| | [**Overview**](http://docs.google.com/overview-summary.html) | [**Package**](http://docs.google.com/package-summary.html) | **Class** | [**Use**](http://docs.google.com/class-use/AWTEventMulticaster.html) | [**Tree**](http://docs.google.com/package-tree.html) | [**Deprecated**](http://docs.google.com/deprecated-list.html) | [**Index**](http://docs.google.com/index-files/index-1.html) | [**Help**](http://docs.google.com/help-doc.html) | | --- | --- | --- | --- | --- | --- | --- | --- | | | ***Java™ Platform***  ***Standard Ed. 6*** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| [**PREV CLASS**](http://docs.google.com/java/awt/AWTEvent.html)   [**NEXT CLASS**](http://docs.google.com/java/awt/AWTException.html) | [**FRAMES**](http://docs.google.com/index.html?java/awt/AWTEventMulticaster.html)    [**NO FRAMES**](http://docs.google.com/AWTEventMulticaster.html)     [**All Classes**](http://docs.google.com/allclasses-noframe.html) |
| SUMMARY: NESTED | [FIELD](#3znysh7) | [CONSTR](#2et92p0) | [METHOD](#tyjcwt) | DETAIL: [FIELD](#1t3h5sf) | [CONSTR](#17dp8vu) | [METHOD](#26in1rg) |

## **java.awt**

Class AWTEventMulticaster

[java.lang.Object](http://docs.google.com/java/lang/Object.html)  
 **java.awt.AWTEventMulticaster**

**All Implemented Interfaces:** [ActionListener](http://docs.google.com/java/awt/event/ActionListener.html), [AdjustmentListener](http://docs.google.com/java/awt/event/AdjustmentListener.html), [ComponentListener](http://docs.google.com/java/awt/event/ComponentListener.html), [ContainerListener](http://docs.google.com/java/awt/event/ContainerListener.html), [FocusListener](http://docs.google.com/java/awt/event/FocusListener.html), [HierarchyBoundsListener](http://docs.google.com/java/awt/event/HierarchyBoundsListener.html), [HierarchyListener](http://docs.google.com/java/awt/event/HierarchyListener.html), [InputMethodListener](http://docs.google.com/java/awt/event/InputMethodListener.html), [ItemListener](http://docs.google.com/java/awt/event/ItemListener.html), [KeyListener](http://docs.google.com/java/awt/event/KeyListener.html), [MouseListener](http://docs.google.com/java/awt/event/MouseListener.html), [MouseMotionListener](http://docs.google.com/java/awt/event/MouseMotionListener.html), [MouseWheelListener](http://docs.google.com/java/awt/event/MouseWheelListener.html), [TextListener](http://docs.google.com/java/awt/event/TextListener.html), [WindowFocusListener](http://docs.google.com/java/awt/event/WindowFocusListener.html), [WindowListener](http://docs.google.com/java/awt/event/WindowListener.html), [WindowStateListener](http://docs.google.com/java/awt/event/WindowStateListener.html), [EventListener](http://docs.google.com/java/util/EventListener.html)

public class **AWTEventMulticaster**extends [Object](http://docs.google.com/java/lang/Object.html)implements [ComponentListener](http://docs.google.com/java/awt/event/ComponentListener.html), [ContainerListener](http://docs.google.com/java/awt/event/ContainerListener.html), [FocusListener](http://docs.google.com/java/awt/event/FocusListener.html), [KeyListener](http://docs.google.com/java/awt/event/KeyListener.html), [MouseListener](http://docs.google.com/java/awt/event/MouseListener.html), [MouseMotionListener](http://docs.google.com/java/awt/event/MouseMotionListener.html), [WindowListener](http://docs.google.com/java/awt/event/WindowListener.html), [WindowFocusListener](http://docs.google.com/java/awt/event/WindowFocusListener.html), [WindowStateListener](http://docs.google.com/java/awt/event/WindowStateListener.html), [ActionListener](http://docs.google.com/java/awt/event/ActionListener.html), [ItemListener](http://docs.google.com/java/awt/event/ItemListener.html), [AdjustmentListener](http://docs.google.com/java/awt/event/AdjustmentListener.html), [TextListener](http://docs.google.com/java/awt/event/TextListener.html), [InputMethodListener](http://docs.google.com/java/awt/event/InputMethodListener.html), [HierarchyListener](http://docs.google.com/java/awt/event/HierarchyListener.html), [HierarchyBoundsListener](http://docs.google.com/java/awt/event/HierarchyBoundsListener.html), [MouseWheelListener](http://docs.google.com/java/awt/event/MouseWheelListener.html)

AWTEventMulticaster implements efficient and thread-safe multi-cast event dispatching for the AWT events defined in the java.awt.event package.

The following example illustrates how to use this class:

public myComponent extends Component {  
 ActionListener actionListener = null;  
  
 public synchronized void addActionListener(ActionListener l) {  
 actionListener = AWTEventMulticaster.add(actionListener, l);  
 }  
 public synchronized void removeActionListener(ActionListener l) {  
 actionListener = AWTEventMulticaster.remove(actionListener, l);  
 }  
 public void processEvent(AWTEvent e) {  
 // when event occurs which causes "action" semantic  
 ActionListener listener = actionListener;  
 if (listener != null) {  
 listener.actionPerformed(new ActionEvent());  
 }  
 }  
 }

The important point to note is the first argument to the add and remove methods is the field maintaining the listeners. In addition you must assign the result of the add and remove methods to the field maintaining the listeners.

AWTEventMulticaster is implemented as a pair of EventListeners that are set at construction time. AWTEventMulticaster is immutable. The add and remove methods do not alter AWTEventMulticaster in anyway. If necessary, a new AWTEventMulticaster is created. In this way it is safe to add and remove listeners during the process of an event dispatching. However, event listeners added during the process of an event dispatch operation are not notified of the event currently being dispatched.

All of the add methods allow null arguments. If the first argument is null, the second argument is returned. If the first argument is not null and the second argument is null, the first argument is returned. If both arguments are non-null, a new AWTEventMulticaster is created using the two arguments and returned.

For the remove methods that take two arguments, the following is returned:

* null, if the first argument is null, or the arguments are equal, by way of ==.
* the first argument, if the first argument is not an instance of AWTEventMulticaster.
* result of invoking remove(EventListener) on the first argument, supplying the second argument to the remove(EventListener) method.

Swing makes use of [EventListenerList](http://docs.google.com/javax/swing/event/EventListenerList.html) for similar logic. Refer to it for details.

**Since:** 1.1 **See Also:**[EventListenerList](http://docs.google.com/javax/swing/event/EventListenerList.html)

| **Field Summary** | |
| --- | --- |
| protected  [EventListener](http://docs.google.com/java/util/EventListener.html) | [**a**](http://docs.google.com/java/awt/AWTEventMulticaster.html#a) |
| protected  [EventListener](http://docs.google.com/java/util/EventListener.html) | [**b**](http://docs.google.com/java/awt/AWTEventMulticaster.html#b) |

| **Constructor Summary** | |
| --- | --- |
| protected | [**AWTEventMulticaster**](http://docs.google.com/java/awt/AWTEventMulticaster.html#AWTEventMulticaster(java.util.EventListener,%20java.util.EventListener))([EventListener](http://docs.google.com/java/util/EventListener.html) a, [EventListener](http://docs.google.com/java/util/EventListener.html) b)            Creates an event multicaster instance which chains listener-a with listener-b. |

