JIDE Common Layer Developer Guide (Open Source Project)

Contents

Purpose of This Document

Welcome to the *JIDE Common Layer* (or JCL is short). This module was the foundation for all JIDE commercial products. It was delivered as jide-common.jar in all former releases. In April of 2007, JIDE Software open sourced the module under GPL+classpath exception, hoping more and more people will join the project and push it to the next level.

In addition to GPL, *JIDE Common Layer* is dual-licensed. Commercial companies who need to build proprietary software can use the same commercial license under which all other JIDE products are released. Except for *JIDE Common Layer*, the commercial license is free of charge.

This developer guide is for those who want to develop applications using the *JIDE Common Layer* and for those who want to contribute to this project.

Why using Components

Thousands and thousands of valuable development hours are wasted on rebuilding components that have been built elsewhere. Why not let us build those components for you, so you can focus on the most value-added part of your application?

What kind of components do we build and how do we choose them?

First of all, those components that are commonly and widely used. Our components provide a foundation to build any Java desktop application. You've probably seen them in some other well-known applications. People are familiar with them. When you see them in our component demo, most likely you will say "Hmm, I can use this component in my application".

Secondly, they are extensible: we never assume our components will satisfy all your requirements. Therefore, in addition, to what we provide, we always leave extension points so that you can write your own code to extend the component. Believe it or not, our whole product strategy is based on the extensibility of each component we are building. We try to cover all the requirements we can find and to build truly general, useful components. At some point, users will likely find a need we didn't address, but that's fine! Our components allow you to "help yourselves".

Last, but not least, they will save the end user time. You use a 3rd party component because you think it will be faster to build on top of it than to start from scratch. If the 3rd party component is very simple, you probably rather building it yourself so that you have full control of the code. If you find the 3rd party component is way too complex and way too hard to configure, you probably also want to build it yourself to avoid the hassle of understanding other people's code. With those in mind, we carefully chose what components to include in our products. We are very "picky" about what components to build. Our pickiness guaranteed that all those components will be useful thus save your valuable time.

All components in this *JIDE Common Layer* are general components built on top of Swing. We built them mainly because we found they are missing from Swing. Many of the components simply extend an existing Swing classes to add more features. They probably should be included in Swing anyway. Thousands of engineers developing various applications had used all components from this project commercially. They are already in production quality when they are included in this open source project.

Why do we open source

JIDE Software was founded back in 2002. Within four years, JIDE became a well-known Swing component provider. We used commercial license term for our products from the very beginning. It was essential for us because it provides the financial support that we needed as a start-up. On the other hand, being commercial is no question a roadblock for many developers who either cannot afford or are prohibited to use the commercial license. In the past couple of years, we saw many emails, blogs and forum posts suggesting us to open source our products. It is the time now.

In this release, we will open source over 30 components, which is about 1/3 of our source code (roughly 100K lines out of 300k+ lines). We will have dedicated people to maintain this project to fix bugs and add enhancements. We will also add more components or move components from our commercial offerings to this project. Of course, we welcome people to contribute this project. The source code can be downloaded from https://jide-oss.java.net.

One of main issues in open source project is the lack of technical support. To address this issue, here is our support policy:

- All source code contains detailed JavaDoc.
- A developer guide is provided to describe how to use each component.
- For bug reports, we will have dedicated resource to work on them based on the priority we decide.
- For technical support, there are two ways. The first way is the community support. We will provide a forum so that you can get help from other people in the community. The second way is the paid technical support provided by JIDE support team. That is, if you think it is critical to get the high quality support in a timely fashion, you can always purchase the annual maintenance renewal for *JIDE Common Layer*.

Open source *JIDE Common Layer* does not mean we will open source all our other components. We still believe high quality software deserves license fee. The open source community would not have existed without the participation of millions of professional developers whose salaries are paid by commercial companies. Therefore, we will continue to market our other products commercially and use part of the license revenue to sponsor this open source project.

How to learn JIDE Common Layer

The source code of JIDE Common Layer can be downloaded from https://jide-oss.java.net. However, in order to evaluate JCL, you should still download the evaluation package following the instruction at http://www.jidesoft.com/evaluation/. The evaluation package is for all JIDE components. Most importantly, it includes over 100 demos with source code. The demo for JCL components are part of it too. After you read this developer guide, you can dive into the demo and the demo source code to learn more about JCL and see JCL in action.

Package Structure

The table below lists the packages in the *JIDE Common Layer*. All packages are in jide-oss-<version>.jar or jide-common.jar if you are a paid JIDE user[1].

Packages	**Description**
com.jidesoft.swing	Common components.
com.jidesoft.icon	Icon related classes
com.jidesoft.comparator	Various Comparators. They all implement interface java.util.Comparator. ObjectComparatorManager provides a central place to register those comparators.
com.jidesoft.converter	Various ObjectConverters which can convert an object to/from String. ObjectConverterManager provides a central place to register those converters.
com.jidesoft.grouper	Various ObjectGroupers which can group several values into a named group. ObjectGrouperManager provides a central place to register those groupers.
com.jidesoft.popup	Popup component
com.jidesoft.animation	Animation related classes
com.jidesoft.hints	IntelliHints related classes
com.jidesoft.dialog	Dialog related classes
com.jidesoft.range	A new data type of Range which is used in JIDE Gantt Charts and JIDE TreeMap
com.jidesoft.validation	Validation related classes
com.jidesoft.spinner	Several spinner components

A general comment on our naming convention: If the class is modified from or based on an existing Swing/AWT class, and serve the same purpose of the existing Swing component, we prefix the original Swing/AWT class name with Jide - for example, *JideTabbedPane* (you can tell that it is based on *JTabbedPane* from the name). If it's a completely new component that

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[1] If you are a paid JIDE product user, you should use jide-common.jar instead of the jide-oss-xxx.jar for JCL portion. The jide-common.jar includes everything inside jide-oss-xxx.jar and a few more classes that are not public APIs but are used by other JIDE products.

doesn't exist in Swing/AWT then we don't prefix anything - for example, *Calculator* etc. There are also cases that a class extends an existing Swing component but the purpose is changed, if so, we will not use Jide- prefix either, for example, *RangeSlider*.

We will add more and more components to *JIDE Common Layer* in the future and we will keep the same package organization. If the component is complex enough or there are a group of components which share a common feature, there will be a separate package for it. If it is a very small component, we probably will put it under *com.jidesoft.swing*.

List of Components

In the tables below, we listed all the components and utility classes in JIDE Common Layer. The bold classes below are the ones that are covered in details in this developer guide.

LAYOUT MANAGERS		
JIDE Class Name	**Related Swing Class**	**Note**
JideBorderLayout	BorderLayout	JideBorderLayout extends BorderLayout by changing the width of the NORTH and SOUTH components to be the same as the CENTER component.
JideBoxLayout	BoxLayout	JideBoxLayout enhances BoxLayout by allowing three resizing options for the child components.

BORDERS		
JIDE Class Name	**Related Swing Class**	**Note**
PartialEtchedBorder	EtchedBorder	PartialEtchedBorder extends EtchedBorder to support etched border on partial sides.
PartialGradientLineBorder	AbstractBorder	PartialLineBorder supports gradient line border on partial sides.
PartialLineBorder	LineBorder	PartialLineBorder extends LineBorder to support line border on partial sides.
JideTitledBorder	AbstractBorder	JideTitledBorder doesn't extend TitledBorder but it is the same code as the TitledBorder except the title has no gap to the left so that it looks good when being used with PartialLineBorder or PartialEtchedBorder.

SWING COMPONENT EXTENSION		
JIDE Class Name	**Related Swing Class**	**Note**
ClickThroughLabel	JLabel	ClickThroughLabel is a JLabel that can re-target mouse event to a specified parent container.
StyledLabel	JLabel	StyledLabel is a JLabel that supports styles and multiple

		lines.
RangeSlider	JSlider	RangeSlider enhances JSlider to support two thumbs on one slider.
TristateCheckBox	JCheckBox	TristateCheckBox extends JCheckBox to support a third state on the check box.
DateSpinner	JSpinner	A JSpinner for Date data type.
PointSpinner	JSpinner	A JSpinner for Point data type.
LabeledTextField	JTextField	LabeledTextField doesn't extend JTextField but looks like a JTextField but it has an icon at the beginning.
JideSplitPane	JSplitPane	JideSplitPane doesn't extend JSplitPane but it is an enhanced JSplitPane which supports more than 2 splits.
JideTabbedPane	JTabbedPane	JideTabbedPane is an enhancement of JTabbedPane by providing different tab shapes, tab resize mode, tab leading component, tab trailing component etc.
JideScrollPane	JScrollPane	JideScrollPane builts on top of JScrollPane to support RowFooter, ColumnFooter as well as new corner components on either side of the scroll bars.
MarqueePane	JScrollPane	MarqueePane is a JScrollPane without scroll bars but it automatically scrolls.
SimpleScrollPane	JScrollPane	SimpleScrollPane is also a JScrollPane without scroll bars. It uses four buttons on four sides to scroll.
MeterProgressBar	JProgressBar	MeterProgressBar extends JProgressBar to provide a different progress bar style.
AutoResizingTextArea	JTextArea	AutoResizingTextArea is a JTextArea that resizes vertically when user types more text.
MultilineLabel	JTextArea	MultilineLabel changes JTextArea to make it look like a label so that it can support multiple lines. However StyledLabel supports multiple lines since 3.3 release so we recommend using StyledLabel over MultilineLabel.
CheckBoxList	JList	A JList that supports check boxes as the list cell.
CheckBoxTree	JTree	A JTree that supports check boxes as the tree cell.
FolderChooser	JFileChooser	A JFileChooser that chooses a folder.
JidePopupMenu	JPopupMenu	JidePopupMenu enhanced JPopupMenu. It will make sure the content of the popup menu to be inside the screen boundary. If the popup menu is very long, it will add scroll button to the top and bottom so that user can scroll it up and down
PaintPanel	JPanel	PaintPanel is a JPanel which supports using Paint (such as GradientPaint, TexturePaint) as the background.
TitledSeparator	JComponent	TitledSeparator is a component used for separating components on a panel.

Gripper	JComponent	Gripper is a component that can be used on any other component so that it can be dragged.
StandardDialog	JDialog	StandardDialog builds on top of JDialog to support commonly used dialog standards.
ButtonPanel	JPanel	ButtonPanel supports a panel for buttons in an OS-aware way.
BannerPanel	JPanel	BannerPanel supports a panel that can be used as a banner.
Calculator	JPanel	A component for calculator.
JidePopup	JComponent	JidePopup is a popup window that can be resized, dragged, attached and automatically hidden.

REPLACEMENTS FOR COMPONENTS on JTOOLBAR and COMMANDBAR

JIDE Class Name	To Replace	Note
JideButton	JButton	JideButton is a replacement for JButton when it is used on toolbar (or command bar in the case of JIDE Action Framework).
JideToggleButton	JToggleButton	JideToggleButton is a replacement for JToggleButton when it is used on toolbar (or command bar in the case of JIDE Action Framework).
JideSplitButton	JMenu	JideSplitButton is a button- dropDownMenu combination when it is used on toolbar (or command bar in the case of JIDE Action Framework).
JideSplitToggleButton	JMenu	JideToggleSplitButton is a toggleButton-dropDownMenu combination when it is used on toolbar (or command bar in the case of JIDE Action Framework).
JideComboBox	JComboBox	JideComboBox is a replacement for JComboBox when it is used on toolbar (or command bar in the case of JIDE Action Framework).
JideLabel	JLabel	JideLabel is a replacement for JLabel when it is used on toolbar (or command bar in the case of JIDE Action Framework).
JideMenu	JMenu	JideMenu is a replacement for JMenu when it is used on toolbar (or command bar in the case of JIDE Action Framework). It also allows lazily creation of menu items and allows specifying the popup menu's alignment.

FEATURES TO ADD ONTO EXISTING SWING COMPONENTS

JIDE Class Name	Note
AutoCompletion	AutoCompletion implements auto-complete feature for JComboBox and

	JTextComponent.
Flashable	Flashable is an interface that be used to implement flashing effect on any component. Right now TableFlashable and TabbedPaneFlashable implements this interface.
Searchable	Searchable implements the quick search feature on JList, JTable, JTree and many other components.
IntelliHints	IntelliHints is an interface that defines all necessary methods to implement showing a hint popup depending on a context and allows user to pick from a list of hints. There are both abstract and concrete implementations for it in JIDE Common Layer and JIDE Code Editor.
Resizable	Resizable can be used to make a component resizable. Right now we have it implemented for JDialog (undecorated), JWindow and JFrame (undecorated).
Sticky	Sticky is a helper class to make JList or JTree or JTable changing selection when mouse moves

IMAGEs and ICONS RELATED CLASSES	
JIDE Class Name	**Note**
IconsFactory	IconsFactory is a collection of methods related to ImageIcons.
ColorFilter	ColorFilter is an image filter that brightens or darkens an existing image.
TintFilter	TintFilter is an image filter that tints the image with a color.
MaskFilter	MaskFilter is an image filter that replaces one color in an image with another color.
RolloverIcon	RolloverIcon provides the expanded and collapsed tree icons that has rollover and fade effect. However it can be used to implement icon for any other purpose, not just the tree icons.
IconSetManager	IconSetManager makes it easy to switch between different icon sets that are in JIDE Basic and Network Icon Sets.
IconSet	IconSet is a class which works with JIDE Basic Icon Set. It defines 141 icons in 12 sections in this class.
NetworkIconSet	NetworkIconSet is a class which works with JIDE Network Icon Set. It defines 72 icons in 6 sections in this class.

INTERFACES	
JIDE Class Name	**Note**
Alignable	Implemented by JideButton, JideLabel etc. components to indicate those components support horizontal and vertical orientation
ButtonStyle	Implemented by JideButton, JideSplitButton to indicate those components support different button styles
Selectable	To indicate something is selectable. Right now it is only used by

	CheckBoxListWithSelectable.
DraggableHandle	To indicate a component can be draggable. Right now it is only implemented by Gripper and CommandTitleBar.
NavigationComponent	To indicate a component is used for the navigation purpose. It is implemented by NavigationList/Tree/Table etc. components.
Overlayable	To indicate a component can add additional components as overlays which can be used for error indicator, validation warning etc purposes. It is very similar to JLayer that was introduced in JDK7. We would recommend you to use JLayer instead if you are using JDK7.
Prioritized	To indicate a data type that has priority. It is only implemented by CellStyle in JIDE Grids
WildcardSupport	A common interface for the wildcard support. It is used in many components related to searching and filtering.

MISC. UTILITIES and CLASSES	
JIDE Class Name	**Note**
DelayUndoManager	DelayUndoManager enhanced the default UndoManager to combine several UndoableEdit's into one UndoableEdit if they happen within a specified short period of time (500 ms by default).
DelegateAction	DelegateAction is an Action class that can be implemented then it can replace the action on a component. DelegateAction will be triggered first then the original action will be triggered depending on the return value from DelegateAction.
SortedList	SortedList is a List that will sort automatically.
SwingWorker	SwingWorker is an abstract class to perform lengthy GUI-interacting tasks in a dedicated thread.
SystemInfo	SystemInfo is a collection of methods to retrieve system information such as OS type and version, JDK version etc.
ShadowFactory	ShadowFactory creates a shadow image from a BufferedImage.
FontUtils	FontUtils is a collection of methods that caches the derived fonts.
SelectAllUtils	SelectAllUtils is a utility class to select all the text in a text component when the component first time receives focus.
ColorUtils	ColorUtils is a collection of methods related to Color.
DateUtils	DateUtils is a collection of methods related to Date and Calendar.
StringUtils	StringUtils is a collection of methods related to String
LoggerUtils	LoggerUtils is a collection of methods related to Logger.
MathUtils	MathUtils is a collection of methods related to stats such as
ReflectionUtils	ReflectionUtils is a collection of methods that use reflection to call methods
TimeUtils	

TypeUtils	TypeUtils is a collection of methods related to primitive types.

