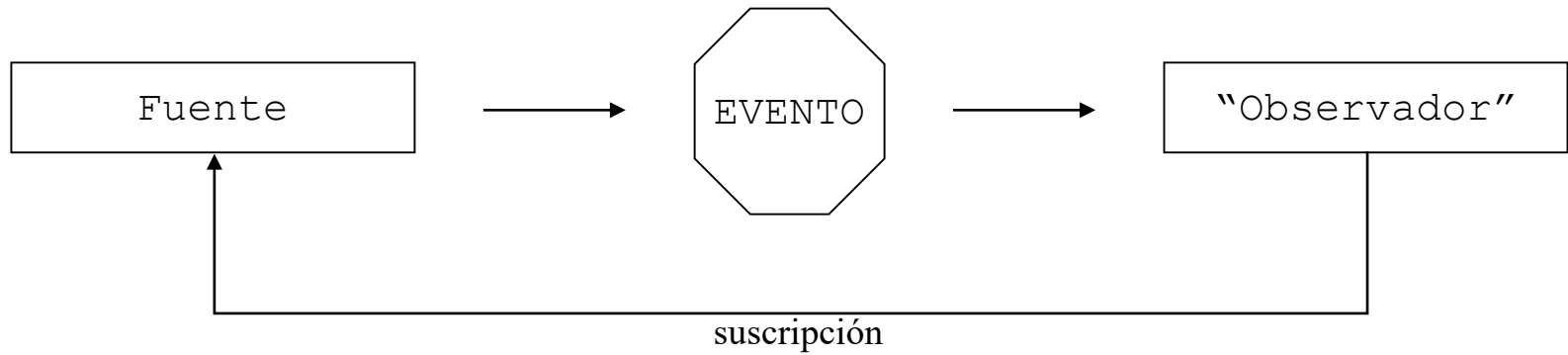
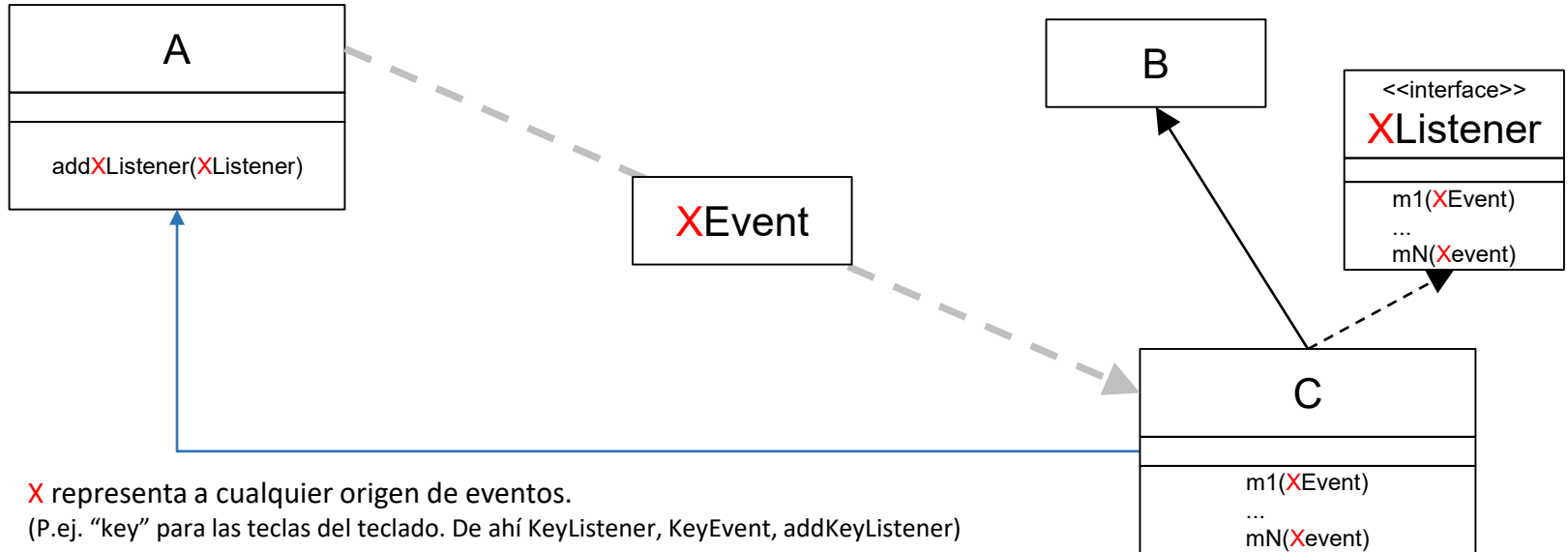
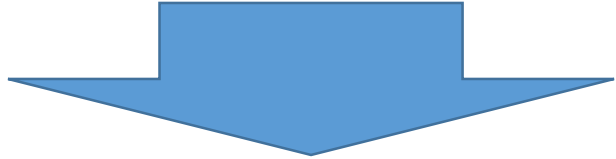
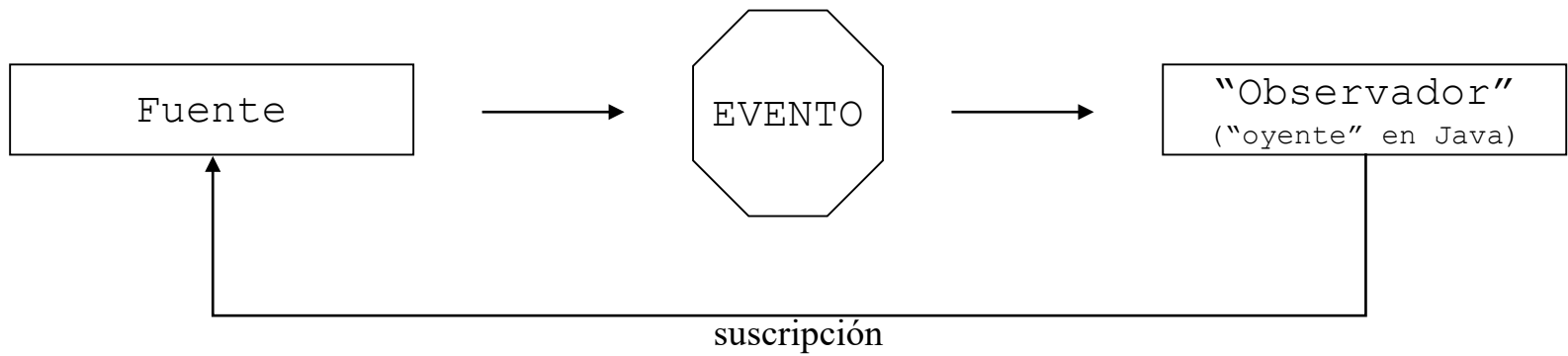


