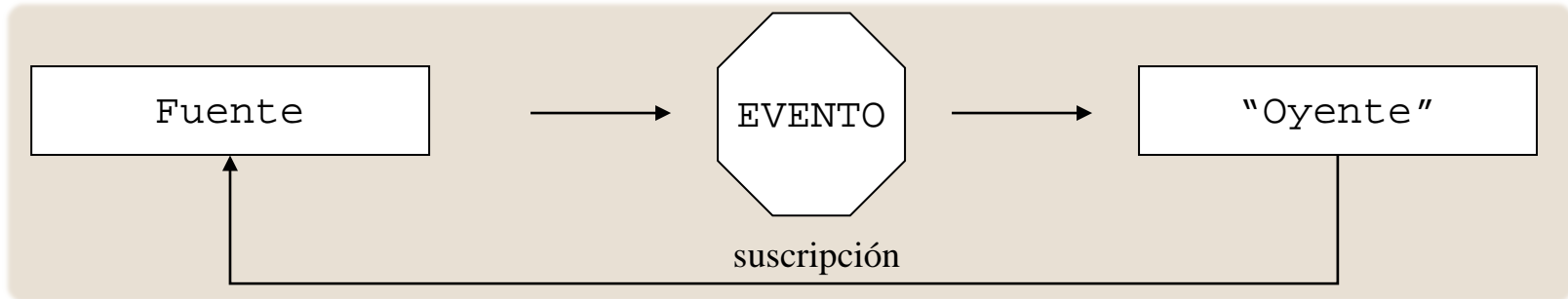
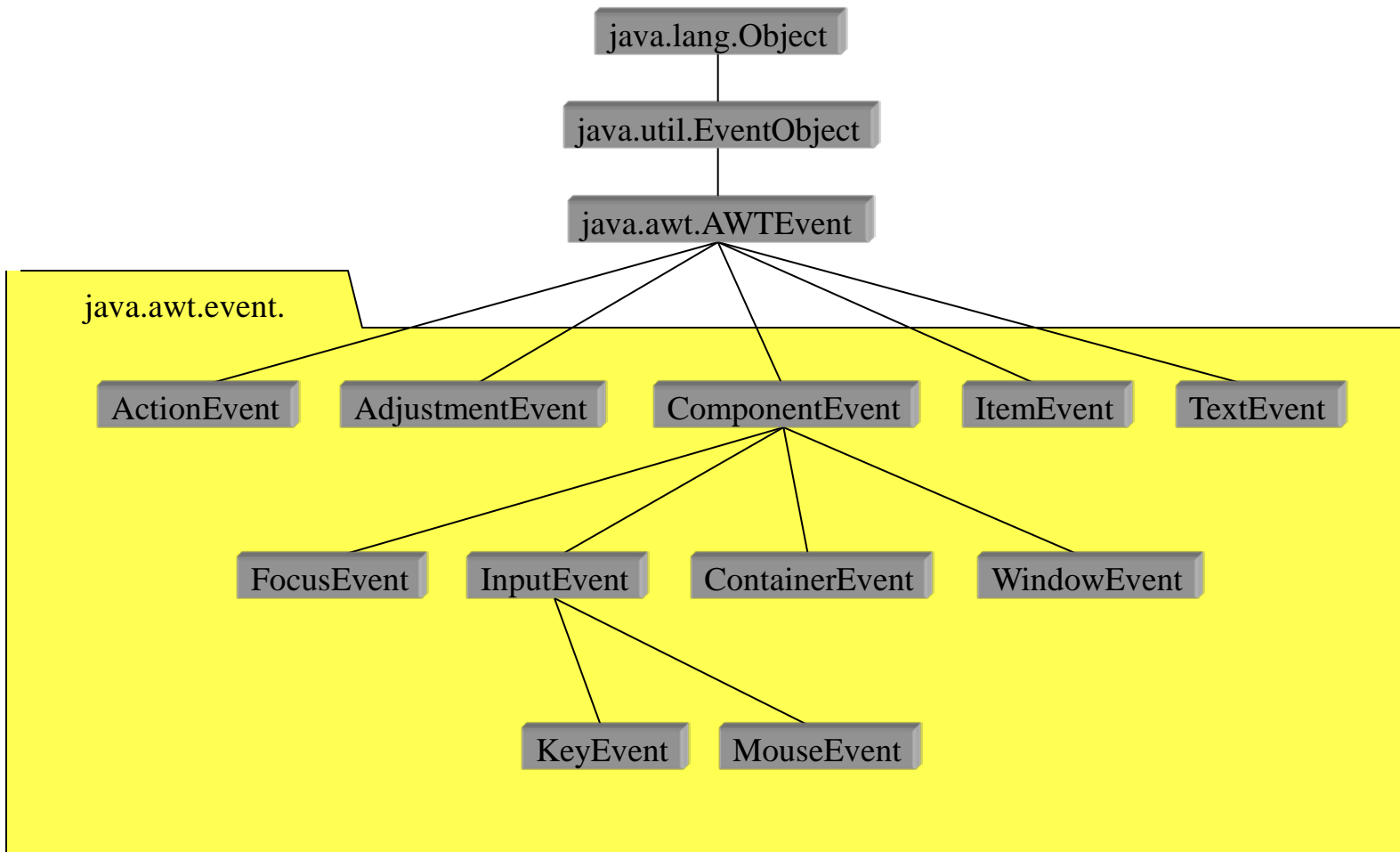


