

## **JavaFX**

Skinning JavaFX Applications with CSS

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Learn how to skin your JavaFX applications using cascading style sheets (CSS) to create a custom look.

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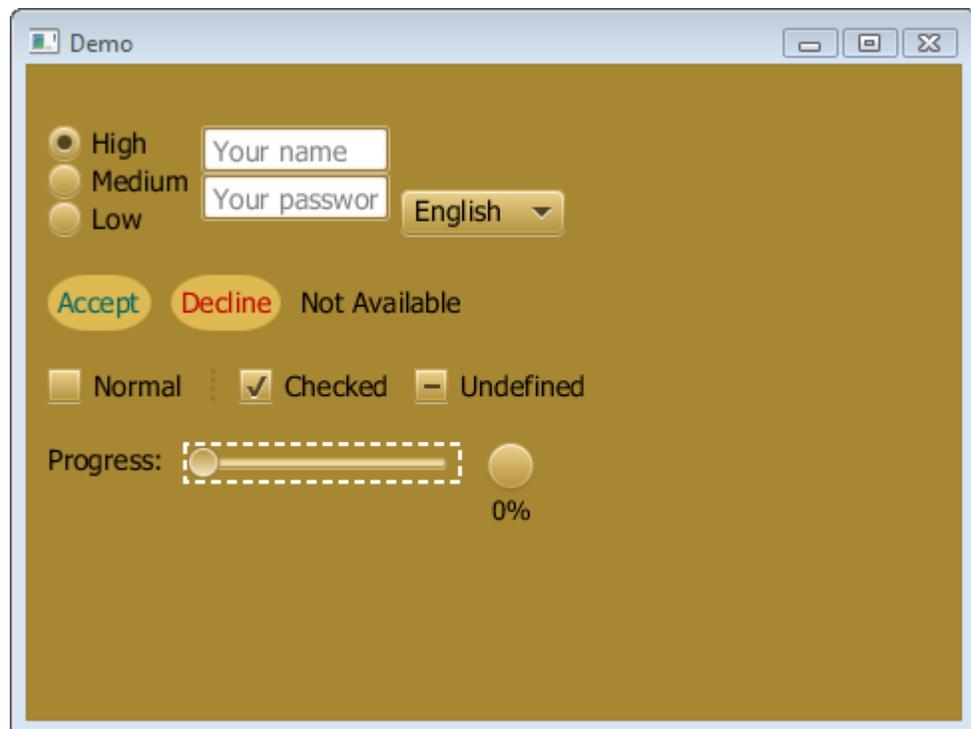
# Skinning JavaFX Applications with CSS

This topic describes how to use cascading style sheets (CSS) with JavaFX applications. Use CSS to create a custom look for your application.

Style sheets contain style definitions that control the look of user interface elements. Using CSS in JavaFX applications is similar to using CSS in HTML. JavaFX CSS are based on the W3C CSS version 2.1 specification (available at <http://www.w3.org/TR/CSS21/>) with some additions from current work on version 3 of the specification and some extensions that support specific JavaFX features.

Skinning your UI with JavaFX CSS enables you to change the UI shown in [Figure 1-1](#) to the UI shown in [Figure 1-2](#) just by changing the style sheet used.