Interacción con GUIs

Un uso concreto del patrón “Delegation Event Model”
Más conocido como “[Observer](#)” o “Publish/subscribe”





X representa a cualquier origen de eventos.
(P.ej. "key" para las teclas del teclado. De ahí KeyListener, KeyEvent, addKeyListener)

Aunque nos limitemos a Java7, podemos "familiarizarnos" con Java17

Module java.desktop

Package java.awt.event

Interface **KeyListener**

All Superinterfaces:

EventListener

All Known Implementing Classes:

AWTEventMulticaster, BasicComboBoxUI.KeyHandler, BasicComboPopup.InvocationKeyHandler, BasicTableUI.KeyHandler, BasicTreeUI.KeyHandler, KeyAdapter

```
public interface KeyListener
extends EventListener
```

The listener interface for receiving keyboard events (keystrokes). The class that is interested in processing a keyboard event either implements this interface (and all the methods it contains) or extends the abstract KeyAdapter class (overriding only the methods of interest).

The listener object created from that class is then registered with a component using the component's addKeyListener method. A keyboard event is generated when a key is pressed, released, or typed. The relevant method in the listener object is then invoked, and the KeyEvent is passed to it.

Since:

1.1

See Also:

KeyAdapter, KeyEvent, Tutorial: Writing a Key Listener

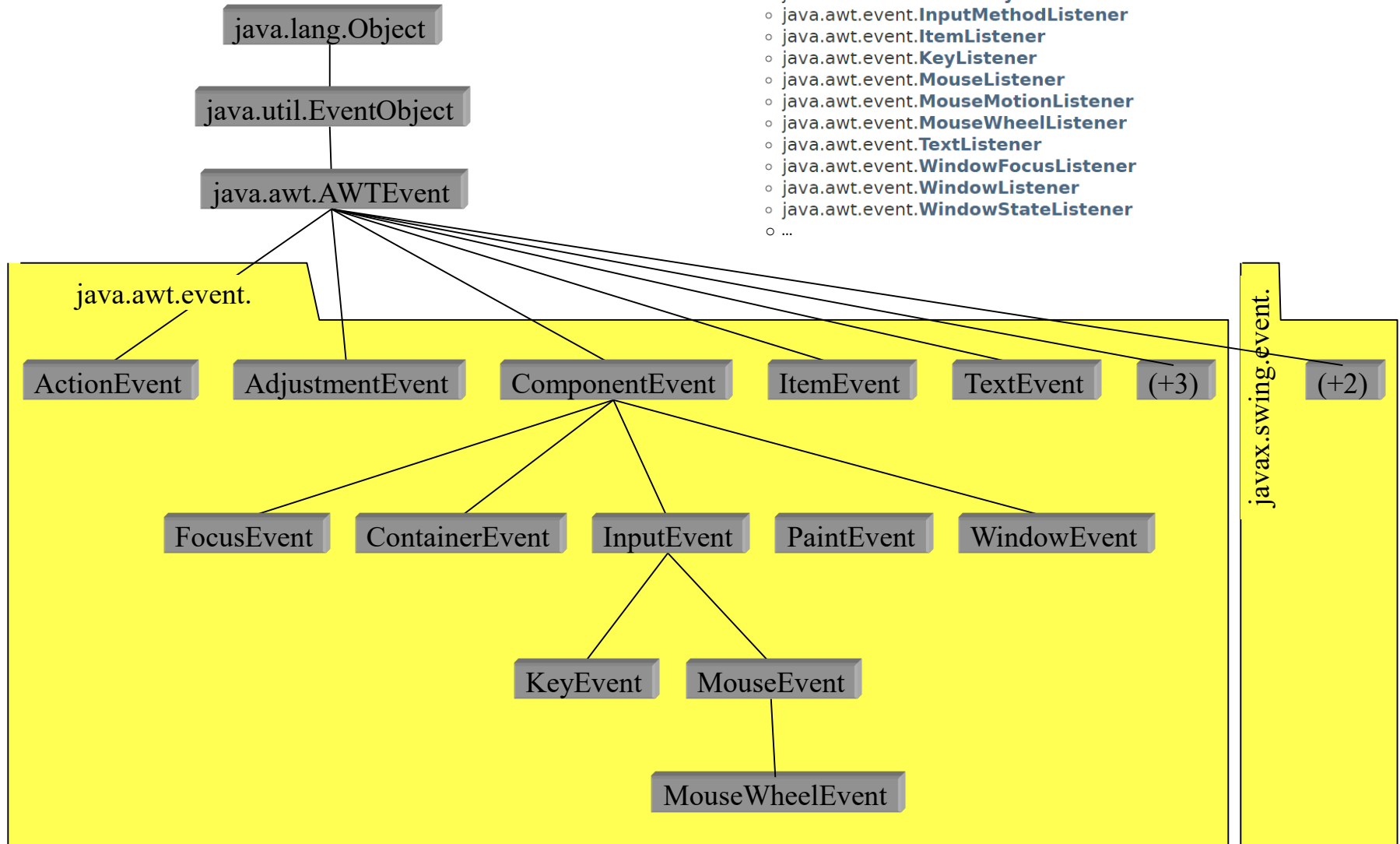
Method Summary

All Methods **Instance Methods** **Abstract Methods**

Modifier and Type	Method	Description
void	keyPressed (KeyEvent e)	Invoked when a key has been pressed.
void	keyReleased (KeyEvent e)	Invoked when a key has been released.
void	keyTyped (KeyEvent e)	Invoked when a key has been typed.

“Listeners” y eventos disponibles en un GUI con awt/swing

- java.util.**EventListener**
 - java.awt.event.**ActionListener**
 - java.awt.event.**AdjustmentListener**
 - java.awt.event.**AWTEventListener**
 - java.awt.event.**ComponentListener**
 - java.awt.event.**ContainerListener**
 - java.awt.event.**FocusListener**
 - java.awt.event.**HierarchyBoundsListener**
 - java.awt.event.**HierarchyListener**
 - java.awt.event.**InputMethodListener**
 - java.awt.event.**ItemListener**
 - java.awt.event.**KeyListener**
 - java.awt.event.**MouseListener**
 - java.awt.event.**MouseMotionListener**
 - java.awt.event.**MouseWheelListener**
 - java.awt.event.**TextListener**
 - java.awt.event.**WindowFocusListener**
 - java.awt.event.**WindowListener**
 - java.awt.event.**WindowStateListener**
 - ...