Interacción con GUIs

Delegation Event Model (Observer)



Eventos



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) componentAdded(ContainerEvent) |
| TextListener | textValueChanged(TextEvent) |

Hierarchy For Package java.awt.event

Class Hierarchy

- java.lang.Object
 - java.awt.event.ComponentAdapter (implements java.awt.event.ComponentListener)
 - java.awt.event.ContainerAdapter (implements java.awt.event.ContainerListener)
 - java.util.EventListenerProxy<T> (implements java.util.EventListener)
 - java.awt.event.AWTEventListenerProxy (implements java.awt.event.AWTEventListener)
 - java.util.EventObject (implements java.io.Serializable)
 - java.awt.AWTEvent
 - java.awt.event.ActionEvent
 - java.awt.event.AdjustmentEvent
 - java.awt.event.ComponentEvent
 - java.awt.event.ContainerEvent
 - java.awt.event.FocusEvent
 - java.awt.event.InputEvent
 - java.awt.event.KeyEvent
 - java.awt.event.MouseEvent
 - java.awt.event.MouseWheelEvent
 - java.awt.event.PaintEvent
 - java.awt.event.WindowEvent
 - java.awt.event.HierarchyEvent
 - java.awt.event.InputMethodEvent
 - java.awt.event.InvocationEvent (implements java.awt.ActiveEvent)
 - java.awt.event.ItemEvent
 - java.awt.event.TextEvent
 - java.awt.event.FocusAdapter (implements java.awt.event.FocusListener)
 - java.awt.event.HierarchyBoundsAdapter (implements java.awt.event.HierarchyBoundsListener)
 - java.awt.event.KeyAdapter (implements java.awt.event.KeyListener)
 - java.awt.event.MouseAdapter (implements java.awt.event.MouseListener, java.awt.event.MouseMotionListener, java.awt.event.MouseWheelListener)
 - java.awt.event.MouseMotionAdapter (implements java.awt.event.MouseMotionListener)
 - java.awt.event.WindowAdapter (implements java.awt.event.WindowFocusListener, java.awt.event.WindowListener, java.awt.event.WindowStateListener)

Interface Hierarchy

- 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

Estudiamos AWT por simplificar
[Ver swing](#)

All Known Subinterfaces:

Action, ActionListener, AdjustmentListener, AncestorListener, AWTEventListener, BeanContextMembershipListener, BeanContextServiceRevokedListener, BeanContextServices, BeanContextServicesListener, CaretListener, CellEditorListener, ChangeListener, ComponentListener, ConnectionEventListener, ContainerListener, ControllerEventListener, DocumentListener, DragGestureListener, DragSourceListener, DragSourceMotionListener, DropTargetListener, FlavorListener, FocusListener, HandshakeCompletedListener, HierarchyBoundsListener, HierarchyListener, HyperlinkListener, IIOReadProgressListener, IIOReadUpdateListener, IIOReadWarningListener, IIOWriteProgressListener, IIOWriteWarningListener, InputMethodListener, InternalFrameListener, ItemListener, KeyListener, LineListener, ListDataListener, ListSelectionListener, MenuItemDragMouseListener, MenuItemKeyListener, MenuItemListener, MetaEventListener, MouseInputListener, MouseListener, MouseMotionListener, MouseWheelListener, NamespaceChangeListener, NamingListener, NodeChangeListener, NotificationListener, ObjectChangeListener, PopupMenuListener, PreferenceChangeListener, PropertyChangeListener, RowSetListener, RowSorterListener, SSLSessionBindingListener, StatementEventListener, TableColumnModelListener, TableModelListener, TextListener, TreeExpansionListener, TreeModelListener, TreeSelectionListener, TreeWillExpandListener, UndoableEditListener, UnsolicitedNotificationListener, 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, BasicComboBoxUI.InvocationKeyHandler, BasicComboBoxUI.InvocationMouseHandler, BasicComboBoxUI.InvocationMouseMotionHandler, BasicComboBoxUI.ItemHandler, BasicComboBoxUI.ListDataHandler, BasicComboBoxUI.ListMouseHandler, BasicComboBoxUI.ListMouseMotionHandler, BasicComboBoxUI.ListSelectionHandler, BasicComboBoxUI.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.PropertyChangeListener, BasicInternalFrameTitlePane.RestoreAction, BasicInternalFrameTitlePane.SizeAction, BasicInternalFrameUI.BasicInternalFrameListener, BasicInternalFrameUI.BorderListener, BasicInternalFrameUI.ComponentHandler, BasicInternalFrameUI.GlassPaneDispatcher, BasicInternalFrameUI.InternalFramePropertyChangeListener, BasicLabelUI, BasicListUI.FocusHandler, BasicListUI.ListDataHandler, BasicListUI.ListSelectionHandler, BasicListUI.MouseInputHandler, BasicListUI.PropertyChangeListener, BasicMenuItemUI.MouseInputHandler, BasicMenuUI.ChangeHandler, BasicMenuUI.MouseInputHandler, BasicOptionPaneUI.ButtonActionListener, BasicOptionPaneUI.PropertyChangeListener, BasicProgressBarUI.ChangeHandler, BasicRootPaneUI, BasicScrollBarUI.ArrowButtonListener, BasicScrollBarUI.ModelListener, BasicScrollBarUI.PropertyChangeListener, BasicScrollBarUI.ScrollListener, BasicScrollBarUI.TrackListener, BasicScrollPaneUI.HSBChangeListener, BasicScrollPaneUI.MouseWheelHandler, BasicScrollPaneUI.PropertyChangeListener, BasicScrollPaneUI.ViewportChangeListener, BasicScrollPaneUI.VSBChangeListener, BasicSliderUI.ActionScroller, BasicSliderUI.ChangeHandler, BasicSliderUI.ComponentHandler, BasicSliderUI.FocusHandler, BasicSliderUI.PropertyChangeListener, BasicSliderUI.ScrollListener, BasicSliderUI.TrackListener, BasicSplitPaneDivider, BasicSplitPaneDivider.MouseHandler, BasicSplitPaneUI.FocusHandler, BasicSplitPaneUI.KeyboardDownRightHandler, BasicSplitPaneUI.KeyboardEndHandler, BasicSplitPaneUI.KeyboardHomeHandler, BasicSplitPaneUI.KeyboardResizeToggleHandler, BasicSplitPaneUI.KeyboardUpLeftHandler, BasicSplitPaneUI.PropertyHandler, BasicTabbedPaneUI.FocusHandler, BasicTabbedPaneUI.MouseHandler, BasicTabbedPaneUI.PropertyChangeListener, BasicTabbedPaneUI.TabSelectionHandler, BasicTableHeaderUI.MouseInputHandler, BasicTableUI.FocusHandler, BasicTableUI.KeyHandler, BasicTableUI.MouseInputHandler, BasicTextUI.BasicCaret, BasicToolBarUI.DockingListener, BasicToolBarUI.FrameListener, BasicToolBarUI.PropertyListener, BasicToolBarUI.ToolBarContListener, BasicToolBarUI.ToolBarFocusListener, BasicTreeUI.CellEditorHandler, BasicTreeUI.ComponentHandler, BasicTreeUI.FocusHandler, BasicTreeUI.KeyHandler, BasicTreeUI.MouseHandler, BasicTreeUI.MouseInputHandler, BasicTreeUI.PropertyChangeListener, BasicTreeUI.SelectionModelPropertyChangeListener, BasicTreeUI.TreeCancelEditingAction, BasicTreeUI.TreeExpansionHandler, BasicTreeUI.TreeHomeAction, BasicTreeUI.TreeIncrementAction, BasicTreeUI.TreeModelHandler, BasicTreeUI.TreePageAction, BasicTreeUI.TreeSelectionHandler, BasicTreeUI.TreeToggleAction, BasicTreeUI.TreeTraversalAction, BeanContextChildSupport, BeanContextServicesSupport, BeanContextServicesSupport.BCSSProxyServiceProvider, BeanContextSupport, Checkbox.AccessibleAWTCheckbox, Component.AccessibleAWTComponent.AccessibleAWTComponentHandler, Component.AccessibleAWTComponent.AccessibleAWTFocusHandler, ComponentAdapter, Container.AccessibleAWTContainer.AccessibleAWTContainerHandler, 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, DropTargetAdapter, DropTargetAutoScroller, DropTargetAdapter, EventListenerProxy, FocusAdapter, FormView, FormView.MouseEventListener, HierarchyBoundsAdapter, HTMLTextAreaKit.HTMLTextAreaAction, HTMLTextAreaKit.InsertHTMLTextAreaAction, HTMLTextAreaKit.LinkController, InternalFrameAdapter, JCheckBox.AccessibleJCheckBox, JCheckBoxComponent.AccessibleJCheckBoxMenuItem, JComponent, JComponent.AccessibleJComponent.AccessibleJComponent.AccessibleJComponent.AccessibleJComponent.AccessibleFocusHandler, JEditorPane.AccessibleJEditorPane, JEditorPane.AccessibleJEditorPaneHTML, JEditorPane.JEditorPane.AccessibleJHyperTextSupport, JLayer, JList.AccessibleJList, JMenu.AccessibleJMenu, JMenu.WinListener, JMenuItem.AccessibleJMenuItem, JPasswordField.AccessibleJPasswordField, JPopupMenu.AccessibleJPopupMenu, JRadioButton.AccessibleJRadioButton, JRadioButtonMenuItem.AccessibleJRadioButtonMenuItem, JScrollBar.AccessibleJScrollBar, JSpinner.AccessibleJSpinner, JSpinner.DefaultEditor, JSpinner.ListEditor, JSpinner.NumberEditor, JTabbedPane.AccessibleJTabbedPane, JTabbedPane.ModelListener, JTable, JTable.AccessibleJTable, JTableHeader, JTextArea.AccessibleJTextArea, JTextComponent.AccessibleJTextComponent, JTextField.AccessibleJTextField, JToggleButton.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.MetalRolloverListener, MouseAdapter, MouseDragGestureRecognizer, MouseInputAdapter, MouseMotionAdapter, ProgressMonitor.AccessibleProgressMonitor, PropertyChangeListenerProxy, RelationService, StyledEditorKit.AlignmentAction, StyledEditorKit.BoldAction, StyledEditorKit.FontFamilyAction, StyledEditorKit.FontSizeAction, StyledEditorKit.ForegroundAction, StyledEditorKit.ItalicAction, StyledEditorKit.StyledTextAction, StyledEditorKit.UnderlineAction, SynthButtonUI, SynthCheckBoxMenuItemUI, SynthCheckBoxUI, SynthColorChooserUI, SynthComboBoxUI, SynthDesktopIconUI, SynthDesktopPaneUI, SynthInternalFrameUI, SynthLabelUI, SynthListUI, SynthMenuBarUI, SynthMenuItemUI, SynthMenuUI, SynthOptionPaneUI, SynthPanelUI, SynthPopupMenuUI, SynthProgressBarUI, SynthRadioButtonMenuItemUI, SynthRadioButtonUI, SynthRootPaneUI, SynthScrollPaneUI, SynthScrollPaneUI, SynthSeparatorUI, SynthSliderUI, SynthSpinnerUI, SynthSplitPaneUI, SynthTabbedPaneUI, SynthTableHeaderUI, SynthTableUI, SynthToggleButtonUI, SynthToolBarUI, SynthToolTipUI, SynthTreeUI, SynthViewportUI, TextAction, TextArea.AccessibleAWTTextArea, TextComponent.AccessibleAWTTextComponent, TextField.AccessibleAWTTextField, ToolTipManager, ToolTipManager.insideTimerAction, ToolTipManager.outsideTimerAction, ToolTipManager.stillInsideTimerAction, UndoManager, VetoableChangeListenerProxy, WindowAdapter

```

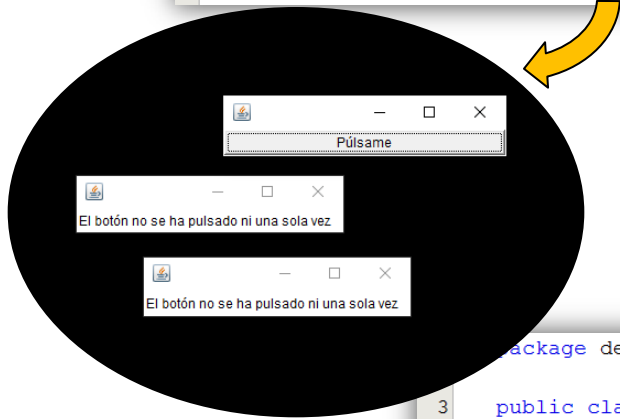
1 package delegationeventmodel;
2
3 public class DelegationEventModel {
4     public static void main(String[] args) {
5         Emisor fe=new Emisor();
6         Receptor fr=new Receptor(fe.boton);
7         Receptor fr2=new Receptor(fe.boton);
8     }
9 }

