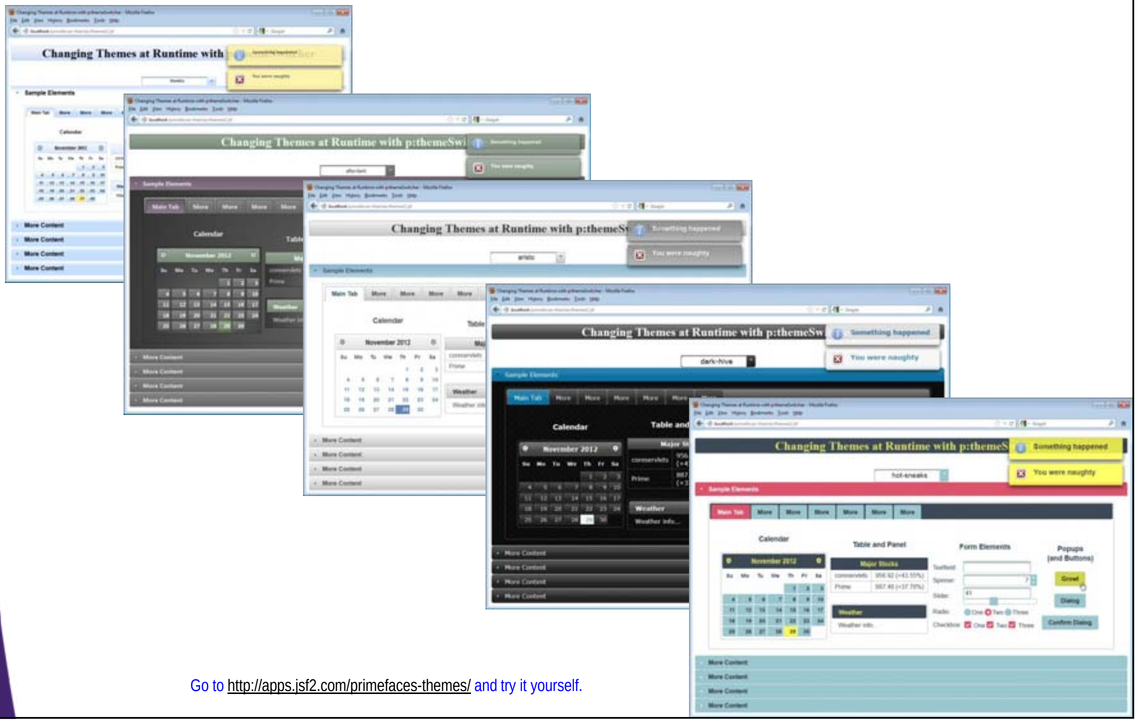
```
<ui:include src="/snippets/theme-body.xhtml"/>
```

Example: Bean

```
@ManagedBean
public class ThemeChoices {
  public static final String[] POSSIBLE_THEMES =
    { "afterdark", "afternoon", "afterwork", "aristo",
      "black-tie", "blitzer", "bluesky", "casablanca",
      "cruze", "cupertino", "dark-hive", "dot-luv",
      "eggplant", "excite-bike", "flick", "glass-x",
      "home", "hot-sneaks", "humanity", "le-frog",
      "midnight", "mint-choc", "overcast", "pepper-grinder",
      "redmond", "rocket", "sam", "smoothness",
      "south-street", "start", "sunny", "swanky-purse",
      "trontastic", "twitter bootstrap", "ui-darkness",
      "ui-lightness", "vader" };

  public String[] getThemes() {
    return(POSSIBLE_THEMES);
  }
}
```