Layout Managers

JideBoxLayout

As its name indicates, the *JideBoxLayout* class is similar to Swing's *BoxLayout*.

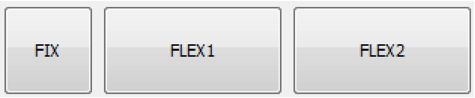
Similar to *BoxLayout*, *JideBoxLayout* lays components out either vertically or horizontally. Unlike *BoxLayout* however, there is a constraint associated with each component, set to either FIX, FLEXIBLE, or VARY. If the constraint is set to FIX then the component's width (or height if the *JideBoxLayout* is vertical) will always be the preferred width. By contrast, although FLEXIBLE components try to keep the preferred width, they will shrink proportionally if there is not enough space. Finally, VARY components will expand in size to fill whatever width is left. Although you can add multiple FIX or FLEXIBLE components, only one VARY component is allowed.

Code Example 1:

This sample has three buttons; the first one is FIX and the second and third ones are FLEXIBLE.

```
JPanel panel = new JPanel();
panel.setLayout(new JideBoxLayout(panel, 0, 6));

JButton button = new JButton("FIX");
button.setPreferredSize(new Dimension(60, 60));
button.setMaximumSize(new Dimension(Integer.MAX_VALUE, Integer.MAX_VALUE));
panel.add(button, JideBoxLayout.FIX);

button = new JButton("FLEX1");
button.setPreferredSize(new Dimension(120, 60));
button.setMaximumSize(new Dimension(Integer.MAX_VALUE, Integer.MAX_VALUE));
panel.add(button, JideBoxLayout.FLEXIBLE);

button = new JButton("FLEX2");
button.setPreferredSize(new Dimension(120, 60));
button.setMaximumSize(new Dimension(Integer.MAX_VALUE, Integer.MAX_VALUE));
panel.add(button, JideBoxLayout.FLEXIBLE);
```

Original:



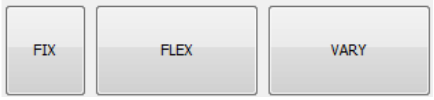
After resizing:

Code Example 2:

This example has one FIX button, one FLEXIBLE button, and one VARY button.

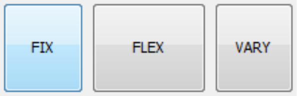
```
JPanel panel = new JPanel();
panel.setLayout(new JideBoxLayout(panel, 0, 6));

JButton button = new JButton("FIX");
button.setPreferredSize(new Dimension(60, 60));
button.setMaximumSize(new Dimension(Integer.MAX_VALUE, Integer.MAX_VALUE));
panel.add(button, JideBoxLayout.FIX);

button = new JButton("FLEX");
button.setPreferredSize(new Dimension(120, 60));
button.setMaximumSize(new Dimension(Integer.MAX_VALUE, Integer.MAX_VALUE));
panel.add(button, JideBoxLayout.FLEXIBLE);

button = new JButton("VARY");
button.setPreferredSize(new Dimension(120, 60));
button.setMaximumSize(new Dimension(Integer.MAX_VALUE, Integer.MAX_VALUE));
panel.add(button, JideBoxLayout.VARY);
```

Original:



After resizing, the VARY component gets all the extra width:

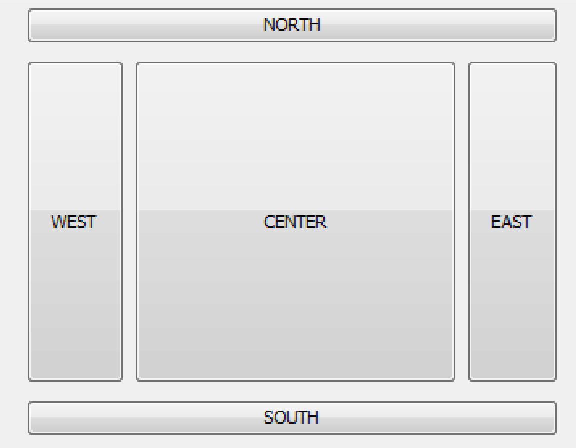
After resizing to make it smaller, when the VARY component reaches its minimum width, the FLEX component will start to resize and the FIX component will never resize:



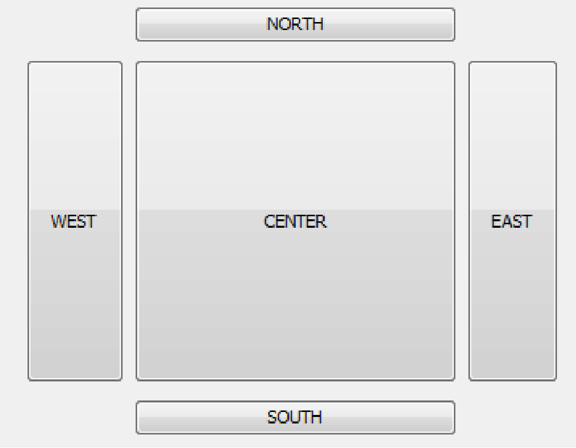
JideBorderLayout

JideBorderLayout is almost the same as the standard Swing *BorderLayout* except that the NORTH and SOUTH component's width is the same as the CENTER component, as shown overleaf. Please note the difference between *BorderLayout* and *JideBorderLayout*.

In AWT *BorderLayout*, the north and south components take *all* of the horizontal space that is available.



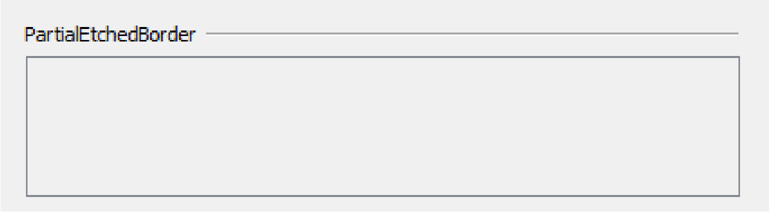
By contrast, in *JideBorderLayout* the north and south components only take the same horizontal space as the center component.



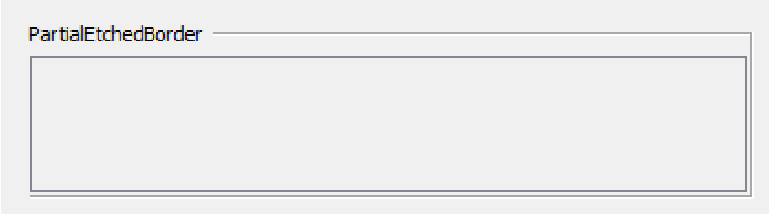
Borders

PartialEtchedBorder

PartialEtchedBorder is an *EtchedBorder* that only paints the etched border on the partial sides. The screenshot below paints only on the north side.

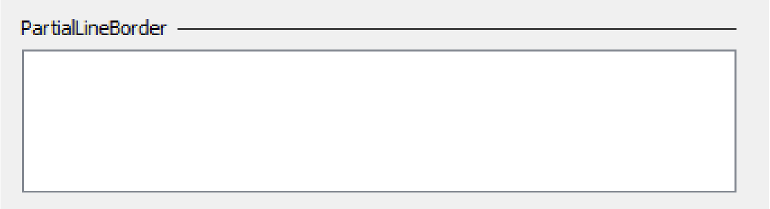


The screenshot below paints three sides.



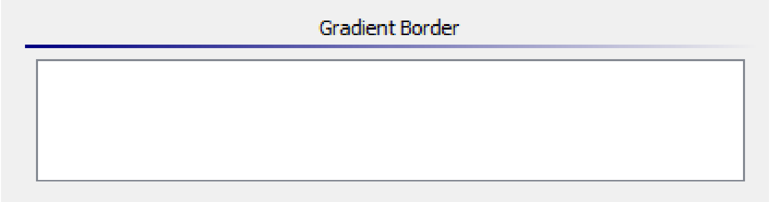
PartialLineBorder

PartialLineBorder is a *LineBorder* that only paints the line border on the partial sides. The screenshot below paints only on the north side.

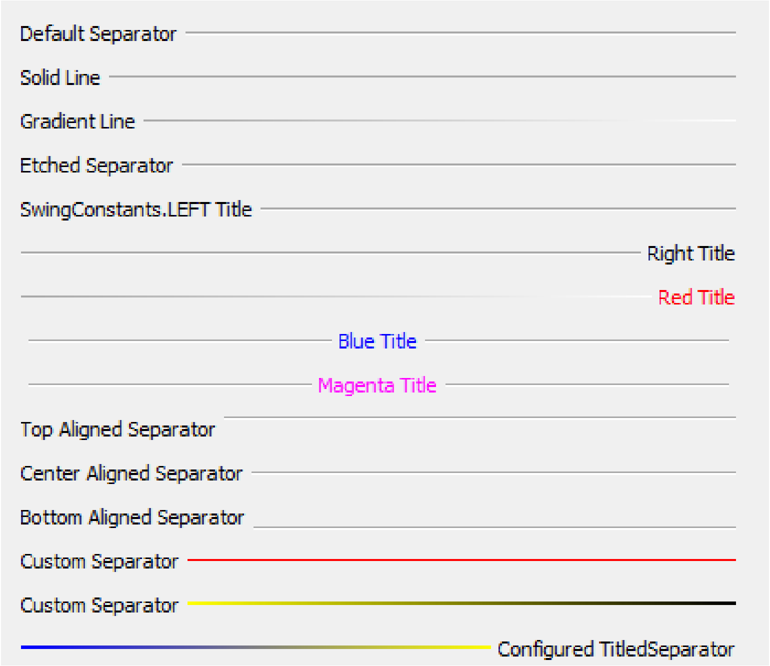


PartialGradientLineBorder

PartialGradientLineBorder is a border that only paints a gradient line border on the partial sides. The screenshot below paints only on the north side.



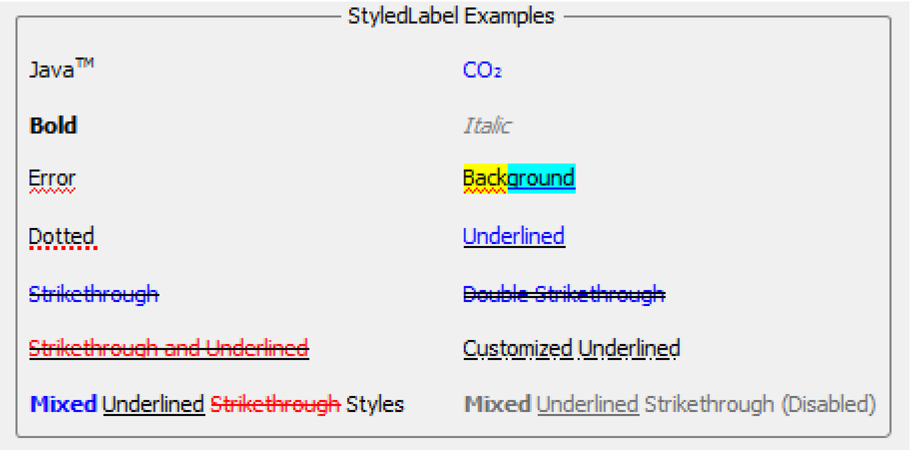
TitledSeparator



The *TitledSeparator* is not a Border. The reason we included it here is it can archive the same effect as *PartialEtchedBorder*, *PartialLineBorder* and *PartialGradientLineBorder*. You can decide which one to use depending on if you want to implement the feature as border or as a separate component.

StyledLabel

Features of StyledLabel



StyledLabel Examples

Java^{TM}

Bold

Error

Dotted

~~Strikethrough~~

~~Strikethrough and Underlined~~

Mixed Underlined ~~Strikethrough~~ Styles

CO$_2$

Italic

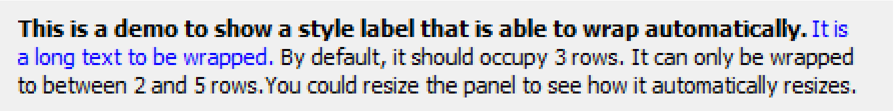
Background

Underlined

~~Double Strikethrough~~

Customized Underlined

Mixed Underlined Strikethrough (Disabled)



This is a demo to show a style label that is able to wrap automatically. It is a long text to be wrapped. By default, it should occupy 3 rows. It can only be wrapped to between 2 and 5 rows.You could resize the panel to see how it automatically resizes.

StyledLabel is an enhanced version of *JLabel* to display text in different colors and styles with several line decorations. It also supports automatic line wrapping.

JLabel is simple and fast but has very limited features. For example, you can't use different colors to draw the text. Changing the foreground will affect the whole text. You may argue *JLabel* can use HTML tag to display text in different colors. Sure, but there are two drawbacks. First it is very slow[2]. Secondly, it is buggy[3]. Comparing with HTML *JLabel*, *StyledLabel* is 20 to 40 times faster based on our performance test. Another solution is to use *JTextPane*. *JTextPane* is powerful and can display text in different colors. But in the cases like cell renderers, *JTextPane* is obviously an overkill.

Here is the list of features that *StyledLabel* support.

- Uses different font styles to display the text.
- Uses different colors to display the text

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[2] You can see StyledLabelPerformanceDemo.java in examples\B15. StyledLabel folder to see a performace test of HTML JLabel and StyledLabel.

[3] See bug report at http://bugs.sun.com/bugdatabase/view_bug.do?bug_id=4373575. Sun claimed it is fixed but it is not as another user pointed it out at the end. If you run the test case provided by original submitter, you will immediately notice the tree node disappeared when you click on the tree nodes. This bug is actually one of the main reasons we decided to create *StyledLabel*.

- Subscript and superscript
- Line decorations including solid line, dotted line, waved line, double solid line or any arbitrary line style that can be defined by Java2D's Stroke class.
- Two line locations – underlined or strikethrough or both.
- Can line wrapping. You can specify the default, minimum, maximum row count, and preferred width.
- Can be used as cell renderers for *JList*, *JTable*, or *JTree*.
- Annotation support using StyledLabelBuilder so that you can use annotated string to defined a StyledLabel.

Classes, Interfaces and Demos

Classes	
StyledLabel (com.jidesoft.swing)	The main class for *StyledLabel*.
StyleRange (com.jidesoft.swing)	This is the class to define the style. Since the style is defined based for a range of text in *StyledLabel*, that's why it is called *StyleRange*.
StyledLabelBuilder (com.jidesoft.swing)	This is the class to support annotation for StyledLabel.
StyledListCellRenderer (com.jidesoft.list)	A list cell renderer which uses *StyledLabel* instead of *JLabel*.
StyledTableCellRenderer (com.jidesoft.grid)	A table cell renderer which uses *StyledLabel* instead of *JLabel*. NOTE: this class resides in jide_grids.jar.
StyledTreeCellRenderer (com.jidesoft.tree)	A tree cell renderer which uses *StyledLabel* instead of *JLabel*.
Demos	
StyledLabelDemo (examples\B15.StyledLabel)	A demo to demonstrate the *StyledLabel* used as standalone labels as well as used in *JTree*, *JList* and *JTable*.

How to use StyledLabel

The design of *StyledLabel* is very similar to the *StyledText* class in SWT. It even has a *StyleRange* class just like SWT. *StyledLabel* can have zero, one or many *StyleRanges*.

StyleRange

StyleRange describes a style for a range of text. For example, to display a *StyledLabel* like “Java^{TM}”, the *StyleRange* will be

```
new StyleRange(4, 2, Font.PLAIN, StyleRange.STYLE_SUPERSCRIPT)
```

It means “starting from the 4th characters, for the next 2 characters, use PLAIN font to draw the text and apply superscript style”.