**Figure 1-1** Style 1



**Figure 1-2 Style 2**

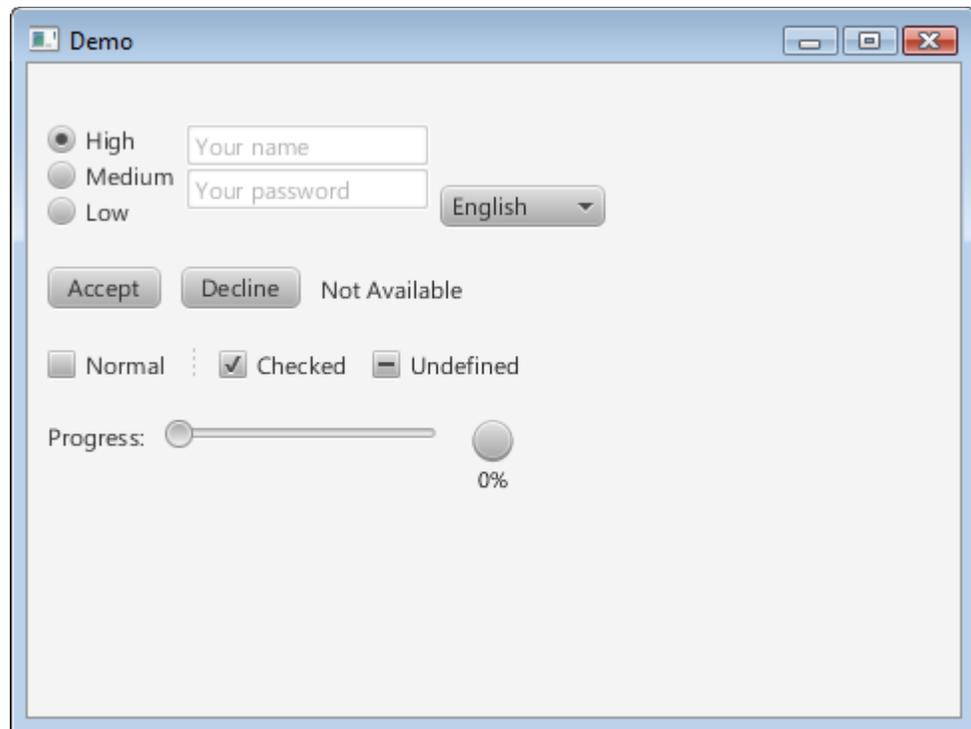
## Default Style Sheet

The default style sheet for JavaFX applications is `caspien.css`, which is found in the JavaFX runtime JAR file, `jfxrt.jar`. This style sheet defines styles for the root node and the UI controls. To view this file, go to the `\jre\lib` directory under the directory in which the Java Development Kit (JDK) is installed. Use the following command to extract the style sheet from the JAR file:

```
jar xf jfxrt.jar com/sun/javafx/scene/control/skin/caspian/caspian.css
```

[Figure 1-3](#) shows what the sample UI looks like with the default style sheet.

Figure 1-3 Default Style



## Creating Style Sheets

You can create one or more of your own style sheets to override the styles in the default style sheet and to add your own styles. Typically style sheets that you create have an extension of `.css` and are located in the same directory as the main class for your JavaFX application.

The style sheet `controlStyle1.css` provides the skinning shown in [Figure 1-1](#). The style sheet `controlStyle2.css` provides the skinning shown in [Figure 1-2](#).

Style sheets are applied to `Scene` objects as shown in [Example 1-1](#), where *path* is the directory structure that reflects the location of your style sheet, and *stylesheet* is the name of your style sheet. For example, the path and name of the style sheet for [Figure 1-2](#) is `uicontrolcss/controlStyle2.css`.

### Example 1-1 Adding a Style Sheet

```
Scene scene = new Scene(new Group(), 500, 400);
scene.getStylesheets().add("path/stylesheet.css");
```

## Defining Styles

A style definition consists of the name of the style, also called the selector, and a series of rules that set the properties for the style. Rules for a definition are enclosed in braces (`{}`). [Example 1-2](#) shows the definition for a style named `.custom-button`.

### Example 1-2 Sample Style Definition

```
.custom-button {
    -fx-font: 16px "Serif";
```

```
-fx-padding: 10;  
-fx-background-color: #CCFF99;  
}
```

---

---

**Note:** The size of a font can be specified in either points (pt) or pixels (px). A resolution of 96 dots per inch (dpi) is assumed, so 1px = 0.75pt.

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## Selectors

Several types of styles can be defined. Each type of style has its own convention for selectors.

Style classes correspond to class names. By convention, style class names that consist of more than one word use a hyphen (-) between words. Style class selectors are preceded by a dot (.).

Examples of class selectors:

```
.button  
.check-box  
.scroll-bar
```

You can also define styles that are associated with a node through the node's ID. The ID is set using the node's `setId()` method. The style name is the ID preceded by a hash symbol (#). For example, a node with the ID `my-button` is skinned with the style `#my-button`.

Examples of ID style selectors:

```
#my-button  
#shaded-hbox
```

Compound selectors are also possible. Some classes include elements that can have their own style definition, which are called descendant classes. For example, many UI controls have a descendant class for the label. These definitions are identified by the selector for the class and the selector for the descendant class separated by a space.

Examples of selectors for descendant classes:

```
.check-box .label  
.check-box .box  
.radio-button .dot
```

Pseudo-classes enable you to customize states of a node, such as when a node has focus. These definitions are identified by the selector for the class and the name for the state separated by a colon (:).

Examples of selectors for pseudo-classes:

```
.radio-button:focusd  
.radio-button:hover  
.scroll-bar:vertical
```

## Rules and Properties

The rules for a style definition assign values to properties associated with the class. Rule property names correspond to the names of the properties for a class. The convention for property names with multiple words is to separate the words with a hyphen (-). Property names for styles in JavaFX style sheets are preceded by `-fx-`.

Property names and values are separated by a colon (:). Rules are terminated with a semicolon (;).

Examples of rules:

```
-fx-background-color: #333333;
-fx-text-fill: white;
-fx-alignment: CENTER;
```

The `.root` style class is applied to the root node of the `Scene` instance. Because all nodes in the scene graph are a descendant of the root node, styles in the `.root` style class can be applied to any node.