Example: Results

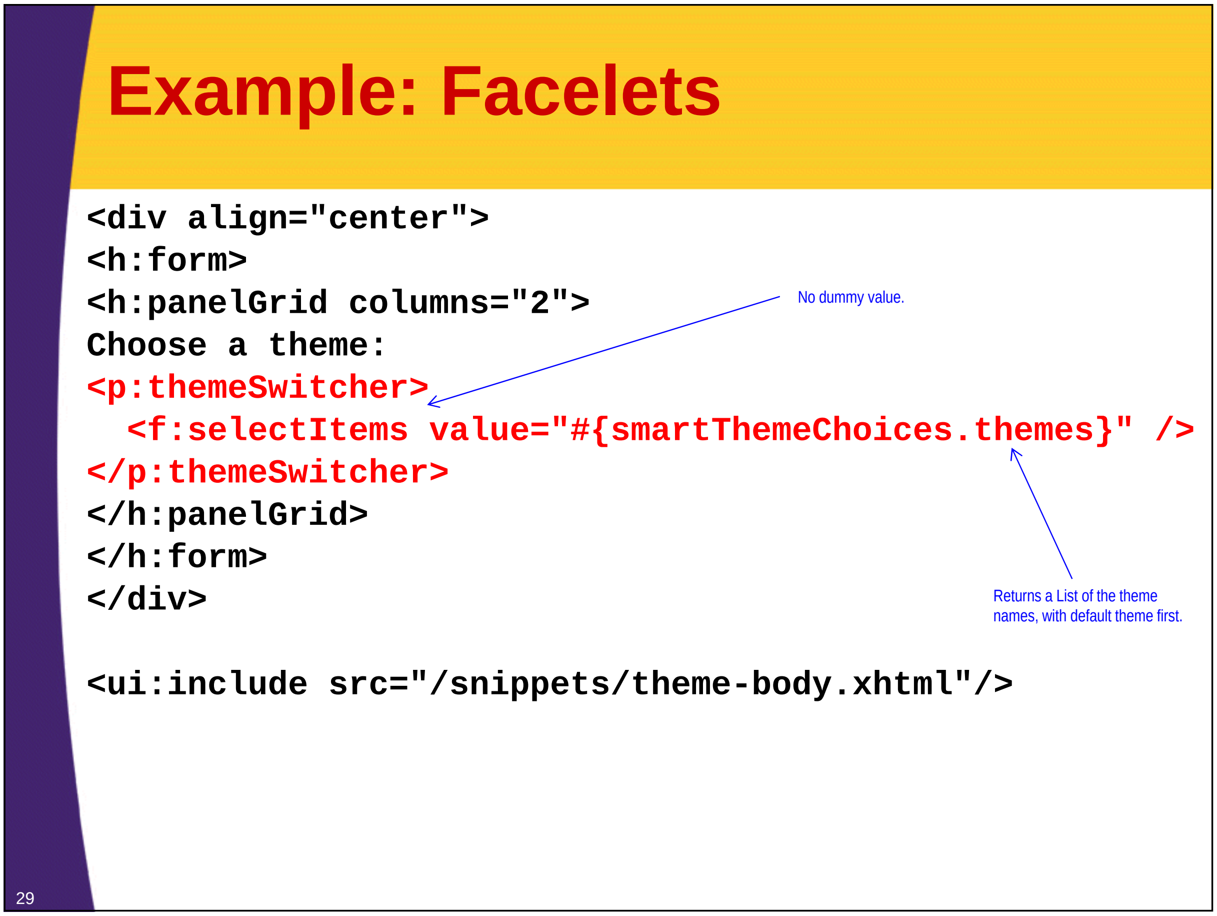


Go to http://apps.jsf2.com/primefaces-themes/ and try it yourself.

Looking up the Default Theme

Idea

- **Default theme is stored as a context-param**
  - Using the ExternalContext, there is a standard way of reading a context-param.
- **Last example required a dummy value at the top of the p:themeSwitcher list**
  - But, if you know the current theme and put it first in the list, you can skip the dummy value.
  - Note that p:themeSwitcher has no associated bean property (other than the list of choices), so you cannot have the bean property getter return a value matching an entry in the list as with h:selectOneMenu. Thus, with p:themeSwitcher, the top value is always the one initially shown.



