| | [**Package**](http://docs.google.com/package-summary.html) | **Class** | [**Tree**](http://docs.google.com/package-tree.html) | [**Deprecated**](http://docs.google.com/deprecated-list.html) | [**Index**](http://docs.google.com/index-all.html) | [**Help**](http://docs.google.com/help-doc.html) | | --- | --- | --- | --- | --- | --- | | |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| [**PREV CLASS**](http://docs.google.com/Wolf.html)   NEXT CLASS | [**FRAMES**](http://docs.google.com/index.html?World.html)    [**NO FRAMES**](http://docs.google.com/World.html)     [**All Classes**](http://docs.google.com/allclasses-noframe.html) |
| SUMMARY: [NESTED](#2et92p0) | [FIELD](#4d34og8) | [CONSTR](#3rdcrjn) | [METHOD](#26in1rg) | DETAIL: FIELD | [CONSTR](#2jxsxqh) | [METHOD](#4i7ojhp) |

## Class World

[java.lang.Object](http://java.sun.com/javase/6/docs/api/java/lang/Object.html?is-external=true)  
 [java.awt.Component](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true)  
 [java.awt.Container](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true)  
 [javax.swing.JComponent](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true)  
 **World**

**All Implemented Interfaces:** [ImageObserver](http://java.sun.com/javase/6/docs/api/java/awt/image/ImageObserver.html?is-external=true), [MenuContainer](http://java.sun.com/javase/6/docs/api/java/awt/MenuContainer.html?is-external=true), [Serializable](http://java.sun.com/javase/6/docs/api/java/io/Serializable.html?is-external=true), [ModelDisplay](http://docs.google.com/ModelDisplay.html)

public class **World**extends [JComponent](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true)implements [ModelDisplay](http://docs.google.com/ModelDisplay.html)

Class to represent a 2d world that can hold turtles and display them Copyright Georgia Institute of Technology 2004

**Author:** Barb Ericson ericson@cc.gatech.edu **See Also:**[Serialized Form](http://docs.google.com/serialized-form.html#World)

| **Nested Class Summary** | |
| --- | --- |

| **Nested classes/interfaces inherited from class javax.swing.**[**JComponent**](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true) |
| --- |
| [JComponent.AccessibleJComponent](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.AccessibleJComponent.html?is-external=true) |

| **Nested classes/interfaces inherited from class java.awt.**[**Container**](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true) |
| --- |
| [Container.AccessibleAWTContainer](http://java.sun.com/javase/6/docs/api/java/awt/Container.AccessibleAWTContainer.html?is-external=true) |

| **Nested classes/interfaces inherited from class java.awt.**[**Component**](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true) |
| --- |
| [Component.AccessibleAWTComponent](http://java.sun.com/javase/6/docs/api/java/awt/Component.AccessibleAWTComponent.html?is-external=true), [Component.BaselineResizeBehavior](http://java.sun.com/javase/6/docs/api/java/awt/Component.BaselineResizeBehavior.html?is-external=true), [Component.BltBufferStrategy](http://java.sun.com/javase/6/docs/api/java/awt/Component.BltBufferStrategy.html?is-external=true), [Component.FlipBufferStrategy](http://java.sun.com/javase/6/docs/api/java/awt/Component.FlipBufferStrategy.html?is-external=true) |

| **Field Summary** | |
| --- | --- |

| **Fields inherited from class javax.swing.**[**JComponent**](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true) |
| --- |
| [accessibleContext](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#accessibleContext), [listenerList](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#listenerList), [TOOL\_TIP\_TEXT\_KEY](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#TOOL_TIP_TEXT_KEY), [ui](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#ui), [UNDEFINED\_CONDITION](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#UNDEFINED_CONDITION), [WHEN\_ANCESTOR\_OF\_FOCUSED\_COMPONENT](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#WHEN_ANCESTOR_OF_FOCUSED_COMPONENT), [WHEN\_FOCUSED](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#WHEN_FOCUSED), [WHEN\_IN\_FOCUSED\_WINDOW](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#WHEN_IN_FOCUSED_WINDOW) |

| **Fields inherited from class java.awt.**[**Component**](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true) |
| --- |
| [BOTTOM\_ALIGNMENT](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#BOTTOM_ALIGNMENT), [CENTER\_ALIGNMENT](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#CENTER_ALIGNMENT), [LEFT\_ALIGNMENT](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#LEFT_ALIGNMENT), [RIGHT\_ALIGNMENT](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#RIGHT_ALIGNMENT), [TOP\_ALIGNMENT](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#TOP_ALIGNMENT) |