If *StyledLabel* has no *StyleRange* set, *StyledLabel* will behave exactly the same as *JLabel*. You can also add multiple *StyleRange*s as long as those ranges don’t overlap with each other. If you add a new *StyleRange* that overlaps with previously set *StyleRanges*, the new *StyleRange* will be ignored.

Here is the information you can set to *StyleRange*.

int start	The start index of the range.
int length	The length of the range
int fontStyle	The font style. The valid values are *Font.PLAIN*, *Font.BOLD*, *Font.ITALIC*, or *Font.BOLD | Font.ITALIC*.
Color fontColor	The text color.
Color lineColor	The line color
Stroke lineStroke	The line stroke. If there are lines in the additional style, the line stroke will be used to paint the line.
int additionalStyle	The additional style. This is the property you set to get all kinds of styles. The valid values are *STYLE_STRIKE_THROUGH* *STYLE_DOUBLE_STRIKE_THROUGH* *STYLE_WAVED* *STYLE_UNDERLINED* *STYLE_DOTTED* *STYLE_SUPERSCRIPT* *STYLE_SUBSCRIPT* They are all defined in *StyleRange* as constants. You can even use a combination of several styles by using “|” as long as they make sense. For example, you can use both strike through and

	underlined. However, you cannot use both superscript and subscript.

StyledLabel

StyledLabel has several methods to change *StyleRange*. The most used one is

```
public void setStyleRange(StyleRange styleRange)
```

This method will set one *StyleRange* to *StyledLabel* while keeping any other *StyleRanges* if they are set earlier.

There are also two methods to allow you quickly add several *StyleRanges* at once. The only difference is the first one will clear *StyleRanges* that was set earlier.

```
public void setStyleRanges(StyleRange[] styleRanges)
public void addStyleRanges(StyleRange[] styleRanges)
```

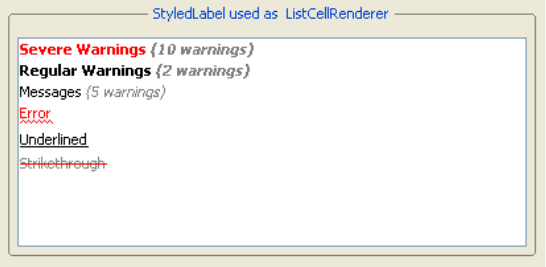
There are of course two methods to help you clear *StyleRanges*.

```
public void clearStyleRange(StyleRange styleRange)
public void clearStyleRanges()
```

All the methods above will fire property change event on property "styleRange". The property name is defined as *StyleRange.PROPERTY_STYLE_RANGE*.

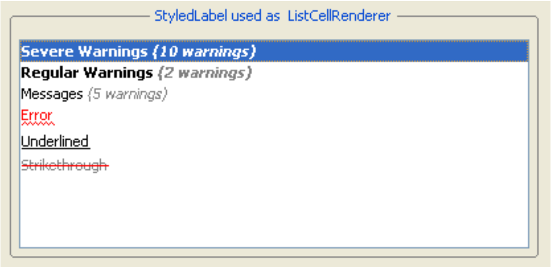
StyledLabel only has one new property called "ignoreColorSettings". If this property is true, the color setting defined *StyleRange* will be ignored and the default foreground will be used to paint the text and color. The color settings include font color and line color. The reason we need this property is for cell renderer. Cell renderer, when selected, need to use selection background. Selection background is usually defined by specific LookAndFeel, there is no way you can guarantee the color you used in *StyleRange* works well with the selection background. To avoid color confliction, we will set this property to true if the cell is selected.

You will know exactly what this property is for by looking at the two screenshots below. Although we use red and gray color in the first cell, they become white (the default selection foreground) when the cell is selected. You can imagine the gray color won't look good on a blue background.



StyledLabel used as ListCellRenderer

Severe Warnings *(10 warnings)*
Regular Warnings *(2 warnings)*
Messages *(5 warnings)*
Error
Underlined
~~Strikethrough~~



StyledLabel used as ListCellRenderer

Severe Warnings *(10 warnings)*
Regular Warnings *(2 warnings)*
Messages *(5 warnings)*
Error
Underlined
~~Strikethrough~~

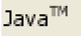
Almost all the features provided by *JLabel* still work with *StyledLabel*. You can add icon. You can set the alignment of the icon or the text or set text position. You can even set mnemonic just like in *JLabel*. However, you need to be aware that if you also use certain underlined line style, the mnemonic indicator might be conflict with the underline.

Code Examples

1. Display “TM” as superscript in string “Java$^{\text{TM}}$”.

```
    StyledLabel javaTM = new StyledLabel("JavaTM");
    javaTM.addStyleRange(new StyleRange(4, 2, Font.PLAIN, StyleRange.STYLE_SUPERSCRIPT));
```

Here is the result.


Java$^{\text{TM}}$

Another way is to use *StyledLabelBuilder*.

```
    StyledLabel javaTM = StyledLabelBuilder.createStyledLabel("Java{TM:sp}");
```

2. Display several line styles in the same *StyledLabel*.

```
    StyledLabel mixed = new StyledLabel("Mixed Underlined Strikethrough Styles");
    mixed.addStyleRange(new StyleRange(0, 5, Font.BOLD, Color.BLUE));
    mixed.addStyleRange(new StyleRange(6, 10, Font.PLAIN, Color.BLACK, StyleRange.STYLE_UNDERLINED));
    mixed.addStyleRange(new StyleRange(17, 13, Font.PLAIN, Color.RED,
StyleRange.STYLE_STRIKE_THROUGH));
```

Here is the result.


Mixed Underlined ~~Strikethrough~~ Styles

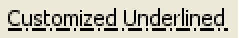
Again, here is how to do it using *StyledLabelBuilder*.

```
    StyledLabel javaTM = StyledLabelBuilder.createStyledLabel("{Mixed:f:blue, b} {Underlined:f:black, u}
{Strikethrough:f:red, s} Styles");
```

3. Display a customized underline style.

```
    StyledLabel customizedUnderlined = new StyledLabel("Customized Underlined");
    customizedUnderlined.addStyleRange(new StyleRange(Font.PLAIN, Color.BLACK,
StyleRange.STYLE_UNDERLINED, Color.BLACK, new BasicStroke(1.0f, BasicStroke.CAP_SQUARE,
BasicStroke.JOIN_ROUND, 1.0f, new float[]{6, 3, 0, 3}, 0)));
```

Here is the result.

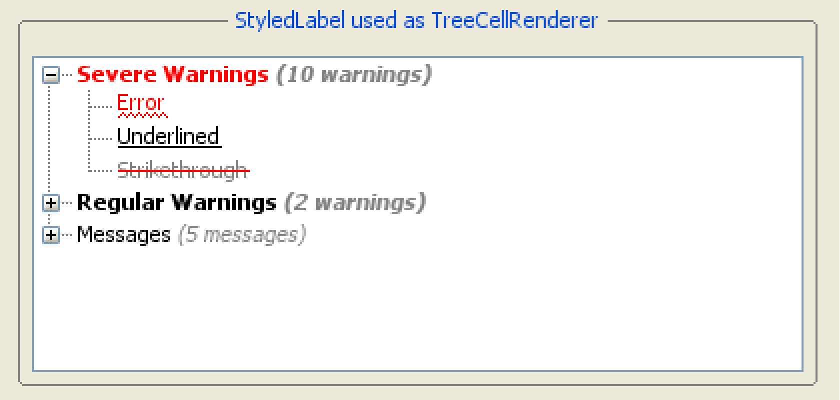

Customized Underlined

4. Uses *StyledTreeCellRenderer*. Here is how to set the renderer onto tree.

```
    tree.setCellRenderer(new StyledTreeCellRenderer() {
```

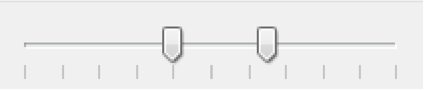
```
        protected void customizeStyledLabel(JTree tree, Object value, boolean sel, boolean expanded, boolean
    leaf, int row, boolean hasFocus) {
                super.customizeStyledLabel(tree, value, sel, expanded, leaf, row, hasFocus);
                String text = getText();
                // here is the code to customize she StyledLabel for each tree node
            }
        });
```

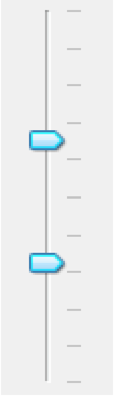
Here is the result.



RangeSlider

Features of RangeSlider





RangeSlider extends *JSlider* but it allows user to choose two values to form a range.

Here is the list of features that *RangeSlider* support.

- Allow to choose lower value and upper value separately to form a range
- Allow to move both lower value and upper value at the same time
- Support both horizontal and vertical orientation
- Support several L&Fs (Metal, Windows, Aqua, Synth, GTK etc.) and can be extended to support other L&Fs.

Classes, Interfaces and Demos

Classes	
RangeSlider (com.jidesoft.swing)	The main class for *RangeSlider*.
Demos	
RangeSliderDemo (examples\B17.RangeSlider)	A demo to demonstrate the *RangeSlider*.

How to use RangeSlider

RangeSlider extends *JSlider*, so the usage of it is almost the same as *JSlider*. For example, you can set min and max value; you can set the major tick and minor spacing; you can set tick/label/track visibility. In addition, *RangeSlider* allows you to set lower value and upper value. Please see code examples below to find out how to use it.

Code Examples

1. Creates a *RangeSlider* with certain min/max/lower/upper value

```
RangeSlider rangeSlider = new RangeSlider(0, 100, 10, 90);
```

2. Creates a *RangeSlider* with major ticks on

```
RangeSlider rangeSlider = new RangeSlider(0, 100, 10, 90);
rangeSlider.setPaintTicks(true);
rangeSlider.setMajorTickSpacing(10);
```

3. Creates a *RangeSlider* with tick label visible

```
RangeSlider rangeSlider = new RangeSlider(0, 100, 10, 90);
rangeSlider.setPaintTicks(true);
rangeSlider.setMajorTickSpacing(10);
```

```
rangeSlider.setPaintLabels(true);
```

4. Creates a vertical *RangeSlider*

```
RangeSlider rangeSlider = new RangeSlider(SwingConstants.VERTICAL);
```

TristateCheckBox

Features of TristateCheckBox

TristateCheckBox extends *JCheckBox* to add a 3rd state to indicate the check box is partially selected.

Here is the list of features that *TristateCheckBox* support.

- Allow a 3rd state for the check box
- Can be used as a cell renderer in a JList, JTree or JTable
- Support several L&Fs (Metal, Windows, Aqua, Synth, GTK etc.) and can be extended to support other L&Fs.

Classes, Interfaces and Demos

Classes	
TristateCheckBox (com.jidesoft.swing)	The main class for *TristateCheckBox*.
Demos	
RangeSliderDemo (examples\B16.CheckBoxTree)	A demo to demonstrate the *TristateCheckBox*.

How to use TristateCheckBox

TristateCheckBox extends *JCheckBox*, so the usage of it is almost the same as *JSlider*. For example, you can select or unselect. In addition, *TristateCheckBox* has *setState* method that you can call it to set it to the 3rd state. Please see code examples below to find out how to use it.

Code Examples

1. Creates a *TristateCheckBox* and set it to the 3rd state.

```
TristateCheckBox  checkBox = new TristateCheckBox("Tristate Check Box");
checkBox.setState(TristateCheckBox.STATE_MIXED);
```

2. Listen to *TristateCheckBox* state change

```
checkBox.addActionListener(new ActionListener() {
   public void actionPerformed(ActionEvent e) {
      int state = checkBox.getState();
      switch (state) {
         case TristateCheckBox.STATE_MIXED:
            // mixed state
            break;
         case TristateCheckBox.STATE_UNSELECTED:
            // unselected state
            break;
         case TristateCheckBox.STATE_SELECTED:
            // selected state
            break;
      }
   }
});
```

JideSplitPane

JSplitPane is a useful Swing component but it has one major limitation: it can only split into two panes. If you want to split into three panes, you have to use two *JSplitPanes*. That may be OK in most cases, but if you want to split it into four or five or more panes then you will quickly get into trouble, maintaining so many *JSplitPanes*. As you can see in *JIDE Docking Framework*, we need to be able to split a panel into any number of panes[4]. *JSplitPane* obviously cannot meet this need gracefully, so we developed *JideSplitPane*.

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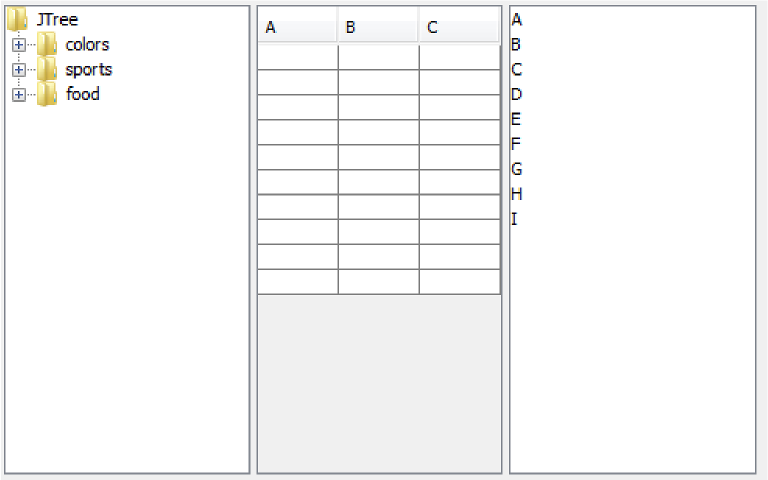
[4] You can refer to a bug in Java website for information on this particular issue. http://developer.java.sun.com/developer/bugParade/bugs/4155064.html



Above is an example of a *JideSplitPane*, which is split into three parts. Each divider can be moved using the mouse, to resize the components either side of it.

JideSplitPane can split either horizontally or vertically, using the two identifiers defined in *JideSplitPane* as HORIZONTAL_SPLIT and VERTICAL_SPLIT. You can either specify the orientation in the constructor or call setOrientation after it is constructed.

Call *addPane(Component)* or *insertPane(Component, int)* or *add(Component)* to add a new component. The underlying layout is *JideBoxLayout*, so you can specify the constraints as VARY, FLEXIBLE or FIX when you call *add(Component, Object constraint)*.

By default, the size of the divider is 3 pixels. You can either change this by calling *setDividerSize()*, or you can change it globally in UIDefaults using the key "JideSplitPane.dividerSize". You can also change the border and background color of the divider in UIDefaults using "JideSplitPaneDivider.border" and "JideSplitPaneDivider.background".

In *JSplitPane*, you can call set the divider location by calling *setDividerLocation()*. You can find this method on *JideSplitPane* too. However, the behavior is different. If the *JideSplitPane* is displayed on screen, *setDividerLocation* will change the divider location correctly. If the *JideSplitPane* has never been displayed before, this method call will have no effect. The reason is *setDividerLocation* changes underlying layout directly. If the *JideSplitPane* is never displayed, the underlying layout is not initialized properly, thus no effect. This is the correct way to change the initial divider location. The divider location is determined by the preferred size of panes. So instead of setting the location directly, you can set the preferred size of each pane to control the dividers' location. For example, if the preferred width of three panes in HORIZONTAL _SPLIT *JideSplitPane* is 200, 300, 500 respectively, then the two dividers will be at 20% and 50% of the total width of *JideSplitPane*.

Continuous Layout refers to painting during drag and drop actions. If this is set to true, then the child components are continuously redisplayed and laid out while moving a window. The default value of this property is false, meaning that only an outline is displayed, which provides much better performance. You can change this with *setContinuousLayout(boolean)*.

Classes, Interfaces and Demos

Classes	
JideSplitPane (com.jidesoft.swing)	The main class for *JideSplitPane*.
Demos	
JideSplitPaneDemo (examples\B5.JideSplitPane)	A demo to demonstrate the *JideSplitPane*.