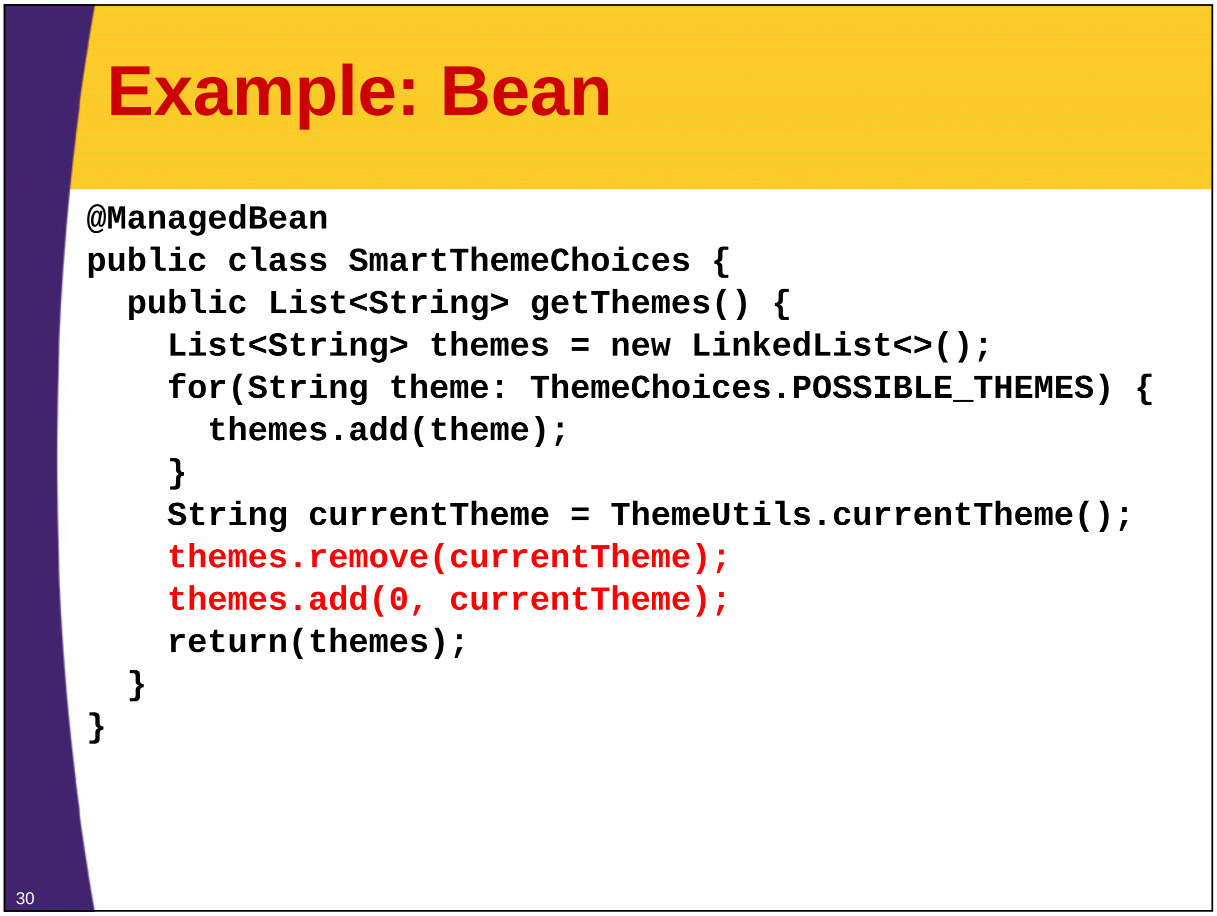
Example: Facelets

```
<div align="center">
<h:form>
<h:panelGrid columns="2">
Choose a theme:
<p:themeSwitcher>
  <f:selectItems value="#{smartThemeChoices.themes}" />
</p:themeSwitcher>
</h:panelGrid>
</h:form>
</div>

<ui:include src="/snippets/theme-body.xhtml"/>
```

No dummy value.

Returns a List of the theme names, with default theme first.