| **Fields inherited from interface java.awt.image.**[**ImageObserver**](http://java.sun.com/javase/6/docs/api/java/awt/image/ImageObserver.html?is-external=true) |
| --- |
| [ABORT](http://java.sun.com/javase/6/docs/api/java/awt/image/ImageObserver.html?is-external=true#ABORT), [ALLBITS](http://java.sun.com/javase/6/docs/api/java/awt/image/ImageObserver.html?is-external=true#ALLBITS), [ERROR](http://java.sun.com/javase/6/docs/api/java/awt/image/ImageObserver.html?is-external=true#ERROR), [FRAMEBITS](http://java.sun.com/javase/6/docs/api/java/awt/image/ImageObserver.html?is-external=true#FRAMEBITS), [HEIGHT](http://java.sun.com/javase/6/docs/api/java/awt/image/ImageObserver.html?is-external=true#HEIGHT), [PROPERTIES](http://java.sun.com/javase/6/docs/api/java/awt/image/ImageObserver.html?is-external=true#PROPERTIES), [SOMEBITS](http://java.sun.com/javase/6/docs/api/java/awt/image/ImageObserver.html?is-external=true#SOMEBITS), [WIDTH](http://java.sun.com/javase/6/docs/api/java/awt/image/ImageObserver.html?is-external=true#WIDTH) |

| **Constructor Summary** | |
| --- | --- |
| [**World**](http://docs.google.com/World.html#World())()            Constructor that takes no arguments |
| [**World**](http://docs.google.com/World.html#World(boolean))(boolean visibleFlag)            Constructor that takes a boolean to say if this world should be visible or not |
| [**World**](http://docs.google.com/World.html#World(int,%20int))(int w, int h)            Constructor that takes a width and height for this world |

| **Method Summary** | |
| --- | --- |
| void | [**addModel**](http://docs.google.com/World.html#addModel(java.lang.Object))([Object](http://java.sun.com/javase/6/docs/api/java/lang/Object.html?is-external=true) model)            Method to add a model to this model displayer |
| void | [**clearBackground**](http://docs.google.com/World.html#clearBackground())()            Method to clear the background picture |
| boolean | [**containsTurtle**](http://docs.google.com/World.html#containsTurtle(Turtle))([Turtle](http://docs.google.com/Turtle.html) turtle)            Method to check if this world contains the passed turtle |
| [Graphics](http://java.sun.com/javase/6/docs/api/java/awt/Graphics.html?is-external=true) | [**getGraphics**](http://docs.google.com/World.html#getGraphics())()            Method to get the graphics context for drawing on |
| int | [**getHeight**](http://docs.google.com/World.html#getHeight())()            Method to get the height in pixels |
| [Turtle](http://docs.google.com/Turtle.html) | [**getLastTurtle**](http://docs.google.com/World.html#getLastTurtle())()            Metod to get the last turtle in this world |
| [Picture](http://docs.google.com/Picture.html) | [**getPicture**](http://docs.google.com/World.html#getPicture())()            Method to get the background picture |
| [Iterator](http://java.sun.com/javase/6/docs/api/java/util/Iterator.html?is-external=true) | [**getTurtleIterator**](http://docs.google.com/World.html#getTurtleIterator())()            Method to get an iterator on the list of turtles |
| [List](http://java.sun.com/javase/6/docs/api/java/util/List.html?is-external=true) | [**getTurtleList**](http://docs.google.com/World.html#getTurtleList())()            Method to get the list of turtles in the world |
| int | [**getWidth**](http://docs.google.com/World.html#getWidth())()            Method to get the width in pixels |
| void | [**modelChanged**](http://docs.google.com/World.html#modelChanged())()            Method that allows the model to notify the display |
| void | [**paintComponent**](http://docs.google.com/World.html#paintComponent(java.awt.Graphics))([Graphics](http://java.sun.com/javase/6/docs/api/java/awt/Graphics.html?is-external=true) g)            Method to paint this component |
| void | [**remove**](http://docs.google.com/World.html#remove(java.lang.Object))([Object](http://java.sun.com/javase/6/docs/api/java/lang/Object.html?is-external=true) model)            Method to remove the passed object from the world |
| void | [**setAutoRepaint**](http://docs.google.com/World.html#setAutoRepaint(boolean))(boolean value)            Method to set the automatically repaint flag |
| void | [**setPicture**](http://docs.google.com/World.html#setPicture(Picture))([Picture](http://docs.google.com/Picture.html) pict)            Method to set the background picture |
| void | [**setVisible**](http://docs.google.com/World.html#setVisible(boolean))(boolean value)            Method to set the visibility of the world |
| [String](http://java.sun.com/javase/6/docs/api/java/lang/String.html?is-external=true) | [**toString**](http://docs.google.com/World.html#toString())()            Method that returns information about this world in the form of a string |