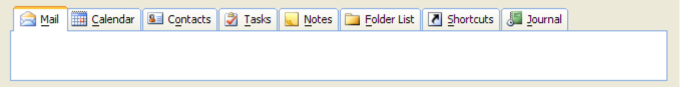
UI Defaults used by JideSplitPane

Name	Type	Description
JideSplitPane.dividerSize	Integer	The divider width or height
JideSplitPaneDivider.border	Border	The border of the dividers
JideSplitPaneDivider.background	Color	The background of the dividers
JideSplitPaneDivider.gripperPainter	Painter	The painter for the gripper

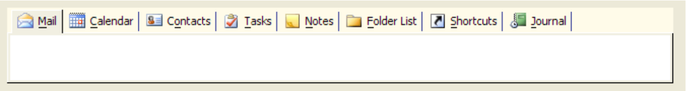
JideTabbedPane

JideTabbedPane is similar to *JTabbedPane*; the differences are that *JideTabbedPane*:

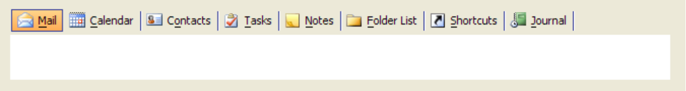
- Has many tab shapes you can choose from. Currently it has
  - *SHAPE_WINDOWS*



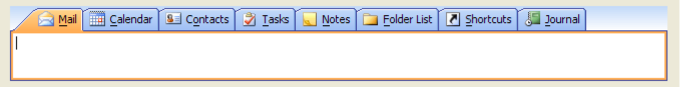
  - *SHAPE_VSNET*



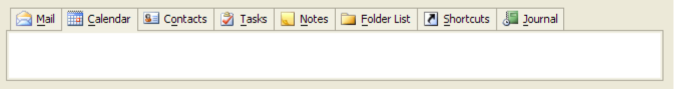
  - *SHAPE_BOX*



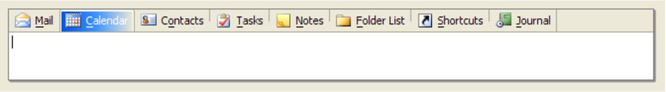
  - *SHAPE_OFFICE2003*



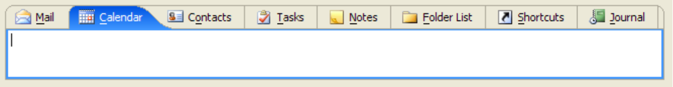
  - *SHAPE_FLAT*



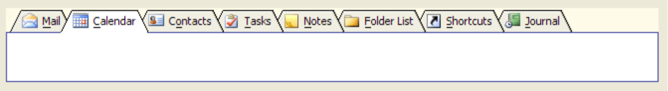
  - *SHAPE_ECLIPSE*



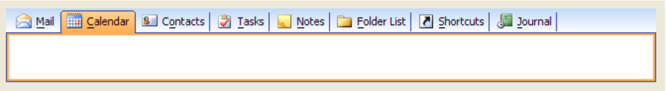
  - *SHAPE_ECLIPSE3x*



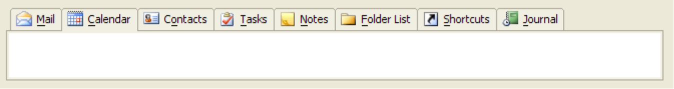
  - *SHAPE_EXCEL*



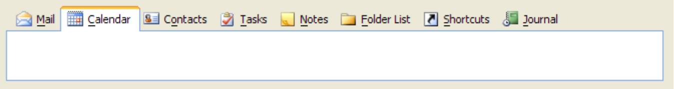
  - *SHAPE_ROUNDED_VSNET*



  - *SHAPE_ROUNDED_FLAT*

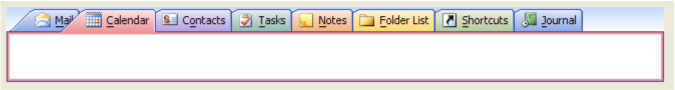


  - *SHAPE_WINDOWS_SELECTED.*

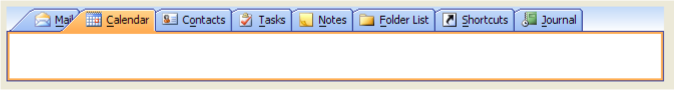


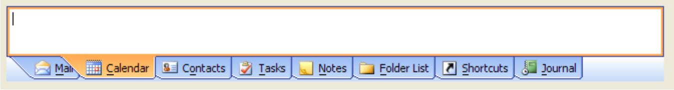
- Has different color themes to choose from. Currently it supports four different themes.
  - COLOR_THEME_WIN2K
  - COLOR_THEME_OFFICE2003
  - COLOR_THEME_VSNET
  - COLOR_THEME_WINXP

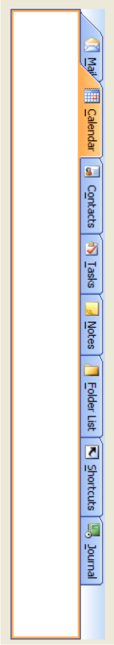
It even has a special OneNote color theme which is available as part of COLOR_THEME_OFFICE2003.



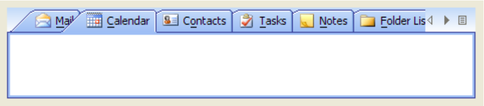
- Supports all four sides as tab placement.



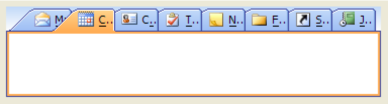




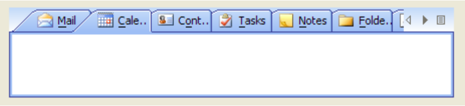
- Has four tab resize layouts.
    - RESIZE_MODE_NONE: it doesn't change tab size when there isn't enough space to hold all tabs. So it uses scroll left and right button to scroll the tabs. There is also a tab list button to show all tabs in popup menu so that you can select the tab even it is not visible.



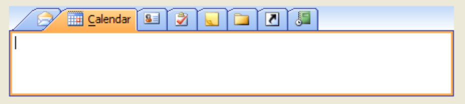
    - RESIZE_MODE_FIT: it shrinks tab size so that all tabs can fit in one row.



    - RESIZE_MODE_FIXED: All tabs have a fixed size which you can define it yourself. Each tab, no matter how long the title is, has the same size. It will not change its size when tabbed pane size changes. So in order to select any tab, you still get scroll left/right and tab list button as in RESIZE_MODE_NONE.

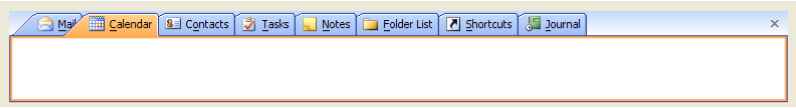


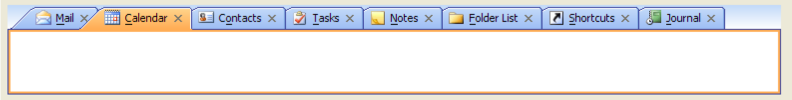
  - RESIZE_MODE_COMPRESSED: This resize mode only shows the selected tab's title. For all unselected tabs, only icons are visible. So if you want to use this mode, you need to make sure you set icons for all tabs.

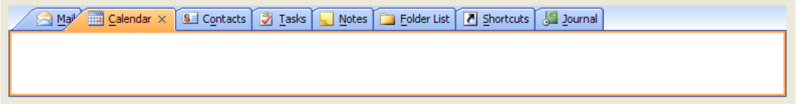


- Has an option to hide the tab area if there is only one component in a tabbed pane. This is a feature used by JIDE Docking Framework.
- Has an option to show a "close" button on the corner, on the tab, or on the selected tab. This is very useful especially each tab is a document in *DocumentPane*. To use this option, you need to call the following two calls. If you never call setShowCloseButtonOnTab, a default value will be used by reading it from L&F. For example, in VSNET L&F, the value is false. In Eclipse L&F, the value is true. So if you want to set it freely, you must disable the L&F by setUseDefaultShowCloseButtonOnTab to false. Then whatever value you set to setShowCloseButtonOnTab will be used.

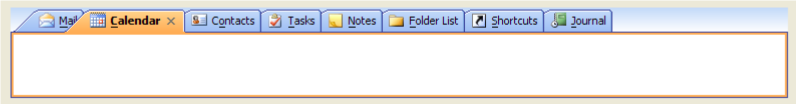
```
tabbedPane.setUseDefaultShowCloseButtonOnTab(false);
tabbedPane.setShowCloseButtonOnTab(true);
```



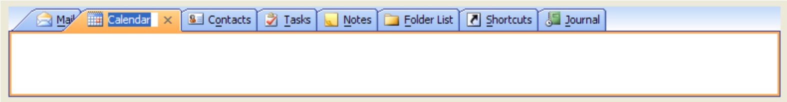




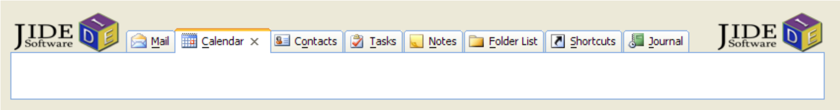
- Can show the selected tab's title in bold font.



- JideTabbedPane also supports inline tab title editing. By default, this feature is disabled. You need to enable it by calling *setTabEditingAllowed(true)*. If enabled, user can double click on any tab to start editing the title. See below.



- Allow tabLeadingComponent and tabTrailingComponent. This feature allows you to add your own component to the area before tabs and after tabs.



Since JideTabbedPane extends JTabbedPane, the usage of it is exactly the same as JTabbedPane, except for the differences in appearance, noted above.

Classes, Interfaces and Demos

Classes	
JideTabbedPane (com.jidesoft.swing)	The main class for *JideTabbedPane*.
Demos	
JideTabbedPaneDemo (examples\B6.JideTabbedPane)	A demo to demonstrate the *JideTabbedPane*.

UI Defaults used by JideTabbedPane

Name	Type	Description
JideTabbedPane.border	Border	The border of tabbed pane
JideTabbedPane.background	Color	The background of tabbed pane
JideTabbedPane.foreground	Color	The foreground of tabbed pane
JideTabbedPane.light	Color	One of the colors used to paint the tab border
JideTabbedPane.highlight	Color	One of the colors used to paint the tab border
JideTabbedPane.shadow	Color	One of the colors used to paint the tab border
JideTabbedPane.darkShadow	Color	One of the colors used to paint the tab border
JideTabbedPane.tabInsets	Insets	The insets of each tab
JideTabbedPane.contentBorderInsets	Insets	The insets of tab content
JideTabbedPane.tabAreaInsets	Insets	The insets of the area where all the tabs are
JideTabbedPane.tabAreaBackground	Color	The tab area background
JideTabbedPane.font	Font	The font used by tabbed pane
JideTabbedPane.selectedTabFont	Font	The font used to draw the text of the selected tab
JideTabbedPane.unselectedTabTextForeground	Color	The default text color of unselected tabs.

		If setForegroundAt() is call to set a new color, the new color will be used. The selected tab foreground is whatever color returned from getForegroundAt().
JideTabbedPane.selectedTabBackground	Color	The selected tab background. The unselect tab background is tabAreaBackground
JideTabbedPane.textIconGap	Integer	The gap between icon and text
JideTabbedPane.showIconOnTab	Boolean	Whether to show icon on tabs
JideTabbedPane.showCloseButtonOnTab	Boolean	Whether to show close button on tabs
JideTabbedPane.closeButtonAlignment	Integer	If the close button is on tab, what is the alignment. It could be LEADING or TRAILING defined in SwingConstants.

JideScrollPane

Features of JideScrollPane

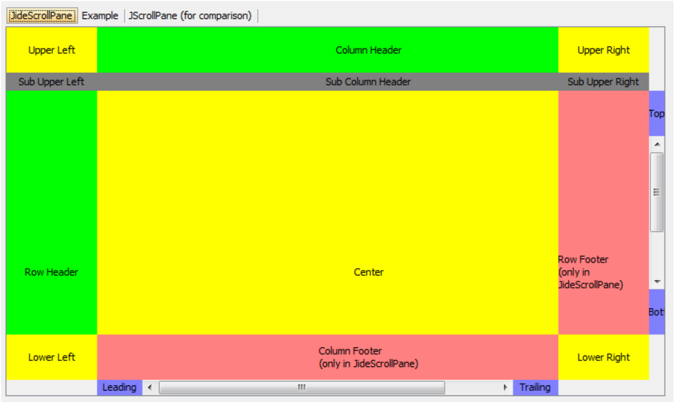


Figure 1 JideScrollPane

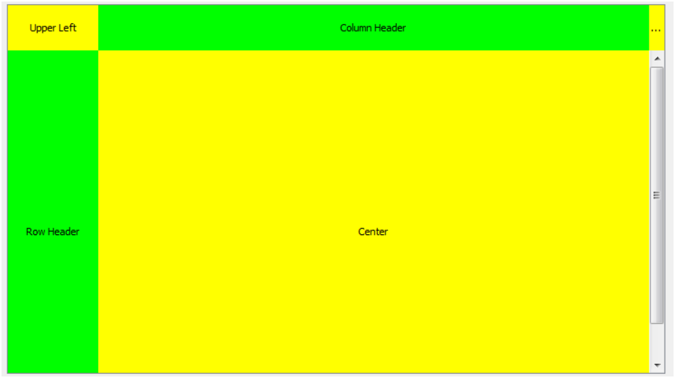


Figure 2 JScrollPane

JideScrollPane extends *JScrollPane*. It supports additional areas than what a *JScrollPane* supports. As you can see from the two screenshots above, *JScrollPane* only supports the row header, the column header, the upper left corner and the upper right corner.

Here is the list of features that *JideScrollPane* supports.

- Supports ROW_FOOTER, COLUMN_FOOTER, SUB_COLUMN_HEADER, which can be used to implement freeze rows/columns feature in a table.
- Supports additional corners such as SUB_UPPER_LEFT, SUB_UPPER_RIGHT.
- Supports scroll bar corners such as HORIZONTAL_LEFT, HORIZONTAL_RIGHT, HORIZONTAL_LEADING, HORIZONTAL_TRAILING, VERTICAL_TOP, VERTICAL_BOTTOM.

Classes, Interfaces and Demos

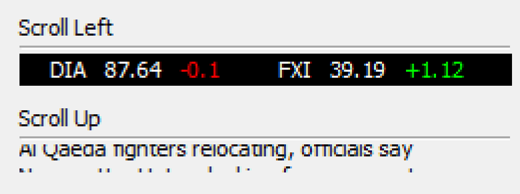
Classes	
JideScrollPane (com.jidesoft.swing)	The main class for *JideScrollPane*.
Demos	
JideScrollPaneDemo (examples\B8.JideScrollPane)	A demo to demonstrate the *JideScrollPane*.

How to use JideScrollPane

JideScrollPane extends *JScrollPane*, so the usage of it is almost the same as *JScrollPane* except a few additional methods you can set the scroll pane areas, corners and scroll bar corners.

MarqueePane

Features of MarqueePane



DIA 87.64 -0.1 FXI 39.19 +1.12

Al Qaeda fighters relocating, officials say

MarqueePane extends *JScrollPane* and it automatically scrolls the content.

Here is the list of features that *MarqueePane* supports.

- Changes the scroll direction. It can scroll up, down, right or left.
- Changes the scroll amount. The number of pixels it scrolls every loop. The smaller, the smoother it appears.

- Scrolls and stays. For example, when you scroll a text, it can scroll line by line and stay for a while on each line so that the full text on that line can be read.