Example: Bean

```
@ManagedBean
public class SmartThemeChoices {
  public List<String> getThemes() {
    List<String> themes = new LinkedList<>();
    for(String theme: ThemeChoices.POSSIBLE_THEMES) {
      themes.add(theme);
    }
    String currentTheme = ThemeUtils.currentTheme();
    themes.remove(currentTheme);
    themes.add(0, currentTheme);
    return(themes);
  }
}
```

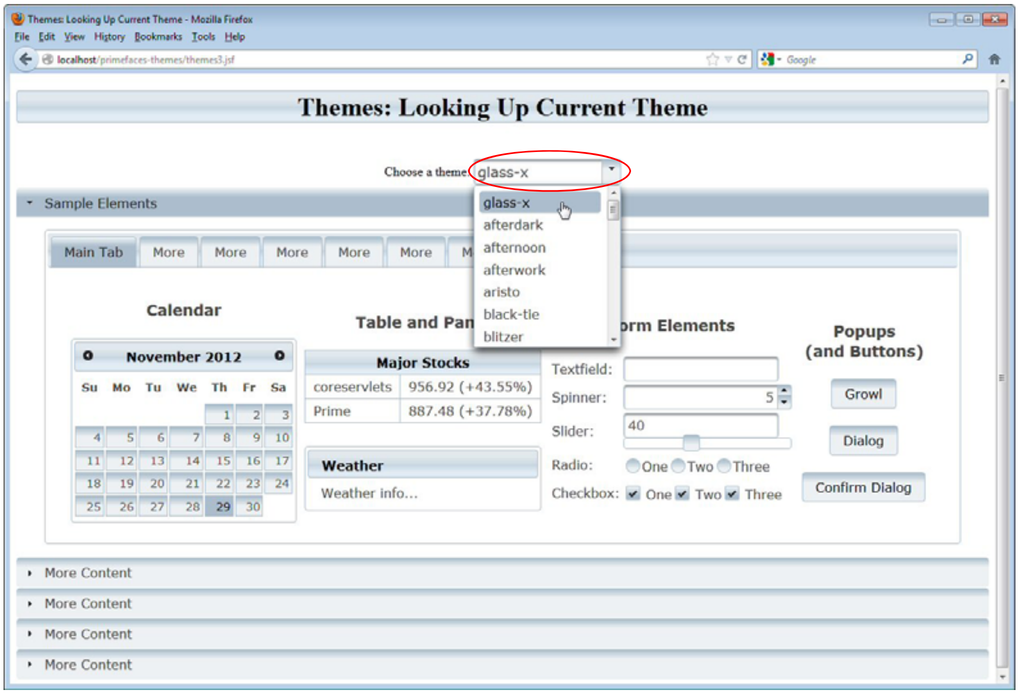
Example: Helper Class

```
public class ThemeUtils {
  public static final String DEFAULT_THEME = "aristo";

  public static String currentTheme() {
    String theme = DEFAULT_THEME;
    ExternalContext externalContext =
      FacesContext.getCurrentInstance().getExternalContext();
    String param =
      externalContext.getInitParameter("primefaces.THEME");
    if (param != null) {
      theme = param;
    }
    return(theme);
  }

  private ThemeUtils() {} // Uninstantiatable class
}
```

Example: Results (When First Loaded)



Themes: Looking Up Current Theme - Mozilla Firefox

localhost/primefaces-themes/themes3.jsf

Themes: Looking Up Current Theme

Choose a theme: glass-x

Major Stocks	
coreservlets	956.92 (+43.55%)
Prime	887.48 (+37.78%)

Weather info...