| **Method Summary** | |
| --- | --- |
| void | [**actionPerformed**](http://docs.google.com/java/awt/AWTEventMulticaster.html#actionPerformed(java.awt.event.ActionEvent))([ActionEvent](http://docs.google.com/java/awt/event/ActionEvent.html) e)            Handles the actionPerformed event by invoking the actionPerformed methods on listener-a and listener-b. |
| static [ActionListener](http://docs.google.com/java/awt/event/ActionListener.html) | [**add**](http://docs.google.com/java/awt/AWTEventMulticaster.html#add(java.awt.event.ActionListener,%20java.awt.event.ActionListener))([ActionListener](http://docs.google.com/java/awt/event/ActionListener.html) a, [ActionListener](http://docs.google.com/java/awt/event/ActionListener.html) b)            Adds action-listener-a with action-listener-b and returns the resulting multicast listener. |
| static [AdjustmentListener](http://docs.google.com/java/awt/event/AdjustmentListener.html) | [**add**](http://docs.google.com/java/awt/AWTEventMulticaster.html#add(java.awt.event.AdjustmentListener,%20java.awt.event.AdjustmentListener))([AdjustmentListener](http://docs.google.com/java/awt/event/AdjustmentListener.html) a, [AdjustmentListener](http://docs.google.com/java/awt/event/AdjustmentListener.html) b)            Adds adjustment-listener-a with adjustment-listener-b and returns the resulting multicast listener. |
| static [ComponentListener](http://docs.google.com/java/awt/event/ComponentListener.html) | [**add**](http://docs.google.com/java/awt/AWTEventMulticaster.html#add(java.awt.event.ComponentListener,%20java.awt.event.ComponentListener))([ComponentListener](http://docs.google.com/java/awt/event/ComponentListener.html) a, [ComponentListener](http://docs.google.com/java/awt/event/ComponentListener.html) b)            Adds component-listener-a with component-listener-b and returns the resulting multicast listener. |
| static [ContainerListener](http://docs.google.com/java/awt/event/ContainerListener.html) | [**add**](http://docs.google.com/java/awt/AWTEventMulticaster.html#add(java.awt.event.ContainerListener,%20java.awt.event.ContainerListener))([ContainerListener](http://docs.google.com/java/awt/event/ContainerListener.html) a, [ContainerListener](http://docs.google.com/java/awt/event/ContainerListener.html) b)            Adds container-listener-a with container-listener-b and returns the resulting multicast listener. |
| static [FocusListener](http://docs.google.com/java/awt/event/FocusListener.html) | [**add**](http://docs.google.com/java/awt/AWTEventMulticaster.html#add(java.awt.event.FocusListener,%20java.awt.event.FocusListener))([FocusListener](http://docs.google.com/java/awt/event/FocusListener.html) a, [FocusListener](http://docs.google.com/java/awt/event/FocusListener.html) b)            Adds focus-listener-a with focus-listener-b and returns the resulting multicast listener. |
| static [HierarchyBoundsListener](http://docs.google.com/java/awt/event/HierarchyBoundsListener.html) | [**add**](http://docs.google.com/java/awt/AWTEventMulticaster.html#add(java.awt.event.HierarchyBoundsListener,%20java.awt.event.HierarchyBoundsListener))([HierarchyBoundsListener](http://docs.google.com/java/awt/event/HierarchyBoundsListener.html) a, [HierarchyBoundsListener](http://docs.google.com/java/awt/event/HierarchyBoundsListener.html) b)            Adds hierarchy-bounds-listener-a with hierarchy-bounds-listener-b and returns the resulting multicast listener. |
| static [HierarchyListener](http://docs.google.com/java/awt/event/HierarchyListener.html) | [**add**](http://docs.google.com/java/awt/AWTEventMulticaster.html#add(java.awt.event.HierarchyListener,%20java.awt.event.HierarchyListener))([HierarchyListener](http://docs.google.com/java/awt/event/HierarchyListener.html) a, [HierarchyListener](http://docs.google.com/java/awt/event/HierarchyListener.html) b)            Adds hierarchy-listener-a with hierarchy-listener-b and returns the resulting multicast listener. |
| static [InputMethodListener](http://docs.google.com/java/awt/event/InputMethodListener.html) | [**add**](http://docs.google.com/java/awt/AWTEventMulticaster.html#add(java.awt.event.InputMethodListener,%20java.awt.event.InputMethodListener))([InputMethodListener](http://docs.google.com/java/awt/event/InputMethodListener.html) a, [InputMethodListener](http://docs.google.com/java/awt/event/InputMethodListener.html) b)            Adds input-method-listener-a with input-method-listener-b and returns the resulting multicast listener. |
| static [ItemListener](http://docs.google.com/java/awt/event/ItemListener.html) | [**add**](http://docs.google.com/java/awt/AWTEventMulticaster.html#add(java.awt.event.ItemListener,%20java.awt.event.ItemListener))([ItemListener](http://docs.google.com/java/awt/event/ItemListener.html) a, [ItemListener](http://docs.google.com/java/awt/event/ItemListener.html) b)            Adds item-listener-a with item-listener-b and returns the resulting multicast listener. |
| static [KeyListener](http://docs.google.com/java/awt/event/KeyListener.html) | [**add**](http://docs.google.com/java/awt/AWTEventMulticaster.html#add(java.awt.event.KeyListener,%20java.awt.event.KeyListener))([KeyListener](http://docs.google.com/java/awt/event/KeyListener.html) a, [KeyListener](http://docs.google.com/java/awt/event/KeyListener.html) b)            Adds key-listener-a with key-listener-b and returns the resulting multicast listener. |
| static [MouseListener](http://docs.google.com/java/awt/event/MouseListener.html) | [**add**](http://docs.google.com/java/awt/AWTEventMulticaster.html#add(java.awt.event.MouseListener,%20java.awt.event.MouseListener))([MouseListener](http://docs.google.com/java/awt/event/MouseListener.html) a, [MouseListener](http://docs.google.com/java/awt/event/MouseListener.html) b)            Adds mouse-listener-a with mouse-listener-b and returns the resulting multicast listener. |
| static [MouseMotionListener](http://docs.google.com/java/awt/event/MouseMotionListener.html) | [**add**](http://docs.google.com/java/awt/AWTEventMulticaster.html#add(java.awt.event.MouseMotionListener,%20java.awt.event.MouseMotionListener))([MouseMotionListener](http://docs.google.com/java/awt/event/MouseMotionListener.html) a, [MouseMotionListener](http://docs.google.com/java/awt/event/MouseMotionListener.html) b)            Adds mouse-motion-listener-a with mouse-motion-listener-b and returns the resulting multicast listener. |
| static [MouseWheelListener](http://docs.google.com/java/awt/event/MouseWheelListener.html) | [**add**](http://docs.google.com/java/awt/AWTEventMulticaster.html#add(java.awt.event.MouseWheelListener,%20java.awt.event.MouseWheelListener))([MouseWheelListener](http://docs.google.com/java/awt/event/MouseWheelListener.html) a, [MouseWheelListener](http://docs.google.com/java/awt/event/MouseWheelListener.html) b)            Adds mouse-wheel-listener-a with mouse-wheel-listener-b and returns the resulting multicast listener. |
| static [TextListener](http://docs.google.com/java/awt/event/TextListener.html) | [**add**](http://docs.google.com/java/awt/AWTEventMulticaster.html#add(java.awt.event.TextListener,%20java.awt.event.TextListener))([TextListener](http://docs.google.com/java/awt/event/TextListener.html) a, [TextListener](http://docs.google.com/java/awt/event/TextListener.html) b) |
| static [WindowFocusListener](http://docs.google.com/java/awt/event/WindowFocusListener.html) | [**add**](http://docs.google.com/java/awt/AWTEventMulticaster.html#add(java.awt.event.WindowFocusListener,%20java.awt.event.WindowFocusListener))([WindowFocusListener](http://docs.google.com/java/awt/event/WindowFocusListener.html) a, [WindowFocusListener](http://docs.google.com/java/awt/event/WindowFocusListener.html) b)            Adds window-focus-listener-a with window-focus-listener-b and returns the resulting multicast listener. |
| static [WindowListener](http://docs.google.com/java/awt/event/WindowListener.html) | [**add**](http://docs.google.com/java/awt/AWTEventMulticaster.html#add(java.awt.event.WindowListener,%20java.awt.event.WindowListener))([WindowListener](http://docs.google.com/java/awt/event/WindowListener.html) a, [WindowListener](http://docs.google.com/java/awt/event/WindowListener.html) b)            Adds window-listener-a with window-listener-b and returns the resulting multicast listener. |
| static [WindowStateListener](http://docs.google.com/java/awt/event/WindowStateListener.html) | [**add**](http://docs.google.com/java/awt/AWTEventMulticaster.html#add(java.awt.event.WindowStateListener,%20java.awt.event.WindowStateListener))([WindowStateListener](http://docs.google.com/java/awt/event/WindowStateListener.html) a, [WindowStateListener](http://docs.google.com/java/awt/event/WindowStateListener.html) b)            Adds window-state-listener-a with window-state-listener-b and returns the resulting multicast listener. |
| protected static [EventListener](http://docs.google.com/java/util/EventListener.html) | [**addInternal**](http://docs.google.com/java/awt/AWTEventMulticaster.html#addInternal(java.util.EventListener,%20java.util.EventListener))([EventListener](http://docs.google.com/java/util/EventListener.html) a, [EventListener](http://docs.google.com/java/util/EventListener.html) b)            Returns the resulting multicast listener from adding listener-a and listener-b together. |
| void | [**adjustmentValueChanged**](http://docs.google.com/java/awt/AWTEventMulticaster.html#adjustmentValueChanged(java.awt.event.AdjustmentEvent))([AdjustmentEvent](http://docs.google.com/java/awt/event/AdjustmentEvent.html) e)            Handles the adjustmentValueChanged event by invoking the adjustmentValueChanged methods on listener-a and listener-b. |
| void | [**ancestorMoved**](http://docs.google.com/java/awt/AWTEventMulticaster.html#ancestorMoved(java.awt.event.HierarchyEvent))([HierarchyEvent](http://docs.google.com/java/awt/event/HierarchyEvent.html) e)            Handles the ancestorMoved event by invoking the ancestorMoved methods on listener-a and listener-b. |
| void | [**ancestorResized**](http://docs.google.com/java/awt/AWTEventMulticaster.html#ancestorResized(java.awt.event.HierarchyEvent))([HierarchyEvent](http://docs.google.com/java/awt/event/HierarchyEvent.html) e)            Handles the ancestorResized event by invoking the ancestorResized methods on listener-a and listener-b. |
| void | [**caretPositionChanged**](http://docs.google.com/java/awt/AWTEventMulticaster.html#caretPositionChanged(java.awt.event.InputMethodEvent))([InputMethodEvent](http://docs.google.com/java/awt/event/InputMethodEvent.html) e)            Handles the caretPositionChanged event by invoking the caretPositionChanged methods on listener-a and listener-b. |
| void | [**componentAdded**](http://docs.google.com/java/awt/AWTEventMulticaster.html#componentAdded(java.awt.event.ContainerEvent))([ContainerEvent](http://docs.google.com/java/awt/event/ContainerEvent.html) e)            Handles the componentAdded container event by invoking the componentAdded methods on listener-a and listener-b. |
| void | [**componentHidden**](http://docs.google.com/java/awt/AWTEventMulticaster.html#componentHidden(java.awt.event.ComponentEvent))([ComponentEvent](http://docs.google.com/java/awt/event/ComponentEvent.html) e)            Handles the componentHidden event by invoking the componentHidden methods on listener-a and listener-b. |
| void | [**componentMoved**](http://docs.google.com/java/awt/AWTEventMulticaster.html#componentMoved(java.awt.event.ComponentEvent))([ComponentEvent](http://docs.google.com/java/awt/event/ComponentEvent.html) e)            Handles the componentMoved event by invoking the componentMoved methods on listener-a and listener-b. |
| void | [**componentRemoved**](http://docs.google.com/java/awt/AWTEventMulticaster.html#componentRemoved(java.awt.event.ContainerEvent))([ContainerEvent](http://docs.google.com/java/awt/event/ContainerEvent.html) e)            Handles the componentRemoved container event by invoking the componentRemoved methods on listener-a and listener-b. |
| void | [**componentResized**](http://docs.google.com/java/awt/AWTEventMulticaster.html#componentResized(java.awt.event.ComponentEvent))([ComponentEvent](http://docs.google.com/java/awt/event/ComponentEvent.html) e)            Handles the componentResized event by invoking the componentResized methods on listener-a and listener-b. |
| void | [**componentShown**](http://docs.google.com/java/awt/AWTEventMulticaster.html#componentShown(java.awt.event.ComponentEvent))([ComponentEvent](http://docs.google.com/java/awt/event/ComponentEvent.html) e)            Handles the componentShown event by invoking the componentShown methods on listener-a and listener-b. |
| void | [**focusGained**](http://docs.google.com/java/awt/AWTEventMulticaster.html#focusGained(java.awt.event.FocusEvent))([FocusEvent](http://docs.google.com/java/awt/event/FocusEvent.html) e)            Handles the focusGained event by invoking the focusGained methods on listener-a and listener-b. |
| void | [**focusLost**](http://docs.google.com/java/awt/AWTEventMulticaster.html#focusLost(java.awt.event.FocusEvent))([FocusEvent](http://docs.google.com/java/awt/event/FocusEvent.html) e)            Handles the focusLost event by invoking the focusLost methods on listener-a and listener-b. |
| static   | <T extends [EventListener](http://docs.google.com/java/util/EventListener.html)>  T[] | | --- | | [**getListeners**](http://docs.google.com/java/awt/AWTEventMulticaster.html#getListeners(java.util.EventListener,%20java.lang.Class))([EventListener](http://docs.google.com/java/util/EventListener.html) l, [Class](http://docs.google.com/java/lang/Class.html)<T> listenerType)            Returns an array of all the objects chained as *Foo*Listeners by the specified java.util.EventListener. |
| void | [**hierarchyChanged**](http://docs.google.com/java/awt/AWTEventMulticaster.html#hierarchyChanged(java.awt.event.HierarchyEvent))([HierarchyEvent](http://docs.google.com/java/awt/event/HierarchyEvent.html) e)            Handles the hierarchyChanged event by invoking the hierarchyChanged methods on listener-a and listener-b. |
| void | [**inputMethodTextChanged**](http://docs.google.com/java/awt/AWTEventMulticaster.html#inputMethodTextChanged(java.awt.event.InputMethodEvent))([InputMethodEvent](http://docs.google.com/java/awt/event/InputMethodEvent.html) e)            Handles the inputMethodTextChanged event by invoking the inputMethodTextChanged methods on listener-a and listener-b. |
| void | [**itemStateChanged**](http://docs.google.com/java/awt/AWTEventMulticaster.html#itemStateChanged(java.awt.event.ItemEvent))([ItemEvent](http://docs.google.com/java/awt/event/ItemEvent.html) e)            Handles the itemStateChanged event by invoking the itemStateChanged methods on listener-a and listener-b. |
| void | [**keyPressed**](http://docs.google.com/java/awt/AWTEventMulticaster.html#keyPressed(java.awt.event.KeyEvent))([KeyEvent](http://docs.google.com/java/awt/event/KeyEvent.html) e)            Handles the keyPressed event by invoking the keyPressed methods on listener-a and listener-b. |
| void | [**keyReleased**](http://docs.google.com/java/awt/AWTEventMulticaster.html#keyReleased(java.awt.event.KeyEvent))([KeyEvent](http://docs.google.com/java/awt/event/KeyEvent.html) e)            Handles the keyReleased event by invoking the keyReleased methods on listener-a and listener-b. |
| void | [**keyTyped**](http://docs.google.com/java/awt/AWTEventMulticaster.html#keyTyped(java.awt.event.KeyEvent))([KeyEvent](http://docs.google.com/java/awt/event/KeyEvent.html) e)            Handles the keyTyped event by invoking the keyTyped methods on listener-a and listener-b. |
| void | [**mouseClicked**](http://docs.google.com/java/awt/AWTEventMulticaster.html#mouseClicked(java.awt.event.MouseEvent))([MouseEvent](http://docs.google.com/java/awt/event/MouseEvent.html) e)            Handles the mouseClicked event by invoking the mouseClicked methods on listener-a and listener-b. |