| **Methods inherited from class javax.swing.**[**JComponent**](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true) |
| --- |
| [addAncestorListener](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#addAncestorListener(javax.swing.event.AncestorListener)), [addNotify](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#addNotify()), [addVetoableChangeListener](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#addVetoableChangeListener(java.beans.VetoableChangeListener)), [computeVisibleRect](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#computeVisibleRect(java.awt.Rectangle)), [contains](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#contains(int,%20int)), [createToolTip](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#createToolTip()), [disable](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#disable()), [enable](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#enable()), [firePropertyChange](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#firePropertyChange(java.lang.String,%20boolean,%20boolean)), [firePropertyChange](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#firePropertyChange(java.lang.String,%20char,%20char)), [firePropertyChange](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#firePropertyChange(java.lang.String,%20int,%20int)), [fireVetoableChange](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#fireVetoableChange(java.lang.String,%20java.lang.Object,%20java.lang.Object)), [getAccessibleContext](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#getAccessibleContext()), [getActionForKeyStroke](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#getActionForKeyStroke(javax.swing.KeyStroke)), [getActionMap](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#getActionMap()), [getAlignmentX](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#getAlignmentX()), [getAlignmentY](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#getAlignmentY()), [getAncestorListeners](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#getAncestorListeners()), [getAutoscrolls](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#getAutoscrolls()), [getBaseline](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#getBaseline(int,%20int)), [getBaselineResizeBehavior](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#getBaselineResizeBehavior()), [getBorder](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#getBorder()), [getBounds](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#getBounds(java.awt.Rectangle)), [getClientProperty](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#getClientProperty(java.lang.Object)), [getComponentGraphics](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#getComponentGraphics(java.awt.Graphics)), [getComponentPopupMenu](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#getComponentPopupMenu()), [getConditionForKeyStroke](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#getConditionForKeyStroke(javax.swing.KeyStroke)), [getDebugGraphicsOptions](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#getDebugGraphicsOptions()), [getDefaultLocale](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#getDefaultLocale()), [getFontMetrics](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#getFontMetrics(java.awt.Font)), [getInheritsPopupMenu](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#getInheritsPopupMenu()), [getInputMap](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#getInputMap()), [getInputMap](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#getInputMap(int)), [getInputVerifier](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#getInputVerifier()), [getInsets](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#getInsets()), [getInsets](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#getInsets(java.awt.Insets)), [getListeners](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#getListeners(java.lang.Class)), [getLocation](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#getLocation(java.awt.Point)), [getMaximumSize](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#getMaximumSize()), [getMinimumSize](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#getMinimumSize()), [getNextFocusableComponent](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#getNextFocusableComponent()), [getPopupLocation](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#getPopupLocation(java.awt.event.MouseEvent)), [getPreferredSize](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#getPreferredSize()), [getRegisteredKeyStrokes](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#getRegisteredKeyStrokes()), [getRootPane](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#getRootPane()), [getSize](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#getSize(java.awt.Dimension)), [getToolTipLocation](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#getToolTipLocation(java.awt.event.MouseEvent)), [getToolTipText](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#getToolTipText()), [getToolTipText](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#getToolTipText(java.awt.event.MouseEvent)), [getTopLevelAncestor](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#getTopLevelAncestor()), [getTransferHandler](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#getTransferHandler()), [getUIClassID](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#getUIClassID()), [getVerifyInputWhenFocusTarget](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#getVerifyInputWhenFocusTarget()), [getVetoableChangeListeners](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#getVetoableChangeListeners()), [getVisibleRect](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#getVisibleRect()), [getX](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#getX()), [getY](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#getY()), [grabFocus](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#grabFocus()), [isDoubleBuffered](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#isDoubleBuffered()), [isLightweightComponent](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#isLightweightComponent(java.awt.Component)), [isManagingFocus](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#isManagingFocus()), [isOpaque](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#isOpaque()), [isOptimizedDrawingEnabled](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#isOptimizedDrawingEnabled()), [isPaintingForPrint](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#isPaintingForPrint()), [isPaintingTile](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#isPaintingTile()), [isRequestFocusEnabled](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#isRequestFocusEnabled()), [isValidateRoot](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#isValidateRoot()), [paint](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#paint(java.awt.Graphics)), [paintBorder](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#paintBorder(java.awt.Graphics)), [paintChildren](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#paintChildren(java.awt.Graphics)), [paintImmediately](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#paintImmediately(int,%20int,%20int,%20int)), [paintImmediately](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#paintImmediately(java.awt.Rectangle)), [paramString](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#paramString()), [print](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#print(java.awt.Graphics)), [printAll](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#printAll(java.awt.Graphics)), [printBorder](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#printBorder(java.awt.Graphics)), [printChildren](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#printChildren(java.awt.Graphics)), [printComponent](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#printComponent(java.awt.Graphics)), [processComponentKeyEvent](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#processComponentKeyEvent(java.awt.event.KeyEvent)), [processKeyBinding](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#processKeyBinding(javax.swing.KeyStroke,%20java.awt.event.KeyEvent,%20int,%20boolean)), [processKeyEvent](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#processKeyEvent(java.awt.event.KeyEvent)), [processMouseEvent](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#processMouseEvent(java.awt.event.MouseEvent)), [processMouseMotionEvent](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#processMouseMotionEvent(java.awt.event.MouseEvent)), [putClientProperty](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#putClientProperty(java.lang.Object,%20java.lang.Object)), [registerKeyboardAction](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#registerKeyboardAction(java.awt.event.ActionListener,%20javax.swing.KeyStroke,%20int)), [registerKeyboardAction](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#registerKeyboardAction(java.awt.event.ActionListener,%20java.lang.String,%20javax.swing.KeyStroke,%20int)), [removeAncestorListener](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#removeAncestorListener(javax.swing.event.AncestorListener)), [removeNotify](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#removeNotify()), [removeVetoableChangeListener](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#removeVetoableChangeListener(java.beans.VetoableChangeListener)), [repaint](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#repaint(long,%20int,%20int,%20int,%20int)), [repaint](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#repaint(java.awt.Rectangle)), [requestDefaultFocus](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#requestDefaultFocus()), [requestFocus](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#requestFocus()), [requestFocus](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#requestFocus(boolean)), [requestFocusInWindow](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#requestFocusInWindow()), [requestFocusInWindow](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#requestFocusInWindow(boolean)), [resetKeyboardActions](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#resetKeyboardActions()), [reshape](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#reshape(int,%20int,%20int,%20int)), [revalidate](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#revalidate()), [scrollRectToVisible](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#scrollRectToVisible(java.awt.Rectangle)), [setActionMap](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#setActionMap(javax.swing.ActionMap)), [setAlignmentX](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#setAlignmentX(float)), [setAlignmentY](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#setAlignmentY(float)), [setAutoscrolls](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#setAutoscrolls(boolean)), [setBackground](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#setBackground(java.awt.Color)), [setBorder](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#setBorder(javax.swing.border.Border)), [setComponentPopupMenu](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#setComponentPopupMenu(javax.swing.JPopupMenu)), [setDebugGraphicsOptions](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#setDebugGraphicsOptions(int)), [setDefaultLocale](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#setDefaultLocale(java.util.Locale)), [setDoubleBuffered](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#setDoubleBuffered(boolean)), [setEnabled](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#setEnabled(boolean)), [setFocusTraversalKeys](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#setFocusTraversalKeys(int,%20java.util.Set)), [setFont](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#setFont(java.awt.Font)), [setForeground](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#setForeground(java.awt.Color)), [setInheritsPopupMenu](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#setInheritsPopupMenu(boolean)), [setInputMap](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#setInputMap(int,%20javax.swing.InputMap)), [setInputVerifier](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#setInputVerifier(javax.swing.InputVerifier)), [setMaximumSize](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#setMaximumSize(java.awt.Dimension)), [setMinimumSize](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#setMinimumSize(java.awt.Dimension)), [setNextFocusableComponent](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#setNextFocusableComponent(java.awt.Component)), [setOpaque](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#setOpaque(boolean)), [setPreferredSize](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#setPreferredSize(java.awt.Dimension)), [setRequestFocusEnabled](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#setRequestFocusEnabled(boolean)), [setToolTipText](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#setToolTipText(java.lang.String)), [setTransferHandler](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#setTransferHandler(javax.swing.TransferHandler)), [setUI](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#setUI(javax.swing.plaf.ComponentUI)), [setVerifyInputWhenFocusTarget](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#setVerifyInputWhenFocusTarget(boolean)), [unregisterKeyboardAction](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#unregisterKeyboardAction(javax.swing.KeyStroke)), [update](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#update(java.awt.Graphics)), [updateUI](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#updateUI()) |