Textfield:

Spinner: 5

Slider: 40

Radio: ○ One ○ Two ○ Three

Checkbox: ☑ One ☑ Two ☑ Three

Changing Theme at Runtime (without p:themeSwitcher)

Idea

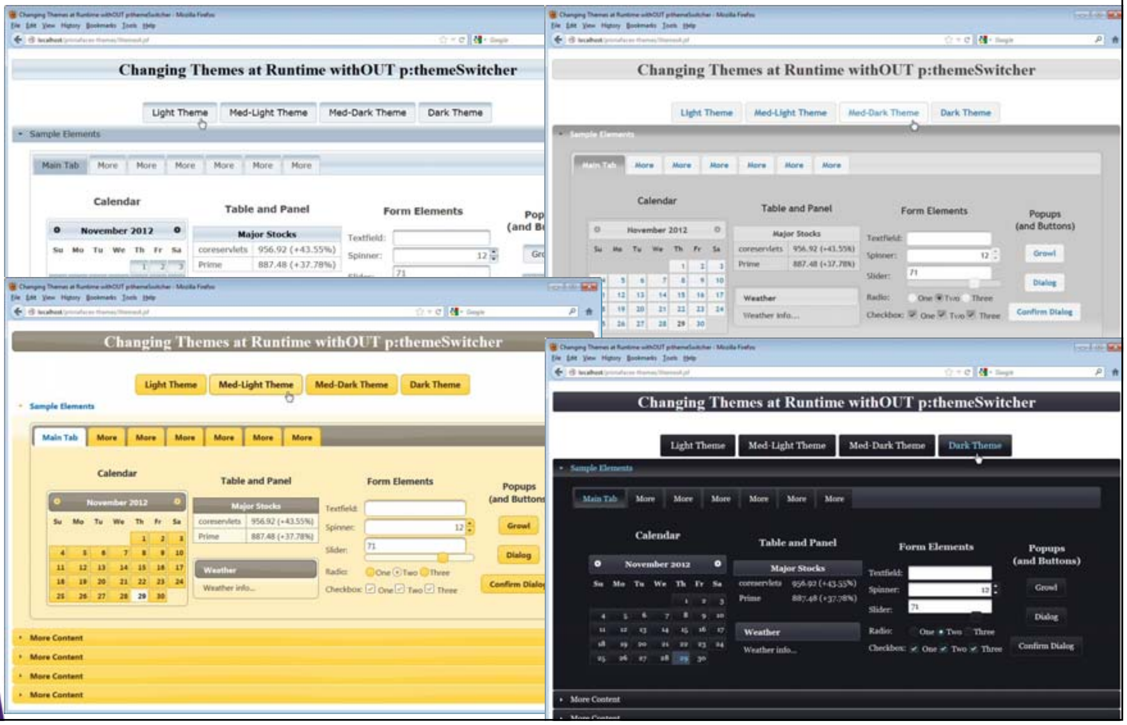
- **How p:themeSwitcher works**
  - It calls PrimeFaces.changeTheme, which uses jQuery to find the "link" tag that loads the theme's CSS file, and changes the "href" attribute.
    - Although not documented, this is a PrimeFaces function that is in core.js, and is unlikely to change in future releases.
- **So, no need to reproduce functionality**
  - Just call PrimeFaces.changeTheme('theme-name')
    - Caveat 1: the appropriate JAR must be in WEB-INF/lib
    - Caveat 2: this does not change the default; it is a pure client-side change. So, next time page is reloaded, it will revert to previous theme. But this is the same behavior as with p:themeSwitcher. You could easily use a View Parameter to make this persistent.

Example: Runtime Theme Changes

```
<div align="center">
<h:form>
<h:panelGrid columns="4">
<p:commandButton value="Light Theme"
                 onclick="PrimeFaces.changeTheme('glass-x')"/>
<p:commandButton value="Med-Light Theme"
                 onclick="PrimeFaces.changeTheme('sunny')"/>
<p:commandButton value="Med-Dark Theme"
                 onclick="PrimeFaces.changeTheme('overcast')"/>
<p:commandButton value="Dark Theme"
                 onclick="PrimeFaces.changeTheme('midnight')"/>
</h:panelGrid>
</h:form>
</div>

<ui:include src="/snippets/theme-body.xhtml"/>
```

Results



Best Practices for Using Themes

Customized Java EE Training: http://courses.coreservlets.com/

Java 7, Java 8, JSF 2, PrimeFaces, Android, JSP, Ajax, jQuery, Spring MVC, RESTful Web Services, GWT, Hadoop.

