



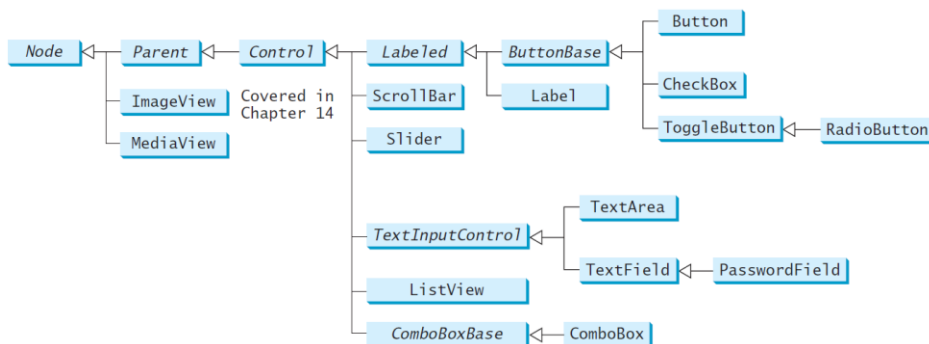
COMP231

Advanced Programming

Chapter 16 JavaFX UI Controls

Compiled By: Dr. Majdi Mafarja
Fall Semester 2017/2018

Frequently Used UI Controls



Throughout this book, the prefixes **lbl**, **bt**, **chk**, **rb**, **tf**, **pf**, **ta**, **cbo**, **lv**, **scb**, **sld**, and **mp** are used to name reference variables for **Label**, **Button**, **CheckBox**, **RadioButton**, **TextField**, **PasswordField**, **TextArea**, **ComboBox**, **ListView**, **ScrollBar**, **Slider**, and **MediaPlayer**.

Labeled

A *label* is a display area for a short text, a node, or both. It is often used to label other controls (usually text fields). Labels and buttons share many common properties. These common properties are defined in the **Labeled** class.

javafx.scene.control.Labeled

```
-alignment: ObjectProperty<Pos>
-contentDisplay:
  ObjectProperty<ContentDisplay>
-graphic: ObjectProperty<Node>
-graphicTextGap: DoubleProperty
-textFill: ObjectProperty<Paint>
-text: StringProperty
-underline: BooleanProperty
-wrapText: BooleanProperty
```

The getter and setter methods for property values and a getter for property itself are provided in the class, but omitted in the UML diagram for brevity.

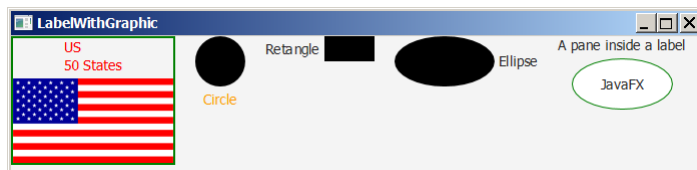
Specifies the alignment of the text and node in the labeled.
Specifies the position of the node relative to the text using the constants TOP, BOTTOM, LEFT, and RIGHT defined in ContentDisplay.
A graphic for the labeled.
The gap between the graphic and the text.
The paint used to fill the text.
A text for the labeled.
Whether text should be underlined.
Whether text should be wrapped if the text exceeds the width.

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Label

The Label class defines labels.



javafx.scene.control.Labeled

javafx.scene.control.Label

```
+Label()
+Label(text: String)
+Label(text: String, graphic: Node)
```

Creates an empty label.
Creates a label with the specified text.
Creates a label with the specified text and graphic.

