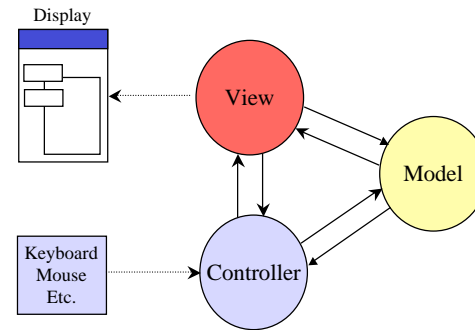


CSC3461

Model-View-Controller (MVC) Architecture *UI Delegates*

MVC Schematic



2

The MVC Design Pattern

- The view makes use of the Composite pattern
 - The display contains a nested set of windows, panels, buttons, text labels, and so on.
 - Each display component is a composite (like a JPanel) or a leaf (like a button). The top-level component contains other components, which contain other components and so on until you get to the leaf nodes
 - When the controller tells the view to update, it only has to tell the top view component, and the Composite takes care of the rest.

3

`javax.swing.plaf.ComponentUI`

plaf = pluggable look and feel

- The base class for all UI delegate objects in the Swing pluggable look and feel architecture.
- The UI delegate object for a Swing component is responsible for implementing the aspects of the component that depend on the look and feel.

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Types of UI Delegate Objects

- ButtonUI
- ComboBoxUI
- ListUI
- TableUI
- and many others

5

ComponentUI	JComponent
Child Classes	Child Classes
ButtonUI	AbstractButton, JButton, JCheckBox, JRadioButton
	BasicInternalFrameTitlePane
	Box
	Box.Filler
ColorChooserUI	JColorChooser
ComboBoxUI	JComboBox
DesktopIconUI	
DesktopPaneUI	
FileChooserUI	JFileChooser
InternalFrameUI	InternalFrame, InternalFrame.JDesktopIcon
LabelUI	JLabel
	JLayeredPane
ListUI	JList
MenuBarUI	JMenuBar
OptionPaneUI	JOptionPane
PanelUI	JPanel
PopupMenuUI	JPopupMenu
ProgressBarUI	JProgressBar
RootPaneUI	JRootPane
ScrollBarUI	JScrollBar
ScrollPaneUI	JScrollPane
SeparatorUI	JSeparator
SliderUI	JSlider
SpinnerUI	JSpinner
SplitPaneUI	JSplitPane
TabbedPaneUI	JTabbedPane
TableUI	JTable
TableHeaderUI	JTableHeader
TextUI	JTextComponent
ToolBarUI	JToolBar
ToolTipUI	JToolTip
TreeUI	JTree
ViewportUI	JViewport

6

Responsibilities of the UI delegate's installUI() method...

- Set default font, color, border, and opacity properties on the component.
- Install an appropriate layout manager on the component.
- Add any appropriate child subcomponents to the component
- Register any required event listeners on the component.
- Register any look-and-feel-specific keyboard actions (mnemonics, etc.) for the component.
- Register appropriate model listeners to be notified when to repaint.
- Initialize any appropriate instance data.

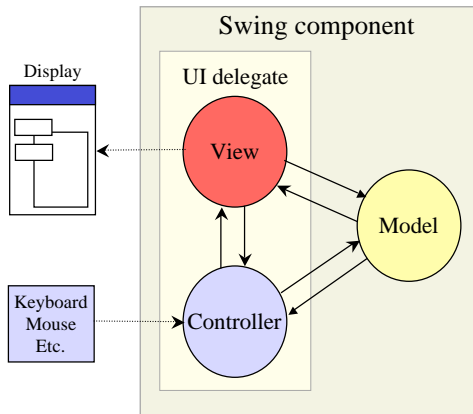
7

MVC and Swing

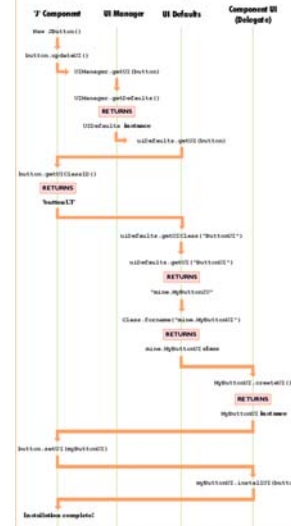
- Swing designers found it difficult to write a generic controller that didn't know the specifics about the view
- They collapsed the view and controller into a single user interface object
 - UI Delegate
 - UI Object
 - UI Delegate Object
 - Delegate object
 - The UI is *delegated* to this object

8

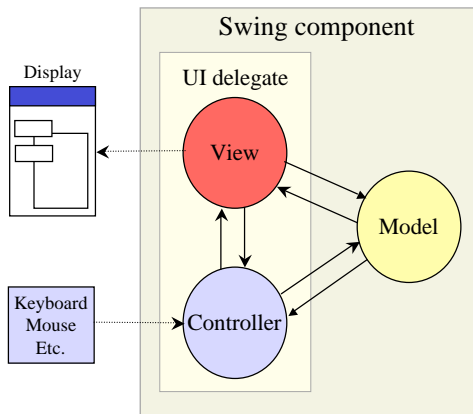
MVC and Swing



The process of installing a UI delegate



MVC and Swing



```

Who called the method *setSelectedItem*?
java.awt.EventQueue.run(EventDispatchThread.java:110)
java.awt.EventQueue.pumpEvents(EventDispatchThread.java:176)
java.awt.EventQueue.pumpEvents(EventDispatchThread.java:184)
java.awt.EventQueue.pumpEventsForHierarchy(EventDispatchThread.java:190)
java.awt.EventQueue.pumpOneEventForHierarchy(EventDispatchThread.java:269)
java.awt.EventQueue.dispatchEvent(EventQueue.java:463)
java.awt.Component.dispatchEvent(Component.java:3885)
java.awt.Window.dispatchEventImpl(Window.java:1791)
java.awt.Container.dispatchEventImpl(Container.java:2054)
java.awt.LightweightDispatcher.dispatchEvent(Container.java:3866)
java.awt.LightweightDispatcher.processMouseEvent(Container.java:3936)
java.awt.LightweightDispatcher.retargetMouseEvent(Container.java:4256)
java.awt.Component.dispatchEvent(Component.java:3885)
java.awt.Container.dispatchEventImpl(Container.java:2068)
java.awt.Component.dispatchEventImpl(Component.java:4050)
java.awt.Container.processEvent(Container.java:2010)
java.awt.Component.processEvent(Component.java:5348)
apple.laf.AquaComboBoxUI$AquaComboPopup$1.processMouseEvent(AquaComboBoxUI.java:443)
javaw.swing.JComponent.processMouseEvent(JComponent.java:3135)
java.awt.Component.processMouseEvent(Component.java:5583)
java.awt.AWTEventMulticaster.mouseReleased(AWTEventMulticaster.java:232)
javaw.swing.plaf.basic.BasicComboPopup$Handler.mouseReleased(BasicComboPopup.java:808)
javaw.swing.JComboBox.setSelectedIndex(JComboBox.java:597)
javaw.swing.JComboBox.setSelectedItem(JComboBox.java:551)
myUIDelegateExample2.MyDataModelForComboBoxData.setSelectedItem(MyDataModelForComboBoxData)
    
```