Developed and taught by well-known author and developer. At public venues or onsite at *your* location.

Plan Ahead for Changes to the Theme

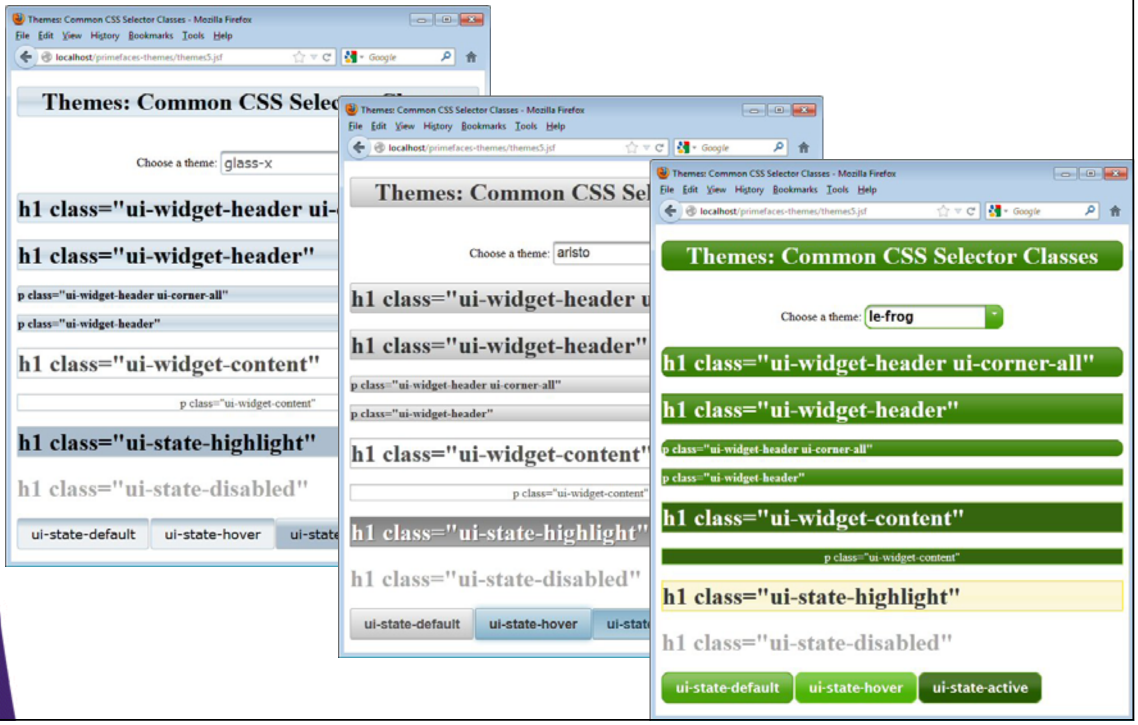
- **Use CSS class names, not element names**
  - Yes: class selectors like **.blah { … }**
    - <table class="blah"> or <p:panelGrid class="blah">
  - No: element selectors like **table { … }**
    - <table> or <p:panelGrid>
- **Minimize use of hard-coded colors**
  - Colors change frequently with the theme
- **Use relative, not absolute font sizes**
  - I.e., use 110% or 90%, not 18px
- **Customize components with placeholders**
  - Each class defines placeholder class names for you to use to add additional customization. *These are clearly listed in the "Skinning" entry under each component in the User's Guide.* E.g., p:slider has .ui-slider, .ui-slider-handle, etc.