LabelWithGraphic

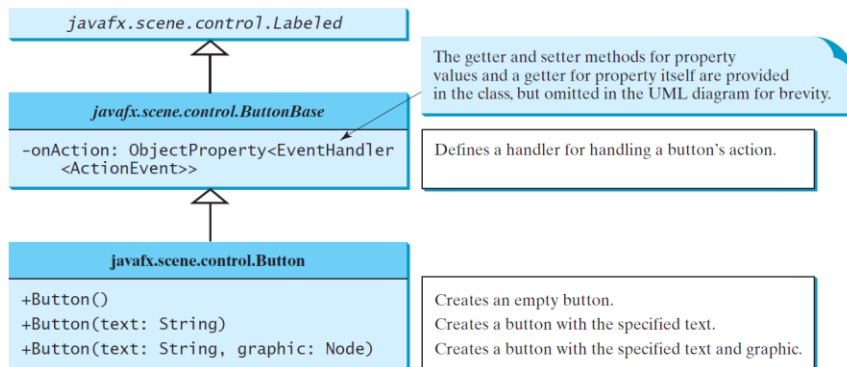
Run

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ButtonBase and Button

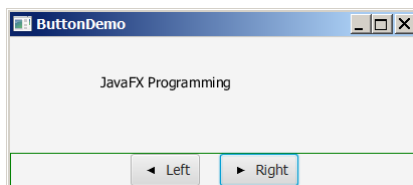
A *button* is a control that triggers an action event when clicked. JavaFX provides regular buttons, toggle buttons, check box buttons, and radio buttons. The common features of these buttons are defined in **ButtonBase** and **Labeled** classes.



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Button Example



ButtonDemo

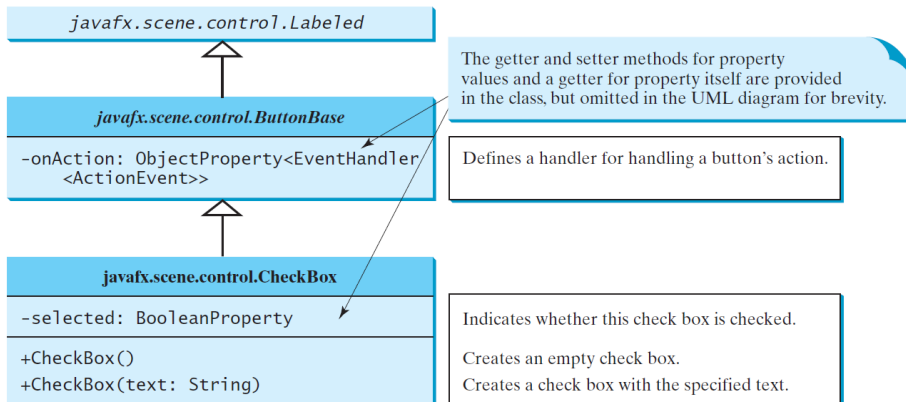
Run

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CheckBox

A **CheckBox** is used for the user to make a selection. Like **Button**, **CheckBox** inherits all the properties such as **onAction**, **text**, **graphic**, **alignment**, **graphicTextGap**, **textFill**, **contentDisplay** from **ButtonBase** and **Labeled**.



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CheckBox Example



CheckBoxDemo

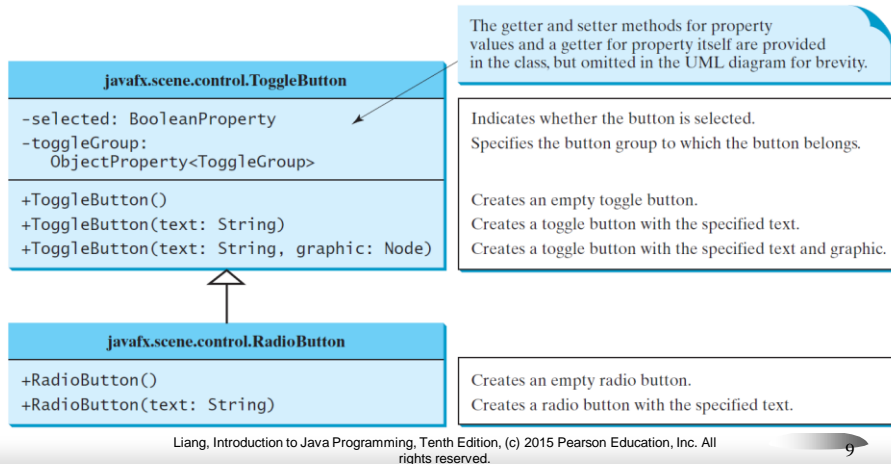
Run

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RadioButton

Radio buttons, also known as *option buttons*, enable you to choose a single item from a group of choices. In appearance radio buttons resemble check boxes, but check boxes display a square that is either checked or blank, whereas radio buttons display a circle that