| void | [**mouseDragged**](http://docs.google.com/java/awt/AWTEventMulticaster.html#mouseDragged(java.awt.event.MouseEvent))([MouseEvent](http://docs.google.com/java/awt/event/MouseEvent.html) e)            Handles the mouseDragged event by invoking the mouseDragged methods on listener-a and listener-b. |
| void | [**mouseEntered**](http://docs.google.com/java/awt/AWTEventMulticaster.html#mouseEntered(java.awt.event.MouseEvent))([MouseEvent](http://docs.google.com/java/awt/event/MouseEvent.html) e)            Handles the mouseEntered event by invoking the mouseEntered methods on listener-a and listener-b. |
| void | [**mouseExited**](http://docs.google.com/java/awt/AWTEventMulticaster.html#mouseExited(java.awt.event.MouseEvent))([MouseEvent](http://docs.google.com/java/awt/event/MouseEvent.html) e)            Handles the mouseExited event by invoking the mouseExited methods on listener-a and listener-b. |
| void | [**mouseMoved**](http://docs.google.com/java/awt/AWTEventMulticaster.html#mouseMoved(java.awt.event.MouseEvent))([MouseEvent](http://docs.google.com/java/awt/event/MouseEvent.html) e)            Handles the mouseMoved event by invoking the mouseMoved methods on listener-a and listener-b. |
| void | [**mousePressed**](http://docs.google.com/java/awt/AWTEventMulticaster.html#mousePressed(java.awt.event.MouseEvent))([MouseEvent](http://docs.google.com/java/awt/event/MouseEvent.html) e)            Handles the mousePressed event by invoking the mousePressed methods on listener-a and listener-b. |
| void | [**mouseReleased**](http://docs.google.com/java/awt/AWTEventMulticaster.html#mouseReleased(java.awt.event.MouseEvent))([MouseEvent](http://docs.google.com/java/awt/event/MouseEvent.html) e)            Handles the mouseReleased event by invoking the mouseReleased methods on listener-a and listener-b. |
| void | [**mouseWheelMoved**](http://docs.google.com/java/awt/AWTEventMulticaster.html#mouseWheelMoved(java.awt.event.MouseWheelEvent))([MouseWheelEvent](http://docs.google.com/java/awt/event/MouseWheelEvent.html) e)            Handles the mouseWheelMoved event by invoking the mouseWheelMoved methods on listener-a and listener-b. |
| static [ActionListener](http://docs.google.com/java/awt/event/ActionListener.html) | [**remove**](http://docs.google.com/java/awt/AWTEventMulticaster.html#remove(java.awt.event.ActionListener,%20java.awt.event.ActionListener))([ActionListener](http://docs.google.com/java/awt/event/ActionListener.html) l, [ActionListener](http://docs.google.com/java/awt/event/ActionListener.html) oldl)            Removes the old action-listener from action-listener-l and returns the resulting multicast listener. |
| static [AdjustmentListener](http://docs.google.com/java/awt/event/AdjustmentListener.html) | [**remove**](http://docs.google.com/java/awt/AWTEventMulticaster.html#remove(java.awt.event.AdjustmentListener,%20java.awt.event.AdjustmentListener))([AdjustmentListener](http://docs.google.com/java/awt/event/AdjustmentListener.html) l, [AdjustmentListener](http://docs.google.com/java/awt/event/AdjustmentListener.html) oldl)            Removes the old adjustment-listener from adjustment-listener-l and returns the resulting multicast listener. |
| static [ComponentListener](http://docs.google.com/java/awt/event/ComponentListener.html) | [**remove**](http://docs.google.com/java/awt/AWTEventMulticaster.html#remove(java.awt.event.ComponentListener,%20java.awt.event.ComponentListener))([ComponentListener](http://docs.google.com/java/awt/event/ComponentListener.html) l, [ComponentListener](http://docs.google.com/java/awt/event/ComponentListener.html) oldl)            Removes the old component-listener from component-listener-l and returns the resulting multicast listener. |
| static [ContainerListener](http://docs.google.com/java/awt/event/ContainerListener.html) | [**remove**](http://docs.google.com/java/awt/AWTEventMulticaster.html#remove(java.awt.event.ContainerListener,%20java.awt.event.ContainerListener))([ContainerListener](http://docs.google.com/java/awt/event/ContainerListener.html) l, [ContainerListener](http://docs.google.com/java/awt/event/ContainerListener.html) oldl)            Removes the old container-listener from container-listener-l and returns the resulting multicast listener. |
| protected  [EventListener](http://docs.google.com/java/util/EventListener.html) | [**remove**](http://docs.google.com/java/awt/AWTEventMulticaster.html#remove(java.util.EventListener))([EventListener](http://docs.google.com/java/util/EventListener.html) oldl)            Removes a listener from this multicaster. |
| static [FocusListener](http://docs.google.com/java/awt/event/FocusListener.html) | [**remove**](http://docs.google.com/java/awt/AWTEventMulticaster.html#remove(java.awt.event.FocusListener,%20java.awt.event.FocusListener))([FocusListener](http://docs.google.com/java/awt/event/FocusListener.html) l, [FocusListener](http://docs.google.com/java/awt/event/FocusListener.html) oldl)            Removes the old focus-listener from focus-listener-l and returns the resulting multicast listener. |
| static [HierarchyBoundsListener](http://docs.google.com/java/awt/event/HierarchyBoundsListener.html) | [**remove**](http://docs.google.com/java/awt/AWTEventMulticaster.html#remove(java.awt.event.HierarchyBoundsListener,%20java.awt.event.HierarchyBoundsListener))([HierarchyBoundsListener](http://docs.google.com/java/awt/event/HierarchyBoundsListener.html) l, [HierarchyBoundsListener](http://docs.google.com/java/awt/event/HierarchyBoundsListener.html) oldl)            Removes the old hierarchy-bounds-listener from hierarchy-bounds-listener-l and returns the resulting multicast listener. |
| static [HierarchyListener](http://docs.google.com/java/awt/event/HierarchyListener.html) | [**remove**](http://docs.google.com/java/awt/AWTEventMulticaster.html#remove(java.awt.event.HierarchyListener,%20java.awt.event.HierarchyListener))([HierarchyListener](http://docs.google.com/java/awt/event/HierarchyListener.html) l, [HierarchyListener](http://docs.google.com/java/awt/event/HierarchyListener.html) oldl)            Removes the old hierarchy-listener from hierarchy-listener-l and returns the resulting multicast listener. |
| static [InputMethodListener](http://docs.google.com/java/awt/event/InputMethodListener.html) | [**remove**](http://docs.google.com/java/awt/AWTEventMulticaster.html#remove(java.awt.event.InputMethodListener,%20java.awt.event.InputMethodListener))([InputMethodListener](http://docs.google.com/java/awt/event/InputMethodListener.html) l, [InputMethodListener](http://docs.google.com/java/awt/event/InputMethodListener.html) oldl)            Removes the old input-method-listener from input-method-listener-l and returns the resulting multicast listener. |
| static [ItemListener](http://docs.google.com/java/awt/event/ItemListener.html) | [**remove**](http://docs.google.com/java/awt/AWTEventMulticaster.html#remove(java.awt.event.ItemListener,%20java.awt.event.ItemListener))([ItemListener](http://docs.google.com/java/awt/event/ItemListener.html) l, [ItemListener](http://docs.google.com/java/awt/event/ItemListener.html) oldl)            Removes the old item-listener from item-listener-l and returns the resulting multicast listener. |
| static [KeyListener](http://docs.google.com/java/awt/event/KeyListener.html) | [**remove**](http://docs.google.com/java/awt/AWTEventMulticaster.html#remove(java.awt.event.KeyListener,%20java.awt.event.KeyListener))([KeyListener](http://docs.google.com/java/awt/event/KeyListener.html) l, [KeyListener](http://docs.google.com/java/awt/event/KeyListener.html) oldl)            Removes the old key-listener from key-listener-l and returns the resulting multicast listener. |
| static [MouseListener](http://docs.google.com/java/awt/event/MouseListener.html) | [**remove**](http://docs.google.com/java/awt/AWTEventMulticaster.html#remove(java.awt.event.MouseListener,%20java.awt.event.MouseListener))([MouseListener](http://docs.google.com/java/awt/event/MouseListener.html) l, [MouseListener](http://docs.google.com/java/awt/event/MouseListener.html) oldl)            Removes the old mouse-listener from mouse-listener-l and returns the resulting multicast listener. |
| static [MouseMotionListener](http://docs.google.com/java/awt/event/MouseMotionListener.html) | [**remove**](http://docs.google.com/java/awt/AWTEventMulticaster.html#remove(java.awt.event.MouseMotionListener,%20java.awt.event.MouseMotionListener))([MouseMotionListener](http://docs.google.com/java/awt/event/MouseMotionListener.html) l, [MouseMotionListener](http://docs.google.com/java/awt/event/MouseMotionListener.html) oldl)            Removes the old mouse-motion-listener from mouse-motion-listener-l and returns the resulting multicast listener. |
| static [MouseWheelListener](http://docs.google.com/java/awt/event/MouseWheelListener.html) | [**remove**](http://docs.google.com/java/awt/AWTEventMulticaster.html#remove(java.awt.event.MouseWheelListener,%20java.awt.event.MouseWheelListener))([MouseWheelListener](http://docs.google.com/java/awt/event/MouseWheelListener.html) l, [MouseWheelListener](http://docs.google.com/java/awt/event/MouseWheelListener.html) oldl)            Removes the old mouse-wheel-listener from mouse-wheel-listener-l and returns the resulting multicast listener. |
| static [TextListener](http://docs.google.com/java/awt/event/TextListener.html) | [**remove**](http://docs.google.com/java/awt/AWTEventMulticaster.html#remove(java.awt.event.TextListener,%20java.awt.event.TextListener))([TextListener](http://docs.google.com/java/awt/event/TextListener.html) l, [TextListener](http://docs.google.com/java/awt/event/TextListener.html) oldl) |
| static [WindowFocusListener](http://docs.google.com/java/awt/event/WindowFocusListener.html) | [**remove**](http://docs.google.com/java/awt/AWTEventMulticaster.html#remove(java.awt.event.WindowFocusListener,%20java.awt.event.WindowFocusListener))([WindowFocusListener](http://docs.google.com/java/awt/event/WindowFocusListener.html) l, [WindowFocusListener](http://docs.google.com/java/awt/event/WindowFocusListener.html) oldl)            Removes the old window-focus-listener from window-focus-listener-l and returns the resulting multicast listener. |
| static [WindowListener](http://docs.google.com/java/awt/event/WindowListener.html) | [**remove**](http://docs.google.com/java/awt/AWTEventMulticaster.html#remove(java.awt.event.WindowListener,%20java.awt.event.WindowListener))([WindowListener](http://docs.google.com/java/awt/event/WindowListener.html) l, [WindowListener](http://docs.google.com/java/awt/event/WindowListener.html) oldl)            Removes the old window-listener from window-listener-l and returns the resulting multicast listener. |
| static [WindowStateListener](http://docs.google.com/java/awt/event/WindowStateListener.html) | [**remove**](http://docs.google.com/java/awt/AWTEventMulticaster.html#remove(java.awt.event.WindowStateListener,%20java.awt.event.WindowStateListener))([WindowStateListener](http://docs.google.com/java/awt/event/WindowStateListener.html) l, [WindowStateListener](http://docs.google.com/java/awt/event/WindowStateListener.html) oldl)            Removes the old window-state-listener from window-state-listener-l and returns the resulting multicast listener. |
| protected static [EventListener](http://docs.google.com/java/util/EventListener.html) | [**removeInternal**](http://docs.google.com/java/awt/AWTEventMulticaster.html#removeInternal(java.util.EventListener,%20java.util.EventListener))([EventListener](http://docs.google.com/java/util/EventListener.html) l, [EventListener](http://docs.google.com/java/util/EventListener.html) oldl)            Returns the resulting multicast listener after removing the old listener from listener-l. |
| protected static void | [**save**](http://docs.google.com/java/awt/AWTEventMulticaster.html#save(java.io.ObjectOutputStream,%20java.lang.String,%20java.util.EventListener))([ObjectOutputStream](http://docs.google.com/java/io/ObjectOutputStream.html) s, [String](http://docs.google.com/java/lang/String.html) k, [EventListener](http://docs.google.com/java/util/EventListener.html) l) |
| protected  void | [**saveInternal**](http://docs.google.com/java/awt/AWTEventMulticaster.html#saveInternal(java.io.ObjectOutputStream,%20java.lang.String))([ObjectOutputStream](http://docs.google.com/java/io/ObjectOutputStream.html) s, [String](http://docs.google.com/java/lang/String.html) k) |
| void | [**textValueChanged**](http://docs.google.com/java/awt/AWTEventMulticaster.html#textValueChanged(java.awt.event.TextEvent))([TextEvent](http://docs.google.com/java/awt/event/TextEvent.html) e)            Invoked when the value of the text has changed. |
| void | [**windowActivated**](http://docs.google.com/java/awt/AWTEventMulticaster.html#windowActivated(java.awt.event.WindowEvent))([WindowEvent](http://docs.google.com/java/awt/event/WindowEvent.html) e)            Handles the windowActivated event by invoking the windowActivated methods on listener-a and listener-b. |
| void | [**windowClosed**](http://docs.google.com/java/awt/AWTEventMulticaster.html#windowClosed(java.awt.event.WindowEvent))([WindowEvent](http://docs.google.com/java/awt/event/WindowEvent.html) e)            Handles the windowClosed event by invoking the windowClosed methods on listener-a and listener-b. |
| void | [**windowClosing**](http://docs.google.com/java/awt/AWTEventMulticaster.html#windowClosing(java.awt.event.WindowEvent))([WindowEvent](http://docs.google.com/java/awt/event/WindowEvent.html) e)            Handles the windowClosing event by invoking the windowClosing methods on listener-a and listener-b. |
| void | [**windowDeactivated**](http://docs.google.com/java/awt/AWTEventMulticaster.html#windowDeactivated(java.awt.event.WindowEvent))([WindowEvent](http://docs.google.com/java/awt/event/WindowEvent.html) e)            Handles the windowDeactivated event by invoking the windowDeactivated methods on listener-a and listener-b. |
| void | [**windowDeiconified**](http://docs.google.com/java/awt/AWTEventMulticaster.html#windowDeiconified(java.awt.event.WindowEvent))([WindowEvent](http://docs.google.com/java/awt/event/WindowEvent.html) e)            Handles the windowDeiconfied event by invoking the windowDeiconified methods on listener-a and listener-b. |
| void | [**windowGainedFocus**](http://docs.google.com/java/awt/AWTEventMulticaster.html#windowGainedFocus(java.awt.event.WindowEvent))([WindowEvent](http://docs.google.com/java/awt/event/WindowEvent.html) e)            Handles the windowGainedFocus event by invoking the windowGainedFocus methods on listener-a and listener-b. |
| void | [**windowIconified**](http://docs.google.com/java/awt/AWTEventMulticaster.html#windowIconified(java.awt.event.WindowEvent))([WindowEvent](http://docs.google.com/java/awt/event/WindowEvent.html) e)            Handles the windowIconified event by invoking the windowIconified methods on listener-a and listener-b. |
| void | [**windowLostFocus**](http://docs.google.com/java/awt/AWTEventMulticaster.html#windowLostFocus(java.awt.event.WindowEvent))([WindowEvent](http://docs.google.com/java/awt/event/WindowEvent.html) e)            Handles the windowLostFocus event by invoking the windowLostFocus methods on listener-a and listener-b. |
| void | [**windowOpened**](http://docs.google.com/java/awt/AWTEventMulticaster.html#windowOpened(java.awt.event.WindowEvent))([WindowEvent](http://docs.google.com/java/awt/event/WindowEvent.html) e)            Handles the windowOpened event by invoking the windowOpened methods on listener-a and listener-b. |
| void | [**windowStateChanged**](http://docs.google.com/java/awt/AWTEventMulticaster.html#windowStateChanged(java.awt.event.WindowEvent))([WindowEvent](http://docs.google.com/java/awt/event/WindowEvent.html) e)            Handles the windowStateChanged event by invoking the windowStateChanged methods on listener-a and listener-b. |