Classes, Interfaces and Demos

Classes	
MarqueePane (com.jidesoft.swing)	The main class for *MarqueePane*.
Demos	
MarqueePaneDemo (examples\B21.MarqueePane)	A demo to demonstrate the *MarqueePane*.

How to use MarqueePane

MarqueePane extends *JScrollPane*, so the usage of it is almost the same as *JScrollPane* except a few additional methods you can customize the scroll behavior. Please see code examples below to find out how to use it.

Code Examples

1. Scroll a long label horizontally when there isn't enough size to show the full content

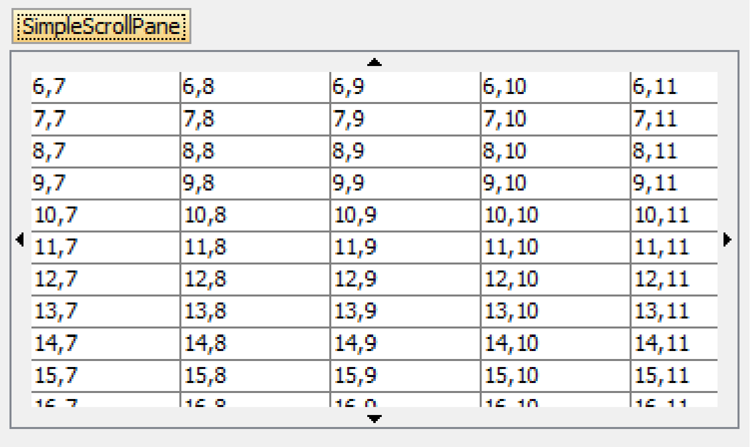
```
MarqueePane horizonMarqueeLeft = new MarqueePane(longLabel);
horizonMarqueeLeft.setPreferredSize(new Dimension(250, 40));
```

2. Scroll several status messages line by line and it stays on each line

```
    MultilineLabel textArea = new MultilineLabel(…);
    MarqueePane verticalMarqueeUp = new MarqueePane(textArea);
    verticalMarqueeUp.setScrollDirection(MarqueePane.SCROLL_DIRECTION_UP);
    verticalMarqueeUp.setPreferredSize(new Dimension((int)
horizonMarqueeLeft.getPreferredSize().getWidth(), 38));
    verticalMarqueeUp.setScrollAmount(1);
    verticalMarqueeUp.setStayPosition(14);
```

SimpleScrollPane

Features of SimpleScrollPane



6,7	6,8	6,9	6,10	6,11
7,7	7,8	7,9	7,10	7,11
8,7	8,8	8,9	8,10	8,11
9,7	9,8	9,9	9,10	9,11
10,7	10,8	10,9	10,10	10,11
11,7	11,8	11,9	11,10	11,11
12,7	12,8	12,9	12,10	12,11
13,7	13,8	13,9	13,10	13,11
14,7	14,8	14,9	14,10	14,11
15,7	15,8	15,9	15,10	15,11

SimpleScrollPane extends *JScrollPane.* There is no scroll bar. It just uses four scroll buttons to do the scrolling.

Here is the list of features that *SimpleScrollPane* supports.

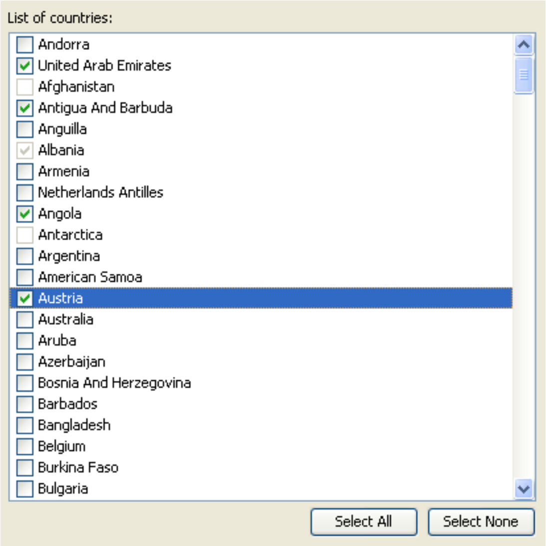
- No more scroll bars. It uses four buttons to scroll the content.
- Instead of clicking on the scroll buttons, user can put mouse over the button and it will scroll automatically.
- The scroll buttons can be customized to always show, show as needed or never show.

Classes, Interfaces and Demos

Classes	
SimpleScrollPane (com.jidesoft.swing)	The main class for *SimpleScrollPane*.
Demos	
SimpleScrollPaneDemo (examples\B8.JideScrollPane)	A demo to demonstrate the Simple*ScrollPane*.

CheckBoxList

Features of CheckBoxList



List of countries:

☐ Andorra
☑ United Arab Emirates
Afghanistan
☑ Antigua And Barbuda
☐ Anguilla
☑ Albania
☐ Armenia
☐ Netherlands Antilles
☑ Angola
Antarctica
☐ Argentina
☐ American Samoa
☑ Austria
☐ Australia
☐ Aruba
☐ Azerbaijan
☐ Bosnia And Herzegovina
☐ Barbados
☐ Bangladesh
☐ Belgium
☐ Burkina Faso
☐ Bulgaria

CheckBoxList is a special *JList* which uses *JCheckBox* as the list cell renderer. In addition to regular *JList*'s features, it also allows you select any number of rows in the list by selecting the check boxes.

To select an element, user can mouse click on the check box, or select one or several rows and press SPACE key to toggle the check box selection for all selected rows.

Here is the list of features that *CheckBoxList* support.

- Check or uncheck each row.
- Check or uncheck multiple rows by selecting them first
- Still supports customized cell renderer as before. The cell renderer will be the part to the left of the check box (when it's left-to-right orientation).

Classes, Interfaces and Demos

Classes
The first implementation [5]

---

[5] Due to a design change, there are currently two working versions for *CheckBoxList*. The first one is just called *CheckBoxList*. This one used the same design as *CheckBoxTree* and uses a *DefaultListSelectionModel* as the selection model to keep track of which check boxes are checked. The second implementation is called *CheckBoxListWithSelectable*. It stored the check box state information in *ListModel* by converting the element in the *ListModel* to Selectable.

CheckBoxList (com.jidesoft.swing)	The main class for *CheckBoxList*.
CheckBoxListCellRenderer (com.jidesoft.swing)	The list cell renderer which uses check box as cell renderer.
The second implementation	
CheckBoxListWithSelectable (com.jidesoft.swing)	
Selectable (com.jidesoft.swing)	This is an interface to indicate something can be selected.
DefaultSelectable (com.jidesoft.swing)	Default implementation of Selectable.
Demos	
CheckBoxListDemo (examples\B10.CheckBoxList)	A demo to demonstrate the *CheckBoxList.*

Code Examples

1. To create a *CheckBoxList*. There is no difference from creating a regular *JList*.

```
CheckBoxList checkBoxList = new CheckBoxList(Object[] or Vector);

or

CheckBoxListWithSelectable checkBoxList = new CheckBoxListWithSelectable(Object[] or Vector);
```

2. To find out when the check box state changes in *CheckBoxList*.

```
checkBoxList. getCheckBoxListSelectionModel().addListSelectionListener(new ListSelectionListener () {
        void valueChanged(ListSelectionEvent e) {
            // your code here.
        }
    });
```

3. To find out all selected objects

```
Object[] objects = checkBoxList.getSelectedObjects(); // or getCheckBoxListSelectedValues()
```

The objects will be the array of objects that are checked.

4. To select all the rows or to clear all the selected rows

```
checkBoxList.selectAll();
checkBoxList.selectNone();
```

5. Change the cell renderer for *CheckBoxList*.

```
checkBoxList.setCellRenderer(a new cell renderer);
```

CheckBoxList has its cell renderer which has check box. However, it doesn't prevent you from setting your own cell renderer. As you can see from the code above, the way to set a new cell renderer is just like before. *CheckTreeList* will use the new cell renderer and add check box before it. The difference is if you call *getCellRenderer()*, you will not get the cell renderer you set but get the check box cell renderer. You can use *getActualCellRenderer()*, which is a new method we added, to get the actual cell renderer you set.

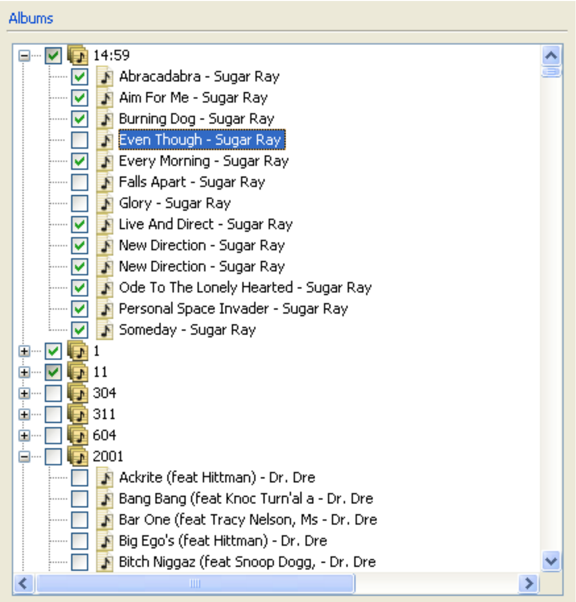
6. Define your own *ListModel* that works with *CheckBoxList*.

```
ListModel listModel = new AbstractListModel () {
     public Object getElementAt(int row) {
        //make sure you return an element which is instance of Selectable. In most case, you can
        // DefaultSelectable and wraps your object into it. Or you can make your
        // object implementing Selectable.
    }

    public int getSize() {
        // return whatever size
    }
};
CheckBoxList checkBoxList = new CheckBoxList(listModel);
```

CheckBoxList doesn't keep the check box selection state in itself. All the selection information is kept in Selectable object in the ListModel. Good thing about this approach is the selection model will never go out of sync with data model. Bad thing is the data model needs to be changed to support it. However, this change should be trivial in most cases.

CheckBoxTree

Features of CheckBoxTree



- ☑ 14:59
  - ☑ Abracadabra - Sugar Ray
  - ☑ Aim For Me - Sugar Ray
  - ☑ Burning Dog - Sugar Ray
  - ☐ Even Though - Sugar Ray
  - ☑ Every Morning - Sugar Ray
  - ☐ Falls Apart - Sugar Ray
  - ☐ Glory - Sugar Ray
  - ☑ Live And Direct - Sugar Ray
  - ☑ New Direction - Sugar Ray
  - ☑ New Direction - Sugar Ray
  - ☑ Ode To The Lonely Hearted - Sugar Ray
  - ☑ Personal Space Invader - Sugar Ray
  - ☑ Someday - Sugar Ray
- ☑ 1
- ☑ 11
- ☐ 304
- ☐ 311
- ☐ 604
- ☐ 2001
  - ☐ Ackrite (feat Hittman) - Dr. Dre
  - ☐ Bang Bang (feat Knoc Turn'al a - Dr. Dre
  - ☐ Bar One (feat Tracy Nelson, Ms - Dr. Dre
  - ☐ Big Ego's (feat Hittman) - Dr. Dre
  - ☐ Bitch Niggaz (feat Snoop Dogg, - Dr. Dre

CheckBoxTree is a special *JTree* which uses *JCheckBox* as the tree renderer. In addition to regular *JTree*'s features, it also allows you select any number of tree nodes in the tree by selecting the check boxes.

To select an element, user can mouse click on the check box, or select one or several tree nodes and press SPACE key to toggle the check box selection for all selected tree nodes.

Here is the list of features that *CheckBoxTree* support.

- Check or uncheck each tree node.
- Check or uncheck multiple tree nodes by selecting them first
- Supports dig-in mode
- Still supports customized cell renderer as before. The cell renderer will be the part to the left of the check box (when it's left-to-right orientation).

Classes, Interfaces and Demos

Classes	
CheckBoxTree (com.jidesoft.swing)	The main class for *CheckBoxTree*.
CheckBoxTreeSelectionModel (com.jidesoft.swing)	This is the selection model to keep track of the check/uncheck state of check boxes.

CheckBoxTreeCellRenderer (com.jidesoft.swing)	The tree cell renderer which uses check box as cell renderer.
TristateCheckBox (com.jidesoft.swing)	A check box can display three states. We used it to show a parent tree node to indicate three different states. The three states are all children are selected, none of the children are selected, and some of the children are selected.
Demos	
CheckBoxTreeDemo (examples\B16.CheckBoxTree)	A demo to demonstrate the *CheckBoxTree.*

Code Examples

7. To create a *CheckBoxTree*. There is no difference from creating a regular *JTree*.

```
CheckBoxTree checkBoxTree = new CheckBoxTree(treeModel);
```

8. To find out when the check box state changes in *CheckBoxTree*.

```
checkBoxTree.getCheckBoxTreeSelectionModel().addTreeSelectionListener(new TreeSelectionListener() {
        public void valueChanged(TreeSelectionEvent e) {
            // your code here.
        }
     });
```

9. To find out which tree nodes are checked

```
TreePath[] treePaths = checkBoxTree.getCheckBoxTreeSelectionModel().getSelectionPaths();
```

The treePaths will be the list of tree path that are checked.

10. Change the dig-in mode.

```
checkBoxTree.getCheckBoxTreeSelectionModel().setDigIn(true/false);
```

If the *CheckBoxTree* is in dig-in mode, checking the parent node will check all the children. Correspondingly, *getSelectionPaths()* will only return the parent tree path. If not in dig-in mode, each tree node can be checked or unchecked independently.

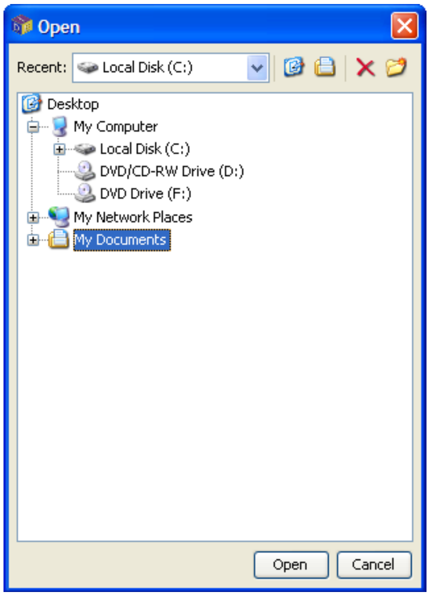
11. Change the cell renderer for *CheckBoxTree*.

```
checkBoxTree.setCellRenderer(a new cell renderer);
```

CheckBoxTree has its cell renderer which has check box. However, it doesn't prevent you from setting your own cell renderer. As you can see from the code above, the way to set a new cell renderer is just like before. The *checkBoxTree* object will use the new cell renderer and add check box before it. The difference is if you call *getCellRenderer()*, you will not get the cell renderer you set but get the check box cell renderer. You can use *getActualCellRenderer()*, which is a new method we added, to get the actual cell renderer you set.

FolderChooser

Features of FolderChooser



FolderChooser extends *JFileChooser* and uses a familiar interface to choose a folder.

Here is the list of features that *FolderChooser* support.

- Chooses a folder in file system
- Remembers a list of recent selected folders
- Allows delete and new folder
- Allows quick access to Home and My Document folder

Classes, Interfaces and Demos

Classes

FolderChooser (com.jidesoft.swing)	The main class for *FolderChooser*.
Demos	
FolderChooserDemo (examples\B18.FolderChooser)	A demo to demonstrate the *FolderChooser*.

How to use FolderChooser

FolderChooser extends *JFileChooser*, so the usage of it is almost the same as *JFileChooser*. Please see code examples below to find out how to use it.