RadioButton Example

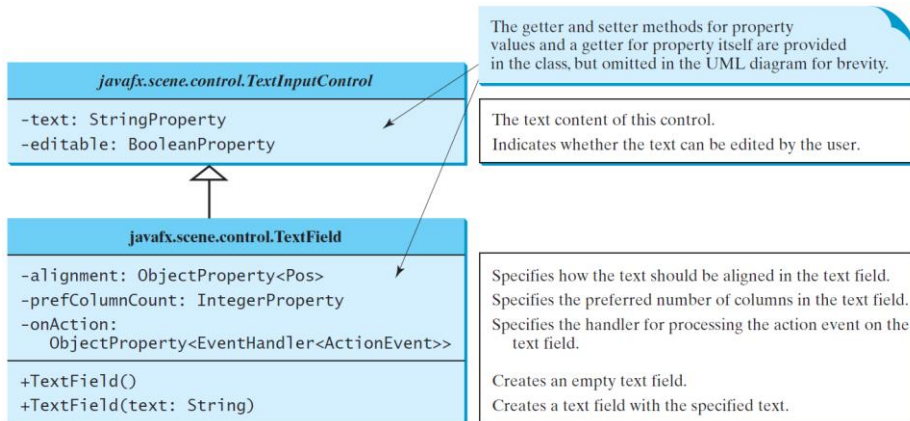


RadioButtonDemo

Run

TextField

A text field can be used to enter or display a string. **TextField** is a subclass of **TextInputControl**.