Module java.base

Package java.util

Interface `EventListener`

All Known Subinterfaces:

`Action`, `ActionListener`, `AdjustmentListener`, `AncestorListener`, `AppForegroundListener`, `AppHiddenListener`, `AppReopenedListener`, `AWTEventListener`, `BeanContextMembershipListener`, `BeanContextServiceRevokedListener`, `BeanContextServices`, `BeanContextServicesListener`, `CaretListener`, `CellEditorListener`, `ChangeListener`, `ComponentListener`, `ConnectionEventListener`, `ContainerListener`, `ControllerEventListener`, `DocumentListener`, `DragGestureListener`, `DragSourceListener`, `DragSourceMotionListener`, `DropTargetListener`, `FlavorListener`, `FocusListener`, `GUIInitializedListener`, `HandshakeCompletedListener`, `HierarchyBoundsListener`, `HierarchyChangeListener`, `HyperlinkListener`, `IIOReadProgressListener`, `IIOReadUpdateListener`, `IIOReadWarningListener`, `IIOWriteProgressListener`, `IIOWriteWarningListener`, `InputMethodListener`, `InternalFrameListener`, `ItemListener`, `KeyListener`, `LineListener`, `ListDataListener`, `ListSelectionListener`, `MenuDragMouseListener`, `MenuKeyListener`, `MenuItemListener`, `MenuListener`, `MetaEventListener`, `MouseInputListener`, `MouseListener`, `MouseEvent`, `MouseMotionListener`, `MouseWheelListener`, `NamespaceChangeListener`, `NamingListener`, `NodeChangeListener`, `NotificationListener`, `ObjectChangeListener`, `PopupMenuListener`, `PreferenceChangeListener`, `PropertyChangeListener`, `RowSetListener`, `RowSorterListener`, `ScreenSaverListener`, `SSLSessionBindingListener`, `StatementEventListener`, `SystemEventListener`, `SystemSleepListener`, `TableModelChangeListener`, `TableModelListener`, `TextListener`, `TopLevelWindowListener`, `TreeExpansionListener`, `TreeModelChangeListener`, `TreeModelListener`, `TreeSelectionListener`, `TreeWillExpandListener`, `UndoableEditListener`, `UnsolicitedNotificationListener`, `UserSessionListener`, `VetoableChangeListener`, `WindowFocusListener`, `WindowListener`, `WindowStateListener`

All Known Implementing Classes:

`AbstractAction`, `AbstractButton`, `ButtonChangeListener`, `AWTEventListenerProxy`, `AWTEventMulticaster`, `BasicButtonListener`, `BasicColorChooserUI`, `PropertyHandler`, `BasicComboBoxEditor`, `BasicComboBoxEditor.UIResource`, `BasicComboBoxUI`, `FocusHandler`, `BasicComboBoxUI.ItemHandler`, `BasicComboBoxUI.KeyHandler`, `BasicComboBoxUI.ListDataHandler`, `BasicComboBoxUI.PropertyChangeListener`, `BasicComboBoxPopup`, `InvocationKeyHandler`, `BasicComboPopup`, `InvocationMouseMotionHandler`, `BasicComboPopup.ItemHandler`, `BasicComboPopup.ListDataHandler`, `BasicComboPopup.ListMouseHandler`, `BasicComboPopup.ListMouseEventHandler`, `BasicComboPopup.ListSelectionHandler`, `BasicComboPopup.PropertyChangeListener`, `BasicDesktopIconUI`, `MouseInputHandler`, `BasicDesktopPaneUI`, `CloseAction`, `BasicDesktopPaneUI`, `MaximizeAction`, `BasicDesktopPaneUI`, `MinimizeAction`, `BasicDesktopPaneUI`, `NavigateAction`, `BasicDesktopPaneUI`, `OpenAction`, `BasicDirectoryModel`, `BasicFileChooserUI`, `ApproveSelectionAction`, `BasicFileChooserUI`, `CancelSelectionAction`, `BasicFileChooserUI`, `ChangeToParentDirectoryAction`, `BasicFileChooserUI`, `DoubleClickListener`, `BasicFileChooserUI`, `GoHomeAction`, `BasicFileChooserUI`, `NewFolderAction`, `BasicFileChooserUI`, `SelectionListener`, `BasicFileChooserUI`, `UpdateAction`, `BasicInternalFrameTitlePane`, `CloseAction`, `BasicInternalFrameTitlePane`, `IconifyAction`, `BasicInternalFrameTitlePane`, `MaximizeAction`, `BasicInternalFrameTitlePane`, `MoveAction`, `BasicInternalFrameTitlePane`, `PropertyChangeHandler`, `BasicInternalFrameTitlePane`, `RestoreAction`, `BasicInternalFrameTitlePane`, `SizeAction`, `BasicInternalFrameUI`, `BasicInternalFrameTitlePane`, `BasicInternalFrameUI`, `BorderListener`, `BasicInternalFrameUI`, `ComponentHandler`, `BasicInternalFrameUI`, `GlassPaneDispatcher`, `BasicInternalFrameUI`, `InternalFramePropertyChangeListener`, `BasicLabelUI`, `BasicListUI`, `FocusHandler`, `BasicListUI`, `ListDataHandler`, `BasicListUI`, `ListSelectionHandler`, `BasicListUI`, `MouseInputHandler`, `BasicListUI`, `PropertyChangeListener`, `BasicMenuItemUI`, `MouseInputHandler`, `BasicMenuItemUI`, `ChangeHandler`, `BasicMenuItemUI`, `MouseInputHandler`, `BasicOptionPaneUI`, `ButtonActionListener`, `BasicOptionPaneUI`, `PropertyChangeHandler`, `BasicProgressBarUI`, `ChangeHandler`, `BasicRootPaneUI`, `BasicScrollBarUI`, `ArrowButtonListener`, `BasicScrollBarUI`, `ModelListener`, `BasicScrollBarUI`, `PropertyChangeHandler`, `BasicScrollBarUI`, `ScrollListener`, `BasicScrollBarUI`, `TrackListener`, `BasicScrollBarUI`, `HSBChangeListener`, `BasicScrollBarUI`, `MouseWheelHandler`, `BasicScrollBarUI`, `PropertyChangeHandler`, `BasicScrollBarUI`, `ViewportChangeListener`, `BasicScrollBarUI`, `VSBChangeListener`, `BasicSliderUI`, `ActionScroller`, `BasicSliderUI`, `ChangeHandler`, `BasicSliderUI`, `ComponentHandler`, `BasicSliderUI`, `FocusHandler`, `BasicSliderUI`, `PropertyChangeHandler`, `BasicSliderUI`, `ScrollListener`, `BasicSliderUI`, `TrackListener`, `BasicSplitPaneDivider`, `BasicSplitPaneUI`, `BasicSplitPaneDivider`, `MouseEvent`, `BasicSplitPaneUI`, `FocusHandler`, `BasicSplitPaneUI`, `KeyboardDownRightHandler`, `BasicSplitPaneUI`, `KeyboardEndHandler`, `BasicSplitPaneUI`, `KeyboardHomeHandler`, `BasicSplitPaneUI`, `KeyboardResizeToggleHandler`, `BasicSplitPaneUI`, `KeyboardUpLeftHandler`, `BasicSplitPaneUI`, `PropertyHandler`, `BasicTabbedPaneUI`, `FocusHandler`, `BasicTabbedPaneUI`, `MouseHandler`, `BasicTabbedPaneUI`, `PropertyChangeHandler`, `BasicTabbedPaneUI`, `TabSelectionHandler`, `BasicTableHeaderUI`, `MouseInputHandler`, `BasicTableUI`, `FocusHandler`, `BasicTableUI`, `KeyListener`, `BasicTableUI`, `MouseInputHandler`, `BasicTextUI`, `BasicCaret`, `BasicToolBarUI`, `DockingListener`, `BasicToolBarUI`, `FrameListener`, `BasicToolBarUI`, `PropertyListener`, `BasicToolBarUI`, `ToolBarChangeListener`, `BasicToolBarUI`, `ToolBarFocusListener`, `BasicTreeUI`, `CellEditorHandler`, `BasicTreeUI`, `ComponentHandler`, `BasicTreeUI`, `FocusHandler`, `BasicTreeUI`, `KeyListener`, `BasicTreeUI`, `MouseHandler`, `BasicTreeUI`, `MouseInputHandler`, `BasicTreeUI`, `PropertyChangeHandler`, `BasicTreeUI`, `SelectionModelPropertyChangeHandler`, `BasicTreeUI`, `TreeCancelEditingAction`, `BasicTreeUI`, `TreeExpansionHandler`, `BasicTreeUI`, `TreeHomeAction`, `BasicTreeUI`, `TreeIncrementAction`, `BasicTreeUI`, `TreeModelHandler`, `BasicTreeUI`, `TreePageAction`, `BasicTreeUI`, `TreeSelectionHandler`, `BasicTreeUI`, `TreeToggleAction`, `BasicTreeUI`, `TreeTraverseAction`, `BeanContextChildSupport`, `BeanContextServicesSupport`, `BeanContextServicesSupport`, `BCSSProxyServiceProvider`, `BeanContextSupport`, `CheckBox`, `AccessibleAWTCheckBox`, `Component`, `AccessibleAWTComponent`, `AccessibleAWTComponentHandler`, `Component`, `AccessibleAWTComponent`, `AccessibleAWTFocusHandler`, `ComponentAdapter`, `Container`, `AccessibleAWTContainer`, `AccessibleContainerHandler`, `ContainerAdapter`, `DefaultCaret`, `DefaultCellEditor`, `EditorDelegate`, `DefaultEditorKit`, `BeepAction`, `DefaultEditorKit`, `CopyAction`, `DefaultEditorKit`, `CutAction`, `DefaultEditorKit`, `DefaultKeyTypedAction`, `DefaultEditorKit`, `InsertBreakAction`, `DefaultEditorKit`, `InsertContentAction`, `DefaultEditorKit`, `InsertTabAction`, `DefaultEditorKit`, `PasteAction`, `DefaultTableColumnModel`, `DefaultTreeCellEditor`, `DragSourceAdapter`, `DragSourceContext`, `DropTarget`, `DropTarget`, `DropTargetAutoScroller`, `DropTargetAdapter`, `EventListenerProxy`, `EventQueueMonitor`, `FocusAdapter`, `FormView`, `FormView`, `MouseEventListener`, `HierarchyBoundsAdapter`, `HTMLTextAreaEditorKit`, `HTMLTextAction`, `HTMLTextAreaEditorKit`, `InsertHTMLTextAction`, `HTMLTextAreaEditorKit`, `LinkController`, `InternalFrameAdapter`, `JCheckBox`, `AccessibleJCheckBox`, `JCheckBoxMenuItem`, `AccessibleJCheckBoxMenuItem`, `JComboBox`, `JComponent`, `AccessibleJComponent`, `AccessibleContainerHandler`, `JComponent`, `AccessibleJComponent`, `AccessibleFocusHandler`, `JEditorPane`, `AccessibleJEditorPane`, `JEditorPane`, `AccessibleJEditorPaneHTML`, `JEditorPane`, `JEditorPaneAccessibleHypertextSupport`, `JLayer`, `JList