Code Examples

1. Show an Open folder chooser dialog

```
FolderChooser folderChooser = new FolderChooser();
int result = folderChooser.showOpenDialog(button.getTopLevelAncestor());
if (result == FolderChooser.APPROVE_OPTION) {
// call folderChooser.getSelectedFile() to get selected folder
}
```

2. Show a Save folder chooser dialog

```
FolderChooser folderChooser = new FolderChooser();
int result = folderChooser.showSaveDialog(button.getTopLevelAncestor());
if (result == FolderChooser.APPROVE_OPTION) {
// call folderChooser.getSelectedFile() to get selected folder
}
```

3. Set recent list to folder chooser

```
List recentList = new ArrayList(); // create recent list
// add File to recent list

FolderChooser folderChooser = new FolderChooser();
folderChooser.setRecentList(recentList);
int result = folderChooser.showOpenDialog(button.getTopLevelAncestor());
if (result == FolderChooser.APPROVE_OPTION) {
// call folderChooser.getSelectedFile() to get selected folder
}
```

4. Display hidden folder in folder chooser

```
FolderChooser folderChooser = new FolderChooser();
folderChooser.setFileHidingEnabled(true); // show hidden folders
int result = folderChooser.showOpenDialog(button.getTopLevelAncestor());
if (result == FolderChooser.APPROVE_OPTION) {
// call folderChooser.getSelectedFile() to get selected folder
}
```

Standard Dialog

StandardDialog extends *JDialog*. In addition to *JDialog*, it can handle a couple of things that all dialogs must handle anyway, such as layout, escape and enter key, initial focused component etc.

We certainly can be creative when designing a dialog. Just because UI designers are creative, that’s how we see more and more new controls. However sometimes we’d better follow the convention. For example, I’ve seen a dialog layout as below with OK and Cancel on top.

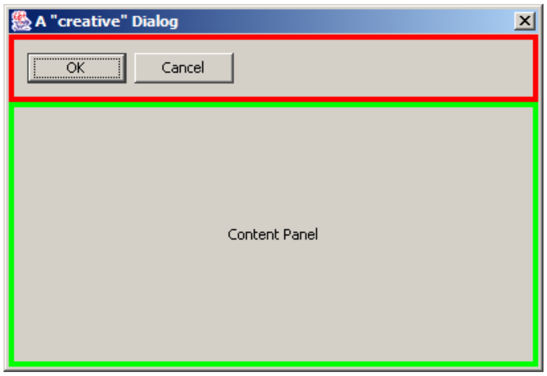
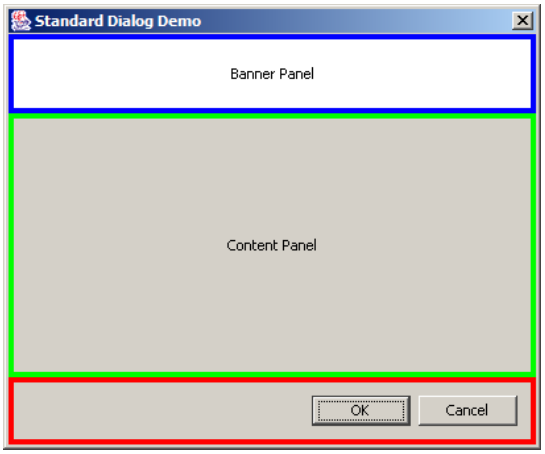
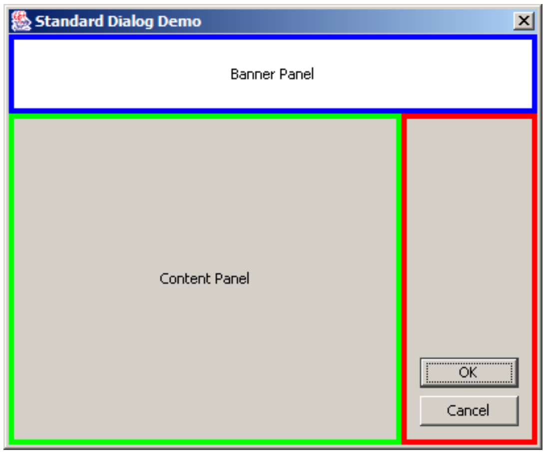


Figure 3 A dialog with buttons on top (bad design in a desktop application)

You might argue it’s easy for user to reach OK and Cancel buttons. However in most culture, users get used to look from top to bottom and from left to right. User wants to see what’s in dialog first before they click on OK or Cancel button. This dialog obviously breaks the flow.

The two screenshots below show the normal layout of a dialog. On top, you can put a banner panel. Button panel should be either on bottom or on right. Content panel is always in the center. These layouts match the logic flow when people read.





It might be tedious to layout those three panels every time creating a dialog. *StandardDialog* will layout automatically for you.

StandardDialog is an abstract class; you implement three methods. After you implemented these three methods, *StandardDialog* will put them at the right places.

```
abstract public JComponent createBannerPanel();
abstract public JComponent createContentPanel();
abstract public ButtonPanel createButtonPanel();
```

Almost all UI guidelines require dialog to handle ESC key and ENTER key correctly. In modal dialog, ESC key should trigger the Cancel button and ENTER should trigger the default button. *StandardDialog* also make this easier by allowing you to set default action and cancel action.

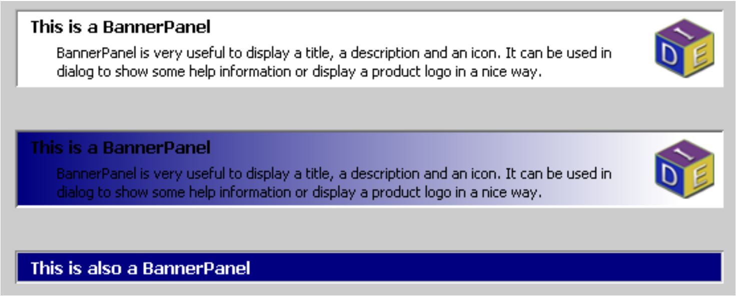
Usually when a dialog is shown, a component in that dialog should have focus. By default, Swing doesn't set any component focus. It is not that straightforward if you try to do it yourself because you can set focus to a component only when a component is visible. With the help of *StandardDialog*, it's never being easier. All you need to do is during *createContentPanel()*, call *setInitFocusedComponent()* to set the initial focused component to whatever you want.

We promise that whenever we find some interesting or useful stuffs, we will continuously enhance *StandardDialog*. That's all about *StandardDialog* so far. Simple, right? Yes. Even though it's simple, when you code using simple *StandardDialog*, your code will become more organized and all your dialogs will look more consistent. Not only that, we also provide several components to make it creation of each methods easier.

Banner Panel

BannerPanel is very useful to display a title, a description and an icon. It can be used in dialog to show some help information or display a product logo in a nice way. You can also set background of *BannerPanel* using *Paint*.

This screenshot below shows three examples that banner panel can do.



This is a BannerPanel

BannerPanel is very useful to display a title, a description and an icon. It can be used in dialog to show some help information or display a product logo in a nice way.

This is a BannerPanel

BannerPanel is very useful to display a title, a description and an icon. It can be used in dialog to show some help information or display a product logo in a nice way.

This is also a BannerPanel

Figure 4 BannerPanel examples

Button Panel

We created *ButtonPanel* class in order to lay out buttons easily in any dialogs. It looks like a very easy thing to do, but when you really think about it, it turns out not so easy. There are two issues *ButtonPanel* try to solve – button width and button order.

Button Width

The problem arose when someone designed a panel like this. Notices the button widths are different.

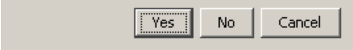
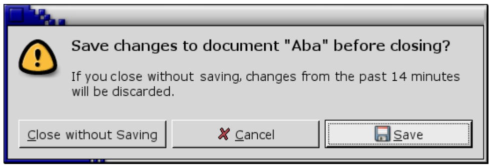


Figure 5 Yes, No and Cancel with different widths

I hope we all agree that this screenshot above doesn't look good. Not only it doesn't look good, but also the small size button is hard to click on. People realized that and argued that all buttons in the same button panel should have the same width. See below for the result. Most existing implementation of button panel did in this way.

Figure 6 Yes, No and Cancel with the same width

With buttons at the same width, the panel certainly looks much better. However, when dealing with several buttons with text of one of them is much longer than other's, the problem comes up. See below for an example. This one is from GNOME design document [GHIG].



Save changes to document "Aba" before closing?

If you close without saving, changes from the past 14 minutes will be discarded.

Figure 7 Same button width

"Close without Saving" is much longer than the other two buttons. Since all buttons should have the same width, the "Cancel" and "Save" are forced to have the same width even though it's not really necessary. You can see the screen gets really crowd and will soon run out of spaces. It might get worse after localization if "Close with Saving" is even longer in certain some languages.

Mac OS X takes a different approach to handle this. See below. [AHIG]

You have 4 documents with unsaved changes. Do you want to review these changes before quitting?

If you don't review your documents, all your changes will be lost.

Figure 8 Different button widths on Mac OS X

Even though buttons have different width, this one looks better than the GNOME one.

It seems there are some contradictions here, isn't it? **It's not necessary that all buttons should have the same width. However all buttons should have the same minimum width.** In fact, this convention is followed on several OS. On Windows, the minimum button width is 75 pixels. On Mac OS X, it is 69 pixels. If the preferred width of button is less than the minimum, minimum width should be used.

To implement this requirement in *ButtonPanel*, we added *setSizeContraint()* method. If you pass in *ButtonPanel.SAME_SIZE*, all buttons will have the same width. If you pass in *ButtonPanel.NO_LESS_THAN*, the button width will be no less than the minimum width. The actual minimum width is different with different LookAndFeel.

Please note, *ButtonPanel* allows you to layout button horizontally and vertically. The *setSizeContraint()* method only has effect when the buttons are laid out horizontally. If buttons are laid out vertically, the *setSizeContraint()* will be ignored and *ButtonPanel.SAME_SIZE* is always used. Knowing this drawback of vertical button panel, we suggest you use horizontal button panel as possible as you can. On Mac OS X, it is very rare to see a vertical button panel. On Windows, vertical button panels are used in some dialogs design but are much fewer than horizontal ones.

Platform Difference on Button Order

The second problem we try to solve is the platform difference. To be more specific, how to layout the buttons in the right order on different platform?

On Windows, the OK button comes first, then Cancel. However on Mac OS, the Cancel button comes first, then OK button. People have different opinion on it. You would think that you could choose one of the two ways and follow it as a guide line in your application. But you can't. Since Java application is cross platform, no matter which way you follow, it's wrong on other platform. If you choose the Windows way and button order will look strange on Mac OS. If you choose the Mac way, Windows user will get confused because all other Windows applications' OK button is the first one. So this gives us a hint – should the button order be part of LookAndFeel which can be changed on fly on different LookAndFeels? The answer is yes. *ButtonPanel* will do it for you.

Button Types and Orders

In order to solve the button order problem, we divide buttons into four categories based on the purpose of the button – Affirmative buttons, Cancel buttons, Help buttons and all other buttons. Please refer to GNOME Human User Interface Guidelines [GHIG] for details. Except we call other button rather than alternative buttons, we pretty much follow their naming convention of those categories so that people can understand it easily.

Affirmative buttons are buttons like OK or Yes, which represent an affirmative action to the dialog. Cancel buttons usually cancel out from the dialog. It is usually Cancel or Close. Help button is a button which provide help information. See below for several examples of button types.

To make it simple, we use one character to represent each type – they are A, C, O, and H – representing Affirmative, Cancel, Other and Help respectively. The order will be a permutation of those four letters.

Figure 9 Button Order on Windows

Taking the screenshot above as an example, if the button panel is left-alignment, the order is “ACO”. This is a typical order of buttons on Windows.

Figure 10 Button Order on Mac OS X

On Mac OS X, the order is “CA” with right alignment and “HO” on the opposite side. So in this case, the order “CA” and the opposite order is “HO”.

UIDefault in Look And Feel

Below is a list of UIDefault keys and values on different L&F.

Windows LookAndFeel

```
"ButtonPanel.order", "ACO",
"ButtonPanel.oppositeOrder", "H",
"ButtonPanel.buttonGap", new Integer(6),
"ButtonPanel.groupGap", new Integer(6),
"ButtonPanel.defaultButtonWidth", new Integer(75),
```

Java LookAndFeel

```
"ButtonPanel.order", "ACO",
"ButtonPanel.oppositeOrder", "H",
"ButtonPanel.buttonGap", new Integer(5),
"ButtonPanel.groupGap", new Integer(5),
"ButtonPanel.defaultButtonWidth", new Integer(57),
```

Mac AquaLookAndFeel

```
"ButtonPanel.order", "CA",
"ButtonPanel.oppositeOrder", "HO",
"ButtonPanel.buttonGap", new Integer(6),
"ButtonPanel.groupGap", new Integer(12),
"ButtonPanel.defaultButtonWidth", new Integer(69),
```

So if you want to use *ButtonPanel*, you just need to add buttons to it and specify the category while adding. The *ButtonPanel* will use values from UIDefault to layout the button correctly.

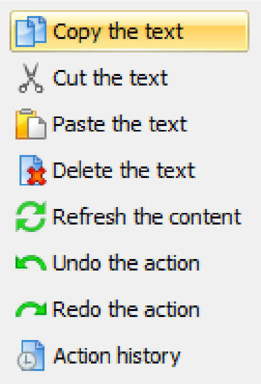
You can also change those values for a particular button panel instance. Those methods are available to you. It will overwrite the value from UIDefaults.

```
setButtonOrder(String order)
setOppositeButtonOrder(String order)
setSizeContraint(SAME_SIZE / NO_LESS_THAN)
setGroupGap(int gap)
setButtonGap(int gap)
```

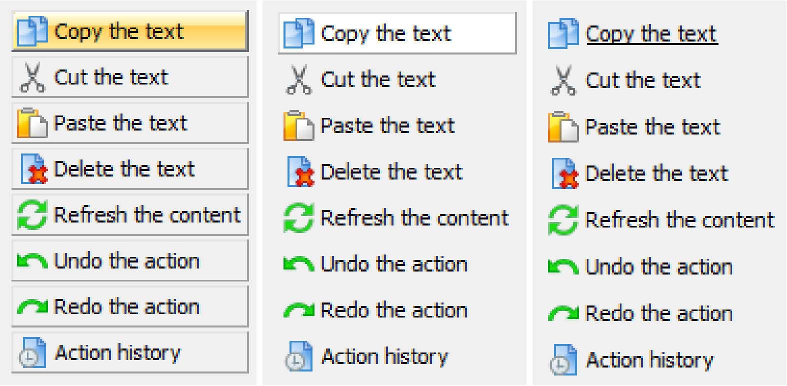
Example of ButtonPanel is in "examples/W4. ButtonPanel".

JideButton

JideButton was introduced to give *JButton* different styles. The main usage of the *JideButton* is for the *JToolBar* or the *CommandBar* (from JIDE Action Framework).



The screenshot above shows what *JideButtons* look like under TOOLBAR_STYLE. There are three more styles as shown above. They are TOOLBOX_STYLE, FLAT_STYLE and HYPERLINK_STYLE respectively.



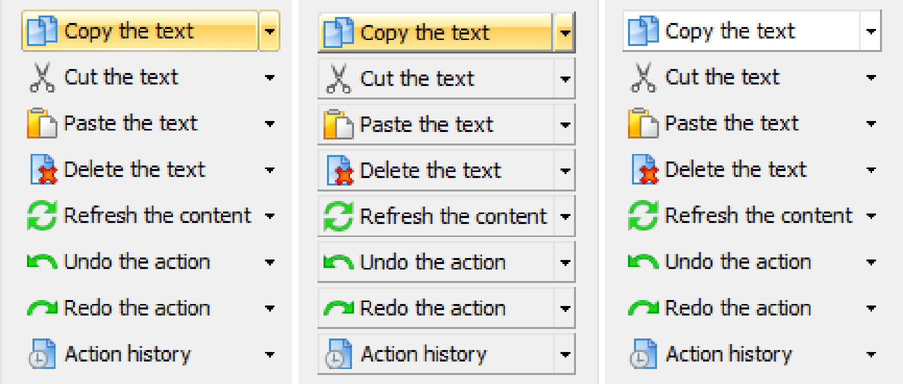
JideButton can be used on *JToolBar* or *CommandBar*. It supports vertical orientation. When it is used on a *CommandBar*, it will automatically toggle to vertical orientation when the *CommandBar* is docked to the east or west side.