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TextField Example



TextFieldDemo

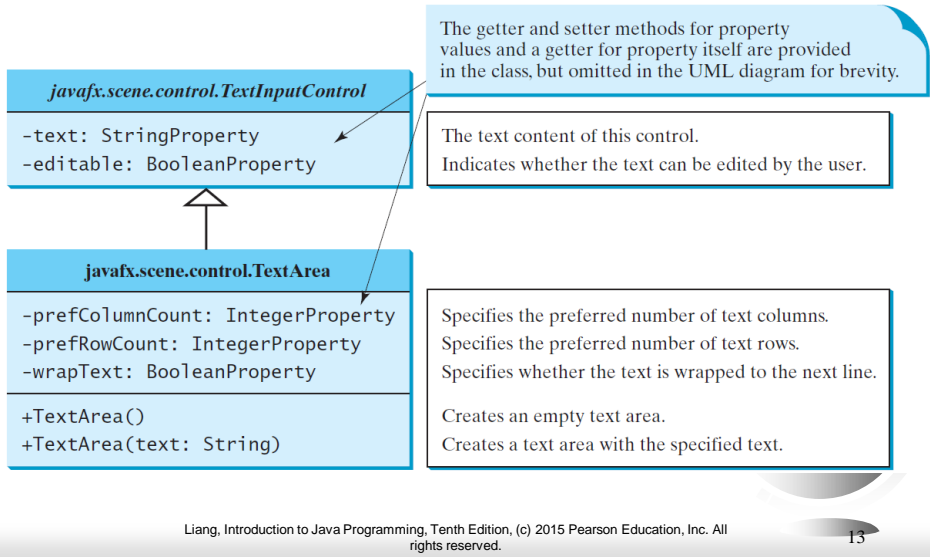
Run

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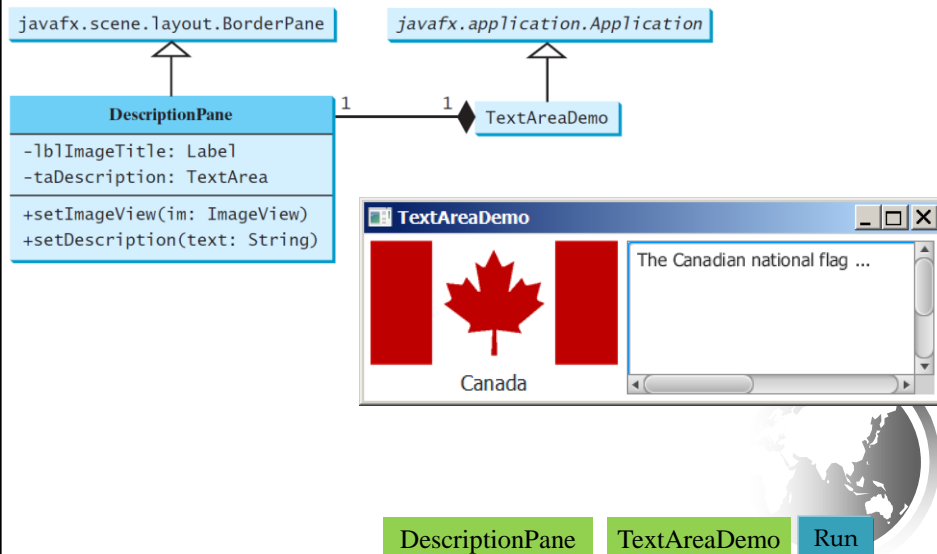
TextArea

A **TextArea** enables the user to enter multiple lines of text.



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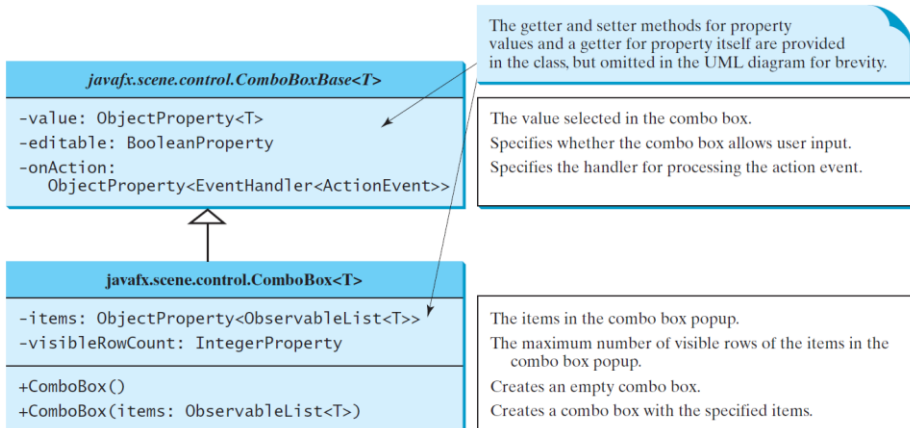
TextArea Example



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ComboBox

A combo box, also known as a choice list or drop-down list, contains a list of items from which the user can choose.



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ComboBox Example

This example lets users view an image and a description of a country's flag by selecting the country from a combo box.