`, `AccessibleJList`, `JMenu`, `AccessibleJMenu`, `JMenu`, `WinListener`, `JMenuItem`, `AccessibleJMenuItem`, `JPasswordField`, `AccessibleJPasswordField`, `JPopupMenu`, `AccessibleJPopupMenu`, `JRadioButton`, `AccessibleJRadioButton`, `JRadioButtonMenuItem`, `AccessibleJRadioButtonMenuItem`, `JScrollPane`, `AccessibleJScrollPane`, `JSlider`, `AccessibleJSlider`, `JSpinner`, `AccessibleJSpinner`, `JSpinner`, `DateEditor`, `JSpinner`, `DefaultEditor`, `JSpinner`, `ListEditor`, `JSpinner`, `NumberEditor`, `JTabbedPane`, `AccessibleJTabbedPane`, `JTabbedPane`, `JTabbedPaneModelListener`, `JTable`, `JTable`, `AccessibleJTable`, `JTableHeader`, `JTextArea`, `AccessibleJTextArea`, `JTextComponent`, `AccessibleJTextComponent`, `JTextField`, `AccessibleJTextField`, `JToggle Button`, `AccessibleJToggleButton`, `JTree`, `AccessibleJTree`, `JTree`, `TreeModelHandler`, `JTree`, `TreeSelectionRedirector`, `JViewport`, `ViewListener`, `KeyAdapter`, `List`, `AccessibleAWTList`, `MetalComboBoxEditor`, `MetalComboBoxEditor`, `UIResource`, `MetalComboBoxUI`, `MetalPropertyChangeListener`, `MetalFileChooserUI`, `DirectoryComboBoxAction`, `MetalFileChooserUI`, `FilterComboBoxModel`, `MetalFileChooserUI`, `SingleClickListener`, `MetalLabelUI`, `MetalRootPaneUI`, `MetalSliderUI`, `MetalPropertyListener`, `MetalToolBarUI`, `MetalContainerListener`, `MetalToolBarUI`, `MetalDockingListener`, `MetalToolBarUI`, `MetalRollerListener`, `MouseAdapter`, `MouseDragGestureRecognizer`, `MouseInputAdapter`, `MouseEventAdapter`, `ProgressMonitor`, `AccessibleProgressMonitor`, `PropertyChangeListenerProxy`, `RelationService`, `StyledEditorKit`, `AlignmentAction`, `StyledEditorKit`, `BoldAction`, `StyledEditorKit`, `FontFamilyAction`, `StyledEditorKit`, `FontSizeAction`, `StyledEditorKit`, `ForegroundAction`, `StyledEditorKit`, `ItalicAction`, `StyledEditorKit`, `StyledTextAction`, `StyledEditorKit`, `UnderlineAction`, `SyntheticButtonUI`, `SyntheticComboBoxMenuItemUI`, `SyntheticCheckBoxUI`, `SyntheticColorChooserUI`, `SyntheticComboBoxUI`, `SyntheticDesktopIconUI`, `SyntheticDesktopPaneUI`, `SyntheticInternalFrameUI`, `SyntheticLabelUI`, `SyntheticListUI`, `SyntheticMenuBarUI`, `SyntheticMenuItemUI`, `SyntheticMenuUI`, `SyntheticOptionPaneUI`, `SyntheticPanelUI`, `SyntheticPopupMenuUI`, `SyntheticProgressBarUI`, `SyntheticRadioButtonMenuItemUI`, `SyntheticRadioButtonUI`, `SyntheticRootPaneUI`, `SyntheticScrollBarUI`, `SyntheticScrollPaneUI`, `SyntheticSeparatorUI`, `SyntheticSliderUI`, `SyntheticSpinnerUI`, `SyntheticSplitPaneUI`, `SyntheticTabbedPaneUI`, `SyntheticTableHeaderUI`, `SyntheticTableUI`, `SyntheticToggleButtonUI`, `SyntheticToolBarUI`, `SyntheticToolTipUI`, `SyntheticTreeUI`, `SyntheticViewportUI`, `TextAction`, `TextArea`, `AccessibleAWTTextArea`, `TextComponent`, `AccessibleAWTTextComponent`, `TextFieldUI`, `AccessibleAWTTextField`, `ToolTipManager`, `ToolTipManager`, `insideTimerAction`, `ToolTipManager`, `outsideTimerAction`, `ToolTipManager`, `stillInsideTimerAction`, `UndoManager`, `VetoableChangeListenerProxy`, `WindowAdapter`

```
public interface EventListener
```