```

```

1 package delegationeventmodel;
2
3 public class Emisor extends java.awt.Frame {
4     java.awt.Button boton=new java.awt.Button("Púlsame");
5     public Emisor() {
6         add(boton);
7         setVisible(true);
8         pack();
9     }
10 }

```



```

package delegationeventmodel;

```

```

3 public class Receptor extends java.awt.Frame implements java.awt.event.MouseListener {
4
5     private int toques = 0;
6     java.awt.Label etiqueta = new java.awt.Label("El botón no se ha pulsado ni una sola vez");
7
8     public Receptor(java.awt.Component c) {
9         add(etiqueta);
10        setVisible(true);
11        pack();
12        c.addMouseListener(this);
13    }
14
15    @Override public void mouseClicked(java.awt.event.MouseEvent evt) {
16        etiqueta.setText("El botón se ha pulsado " + (++toques) + ((toques == 1) ? " vez" : " veces"));
17    }
18
19    @Override public void mousePressed(java.awt.event.MouseEvent evt) {}
20    @Override public void mouseReleased(java.awt.event.MouseEvent evt) {}
21    @Override public void mouseEntered(java.awt.event.MouseEvent evt) {}
22    @Override public void mouseExited(java.awt.event.MouseEvent evt) {}
23 }

```

Suscripción

MouseListener