ComboBoxDemo

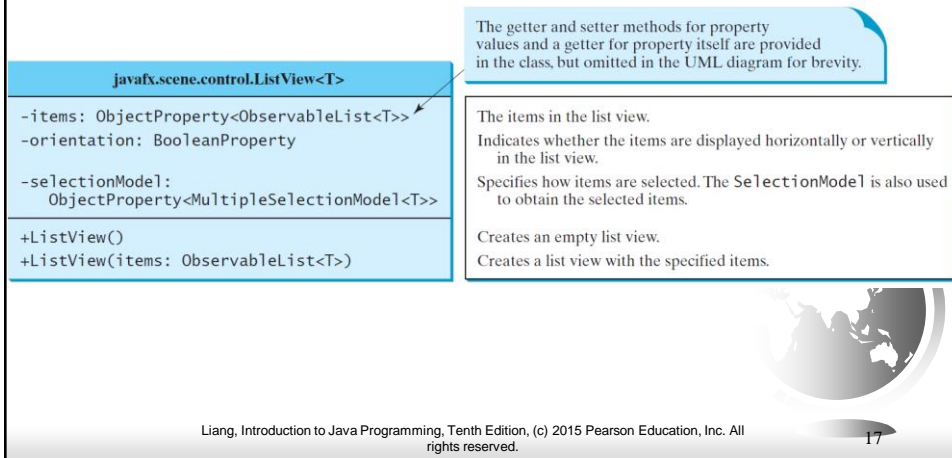
Run

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ListView

A *list view* is a component that performs basically the same function as a combo box, but it enables the user to choose a single value or multiple values.



Example: Using ListView

This example gives a program that lets users select countries in a list and display the flags of the selected countries in the labels.

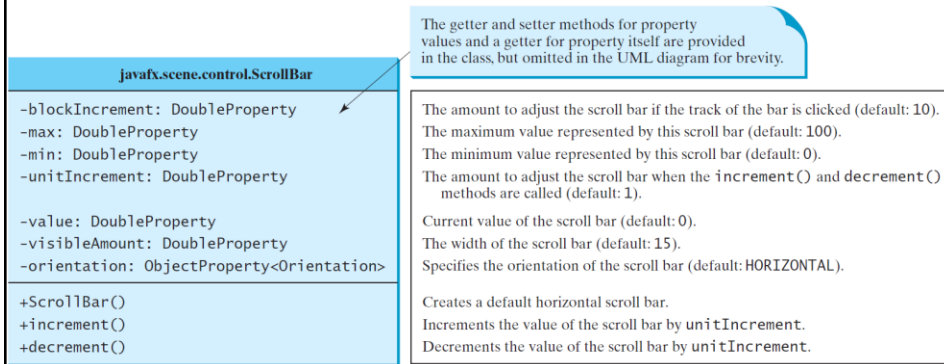


ListViewDemo Run

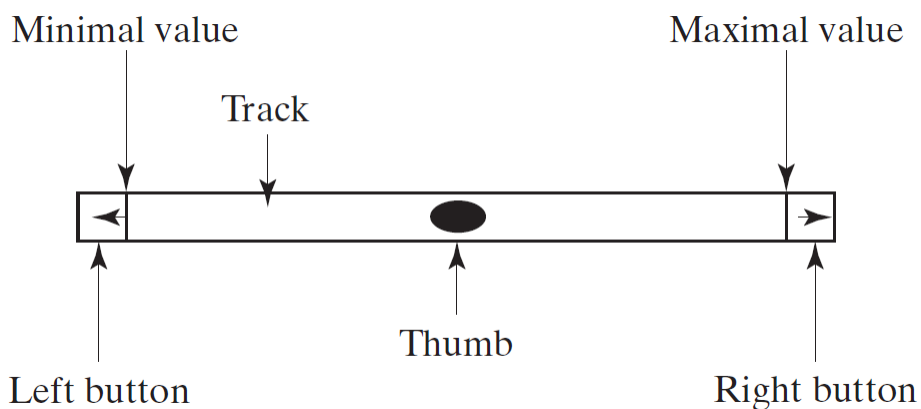


ScrollBar

A *scroll bar* is a control that enables the user to select from a range of values. The scrollbar appears in two styles: *horizontal* and *vertical*.

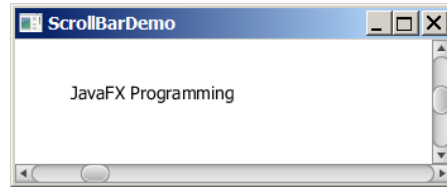


Scroll Bar Properties



Example: Using Scrollbars

This example uses horizontal and vertical scrollbars to control a message displayed on a panel. The horizontal scrollbar is used to move the message to the left or the right, and the vertical scrollbar to move it up and down.