| **Methods inherited from class java.awt.**[**Container**](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true) |
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| [add](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#add(java.awt.Component)), [add](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#add(java.awt.Component,%20int)), [add](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#add(java.awt.Component,%20java.lang.Object)), [add](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#add(java.awt.Component,%20java.lang.Object,%20int)), [add](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#add(java.lang.String,%20java.awt.Component)), [addContainerListener](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#addContainerListener(java.awt.event.ContainerListener)), [addImpl](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#addImpl(java.awt.Component,%20java.lang.Object,%20int)), [addPropertyChangeListener](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#addPropertyChangeListener(java.beans.PropertyChangeListener)), [addPropertyChangeListener](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#addPropertyChangeListener(java.lang.String,%20java.beans.PropertyChangeListener)), [applyComponentOrientation](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#applyComponentOrientation(java.awt.ComponentOrientation)), [areFocusTraversalKeysSet](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#areFocusTraversalKeysSet(int)), [countComponents](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#countComponents()), [deliverEvent](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#deliverEvent(java.awt.Event)), [doLayout](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#doLayout()), [findComponentAt](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#findComponentAt(int,%20int)), [findComponentAt](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#findComponentAt(java.awt.Point)), [getComponent](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#getComponent(int)), [getComponentAt](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#getComponentAt(int,%20int)), [getComponentAt](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#getComponentAt(java.awt.Point)), [getComponentCount](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#getComponentCount()), [getComponents](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#getComponents()), [getComponentZOrder](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#getComponentZOrder(java.awt.Component)), [getContainerListeners](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#getContainerListeners()), [getFocusTraversalKeys](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#getFocusTraversalKeys(int)), [getFocusTraversalPolicy](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#getFocusTraversalPolicy()), [getLayout](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#getLayout()), [getMousePosition](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#getMousePosition(boolean)), [insets](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#insets()), [invalidate](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#invalidate()), [isAncestorOf](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#isAncestorOf(java.awt.Component)), [isFocusCycleRoot](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#isFocusCycleRoot()), [isFocusCycleRoot](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#isFocusCycleRoot(java.awt.Container)), [isFocusTraversalPolicyProvider](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#isFocusTraversalPolicyProvider()), [isFocusTraversalPolicySet](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#isFocusTraversalPolicySet()), [layout](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#layout()), [list](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#list(java.io.PrintStream,%20int)), [list](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#list(java.io.PrintWriter,%20int)), [locate](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#locate(int,%20int)), [minimumSize](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#minimumSize()), [paintComponents](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#paintComponents(java.awt.Graphics)), [preferredSize](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#preferredSize()), [printComponents](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#printComponents(java.awt.Graphics)), [processContainerEvent](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#processContainerEvent(java.awt.event.ContainerEvent)), [processEvent](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#processEvent(java.awt.AWTEvent)), [remove](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#remove(java.awt.Component)), [remove](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#remove(int)), [removeAll](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#removeAll()), [removeContainerListener](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#removeContainerListener(java.awt.event.ContainerListener)), [setComponentZOrder](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#setComponentZOrder(java.awt.Component,%20int)), [setFocusCycleRoot](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#setFocusCycleRoot(boolean)), [setFocusTraversalPolicy](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#setFocusTraversalPolicy(java.awt.FocusTraversalPolicy)), [setFocusTraversalPolicyProvider](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#setFocusTraversalPolicyProvider(boolean)), [setLayout](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#setLayout(java.awt.LayoutManager)), [transferFocusBackward](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#transferFocusBackward()), [transferFocusDownCycle](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#transferFocusDownCycle()), [validate](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#validate()), [validateTree](http://java.sun.com/javase/6/docs/api/java/awt/Container.html?is-external=true#validateTree()) |