A tagging interface that all event listener interfaces must extend.



El patrón Observer es muy utilizado

Este es un ejemplo de Interfaz “etiquetador”

Métodos de los principales Listeners

ActionListener	actionPerformed (ActionEvent)
ItemListener	itemStateChanged (ItemEvent)
MouseListener	mousePressed (MouseEvent) mouseReleased (MouseEvent) mouseEntered (MouseEvent) mouseExited (MouseEvent) mouseClicked (MouseEvent)
MouseMotionListener	mouseDragged (MouseEvent) mouseMoved (MouseEvent)
KeyListener	keyPressed (KeyEvent) keyReleased (KeyEvent) keyTyped (KeyEvent)
FocusListener	focusGained (FocusEvent) focusLost (FocusEvent)
AdjustmentListener	adjustmentValueChanged (AdjustmentEvent)
ComponentListener	componentMoved (ComponentEvent) componentHidden (ComponentEvent) componentResized (ComponentEvent) componentShown (ComponentEvent)
WindowListener	windowClosing (WindowEvent) windowOpened (WindowEvent) windowIconified (WindowEvent) windowDeiconified (WindowEvent) windowClosed (WindowEvent) windowActivated (WindowEvent) windowDeactivated (WindowEvent)
ContainerListener	componentAdded (ContainerEvent) componentRemoved (ContainerEvent)
TextListener	textValueChanged (TextEvent)