Know the Most Important PrimeFaces CSS Classes

Selector	Applies To
.ui-widget	All PrimeFaces components
.ui-widget-header	Header section of a component
.ui-widget-content	Content section of a component
.ui-corner-all	Makes corners rounded
.ui-state-default	A clickable in its default state
.ui-state-hover	A clickable when the mouse is hovering over it
.ui-state-active	A clickable when it is selected
.ui-state-disabled	Disabled elements
.ui-state-highlight	Highlighted elements
.ui-icon	Predefined icon for that component

More classes and detail: http://docs.jquery.com/UI/Theming/API#The_jQuery_UI_CSS_Framework

CSS Classes: Samples


Themes: Common CSS Selector Classes - Mozilla Firefox
File Edit View History Bookmarks Tools Help
localhost/primefaces-themes/themes5.jsf
Google
ui-state-default
ui-state-hover
ui-state
ui-state-default
ui-state-hover
ui-state
ui-state-default
ui-state-hover
ui-state-active

Themes: Common CSS Selec

Choose a theme: glass-x

h1 class="ui-widget-header ui-

h1 class="ui-widget-header"

p class="ui-widget-header ui-corner-all"

p class="ui-widget-header"

h1 class="ui-widget-content"

p class="ui-widget-content"

h1 class="ui-state-highlight"

h1 class="ui-state-disabled"

Themes: Common CSS Sel

Choose a theme: aristo

h1 class="ui-widget-header u

h1 class="ui-widget-header"

p class="ui-widget-header ui-corner-all"

p class="ui-widget-header"

h1 class="ui-widget-content"

p class="ui-widget-content"

h1 class="ui-state-highlight"

h1 class="ui-state-disabled"

Themes: Common CSS Selector Classes

Choose a theme: le-frog

h1 class="ui-widget-header ui-corner-all"

h1 class="ui-widget-header"

p class="ui-widget-header ui-corner-all"

p class="ui-widget-header"

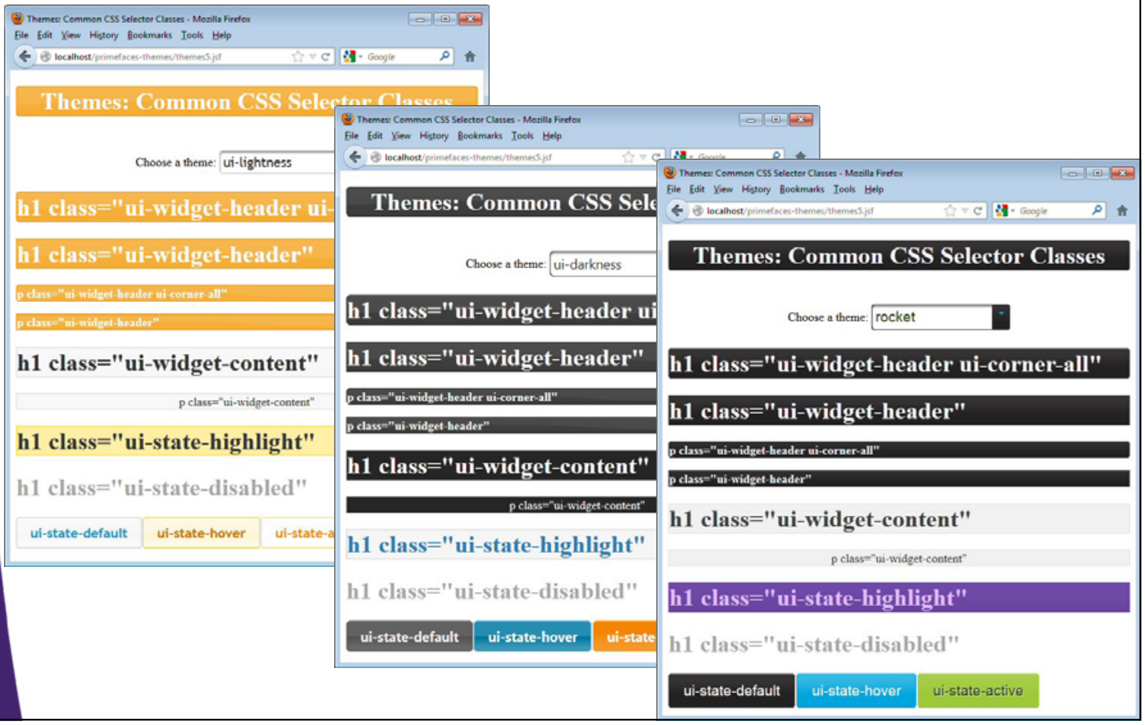
h1 class="ui-widget-content"

p class="ui-widget-content"

h1 class="ui-state-highlight"

h1 class="ui-state-disabled"