The `.root` style class includes properties that can be used by other styles to provide consistency in a UI. For example, the property `-fx-focused-base` is defined in the `.root` style. This property is used by styles for other UI controls as the color for the control when it has focus. The following definition shows how this property is used in the style for the class `CheckBox`:

```
.check-box:focused {
    -fx-color: -fx-focused-base;
}
```

## Skinning the Scene

You can quickly change the look of your UI just by customizing the `.root` style class. Both of the sample style sheets set the font size and family, the base color from which other colors are derived, and the background color of the scene. [Example 1-3](#) shows the `.root` style from `controlStyle2.css`.

### **Example 1-3** Root Style from `controlStyle2.css`

```
.root{
    -fx-font-size: 16pt;
    -fx-font-family: "Courier New";
    -fx-base: rgb(132, 145, 47);
    -fx-background: rgb(225, 228, 203);
}
```

With just this style, you create the basic look of [Figure 1-2](#). This is possible because the built-in UI controls use the properties set for the root node to derive their own colors and fonts.

## Skinning Controls

You can further customize your UI by defining styles for the different controls that you are using. You can override the definitions in the default style sheet or create new class or ID styles. You can also define the style for a node within your code.

### Overriding Default Styles

You can override a style in the default style sheet by including the style in your style sheet and assigning it different properties. [Example 1-4](#) shows the style for the `Button` class from `controlStyle2.css`.

### **Example 1-4** Override a Style

```
.button{
```

```
-fx-text-fill: rgb(49, 89, 23);
-fx-border-color: rgb(49, 89, 23);
-fx-border-radius: 5;
-fx-padding: 3 6 6 6;
}
```

The font color, border color, border radius, and padding are picked up from this definition. The color of the button and the font style of the label are picked up from the `.root` definition from [Example 1-3](#). Buttons with this styling look as shown in the following image.



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**Note:** If a class does not have a style defined in the `caspiant.css` style sheet, define the style in your style sheet and assign it to each class instance as shown in [Example 1-6](#). For example, layout panes do not have styles defined in the `caspiant.css` style sheet. See [Styling Layout Panes with CSS](#) for information on creating styles for classes such as `HBox` and `GridPane`.

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## Creating Class Styles

You can create a class style by adding a definition for it to your style sheet. [Example 1-5](#) defines a new style in `controlStyle1.css` called `.button1`.

### **Example 1-5** Define a New Style

```
.button1{
  -fx-text-fill: #006464;
  -fx-background-color: #DFB951;
  -fx-border-radius: 20;
  -fx-background-radius: 20;
  -fx-padding: 5;
}
```

Any button to which this style is added looks as shown in the following image. Note that the font of the label is picked up from the `.root` definition in `controlStyle1.css`.



To assign this class style to a node, use the `getStyleClass().add()` sequence of methods. [Example 1-6](#) shows the `.button1` style assigned to the `Accept` button.

### **Example 1-6** Assign a Class Style

```
Button buttonAccept = new Button("Accept");
buttonAccept.getStyleClass().add("button1");
```

Be aware that adding styles to a node is accumulative. After adding the `.button1` style class to the `buttonAccept` node, the node is rendered using rules from both the `.button` and `.button1` styles.

## Creating ID Styles

You can define a style for an individual node by creating a style and assigning the style to the node. The style name is the ID preceded by a hash symbol (#). [Example 1-7](#) creates a definition for a style named `#font-button`.

### Example 1-7 Define an ID Style

```
#font-button {
    -fx-font: bold italic 20pt "Arial";
    -fx-effect: dropshadow( one-pass-box , black , 8 , 0.0 , 2 , 0 );
}
```

The button that is assigned the ID `font-button` looks as shown in the following image.



[Example 1-8](#) shows how to assign the ID style to a node.

### Example 1-8 Assign an ID Style

```
Button buttonFont = new Button("Font");
buttonFont.setId("font-button");
```

## Setting Styles in the Code

You also have the option of setting style properties for a node within the code for your application. Rules set within the code take precedence over styles from a style sheet. [Example 1-9](#) shows how to change the background color and font color for a button.

### Example 1-9 Define a Style Inline

```
Button buttonColor = new Button("Color");
buttonColor.setStyle("-fx-background-color: slateblue; -fx-text-fill: white;");
```

The following image shows how the button appears.



## Additional Resources

For more in-depth information on JavaFX style sheets, see the [JavaFX CSS Reference Guide](#).

For information on styling the UI Controls, see [Using JavaFX UI Controls](#).

For information on styling layout panes, see [Styling Layout Panes with CSS](#).

For information on styling charts, see [Styling Charts with CSS](#).