| **Methods inherited from class java.awt.**[**Component**](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true) |
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| [action](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#action(java.awt.Event,%20java.lang.Object)), [add](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#add(java.awt.PopupMenu)), [addComponentListener](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#addComponentListener(java.awt.event.ComponentListener)), [addFocusListener](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#addFocusListener(java.awt.event.FocusListener)), [addHierarchyBoundsListener](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#addHierarchyBoundsListener(java.awt.event.HierarchyBoundsListener)), [addHierarchyListener](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#addHierarchyListener(java.awt.event.HierarchyListener)), [addInputMethodListener](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#addInputMethodListener(java.awt.event.InputMethodListener)), [addKeyListener](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#addKeyListener(java.awt.event.KeyListener)), [addMouseListener](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#addMouseListener(java.awt.event.MouseListener)), [addMouseMotionListener](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#addMouseMotionListener(java.awt.event.MouseMotionListener)), [addMouseWheelListener](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#addMouseWheelListener(java.awt.event.MouseWheelListener)), [bounds](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#bounds()), [checkImage](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#checkImage(java.awt.Image,%20java.awt.image.ImageObserver)), [checkImage](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#checkImage(java.awt.Image,%20int,%20int,%20java.awt.image.ImageObserver)), [coalesceEvents](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#coalesceEvents(java.awt.AWTEvent,%20java.awt.AWTEvent)), [contains](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#contains(java.awt.Point)), [createImage](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#createImage(java.awt.image.ImageProducer)), [createImage](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#createImage(int,%20int)), [createVolatileImage](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#createVolatileImage(int,%20int)), [createVolatileImage](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#createVolatileImage(int,%20int,%20java.awt.ImageCapabilities)), [disableEvents](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#disableEvents(long)), [dispatchEvent](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#dispatchEvent(java.awt.AWTEvent)), [enable](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#enable(boolean)), [enableEvents](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#enableEvents(long)), [enableInputMethods](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#enableInputMethods(boolean)), [firePropertyChange](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#firePropertyChange(java.lang.String,%20byte,%20byte)), [firePropertyChange](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#firePropertyChange(java.lang.String,%20double,%20double)), [firePropertyChange](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#firePropertyChange(java.lang.String,%20float,%20float)), [firePropertyChange](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#firePropertyChange(java.lang.String,%20long,%20long)), [firePropertyChange](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#firePropertyChange(java.lang.String,%20java.lang.Object,%20java.lang.Object)), [firePropertyChange](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#firePropertyChange(java.lang.String,%20short,%20short)), [getBackground](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#getBackground()), [getBounds](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#getBounds()), [getColorModel](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#getColorModel()), [getComponentListeners](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#getComponentListeners()), [getComponentOrientation](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#getComponentOrientation()), [getCursor](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#getCursor()), [getDropTarget](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#getDropTarget()), [getFocusCycleRootAncestor](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#getFocusCycleRootAncestor()), [getFocusListeners](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#getFocusListeners()), [getFocusTraversalKeysEnabled](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#getFocusTraversalKeysEnabled()), [getFont](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#getFont()), [getForeground](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#getForeground()), [getGraphicsConfiguration](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#getGraphicsConfiguration()), [getHierarchyBoundsListeners](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#getHierarchyBoundsListeners()), [getHierarchyListeners](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#getHierarchyListeners()), [getIgnoreRepaint](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#getIgnoreRepaint()), [getInputContext](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#getInputContext()), [getInputMethodListeners](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#getInputMethodListeners()), [getInputMethodRequests](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#getInputMethodRequests()), [getKeyListeners](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#getKeyListeners()), [getLocale](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#getLocale()), [getLocation](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#getLocation()), [getLocationOnScreen](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#getLocationOnScreen()), [getMouseListeners](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#getMouseListeners()), [getMouseMotionListeners](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#getMouseMotionListeners()), [getMousePosition](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#getMousePosition()), [getMouseWheelListeners](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#getMouseWheelListeners()), [getName](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#getName()), [getParent](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#getParent()), [getPeer](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#getPeer()), [getPropertyChangeListeners](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#getPropertyChangeListeners()), [getPropertyChangeListeners](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#getPropertyChangeListeners(java.lang.String)), [getSize](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#getSize()), [getToolkit](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#getToolkit()), [getTreeLock](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#getTreeLock()), [gotFocus](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#gotFocus(java.awt.Event,%20java.lang.Object)), [handleEvent](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#handleEvent(java.awt.Event)), [hasFocus](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#hasFocus()), [hide](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