Even though *JideButton* was designed for the *CommandBar*, it can still be used to replace *JButton* when appropriate.

JideSplitButton

JideSplitButton is a combination of button and menu. There is a line in the middle of the button that splits the button into two portions. The portion before the line is a button. User can click on it and trigger an action. The portion after the line is a menu. User can click on it to show a normal menu.

The screenshot below shows what JideSplitButtons look like under different styles. They are TOOLBAR_STYLE, TOOLBOX_STYLE and FLAT_STYLE respectively.



JideSplitButton can be used on *JToolBar* or *CommandBar*. It supports vertical orientation. When it is used on a *CommandBar*, it will automatically toggle to vertical orientation when the *CommandBar* is docked to the east or west side.

JideLabel

JideLabel is a JLabel that can be used on *JToolBar* or *CommandBar*. It supports vertical orientation. When it is used on a *CommandBar*, it will automatically toggle to vertical orientation when the *CommandBar* is docked to the east or west side.

Searchable Components

JList, JComboBox, JTable, JTree, JTextComponent are five data-rich components. They can be used to display a huge amount of data so searching function will be a very useful feature in those components. By default, JList kind of supports searching. User can type in a key and the list will automatically select that row whose first character matches with the typed key. However, it can only match the first character. Therefore, the goal of this component is to make all five components searchable[6].

Searchable is such a class that makes it possible. An end user can simply type in any string they want to search for and use arrow keys to navigate to next or previous occurrence. We implement *ListSearchable, ComboBoxSearchable, TableSearchable, TreeSearchable*, *TextComponentSearchable* to make JList, JComboBox, JTable, JTree, and JTextComponent searchable respectively. In addition, we create SearchableUtils encapsulate different classes into one utility class.

It is very easy to use those classes. For example, if you have a JList, all you need to do is:

```
JList list = new JList();
SearchableUtils.installSearchable(list);
```

The same type of implementation is used to make JTable or JTree searchable – just replace *ListSearchable* with the corresponding *ComboBoxSearchable*, *TableSearchable, TreeSearchable* or *TextComponentSearchable*.

If you need to further configure the searchable, for example make your search criteria case sensitive, you could do the following:

```
JList list = new JList();
ListSearchable searchable = SearchableUtils.installSearchable(list);
// further configure it
searchable.setCaseSensitive(true);
```

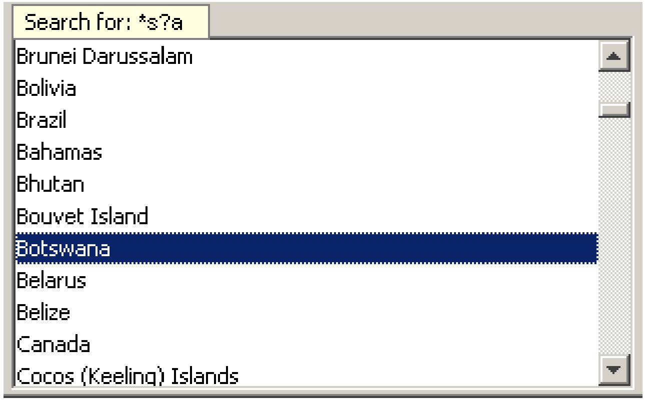
Usually you do not need to uninstall the searchable from the component. But if for some reason, you need to disable the searchable feature of the component, you can call uninstallSearchable():

```
Searchable searchable = SearchableUtils.installSearchable(component);
// ...
// Now disable it
SearchableUtils.uninstallSearchable(searchable);
```

Below are examples of a searchable JList and JTable.

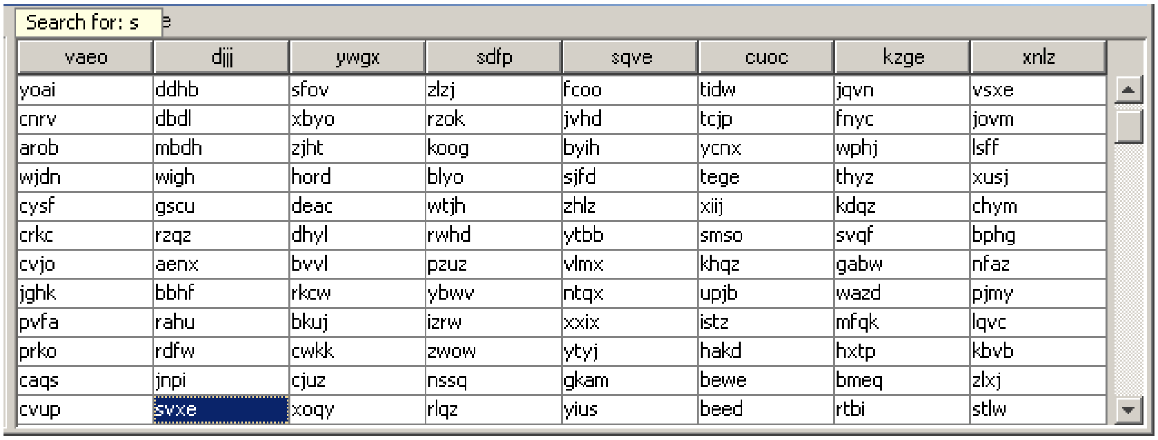
---

[6] The idea for the searchable feature really came from IntelliJ IDEA. In IDEA, all the trees and lists are searchable. We found this feature to be very useful and consider it as one of the key features to improve the usability of a user interface. As a result, we further extended this idea and make JTable searchable too. We also added several more features such as multiple select and select all that IDEA does not have.


Search for: *s?a

Brunei Darussalam
Bolivia
Brazil
Bahamas
Bhutan
Bouvet Island
Botswana
Belarus
Belize
Canada
Cocos (Keeling) Islands

Figure 11 Searchable JList – use up/down arrow key to navigate to next or previous occurrence


Search for: s

vaeo	djij	ywgx	sdfp	sqve	cuoc	kzge	xnlz
yoai	ddhb	sfov	zlzj	fcoo	tidw	jqvn	vsxe
cnrv	dbdl	xbyo	rzok	jvhd	tcjp	fnyc	jovm
arob	mbdh	zjht	koog	byih	ycnx	wphj	lsff
wjdn	wigh	hord	blyo	sjfd	tege	thyz	xusj
cysf	gscu	deac	wtjh	zhlz	xiij	kdqz	chym
crkc	rzqz	dhyl	rwhd	ytbb	smso	svqf	bphg
cvjo	aenx	bvvl	pzuz	vlmx	khqz	gabw	nfaz
jghk	bbhf	rkcw	ybwv	ntqx	upjb	wazd	pjmy
pvfa	rahu	bkuj	izrw	xxix	istz	mfqk	lqvc
prko	rdfw	cwkk	zwow	ytyj	hakd	hxtp	kbvb
caqs	jnpi	cjuz	nssq	gkam	bewe	bmeq	zlxj
cvup	svxe	xoqy	rlqz	yius	beed	rtbi	stlw

Figure 12 Searchable JTable – use up/down/left/right to navigate to next or previous occurrence

For JComboBox, we can only make non-editable combo box searchable. So make sure you call *comboBox.setEditable(false)* before you pass it into *SearchableUtils*[7].

For JTextComponent, the searchable popup will not be displayed unless user types in Ctrl-F. The reason is obvious – because the JTextComponent is usually editable. If the JTextComponent is not editable, typing any key will show the popup just like other components.

Features

The main purpose of searchable is to make the searching for a particular string easier in a component having a lot of information. All features are related to how to make it quicker and easier to identify the matching text.

Navigation feature - After user types in a text and presses the up or down arrow keys, only items that match with the typed text will be selected. User can press the up and down keys to

---

[7] You may wonder why we only support searchable on non-editable combo box. The “searchable” feature on editable combo box is called auto-completion.

quickly look at what those items are. In addition, end users can use the home key in order to navigate to the first occurrence. Likewise, the end key will navigate to the last occurrence. The navigation keys are fully customizable. The next section will explain how to customize them.

Multiple selection feature - If you press and hold CTRL key while pressing up and down arrow, it will find next/previous occurrence while keeping existing selections. See the screenshot below. This way one can easily find several occurrences and apply an action to all of them later.

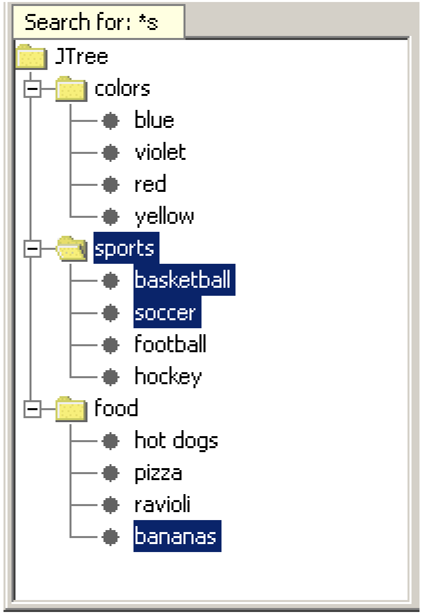


Figure 13 Multiple Selections

Select all feature – Further extending the multiple selections feature, you can even select all. If you type in a searching text and press CTRL+A, all the occurrences matching the searching text will be selected. This is a very handy feature. For example, you want to delete all rows in a table whose "name" column begins with "old". You can type in "old" and press CTRL+A, now all rows beginning with "old" will be selected. If you hook up delete key with the table, pressing delete key will delete all selected rows. Imagine without this searchable feature, users will have to hold CTRL key, look through each row, and click on the row they want to delete. In case they forgot to hold tight the CTRL key while clicking, they have to start over again.

Basic regular expression support - It allows '?' to match any character and '*' to match any number of characters. For example "a*c" will match "ac", "abc", "abbbc", or even "a b c" etc. "a?c" will only match "abc" or "a c".

Recursive search (only in TreeSearchable) – In the case of TreeSearchable, there is an option called recursive. You can call TreeSearchable#setRecursive(true/false) to change it. If TreeSearchable is recursive, it will search all tree nodes including those, which are not visible to find the matching node. Obviously, if your tree has unlimited number of tree nodes or a potential huge number of tree nodes (such as a tree to represent file system), the recursive attribute should be false. To avoid this potential problem in this case, we default it to false.

How to extend Searchable

Searchable is a base abstract class. For each subclass of Searchable, there are at least five methods need to be implemented.

```
protected abstract int getSelectedIndex()
protected abstract void setSelectedIndex(int index, boolean incremental)
protected abstract int getElementCount()
protected abstract Object getElementAt(int index)
protected abstract String convertElementToString(Object element)
```

The keys used by this class are fully customizable. The subclass can override the methods to customize the keys. For example, isActivateKey() is defined as below.

```
protected boolean isActivateKey(KeyEvent e) {
  char keyChar = e.getKeyChar();
  return Character.isLetterOrDigit(keyChar) || keyChar == '*' || keyChar == '?';
}
```

In your case, you might need additional characters such as '_', '+' etc. So you can override the isActivateKey() method to provide additional keys to activate the search pop up. In order to override a method, you cannot use SearchableUtils anymore. You have to do create a Searchable yourself. However, it is still very easy. See below.

```
ListSearchable listSearchable = new ListSearchable(list) {
   protected boolean isActivateKey(KeyEvent e) {
     return ...;
   }
};
```

The other methods (belonging to abstract Searchable) that a subclass can override are isDeactivateKey(), isFindFirstKey(), isFindLastKey(), isFindNextKey(), isFindPreviousKey()

We provide basic regular expression support. It is possible to implement full regular expression support. We did not do that because not many users are familiar with complex regular expression grammar. However, if your user base is very familiar with regular expression, you can add the feature to Searchable. All you need to do is override the compare(String text, String searchingText) method and implement the comparison algorithm by yourself. This task is very easy by leveraging the javax.regex package.

Resizable Components

In Swing, almost all lightweight components are not resizable[8]. Heavyweight components, such as JWindow and the undecorated JDialog, are not resizable either. The main reason for this is that the component size is determined by layout managers in Swing. If the parent container size changes, the component size will change accordingly. However, this does not mean there is no need for resizable components. A typical usage of a resizable panel is in icon or form designer. See the picture below for an example. While designing the icon, you want to control the icon size as well. You can do it by resizing the canvas. In this case, the icon size will be the canvas size.

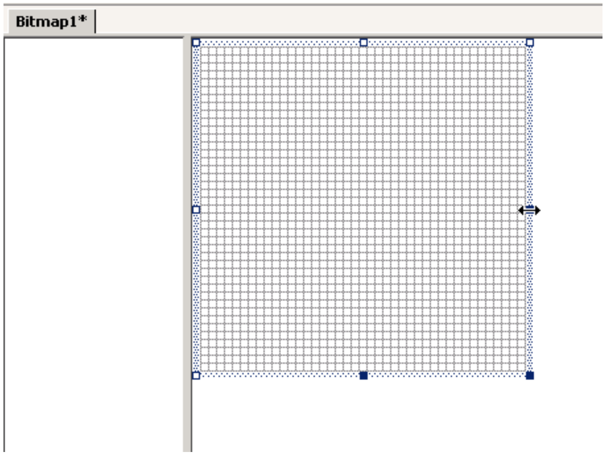
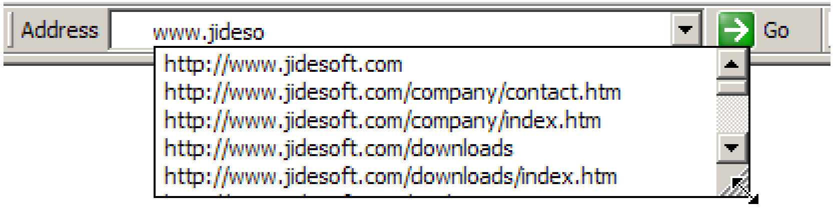


Figure 14 Usage of a Resizable component

In addition, to the canvas case above, we also find the need for resizable JWindow or resizable undecorated JDialog. A typical use case for a resizable window is the combo box. In Swing's JComboBox, the pop up is not resizable. However, you can see a resizable popup in IE (see Figure 5 below). The only way to implement this in Swing is to put the JList in a resizable JWindow. As a result, we do need a resizable JWindow.



www.jideso

http://www.jidesoft.com
http://www.jidesoft.com/company/contact.htm
http://www.jidesoft.com/company/index.htm
http://www.jidesoft.com/downloads
http://www.jidesoft.com/downloads/index.htm

Figure 15 Resizable Window in IE

---

[8] The only exception is JInternalFrame which is light-weight and resizable.

Resizable

The *Resizable* class is used to ensure that visual component “resizablility” is possible. Very similar to the *Searchable* class, *Resizable* also adds necessary mouse listener capability to a particular component and makes it resizable when you pass that component to *Resizable’s* constructor. You also need to make sure the component has a non-empty border. Otherwise, there is no place for the mouse cursor to change shape and perform the dragging during resizing.