| **Methods inherited from class java.lang.**[**Object**](http://docs.google.com/java/lang/Object.html) |
| --- |
| [clone](http://docs.google.com/java/lang/Object.html#clone()), [equals](http://docs.google.com/java/lang/Object.html#equals(java.lang.Object)), [finalize](http://docs.google.com/java/lang/Object.html#finalize()), [getClass](http://docs.google.com/java/lang/Object.html#getClass()), [hashCode](http://docs.google.com/java/lang/Object.html#hashCode()), [notify](http://docs.google.com/java/lang/Object.html#notify()), [notifyAll](http://docs.google.com/java/lang/Object.html#notifyAll()), [toString](http://docs.google.com/java/lang/Object.html#toString()), [wait](http://docs.google.com/java/lang/Object.html#wait()), [wait](http://docs.google.com/java/lang/Object.html#wait(long)), [wait](http://docs.google.com/java/lang/Object.html#wait(long,%20int)) |

| **Field Detail** |
| --- |

### a

protected final [EventListener](http://docs.google.com/java/util/EventListener.html) **a**

### b

protected final [EventListener](http://docs.google.com/java/util/EventListener.html) **b**

| **Constructor Detail** |
| --- |

### AWTEventMulticaster

protected **AWTEventMulticaster**([EventListener](http://docs.google.com/java/util/EventListener.html) a,  
 [EventListener](http://docs.google.com/java/util/EventListener.html) b)

Creates an event multicaster instance which chains listener-a with listener-b. Input parameters a and b should not be null, though implementations may vary in choosing whether or not to throw NullPointerException in that case.