#hide()), [imageUpdate](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#imageUpdate(java.awt.Image,%20int,%20int,%20int,%20int,%20int)), [inside](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#inside(int,%20int)), [isBackgroundSet](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#isBackgroundSet()), [isCursorSet](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#isCursorSet()), [isDisplayable](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#isDisplayable()), [isEnabled](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#isEnabled()), [isFocusable](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#isFocusable()), [isFocusOwner](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#isFocusOwner()), [isFocusTraversable](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#isFocusTraversable()), [isFontSet](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#isFontSet()), [isForegroundSet](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#isForegroundSet()), [isLightweight](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#isLightweight()), [isMaximumSizeSet](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#isMaximumSizeSet()), [isMinimumSizeSet](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#isMinimumSizeSet()), [isPreferredSizeSet](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#isPreferredSizeSet()), [isShowing](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#isShowing()), [isValid](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#isValid()), [isVisible](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#isVisible()), [keyDown](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#keyDown(java.awt.Event,%20int)), [keyUp](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#keyUp(java.awt.Event,%20int)), [list](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#list()), [list](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#list(java.io.PrintStream)), [list](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#list(java.io.PrintWriter)), [location](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#location()), [lostFocus](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#lostFocus(java.awt.Event,%20java.lang.Object)), [mouseDown](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#mouseDown(java.awt.Event,%20int,%20int)), [mouseDrag](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#mouseDrag(java.awt.Event,%20int,%20int)), [mouseEnter](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#mouseEnter(java.awt.Event,%20int,%20int)), [mouseExit](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#mouseExit(java.awt.Event,%20int,%20int)), [mouseMove](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#mouseMove(java.awt.Event,%20int,%20int)), [mouseUp](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#mouseUp(java.awt.Event,%20int,%20int)), [move](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#move(int,%20int)), [nextFocus](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#nextFocus()), [paintAll](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#paintAll(java.awt.Graphics)), [postEvent](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#postEvent(java.awt.Event)), [prepareImage](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#prepareImage(java.awt.Image,%20java.awt.image.ImageObserver)), [prepareImage](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#prepareImage(java.awt.Image,%20int,%20int,%20java.awt.image.ImageObserver)), [processComponentEvent](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#processComponentEvent(java.awt.event.ComponentEvent)), [processFocusEvent](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#processFocusEvent(java.awt.event.FocusEvent)), [processHierarchyBoundsEvent](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#processHierarchyBoundsEvent(java.awt.event.HierarchyEvent)), 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[removeHierarchyBoundsListener](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#removeHierarchyBoundsListener(java.awt.event.HierarchyBoundsListener)), [removeHierarchyListener](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#removeHierarchyListener(java.awt.event.HierarchyListener)), [removeInputMethodListener](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#removeInputMethodListener(java.awt.event.InputMethodListener)), [removeKeyListener](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#removeKeyListener(java.awt.event.KeyListener)), [removeMouseListener](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#removeMouseListener(java.awt.event.MouseListener)), [removeMouseMotionListener](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#removeMouseMotionListener(java.awt.event.MouseMotionListener)), [removeMouseWheelListener](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#removeMouseWheelListener(java.awt.event.MouseWheelListener)), [removePropertyChangeListener](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#removePropertyChangeListener(java.beans.PropertyChangeListener)), [removePropertyChangeListener](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#removePropertyChangeListener(java.lang.String,%20java.beans.PropertyChangeListener)), [repaint](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#repaint()), [repaint](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#repaint(int,%20int,%20int,%20int)), [repaint](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#repaint(long)), [resize](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#resize(java.awt.Dimension)), [resize](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#resize(int,%20int)), [setBounds](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#setBounds(int,%20int,%20int,%20int)), [setBounds](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#setBounds(java.awt.Rectangle)), [setComponentOrientation](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#setComponentOrientation(java.awt.ComponentOrientation)), [setCursor](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#setCursor(java.awt.Cursor)), [setDropTarget](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#setDropTarget(java.awt.dnd.DropTarget)), [setFocusable](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#setFocusable(boolean)), [setFocusTraversalKeysEnabled](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#setFocusTraversalKeysEnabled(boolean)), [setIgnoreRepaint](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#setIgnoreRepaint(boolean)), [setLocale](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#setLocale(java.util.Locale)), [setLocation](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#setLocation(int,%20int)), [setLocation](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#setLocation(java.awt.Point)), [setName](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#setName(java.lang.String)), [setSize](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#setSize(java.awt.Dimension)), [setSize](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#setSize(int,%20int)), [show](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#show()), [show](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#show(boolean)), [size](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#size()), [transferFocus](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#transferFocus()), [transferFocusUpCycle](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#transferFocusUpCycle()) |