ScrollBarDemo

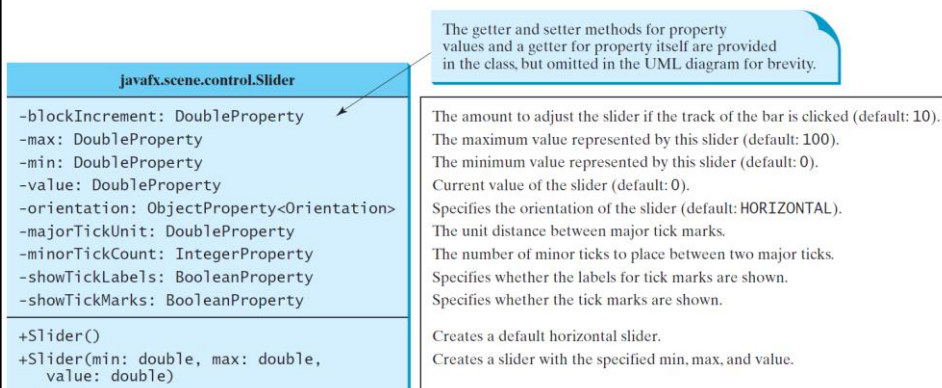
Run

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Slider

Slider is similar to ScrollBar, but Slider has more properties and can appear in many forms.

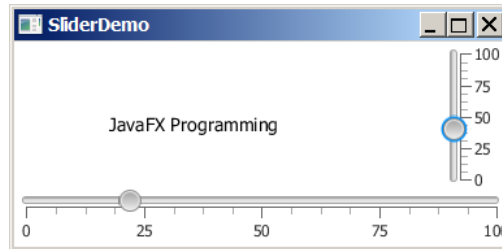


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Example: Using Sliders

Rewrite the preceding program using the sliders to control a message displayed on a panel instead of using scroll bars.

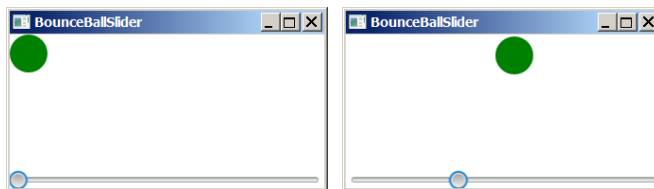


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Case Study: Bounce Ball

Listing 15.17 gives a program that displays a bouncing ball. You can add a slider to control the speed of the ball movement.



SliderDemo

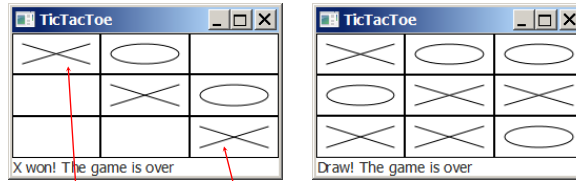
Run



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Case Study: TicTacToe



`javafx.scene.layout.Pane`

Cell

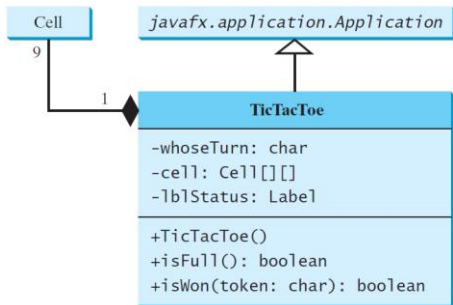
-token: char
+getToken(): char
+setToken(token: char): void
-handleMouseClicked(): void

Token used in the cell (default: ' ').
Returns the token in the cell.
Sets a new token in the cell.
Handles a mouse click event.

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Case Study: TicTacToe, cont.



Indicates which player has the turn, initially X.
A 3×3 , two-dimensional array for cells.
A label to display game status.

Constructs the TicTacToe user interface.
Returns true if all cells are filled.
Returns true if a player with the specified token has won.

TicTacToe

Run

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Case Study: National Flags and Anthems

This case study presents a program that displays a nation's flag and plays its anthem.



FlagAnthem

Run