**Parameters:**a - listener-ab - listener-b

| **Method Detail** |
| --- |

### remove

protected [EventListener](http://docs.google.com/java/util/EventListener.html) **remove**([EventListener](http://docs.google.com/java/util/EventListener.html) oldl)

Removes a listener from this multicaster.

The returned multicaster contains all the listeners in this multicaster with the exception of all occurrences of oldl. If the resulting multicaster contains only one regular listener the regular listener may be returned. If the resulting multicaster is empty, then null may be returned instead.

No exception is thrown if oldl is null.

**Parameters:**oldl - the listener to be removed **Returns:**resulting listener

### componentResized

public void **componentResized**([ComponentEvent](http://docs.google.com/java/awt/event/ComponentEvent.html) e)

Handles the componentResized event by invoking the componentResized methods on listener-a and listener-b.

**Specified by:**[componentResized](http://docs.google.com/java/awt/event/ComponentListener.html#componentResized(java.awt.event.ComponentEvent)) in interface [ComponentListener](http://docs.google.com/java/awt/event/ComponentListener.html) **Parameters:**e - the component event

### componentMoved

public void **componentMoved**([ComponentEvent](http://docs.google.com/java/awt/event/ComponentEvent.html) e)

Handles the componentMoved event by invoking the componentMoved methods on listener-a and listener-b.

**Specified by:**[componentMoved](http://docs.google.com/java/awt/event/ComponentListener.html#componentMoved(java.awt.event.ComponentEvent)) in interface [ComponentListener](http://docs.google.com/java/awt/event/ComponentListener.html) **Parameters:**e - the component event

### componentShown

public void **componentShown**([ComponentEvent](http://docs.google.com/java/awt/event/ComponentEvent.html) e)

Handles the componentShown event by invoking the componentShown methods on listener-a and listener-b.

**Specified by:**[componentShown](http://docs.google.com/java/awt/event/ComponentListener.html#componentShown(java.awt.event.ComponentEvent)) in interface [ComponentListener](http://docs.google.com/java/awt/event/ComponentListener.html) **Parameters:**e - the component event

### componentHidden

public void **componentHidden**([ComponentEvent](http://docs.google.com/java/awt/event/ComponentEvent.html) e)

Handles the componentHidden event by invoking the componentHidden methods on listener-a and listener-b.

**Specified by:**[componentHidden](http://docs.google.com/java/awt/event/ComponentListener.html#componentHidden(java.awt.event.ComponentEvent)) in interface [ComponentListener](http://docs.google.com/java/awt/event/ComponentListener.html) **Parameters:**e - the component event

### componentAdded

public void **componentAdded**([ContainerEvent](http://docs.google.com/java/awt/event/ContainerEvent.html) e)

Handles the componentAdded container event by invoking the componentAdded methods on listener-a and listener-b.

**Specified by:**[componentAdded](http://docs.google.com/java/awt/event/ContainerListener.html#componentAdded(java.awt.event.ContainerEvent)) in interface [ContainerListener](http://docs.google.com/java/awt/event/ContainerListener.html) **Parameters:**e - the component event

### componentRemoved

public void **componentRemoved**([ContainerEvent](http://docs.google.com/java/awt/event/ContainerEvent.html) e)

Handles the componentRemoved container event by invoking the componentRemoved methods on listener-a and listener-b.

**Specified by:**[componentRemoved](http://docs.google.com/java/awt/event/ContainerListener.html#componentRemoved(java.awt.event.ContainerEvent)) in interface [ContainerListener](http://docs.google.com/java/awt/event/ContainerListener.html) **Parameters:**e - the component event

### focusGained

public void **focusGained**([FocusEvent](http://docs.google.com/java/awt/event/FocusEvent.html) e)

Handles the focusGained event by invoking the focusGained methods on listener-a and listener-b.

**Specified by:**[focusGained](http://docs.google.com/java/awt/event/FocusListener.html#focusGained(java.awt.event.FocusEvent)) in interface [FocusListener](http://docs.google.com/java/awt/event/FocusListener.html) **Parameters:**e - the focus event

### focusLost

public void **focusLost**([FocusEvent](http://docs.google.com/java/awt/event/FocusEvent.html) e)

Handles the focusLost event by invoking the focusLost methods on listener-a and listener-b.

**Specified by:**[focusLost](http://docs.google.com/java/awt/event/FocusListener.html#focusLost(java.awt.event.FocusEvent)) in interface [FocusListener](http://docs.google.com/java/awt/event/FocusListener.html) **Parameters:**e - the focus event

### keyTyped

public void **keyTyped**([KeyEvent](http://docs.google.com/java/awt/event/KeyEvent.html) e)

Handles the keyTyped event by invoking the keyTyped methods on listener-a and listener-b.

**Specified by:**[keyTyped](http://docs.google.com/java/awt/event/KeyListener.html#keyTyped(java.awt.event.KeyEvent)) in interface [KeyListener](http://docs.google.com/java/awt/event/KeyListener.html) **Parameters:**e - the key event

### keyPressed

public void **keyPressed**([KeyEvent](http://docs.google.com/java/awt/event/KeyEvent.html) e)

Handles the keyPressed event by invoking the keyPressed methods on listener-a and listener-b.

**Specified by:**[keyPressed](http://docs.google.com/java/awt/event/KeyListener.html#keyPressed(java.awt.event.KeyEvent)) in interface [KeyListener](http://docs.google.com/java/awt/event/KeyListener.html) **Parameters:**e - the key event

### keyReleased

public void **keyReleased**([KeyEvent](http://docs.google.com/java/awt/event/KeyEvent.html) e)

Handles the keyReleased event by invoking the keyReleased methods on listener-a and listener-b.

**Specified by:**[keyReleased](http://docs.google.com/java/awt/event/KeyListener.html#keyReleased(java.awt.event.KeyEvent)) in interface [KeyListener](http://docs.google.com/java/awt/event/KeyListener.html) **Parameters:**e - the key event

### mouseClicked

public void **mouseClicked**([MouseEvent](http://docs.google.com/java/awt/event/MouseEvent.html) e)

Handles the mouseClicked event by invoking the mouseClicked methods on listener-a and listener-b.

**Specified by:**[mouseClicked](http://docs.google.com/java/awt/event/MouseListener.html#mouseClicked(java.awt.event.MouseEvent)) in interface [MouseListener](http://docs.google.com/java/awt/event/MouseListener.html) **Parameters:**e - the mouse event

### mousePressed

public void **mousePressed**([MouseEvent](http://docs.google.com/java/awt/event/MouseEvent.html) e)

Handles the mousePressed event by invoking the mousePressed methods on listener-a and listener-b.

**Specified by:**[mousePressed](http://docs.google.com/java/awt/event/MouseListener.html#mousePressed(java.awt.event.MouseEvent)) in interface [MouseListener](http://docs.google.com/java/awt/event/MouseListener.html) **Parameters:**e - the mouse event

### mouseReleased

public void **mouseReleased**([MouseEvent](http://docs.google.com/java/awt/event/MouseEvent.html) e)

Handles the mouseReleased event by invoking the mouseReleased methods on listener-a and listener-b.

**Specified by:**[mouseReleased](http://docs.google.com/java/awt/event/MouseListener.html#mouseReleased(java.awt.event.MouseEvent)) in interface [MouseListener](http://docs.google.com/java/awt/event/MouseListener.html) **Parameters:**e - the mouse event

### mouseEntered

public void **mouseEntered**([MouseEvent](http://docs.google.com/java/awt/event/MouseEvent.html) e)

Handles the mouseEntered event by invoking the mouseEntered methods on listener-a and listener-b.

**Specified by:**[mouseEntered](http://docs.google.com/java/awt/event/MouseListener.html#mouseEntered(java.awt.event.MouseEvent)) in interface [MouseListener](http://docs.google.com/java/awt/event/MouseListener.html) **Parameters:**e - the mouse event

### mouseExited

public void **mouseExited**([MouseEvent](http://docs.google.com/java/awt/event/MouseEvent.html) e)

Handles the mouseExited event by invoking the mouseExited methods on listener-a and listener-b.

**Specified by:**[mouseExited](http://docs.google.com/java/awt/event/MouseListener.html#mouseExited(java.awt.event.MouseEvent)) in interface [MouseListener](http://docs.google.com/java/awt/event/MouseListener.html) **Parameters:**e - the mouse event

### mouseDragged

public void **mouseDragged**([MouseEvent](http://docs.google.com/java/awt/event/MouseEvent.html) e)

Handles the mouseDragged event by invoking the mouseDragged methods on listener-a and listener-b.

**Specified by:**[mouseDragged](http://docs.google.com/java/awt/event/MouseMotionListener.html#mouseDragged(java.awt.event.MouseEvent)) in interface [MouseMotionListener](http://docs.google.com/java/awt/event/MouseMotionListener.html) **Parameters:**e - the mouse event

### mouseMoved

public void **mouseMoved**([MouseEvent](http://docs.google.com/java/awt/event/MouseEvent.html) e)

Handles the mouseMoved event by invoking the mouseMoved methods on listener-a and listener-b.

**Specified by:**[mouseMoved](http://docs.google.com/java/awt/event/MouseMotionListener.html#mouseMoved(java.awt.event.MouseEvent)) in interface [MouseMotionListener](http://docs.google.com/java/awt/event/MouseMotionListener.html) **Parameters:**e - the mouse event

### windowOpened

public void **windowOpened**([WindowEvent](http://docs.google.com/java/awt/event/WindowEvent.html) e)

Handles the windowOpened event by invoking the windowOpened methods on listener-a and listener-b.