| **Methods inherited from class java.lang.**[**Object**](http://java.sun.com/javase/6/docs/api/java/lang/Object.html?is-external=true) |
| --- |
| [clone](http://java.sun.com/javase/6/docs/api/java/lang/Object.html?is-external=true#clone()), [equals](http://java.sun.com/javase/6/docs/api/java/lang/Object.html?is-external=true#equals(java.lang.Object)), [finalize](http://java.sun.com/javase/6/docs/api/java/lang/Object.html?is-external=true#finalize()), [getClass](http://java.sun.com/javase/6/docs/api/java/lang/Object.html?is-external=true#getClass()), [hashCode](http://java.sun.com/javase/6/docs/api/java/lang/Object.html?is-external=true#hashCode()), [notify](http://java.sun.com/javase/6/docs/api/java/lang/Object.html?is-external=true#notify()), [notifyAll](http://java.sun.com/javase/6/docs/api/java/lang/Object.html?is-external=true#notifyAll()), [wait](http://java.sun.com/javase/6/docs/api/java/lang/Object.html?is-external=true#wait()), [wait](http://java.sun.com/javase/6/docs/api/java/lang/Object.html?is-external=true#wait(long)), [wait](http://java.sun.com/javase/6/docs/api/java/lang/Object.html?is-external=true#wait(long,%20int)) |