CSS Classes: Samples



Themes: Common CSS Selector Classes - Mozilla Firefox

localhost/primefaces-themes/themes5.jsf

Themes: Common CSS Selector Classes

Choose a theme: rocket

h1 class="ui-widget-header ui-corner-all"

h1 class="ui-widget-header"

p class="ui-widget-header ui-corner-all"

p class="ui-widget-header"

h1 class="ui-widget-content"

p class="ui-widget-content"

h1 class="ui-state-highlight"

h1 class="ui-state-disabled"

Theme Gotcha: Style Sheets Being Superseded

- **Problem**
  - You define
    - .ui-growl { right: 50px; top: 100px }

    but settings appear to be ignored
- **Reason**
  - PrimeFaces dynamically inserts <link> tag in head section, and it is placed at the bottom of the head, i.e., *after* yours.
- **Solutions**
  - Mark settings as !important
    - .ui-growl { right: 50px !important; top: 100px !important}
  - Or, use h:outputStyleSheet
    - Your style sheet will be loaded *after* the PrimeFaces one
      - h:outputStyleSheet covered in Page Templating section

Theme Gotcha: Everything in Theme is Too Large

- **Problem**
  - Many people feel that most themes make components slightly too large for most professional apps
- **Solution**
  - Change default font size, leave everything else the same

```
.ui-widget, .ui-widget .ui-widget {
    font-size: 90% !important;
}
```

  - As discussed on previous slide, if you use h:outputStyleSheet, then you do not need the !important above.

Theme Gotcha: Not All Styles Well Documented

- **Problem**
  - Main styles are documented clearly. Placeholder styles for each element also well documented. But, some of the minor styles used throughout the themes are not documented.
- **Solution**
  - Find the CSS file in the JAR file
    - META-INF/resources/primefaces-aristo/theme.css
  - Open it in TopStyle or another CSS editor that shows previews.
    - Browse around!

Theme Gotcha: None of the Themes Fit Your Needs

- **Problem**
  - None of the 37 builtin themes is exactly what you want
- **Solution**
  - Roll your own. But don’t start from scratch. Choose the theme that is nearest to what you want, then use ThemeRoller to tweak it.
    - http://jqueryui.com/themeroller/
  - The output of ThemeRoller has to be edited in several ways to be compatible with PrimeFaces, but this is moderately well documented in Section 7.2 of PrimeFaces User’s Guide, and is *much* easier than editing CSS by hand.

Wrap-Up

Summary

- **Browse themes and choose name**
  - http://www.primefaces.org/themes.html or
  - http://apps.jsf2.com/primefaces-themes/themes3.jsf
- **Download and install corresponding JAR**
  - http://repository.primefaces.org/org/primefaces/themes/
- **Specify theme as default in web.xml**

```
<context-param>
   <param-name>primefaces.THEME</param-name>
   <param-value>theme-name</param-value>
</context-param>
```

- **Change themes at runtime**
  - Use p:themeSwitcher or call PrimeFaces.changeTheme
- **Plan ahead for changes to themes**
  - Learn most important CSS names. Avoid hard-coded fonts and colors. Don’t define your own CSS for HTML elements, only classes.
    - See http://docs.jquery.com/UI/Theming/API

Questions?

More info:
http://www.coreservlets.com/JSF-Tutorial/jsf2/ – JSF 2.2 tutorial
http://www.coreservlets.com/JSF-Tutorial/primefaces/ – PrimeFaces tutorial
http://courses.coreservlets.com/jsf-training.html – Customized JSF and PrimeFaces training courses
http://coreservlets.com/ – JSF 2, PrimeFaces, Java 7 or 8, Ajax, jQuery, Hadoop, RESTful Web Services, Android, HTML5, Spring, Hibernate, Servlets, JSP, GWT, and other Java EE training