**Specified by:**[windowOpened](http://docs.google.com/java/awt/event/WindowListener.html#windowOpened(java.awt.event.WindowEvent)) in interface [WindowListener](http://docs.google.com/java/awt/event/WindowListener.html) **Parameters:**e - the window event

### windowClosing

public void **windowClosing**([WindowEvent](http://docs.google.com/java/awt/event/WindowEvent.html) e)

Handles the windowClosing event by invoking the windowClosing methods on listener-a and listener-b.

**Specified by:**[windowClosing](http://docs.google.com/java/awt/event/WindowListener.html#windowClosing(java.awt.event.WindowEvent)) in interface [WindowListener](http://docs.google.com/java/awt/event/WindowListener.html) **Parameters:**e - the window event

### windowClosed

public void **windowClosed**([WindowEvent](http://docs.google.com/java/awt/event/WindowEvent.html) e)

Handles the windowClosed event by invoking the windowClosed methods on listener-a and listener-b.

**Specified by:**[windowClosed](http://docs.google.com/java/awt/event/WindowListener.html#windowClosed(java.awt.event.WindowEvent)) in interface [WindowListener](http://docs.google.com/java/awt/event/WindowListener.html) **Parameters:**e - the window event

### windowIconified

public void **windowIconified**([WindowEvent](http://docs.google.com/java/awt/event/WindowEvent.html) e)

Handles the windowIconified event by invoking the windowIconified methods on listener-a and listener-b.

**Specified by:**[windowIconified](http://docs.google.com/java/awt/event/WindowListener.html#windowIconified(java.awt.event.WindowEvent)) in interface [WindowListener](http://docs.google.com/java/awt/event/WindowListener.html) **Parameters:**e - the window event**See Also:**[Frame.setIconImage(java.awt.Image)](http://docs.google.com/java/awt/Frame.html#setIconImage(java.awt.Image))

### windowDeiconified

public void **windowDeiconified**([WindowEvent](http://docs.google.com/java/awt/event/WindowEvent.html) e)

Handles the windowDeiconfied event by invoking the windowDeiconified methods on listener-a and listener-b.

**Specified by:**[windowDeiconified](http://docs.google.com/java/awt/event/WindowListener.html#windowDeiconified(java.awt.event.WindowEvent)) in interface [WindowListener](http://docs.google.com/java/awt/event/WindowListener.html) **Parameters:**e - the window event

### windowActivated

public void **windowActivated**([WindowEvent](http://docs.google.com/java/awt/event/WindowEvent.html) e)

Handles the windowActivated event by invoking the windowActivated methods on listener-a and listener-b.

**Specified by:**[windowActivated](http://docs.google.com/java/awt/event/WindowListener.html#windowActivated(java.awt.event.WindowEvent)) in interface [WindowListener](http://docs.google.com/java/awt/event/WindowListener.html) **Parameters:**e - the window event

### windowDeactivated

public void **windowDeactivated**([WindowEvent](http://docs.google.com/java/awt/event/WindowEvent.html) e)

Handles the windowDeactivated event by invoking the windowDeactivated methods on listener-a and listener-b.

**Specified by:**[windowDeactivated](http://docs.google.com/java/awt/event/WindowListener.html#windowDeactivated(java.awt.event.WindowEvent)) in interface [WindowListener](http://docs.google.com/java/awt/event/WindowListener.html) **Parameters:**e - the window event

### windowStateChanged

public void **windowStateChanged**([WindowEvent](http://docs.google.com/java/awt/event/WindowEvent.html) e)

Handles the windowStateChanged event by invoking the windowStateChanged methods on listener-a and listener-b.

**Specified by:**[windowStateChanged](http://docs.google.com/java/awt/event/WindowStateListener.html#windowStateChanged(java.awt.event.WindowEvent)) in interface [WindowStateListener](http://docs.google.com/java/awt/event/WindowStateListener.html) **Parameters:**e - the window event**Since:** 1.4

### windowGainedFocus

public void **windowGainedFocus**([WindowEvent](http://docs.google.com/java/awt/event/WindowEvent.html) e)

Handles the windowGainedFocus event by invoking the windowGainedFocus methods on listener-a and listener-b.

**Specified by:**[windowGainedFocus](http://docs.google.com/java/awt/event/WindowFocusListener.html#windowGainedFocus(java.awt.event.WindowEvent)) in interface [WindowFocusListener](http://docs.google.com/java/awt/event/WindowFocusListener.html) **Parameters:**e - the window event**Since:** 1.4

### windowLostFocus

public void **windowLostFocus**([WindowEvent](http://docs.google.com/java/awt/event/WindowEvent.html) e)

Handles the windowLostFocus event by invoking the windowLostFocus methods on listener-a and listener-b.

**Specified by:**[windowLostFocus](http://docs.google.com/java/awt/event/WindowFocusListener.html#windowLostFocus(java.awt.event.WindowEvent)) in interface [WindowFocusListener](http://docs.google.com/java/awt/event/WindowFocusListener.html) **Parameters:**e - the window event**Since:** 1.4

### actionPerformed

public void **actionPerformed**([ActionEvent](http://docs.google.com/java/awt/event/ActionEvent.html) e)

Handles the actionPerformed event by invoking the actionPerformed methods on listener-a and listener-b.

**Specified by:**[actionPerformed](http://docs.google.com/java/awt/event/ActionListener.html#actionPerformed(java.awt.event.ActionEvent)) in interface [ActionListener](http://docs.google.com/java/awt/event/ActionListener.html) **Parameters:**e - the action event

### itemStateChanged

public void **itemStateChanged**([ItemEvent](http://docs.google.com/java/awt/event/ItemEvent.html) e)

Handles the itemStateChanged event by invoking the itemStateChanged methods on listener-a and listener-b.

**Specified by:**[itemStateChanged](http://docs.google.com/java/awt/event/ItemListener.html#itemStateChanged(java.awt.event.ItemEvent)) in interface [ItemListener](http://docs.google.com/java/awt/event/ItemListener.html) **Parameters:**e - the item event

### adjustmentValueChanged

public void **adjustmentValueChanged**([AdjustmentEvent](http://docs.google.com/java/awt/event/AdjustmentEvent.html) e)

Handles the adjustmentValueChanged event by invoking the adjustmentValueChanged methods on listener-a and listener-b.

**Specified by:**[adjustmentValueChanged](http://docs.google.com/java/awt/event/AdjustmentListener.html#adjustmentValueChanged(java.awt.event.AdjustmentEvent)) in interface [AdjustmentListener](http://docs.google.com/java/awt/event/AdjustmentListener.html) **Parameters:**e - the adjustment event

### textValueChanged

public void **textValueChanged**([TextEvent](http://docs.google.com/java/awt/event/TextEvent.html) e)

**Description copied from interface:** [**TextListener**](http://docs.google.com/java/awt/event/TextListener.html#textValueChanged(java.awt.event.TextEvent)) Invoked when the value of the text has changed. The code written for this method performs the operations that need to occur when text changes.

**Specified by:**[textValueChanged](http://docs.google.com/java/awt/event/TextListener.html#textValueChanged(java.awt.event.TextEvent)) in interface [TextListener](http://docs.google.com/java/awt/event/TextListener.html)

### inputMethodTextChanged

public void **inputMethodTextChanged**([InputMethodEvent](http://docs.google.com/java/awt/event/InputMethodEvent.html) e)

Handles the inputMethodTextChanged event by invoking the inputMethodTextChanged methods on listener-a and listener-b.

**Specified by:**[inputMethodTextChanged](http://docs.google.com/java/awt/event/InputMethodListener.html#inputMethodTextChanged(java.awt.event.InputMethodEvent)) in interface [InputMethodListener](http://docs.google.com/java/awt/event/InputMethodListener.html) **Parameters:**e - the item event

### caretPositionChanged

public void **caretPositionChanged**([InputMethodEvent](http://docs.google.com/java/awt/event/InputMethodEvent.html) e)

Handles the caretPositionChanged event by invoking the caretPositionChanged methods on listener-a and listener-b.

**Specified by:**[caretPositionChanged](http://docs.google.com/java/awt/event/InputMethodListener.html#caretPositionChanged(java.awt.event.InputMethodEvent)) in interface [InputMethodListener](http://docs.google.com/java/awt/event/InputMethodListener.html) **Parameters:**e - the item event

### hierarchyChanged

public void **hierarchyChanged**([HierarchyEvent](http://docs.google.com/java/awt/event/HierarchyEvent.html) e)

Handles the hierarchyChanged event by invoking the hierarchyChanged methods on listener-a and listener-b.

**Specified by:**[hierarchyChanged](http://docs.google.com/java/awt/event/HierarchyListener.html#hierarchyChanged(java.awt.event.HierarchyEvent)) in interface [HierarchyListener](http://docs.google.com/java/awt/event/HierarchyListener.html) **Parameters:**e - the item event**Since:** 1.3 **See Also:**[HierarchyEvent.getChangeFlags()](http://docs.google.com/java/awt/event/HierarchyEvent.html#getChangeFlags())

### ancestorMoved

public void **ancestorMoved**([HierarchyEvent](http://docs.google.com/java/awt/event/HierarchyEvent.html) e)

Handles the ancestorMoved event by invoking the ancestorMoved methods on listener-a and listener-b.

**Specified by:**[ancestorMoved](http://docs.google.com/java/awt/event/HierarchyBoundsListener.html#ancestorMoved(java.awt.event.HierarchyEvent)) in interface [HierarchyBoundsListener](http://docs.google.com/java/awt/event/HierarchyBoundsListener.html) **Parameters:**e - the item event**Since:** 1.3

### ancestorResized

public void **ancestorResized**([HierarchyEvent](http://docs.google.com/java/awt/event/HierarchyEvent.html) e)

Handles the ancestorResized event by invoking the ancestorResized methods on listener-a and listener-b.

**Specified by:**[ancestorResized](http://docs.google.com/java/awt/event/HierarchyBoundsListener.html#ancestorResized(java.awt.event.HierarchyEvent)) in interface [HierarchyBoundsListener](http://docs.google.com/java/awt/event/HierarchyBoundsListener.html) **Parameters:**e - the item event**Since:** 1.3

### mouseWheelMoved

public void **mouseWheelMoved**([MouseWheelEvent](http://docs.google.com/java/awt/event/MouseWheelEvent.html) e)

Handles the mouseWheelMoved event by invoking the mouseWheelMoved methods on listener-a and listener-b.