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

### World

public **World**()

Constructor that takes no arguments

### World

public **World**(boolean visibleFlag)

Constructor that takes a boolean to say if this world should be visible or not

**Parameters:**visibleFlag - if true will be visible else if false will not be visible

### World

public **World**(int w,  
 int h)

Constructor that takes a width and height for this world

**Parameters:**w - the width for the worldh - the height for the world

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

### getGraphics

public [Graphics](http://java.sun.com/javase/6/docs/api/java/awt/Graphics.html?is-external=true) **getGraphics**()

Method to get the graphics context for drawing on

**Specified by:**[getGraphics](http://docs.google.com/ModelDisplay.html#getGraphics()) in interface [ModelDisplay](http://docs.google.com/ModelDisplay.html)**Overrides:**[getGraphics](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#getGraphics()) in class [JComponent](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true) **Returns:**the graphics context of the background picture

### clearBackground

public void **clearBackground**()

Method to clear the background picture

**Specified by:**[clearBackground](http://docs.google.com/ModelDisplay.html#clearBackground()) in interface [ModelDisplay](http://docs.google.com/ModelDisplay.html)

### getPicture

public [Picture](http://docs.google.com/Picture.html) **getPicture**()

Method to get the background picture

**Returns:**the background picture

### setPicture

public void **setPicture**([Picture](http://docs.google.com/Picture.html) pict)

Method to set the background picture

**Parameters:**pict - the background picture to use

### paintComponent

public void **paintComponent**([Graphics](http://java.sun.com/javase/6/docs/api/java/awt/Graphics.html?is-external=true) g)

Method to paint this component

**Overrides:**[paintComponent](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#paintComponent(java.awt.Graphics)) in class [JComponent](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true) **Parameters:**g - the graphics context

### getLastTurtle

public [Turtle](http://docs.google.com/Turtle.html) **getLastTurtle**()

Metod to get the last turtle in this world

**Returns:**the last turtle added to this world

### addModel

public void **addModel**([Object](http://java.sun.com/javase/6/docs/api/java/lang/Object.html?is-external=true) model)

Method to add a model to this model displayer

**Specified by:**[addModel](http://docs.google.com/ModelDisplay.html#addModel(java.lang.Object)) in interface [ModelDisplay](http://docs.google.com/ModelDisplay.html) **Parameters:**model - the model object to add

### containsTurtle

public boolean **containsTurtle**([Turtle](http://docs.google.com/Turtle.html) turtle)

Method to check if this world contains the passed turtle

**Returns:**true if there else false

### remove

public void **remove**([Object](http://java.sun.com/javase/6/docs/api/java/lang/Object.html?is-external=true) model)

Method to remove the passed object from the world

**Specified by:**[remove](http://docs.google.com/ModelDisplay.html#remove(java.lang.Object)) in interface [ModelDisplay](http://docs.google.com/ModelDisplay.html) **Parameters:**model - the model object to remove

### getWidth

public int **getWidth**()

Method to get the width in pixels

**Specified by:**[getWidth](http://docs.google.com/ModelDisplay.html#getWidth()) in interface [ModelDisplay](http://docs.google.com/ModelDisplay.html)**Overrides:**[getWidth](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#getWidth()) in class [JComponent](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true) **Returns:**the width in pixels

### getHeight

public int **getHeight**()

Method to get the height in pixels

**Specified by:**[getHeight](http://docs.google.com/ModelDisplay.html#getHeight()) in interface [ModelDisplay](http://docs.google.com/ModelDisplay.html)**Overrides:**[getHeight](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#getHeight()) in class [JComponent](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true) **Returns:**the height in pixels

### modelChanged

public void **modelChanged**()

Method that allows the model to notify the display

**Specified by:**[modelChanged](http://docs.google.com/ModelDisplay.html#modelChanged()) in interface [ModelDisplay](http://docs.google.com/ModelDisplay.html)

### setAutoRepaint

public void **setAutoRepaint**(boolean value)

Method to set the automatically repaint flag

**Parameters:**value - if true will auto repaint

### setVisible

public void **setVisible**(boolean value)

Method to set the visibility of the world

**Overrides:**[setVisible](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true#setVisible(boolean)) in class [JComponent](http://java.sun.com/javase/6/docs/api/javax/swing/JComponent.html?is-external=true) **Parameters:**value - a boolean value to say if should show or hide

### getTurtleList

public [List](http://java.sun.com/javase/6/docs/api/java/util/List.html?is-external=true) **getTurtleList**()

Method to get the list of turtles in the world

**Returns:**a list of turtles in the world

### getTurtleIterator

public [Iterator](http://java.sun.com/javase/6/docs/api/java/util/Iterator.html?is-external=true) **getTurtleIterator**()

Method to get an iterator on the list of turtles

**Returns:**an iterator for the list of turtles

### toString

public [String](http://java.sun.com/javase/6/docs/api/java/lang/String.html?is-external=true) **toString**()

Method that returns information about this world in the form of a string

**Overrides:**[toString](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true#toString()) in class [Component](http://java.sun.com/javase/6/docs/api/java/awt/Component.html?is-external=true) **Returns:**a string of information about this world

| | [**Package**](http://docs.google.com/package-summary.html) | **Class** | [**Tree**](http://docs.google.com/package-tree.html) | [**Deprecated**](http://docs.google.com/deprecated-list.html) | [**Index**](http://docs.google.com/index-all.html) | [**Help**](http://docs.google.com/help-doc.html) | | --- | --- | --- | --- | --- | --- | | |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| [**PREV CLASS**](http://docs.google.com/Wolf.html)   NEXT CLASS | [**FRAMES**](http://docs.google.com/index.html?World.html)    [**NO FRAMES**](http://docs.google.com/World.html)     [**All Classes**](http://docs.google.com/allclasses-noframe.html) |
| SUMMARY: [NESTED](#2et92p0) | [FIELD](#4d34og8) | [CONSTR](#3rdcrjn) | [METHOD](#26in1rg) | DETAIL: FIELD | [CONSTR](#2jxsxqh) | [METHOD](#4i7ojhp) |