**Specified by:**[mouseWheelMoved](http://docs.google.com/java/awt/event/MouseWheelListener.html#mouseWheelMoved(java.awt.event.MouseWheelEvent)) in interface [MouseWheelListener](http://docs.google.com/java/awt/event/MouseWheelListener.html) **Parameters:**e - the mouse event**Since:** 1.4 **See Also:**[MouseWheelEvent](http://docs.google.com/java/awt/event/MouseWheelEvent.html)

### add

public static [ComponentListener](http://docs.google.com/java/awt/event/ComponentListener.html) **add**([ComponentListener](http://docs.google.com/java/awt/event/ComponentListener.html) a,  
 [ComponentListener](http://docs.google.com/java/awt/event/ComponentListener.html) b)

Adds component-listener-a with component-listener-b and returns the resulting multicast listener.

**Parameters:**a - component-listener-ab - component-listener-b

### add

public static [ContainerListener](http://docs.google.com/java/awt/event/ContainerListener.html) **add**([ContainerListener](http://docs.google.com/java/awt/event/ContainerListener.html) a,  
 [ContainerListener](http://docs.google.com/java/awt/event/ContainerListener.html) b)

Adds container-listener-a with container-listener-b and returns the resulting multicast listener.

**Parameters:**a - container-listener-ab - container-listener-b

### add

public static [FocusListener](http://docs.google.com/java/awt/event/FocusListener.html) **add**([FocusListener](http://docs.google.com/java/awt/event/FocusListener.html) a,  
 [FocusListener](http://docs.google.com/java/awt/event/FocusListener.html) b)

Adds focus-listener-a with focus-listener-b and returns the resulting multicast listener.

**Parameters:**a - focus-listener-ab - focus-listener-b

### add

public static [KeyListener](http://docs.google.com/java/awt/event/KeyListener.html) **add**([KeyListener](http://docs.google.com/java/awt/event/KeyListener.html) a,  
 [KeyListener](http://docs.google.com/java/awt/event/KeyListener.html) b)

Adds key-listener-a with key-listener-b and returns the resulting multicast listener.

**Parameters:**a - key-listener-ab - key-listener-b

### add

public static [MouseListener](http://docs.google.com/java/awt/event/MouseListener.html) **add**([MouseListener](http://docs.google.com/java/awt/event/MouseListener.html) a,  
 [MouseListener](http://docs.google.com/java/awt/event/MouseListener.html) b)

Adds mouse-listener-a with mouse-listener-b and returns the resulting multicast listener.

**Parameters:**a - mouse-listener-ab - mouse-listener-b

### add

public static [MouseMotionListener](http://docs.google.com/java/awt/event/MouseMotionListener.html) **add**([MouseMotionListener](http://docs.google.com/java/awt/event/MouseMotionListener.html) a,  
 [MouseMotionListener](http://docs.google.com/java/awt/event/MouseMotionListener.html) b)

Adds mouse-motion-listener-a with mouse-motion-listener-b and returns the resulting multicast listener.

**Parameters:**a - mouse-motion-listener-ab - mouse-motion-listener-b

### add

public static [WindowListener](http://docs.google.com/java/awt/event/WindowListener.html) **add**([WindowListener](http://docs.google.com/java/awt/event/WindowListener.html) a,  
 [WindowListener](http://docs.google.com/java/awt/event/WindowListener.html) b)

Adds window-listener-a with window-listener-b and returns the resulting multicast listener.

**Parameters:**a - window-listener-ab - window-listener-b

### add

public static [WindowStateListener](http://docs.google.com/java/awt/event/WindowStateListener.html) **add**([WindowStateListener](http://docs.google.com/java/awt/event/WindowStateListener.html) a,  
 [WindowStateListener](http://docs.google.com/java/awt/event/WindowStateListener.html) b)

Adds window-state-listener-a with window-state-listener-b and returns the resulting multicast listener.

**Parameters:**a - window-state-listener-ab - window-state-listener-b**Since:** 1.4

### add

public static [WindowFocusListener](http://docs.google.com/java/awt/event/WindowFocusListener.html) **add**([WindowFocusListener](http://docs.google.com/java/awt/event/WindowFocusListener.html) a,  
 [WindowFocusListener](http://docs.google.com/java/awt/event/WindowFocusListener.html) b)

Adds window-focus-listener-a with window-focus-listener-b and returns the resulting multicast listener.

**Parameters:**a - window-focus-listener-ab - window-focus-listener-b**Since:** 1.4

### add

public static [ActionListener](http://docs.google.com/java/awt/event/ActionListener.html) **add**([ActionListener](http://docs.google.com/java/awt/event/ActionListener.html) a,  
 [ActionListener](http://docs.google.com/java/awt/event/ActionListener.html) b)

Adds action-listener-a with action-listener-b and returns the resulting multicast listener.

**Parameters:**a - action-listener-ab - action-listener-b

### add

public static [ItemListener](http://docs.google.com/java/awt/event/ItemListener.html) **add**([ItemListener](http://docs.google.com/java/awt/event/ItemListener.html) a,  
 [ItemListener](http://docs.google.com/java/awt/event/ItemListener.html) b)

Adds item-listener-a with item-listener-b and returns the resulting multicast listener.

**Parameters:**a - item-listener-ab - item-listener-b

### add

public static [AdjustmentListener](http://docs.google.com/java/awt/event/AdjustmentListener.html) **add**([AdjustmentListener](http://docs.google.com/java/awt/event/AdjustmentListener.html) a,  
 [AdjustmentListener](http://docs.google.com/java/awt/event/AdjustmentListener.html) b)

Adds adjustment-listener-a with adjustment-listener-b and returns the resulting multicast listener.

**Parameters:**a - adjustment-listener-ab - adjustment-listener-b

### add

public static [TextListener](http://docs.google.com/java/awt/event/TextListener.html) **add**([TextListener](http://docs.google.com/java/awt/event/TextListener.html) a,  
 [TextListener](http://docs.google.com/java/awt/event/TextListener.html) b)

### add

public static [InputMethodListener](http://docs.google.com/java/awt/event/InputMethodListener.html) **add**([InputMethodListener](http://docs.google.com/java/awt/event/InputMethodListener.html) a,  
 [InputMethodListener](http://docs.google.com/java/awt/event/InputMethodListener.html) b)

Adds input-method-listener-a with input-method-listener-b and returns the resulting multicast listener.

**Parameters:**a - input-method-listener-ab - input-method-listener-b

### add

public static [HierarchyListener](http://docs.google.com/java/awt/event/HierarchyListener.html) **add**([HierarchyListener](http://docs.google.com/java/awt/event/HierarchyListener.html) a,  
 [HierarchyListener](http://docs.google.com/java/awt/event/HierarchyListener.html) b)

Adds hierarchy-listener-a with hierarchy-listener-b and returns the resulting multicast listener.

**Parameters:**a - hierarchy-listener-ab - hierarchy-listener-b**Since:** 1.3

### add

public static [HierarchyBoundsListener](http://docs.google.com/java/awt/event/HierarchyBoundsListener.html) **add**([HierarchyBoundsListener](http://docs.google.com/java/awt/event/HierarchyBoundsListener.html) a,  
 [HierarchyBoundsListener](http://docs.google.com/java/awt/event/HierarchyBoundsListener.html) b)

Adds hierarchy-bounds-listener-a with hierarchy-bounds-listener-b and returns the resulting multicast listener.

**Parameters:**a - hierarchy-bounds-listener-ab - hierarchy-bounds-listener-b**Since:** 1.3

### add

public static [MouseWheelListener](http://docs.google.com/java/awt/event/MouseWheelListener.html) **add**([MouseWheelListener](http://docs.google.com/java/awt/event/MouseWheelListener.html) a,  
 [MouseWheelListener](http://docs.google.com/java/awt/event/MouseWheelListener.html) b)

Adds mouse-wheel-listener-a with mouse-wheel-listener-b and returns the resulting multicast listener.

**Parameters:**a - mouse-wheel-listener-ab - mouse-wheel-listener-b**Since:** 1.4

### remove

public static [ComponentListener](http://docs.google.com/java/awt/event/ComponentListener.html) **remove**([ComponentListener](http://docs.google.com/java/awt/event/ComponentListener.html) l,  
 [ComponentListener](http://docs.google.com/java/awt/event/ComponentListener.html) oldl)

Removes the old component-listener from component-listener-l and returns the resulting multicast listener.

**Parameters:**l - component-listener-loldl - the component-listener being removed

### remove

public static [ContainerListener](http://docs.google.com/java/awt/event/ContainerListener.html) **remove**([ContainerListener](http://docs.google.com/java/awt/event/ContainerListener.html) l,  
 [ContainerListener](http://docs.google.com/java/awt/event/ContainerListener.html) oldl)

Removes the old container-listener from container-listener-l and returns the resulting multicast listener.

**Parameters:**l - container-listener-loldl - the container-listener being removed

### remove

public static [FocusListener](http://docs.google.com/java/awt/event/FocusListener.html) **remove**([FocusListener](http://docs.google.com/java/awt/event/FocusListener.html) l,  
 [FocusListener](http://docs.google.com/java/awt/event/FocusListener.html) oldl)

Removes the old focus-listener from focus-listener-l and returns the resulting multicast listener.

**Parameters:**l - focus-listener-loldl - the focus-listener being removed

### remove

public static [KeyListener](http://docs.google.com/java/awt/event/KeyListener.html) **remove**([KeyListener](http://docs.google.com/java/awt/event/KeyListener.html) l,  
 [KeyListener](http://docs.google.com/java/awt/event/KeyListener.html) oldl)

Removes the old key-listener from key-listener-l and returns the resulting multicast listener.

**Parameters:**l - key-listener-loldl - the key-listener being removed

### remove

public static [MouseListener](http://docs.google.com/java/awt/event/MouseListener.html) **remove**([MouseListener](http://docs.google.com/java/awt/event/MouseListener.html) l,  
 [MouseListener](http://docs.google.com/java/awt/event/MouseListener.html) oldl)

Removes the old mouse-listener from mouse-listener-l and returns the resulting multicast listener.

**Parameters:**l - mouse-listener-loldl - the mouse-listener being removed

### remove

public static [MouseMotionListener](http://docs.google.com/java/awt/event/MouseMotionListener.html) **remove**([MouseMotionListener](http://docs.google.com/java/awt/event/MouseMotionListener.html) l,  
 [MouseMotionListener](http://docs.google.com/java/awt/event/MouseMotionListener.html) oldl)

Removes the old mouse-motion-listener from mouse-motion-listener-l and returns the resulting multicast listener.

**Parameters:**l - mouse-motion-listener-loldl - the mouse-motion-listener being removed

### remove

public static [WindowListener](http://docs.google.com/java/awt/event/WindowListener.html) **remove**([WindowListener](http://docs.google.com/java/awt/event/WindowListener.html) l,  
 [WindowListener](http://docs.google.com/java/awt/event/WindowListener.html) oldl)

Removes the old window-listener from window-listener-l and returns the resulting multicast listener.

**Parameters:**l - window-listener-loldl - the window-listener being removed

### remove

public static [WindowStateListener](http://docs.google.com/java/awt/event/WindowStateListener.html) **remove**([WindowStateListener](http://docs.google.com/java/awt/event/WindowStateListener.html) l,  
 [WindowStateListener](http://docs.google.com/java/awt/event/WindowStateListener.html) oldl)

Removes the old window-state-listener from window-state-listener-l and returns the resulting multicast listener.

**Parameters:**l - window-state-listener-loldl - the window-state-listener being removed**Since:** 1.4

### remove

public static [WindowFocusListener](http://docs.google.com/java/awt/event/WindowFocusListener.html) **remove**([WindowFocusListener](http://docs.google.com/java/awt/event/WindowFocusListener.html) l,  
 [WindowFocusListener](http://docs.google.com/java/awt/event/WindowFocusListener.html) oldl)

Removes the old window-focus-listener from window-focus-listener-l and returns the resulting multicast listener.

**Parameters:**l - window-focus-listener-loldl - the window-focus-listener being removed**Since:** 1.4

### remove

public static [ActionListener](http://docs.google.com/java/awt/event/ActionListener.html) **remove**([ActionListener](http://docs.google.com/java/awt/event/ActionListener.html) l,  
 [ActionListener](http://docs.google.com/java/awt/event/ActionListener.html) oldl)

Removes the old action-listener from action-listener-l and returns the resulting multicast listener.

**Parameters:**l - action-listener-loldl - the action-listener being removed

### remove

public static [ItemListener](http://docs.google.com/java/awt/event/ItemListener.html) **remove**([ItemListener](http://docs.google.com/java/awt/event/ItemListener.html) l,  
 [ItemListener](http://docs.google.com/java/awt/event/ItemListener.html) oldl)

Removes the old item-listener from item-listener-l and returns the resulting multicast listener.

**Parameters:**l - item-listener-loldl - the item-listener being removed

### remove

public static [AdjustmentListener](http://docs.google.com/java/awt/event/AdjustmentListener.html) **remove**([AdjustmentListener](http://docs.google.com/java/awt/event/AdjustmentListener.html) l,  
 [AdjustmentListener](http://docs.google.com/java/awt/event/AdjustmentListener.html) oldl)

Removes the old adjustment-listener from adjustment-listener-l and returns the resulting multicast listener.

**Parameters:**l - adjustment-listener-loldl - the adjustment-listener being removed

### remove

public static [TextListener](http://docs.google.com/java/awt/event/TextListener.html) **remove**([TextListener](http://docs.google.com/java/awt/event/TextListener.html) l,  
 [TextListener](http://docs.google.com/java/awt/event/TextListener.html) oldl)

### remove

public static [InputMethodListener](http://docs.google.com/java/awt/event/InputMethodListener.html) **remove**([InputMethodListener](http://docs.google.com/java/awt/event/InputMethodListener.html) l,  
 [InputMethodListener](http://docs.google.com/java/awt/event/InputMethodListener.html) oldl)

Removes the old input-method-listener from input-method-listener-l and returns the resulting multicast listener.

**Parameters:**l - input-method-listener-loldl - the input-method-listener being removed

### remove

public static [HierarchyListener](http://docs.google.com/java/awt/event/HierarchyListener.html) **remove**([HierarchyListener](http://docs.google.com/java/awt/event/HierarchyListener.html) l,  
 [HierarchyListener](http://docs.google.com/java/awt/event/HierarchyListener.html) oldl)

Removes the old hierarchy-listener from hierarchy-listener-l and returns the resulting multicast listener.

**Parameters:**l - hierarchy-listener-loldl - the hierarchy-listener being removed**Since:** 1.3

### remove

public static [HierarchyBoundsListener](http://docs.google.com/java/awt/event/HierarchyBoundsListener.html) **remove**([HierarchyBoundsListener](http://docs.google.com/java/awt/event/HierarchyBoundsListener.html) l,  
 [HierarchyBoundsListener](http://docs.google.com/java/awt/event/HierarchyBoundsListener.html) oldl)

Removes the old hierarchy-bounds-listener from hierarchy-bounds-listener-l and returns the resulting multicast listener.

**Parameters:**l - hierarchy-bounds-listener-loldl - the hierarchy-bounds-listener being removed**Since:** 1.3

### remove

public static [MouseWheelListener](http://docs.google.com/java/awt/event/MouseWheelListener.html) **remove**([MouseWheelListener](http://docs.google.com/java/awt/event/MouseWheelListener.html) l,  
 [MouseWheelListener](http://docs.google.com/java/awt/event/MouseWheelListener.html) oldl)

Removes the old mouse-wheel-listener from mouse-wheel-listener-l and returns the resulting multicast listener.

**Parameters:**l - mouse-wheel-listener-loldl - the mouse-wheel-listener being removed**Since:** 1.4

### addInternal

protected static [EventListener](http://docs.google.com/java/util/EventListener.html) **addInternal**([EventListener](http://docs.google.com/java/util/EventListener.html) a,  
 [EventListener](http://docs.google.com/java/util/EventListener.html) b)

Returns the resulting multicast listener from adding listener-a and listener-b together. If listener-a is null, it returns listener-b; If listener-b is null, it returns listener-a If neither are null, then it creates and returns a new AWTEventMulticaster instance which chains a with b.

**Parameters:**a - event listener-ab - event listener-b

### removeInternal

protected static [EventListener](http://docs.google.com/java/util/EventListener.html) **removeInternal**([EventListener](http://docs.google.com/java/util/EventListener.html) l,  
 [EventListener](http://docs.google.com/java/util/EventListener.html) oldl)

Returns the resulting multicast listener after removing the old listener from listener-l. If listener-l equals the old listener OR listener-l is null, returns null. Else if listener-l is an instance of AWTEventMulticaster, then it removes the old listener from it. Else, returns listener l.

**Parameters:**l - the listener being removed fromoldl - the listener being removed

### saveInternal

protected void **saveInternal**([ObjectOutputStream](http://docs.google.com/java/io/ObjectOutputStream.html) s,  
 [String](http://docs.google.com/java/lang/String.html) k)  
 throws [IOException](http://docs.google.com/java/io/IOException.html)

**Throws:** [IOException](http://docs.google.com/java/io/IOException.html)

### save

protected static void **save**([ObjectOutputStream](http://docs.google.com/java/io/ObjectOutputStream.html) s,  
 [String](http://docs.google.com/java/lang/String.html) k,  
 [EventListener](http://docs.google.com/java/util/EventListener.html) l)  
 throws [IOException](http://docs.google.com/java/io/IOException.html)

**Throws:** [IOException](http://docs.google.com/java/io/IOException.html)

### getListeners

public static <T extends [EventListener](http://docs.google.com/java/util/EventListener.html)> T[] **getListeners**([EventListener](http://docs.google.com/java/util/EventListener.html) l,  
 [Class](http://docs.google.com/java/lang/Class.html)<T> listenerType)

Returns an array of all the objects chained as *Foo*Listeners by the specified java.util.EventListener. *Foo*Listeners are chained by the AWTEventMulticaster using the add*Foo*Listener method. If a null listener is specified, this method returns an empty array. If the specified listener is not an instance of AWTEventMulticaster, this method returns an array which contains only the specified listener. If no such listeners are chanined, this method returns an empty array.

**Parameters:**l - the specified java.util.EventListenerlistenerType - the type of listeners requested; this parameter should specify an interface that descends from java.util.EventListener **Returns:**an array of all objects chained as *Foo*Listeners by the specified multicast listener, or an empty array if no such listeners have been chained by the specified multicast listener **Throws:** [NullPointerException](http://docs.google.com/java/lang/NullPointerException.html) - if the specified listenertype parameter is null [ClassCastException](http://docs.google.com/java/lang/ClassCastException.html) - if listenerType doesn't specify a class or interface that implements java.util.EventListener**Since:** 1.4

| | [**Overview**](http://docs.google.com/overview-summary.html) | [**Package**](http://docs.google.com/package-summary.html) | **Class** | [**Use**](http://docs.google.com/class-use/AWTEventMulticaster.html) | [**Tree**](http://docs.google.com/package-tree.html) | [**Deprecated**](http://docs.google.com/deprecated-list.html) | [**Index**](http://docs.google.com/index-files/index-1.html) | [**Help**](http://docs.google.com/help-doc.html) | | --- | --- | --- | --- | --- | --- | --- | --- | | | ***Java™ Platform***  ***Standard Ed. 6*** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| [**PREV CLASS**](http://docs.google.com/java/awt/AWTEvent.html)   [**NEXT CLASS**](http://docs.google.com/java/awt/AWTException.html) | [**FRAMES**](http://docs.google.com/index.html?java/awt/AWTEventMulticaster.html)    [**NO FRAMES**](http://docs.google.com/AWTEventMulticaster.html)     [**All Classes**](http://docs.google.com/allclasses-noframe.html) |
| SUMMARY: NESTED | [FIELD](#3znysh7) | [CONSTR](#2et92p0) | [METHOD](#tyjcwt) | DETAIL: [FIELD](#1t3h5sf) | [CONSTR](#17dp8vu) | [METHOD](#26in1rg) |

[Submit a bug or feature](http://bugs.sun.com/services/bugreport/index.jsp)

For further API reference and developer documentation, see [Java SE Developer Documentation](http://docs.google.com/webnotes/devdocs-vs-specs.html). That documentation contains more detailed, developer-targeted descriptions, with conceptual overviews, definitions of terms, workarounds, and working code examples.

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