The *Resizable* class supports several options:

ResizableCorners - The value of *ResizableCorners* is a bitwise OR of eight constants defined in *Resizable* This allows end users complete control of which sides/corners are resizable.

```
public final static int NONE = 0x0;
public final static int UPPER_LEFT = 0x1;
public final static int UPPER = 0x2;
public final static int UPPER_RIGHT = 0x4;
public final static int RIGHT = 0x8;
public final static int LOWER_RIGHT = 0x10;
public final static int LOWER = 0x20;
public final static int LOWER_LEFT = 0x40;
public final static int LEFT = 0x80;
public final static int ALL = 0xFF;
```

ResizeCornerSize – As you know, the mouse cursor will change shape along the resizable component border. If the mouse is near the corner, it will resize both adjacent sides. The value of *resizeCornerSize* will define how big the corner is. The value is in pixel.

beginResizing(), resizing(), and endResizing() – These three methods will be called during resizing. The *beginResizing()* and *endResizing()* methods will be called only once when it starts to resize and when resizing ends respectively. The *resizing()* method is called many times during resizing. By default, *resizing()* method will set the preferred size of the component and cause the parent to invoke the *doLayout()* method. However, it still depends on the parent, a simple doLayout() may not resize the component correctly. For example, if the parent is *JWindow*, a top level container, *doLayout()* will do nothing. In this case, you should subclass *Resizable* and override *resizing()* method to do something else. For example, in the case of JWindow, you just need to call *setBounds()* to change the size and location of JWindow.

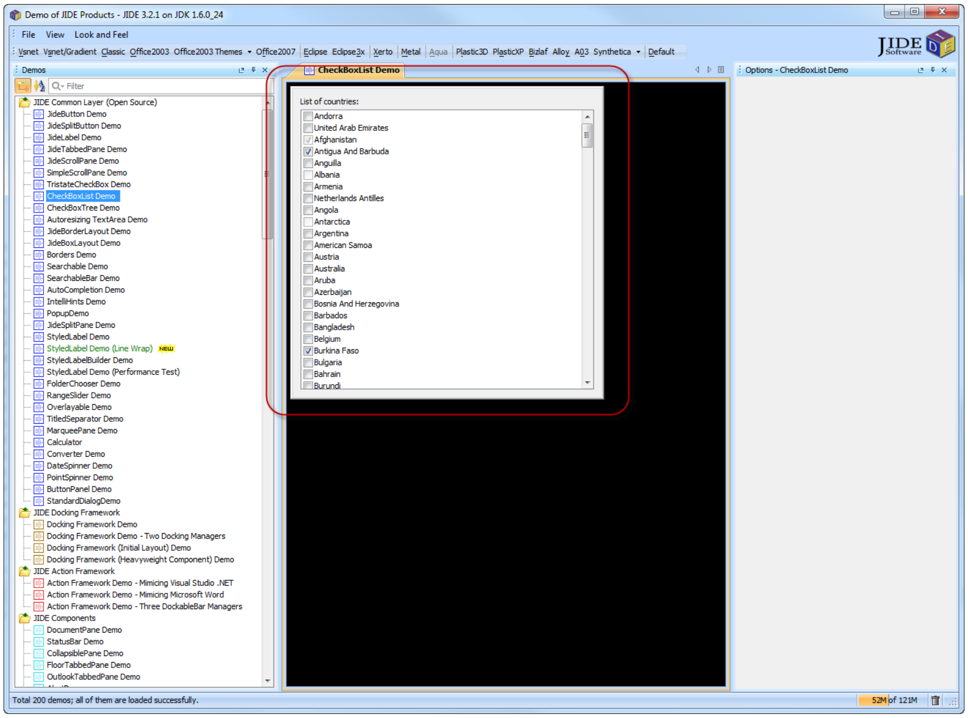
```
protected Resizable createResizable() {
    return new Resizable(this) {
        public void resizing(int resizeDir, int newX, int newY, int newW, int newH) {
            ResizableWindow.this.setBounds(newX, newY, newW, newH);
        }

        public boolean isTopLevel() {
            return true;
        }
    };
}
```

Several Resizeable Examples

In order to make *Resizable* easy to use, we created a *ResizablePanel*. It extends JPanel except it is resizable. In addition, we also create two top level *Resizables* – *ResizableWindow* and *ResizableDialog*. It makes sense to have *ResizableWindow* because JWindow is not resizable by default. However, you may wonder why *ResizableDialog*? The reason for this is that JDialog is resizable by default, but not when it is undecorated. Because of this, the *ResizableDialog* is actually an resizable undecorated *JDialog*.

The usage of these classes is the same as JPanel, JWindow, or JDialog respectively. All of them have the *getResizable()* method to get the underlying *Resizable*. You can get it and tweak some options such as ResizeCornerSize or ResizableCorners.

We heavily used the *Resizable* class in other part of our products and in our demos. For example, the floating window in JIDE Docking Framework is using *ResizableWindow*. JidePopup/Alert is also using *ResizableWindow*, as well. In the JIDE webstart demo, *ResizablePanel* is used inside *DocumentComponent* to make the demo area resizable. See the figure below for an example of *ResizablePanel* inside *DocumentComponent*.



List of countries:

☐ Andorra
☐ United Arab Emirates
☑ Afghanistan
☑ Antigua And Barbuda
☐ Anguilla
☐ Albania
☐ Armenia
☐ Netherlands Antilles
☐ Angola
☐ Antarctica
☐ Argentina
☐ American Samoa
☐ Austria
☐ Australia
☐ Aruba
☐ Azerbaijan
☐ Bosnia And Herzegovina
☐ Barbados
☐ Bangladesh
☐ Belgium
☑ Burkina Faso
☐ Bulgaria
☐ Bahrain
☐ Burundi

Total 200 demos; all of them are loaded successfully.

Figure 16 Resizable Panel

Popup

The intention of developing the JidePopup[9] component is to address the common features of any types of popup. Popup is something that appears above any other windows. However, it is transient; meaning that when you click outside the popup, the popup is gone. There are many examples of popup, such as tool tips, combo box popup, and popup menu. If further expanding the popup concept, there are even more examples, such as new email alert, the famous IntelliJ IDEA Ctrl-N popup[10].

Except the common feature of popup, each popup might have its own characters. For example, some could be resizable such as the combo box popup (there is an example in *Resizable* components section). Some could be movable. Some support time out – it will hide automatically after several seconds for example. Some are always attached to the invoking component, such as the combo box. Some are standalone such as email alert. Others might be attached to the invoking component at the beginning but can be detached by dragging, such as color split button you can see in MSOffice product. There is also a special category of popups that support animation when entrancing and exiting – either using fade effect, or flying in/out effect or using whatever animation effect you can think of. The JidePopup is trying to capture all those different requirements and provide one solution for you.

JidePopup extends *JComponent*. You just used it as using any other *JComponent* by adding child components to it. *JidePopup* also supports RootPane which means you can also set a menu bar on it or use JLayeredPane or GlassPane. The only thing is you don't want to do is to add *JidePopup* to a container. To show it, you just call one of the *showPopup()* method. See below for an example. It will create a popup with an empty text area and a sample menu bar, then it will display the popup.

```
JidePopup popup = new JidePopup();
popup.setMovable(true);
popup.getContentPane().setLayout(new BorderLayout());
JTextArea view = new JTextArea();
view.setRows(10);
view.setColumns(40);
popup.getContentPane().add(new JScrollPane(view));
JMenuBar menuBar = new JMenuBar();
JMenu menu = menuBar.add(new JMenu("File"));
menu.add("<< Example >>");
menuBar.add(new JMenu("Edit"));
menuBar.add(new JMenu("Help"));
popup.setJMenuBar(menuBar);
```

---

[9] We named JidePopup just to avoid the name conflict with Swing's Popup, although these two are not quite related.

[10] You will understand what this means only if you use IntelliJ IDEA. For those who don't use IntelliJ IDEA, here is a short explanation. Ctrl-N in IDEA is hotkey for "Go to Class" where a "dialog" will popup. You can type in part of the class name and it will list all matches with that name so that you can quickly pick it and go to the class you want to go. This is probably the most used hotkey in the whole IntelliJ IDEA. When I said "dialog", it's not really a dialog although it looks like one. The difference from dialog is that it doesn't block. When mouse clicks anywhere outside, the "dialog" is gone. This is exactly the "unstable" behavior of a popup. By the way, Alt-F1 is another popup example.

```
popup.setOwner(attachedButton);
popup.setResizable(true);
popup.setDetachable(true);
popup.setDefaultFocusComponent(view);
popup.showPopup();
```

Options

Owner: The owner or the invoker of this popup. If you show a popup in the actionPerformed of a button, the button should be the owner of this popup. If the popup is for a combo box, the combo box should be the owner. There are several reasons we need this owner. In attached mode, the owner is the component that popup attaches to. When you call *showPopup()* without any parameter, it will place the popup just below the owner.

Resizable: Resizable option is on by default. Depending on the detached/attached mode, the resizing behavior may be different. If a popup is detached to a component, it only allows you to resize from bottom, bottom right and right. It obviously doesn't make sense to resize from top and top side is aligned with the attached component.

Movable: If a popup is movable, it will show a gripper so that user can grab it and move the popup. If the popup is attached to its owner, moving it will detach from the owner first.

Detached: Detached is a flag to indicate if the popup is detached from owner or not. You shouldn't need to call *setDetached()* directly. If you call *showPopup()*, the detached will be true.

DefaultFocusComponent: DefaultFocusComponent is a component on popup. It will receive keyboard focus when popup is shown.

Timeout: *JidePopup* can hide itself after certain time. This can be controlled by setTimeOut(). You can pass in a value, which is taken in millisecond format. If you don't want the popup to hide after the time out, set the value to 0. By default it's 0 , which means it will never time out.

IntelliHints

IntelliHints is a new name we invented to capture a collection of new features we introduced in the 1.8.3 release. Similar features (in other developer related tools) are called “code completion” or “intelli-sense” in the context of a text editor or IDE. Without getting into too much detail, we encourage you to run the B14 example to see different flavors of IntelliHints. IntelliHints is designed to be extensible. You can easily extend one of existing base IntelliHints classes such as AbstractIntelliHints or AbstractListIntelliHints or even implement IntelliHints directly to create your own IntelliHints.

See below for the class hierarchy of IntelliHints related class.

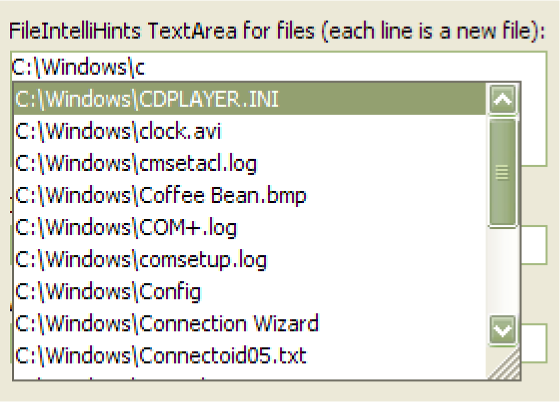
IntelliHints (com.jidesoft.hints)
- AbstractIntelliHints (com.jidesoft.hints)
  - AbstractListIntelliHints (com.jidesoft.hints)
    - FileIntelliHints (com.jidesoft.hints)
    - ListDataIntelliHints (com.jidesoft.hints)

The base IntelliHints is an interface. It has four very basic methods about hints.

```
    /**
     * Creates the component which contains hints. At this moment, the content should be empty. Following
call
     * {@link #updateHints(Object)} will update the content.
     *
     * @return the component which will be used to display the hints.
     */
    JComponent createHintsComponent();

    /**
     * Update hints depending on the context.
     *
     * @param context the current context
     * @return true or false. If it is false, hint popup will not be shown.
     */
    boolean updateHints(Object context);

    /**
     * Gets the selected value. This value will be used to complete the text component.
     *
     * @return the selected value.
     */
    Object getSelectedHint();

    /**
     * Accepts the selected hint.
     *
     * @param hint
     */
    void acceptHint(Object hint);
```

AbstractIntelliHints implements *IntelliHints*. It assumes the hints are for a *JTextComponent* and provides a popup using JidePopup to show the hints. However, it has no idea what components the popup contains. Since in most cases, the hints can be represented by a JList, here comes the *AbstractListIntelliHints*. This class assumes JList is used to display hints in the popup and implements most of the methods in IntelliHints except *updateHints()* methods. That's why it is still abstract. Whatever classes that extend *AbstractListIntelliHints* should implement *updateHints()* method and set the list data to the JList.

There are two concrete implementations included in the current release: *FileIntelliHints* and *ListDataIntelliHints*. *FileIntelliHints* provides hints based on a file system. *ListDataIntelliHints* provides the hints based on a known list. Take a look at the following figures below… The first one is *FileIntelliHints*. The list contains the files and folders that match what user typed in so far.



C:\Windows\c

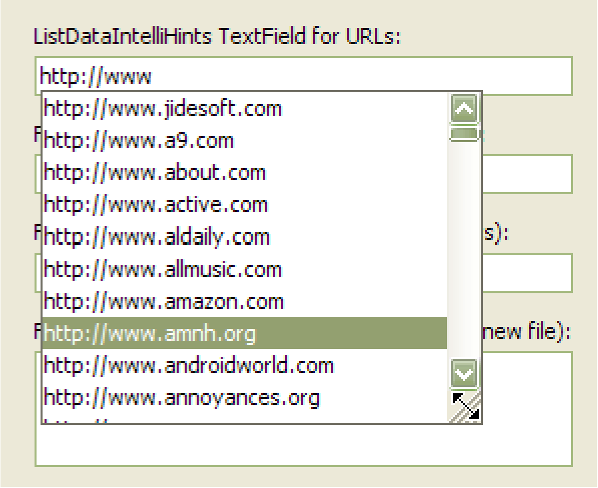
C:\Windows\CDPLAYER.INI
C:\Windows\clock.avi
C:\Windows\cmsetacl.log
C:\Windows\Coffee Bean.bmp
C:\Windows\COM+.log
C:\Windows\comsetup.log
C:\Windows\Config
C:\Windows\Connection Wizard
C:\Windows\Connectoid05.txt

Figure 17 FileIntelliHints

It is very easy to create one:

```
JTextField pathTextField = new JTextField();
FileIntelliHints intelliHints =  new FileIntelliHints(pathTextField);
intelliHints.setFolderOnly(true);
```

Below is an example of *ListDataIntelliHints*. It provides hints based on what you typed in so far to filter a known list, and only shows those that match what you typed in.



ListDataIntelliHints TextField for URLs:

http://www

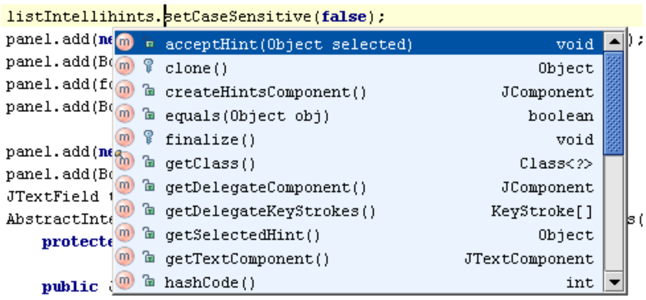
http://www.jidesoft.com
http://www.a9.com
http://www.about.com
http://www.active.com
http://www.aldaily.com
http://www.allmusic.com
http://www.amazon.com
http://www.amnh.org
http://www.androidworld.com
http://www.annoyances.org

Figure 18 ListDataIntelliHints

Here is the code to create the ListDataIntelliHints above.

```
JTextField urlTextField = new JTextField("http://");
ListDataIntelliHints intellihints = new ListDataIntelliHints(urlTextField, urls);
intellihints.setCaseSensitive(false);
```

Like previously mentioned, *IntelliHints* can easily be extended. If you can use a JList to represent the hints, you can extend *AbstractListIntelliHints*. For example, if you want to implement code completion as in any IDE like below, *AbstractListIntelliHints* should be good enough for you. Like to do what's in the screenshot below, all you need to do is to override *createList()* method in *AbstractListIntelliHints* and set a special list cell renderer.



```
listIntellihints.setCaseSensitive(false);
```

```
acceptHint(Object selected)                 void
clone()                                   Object
createHintsComponent()                JComponent
equals(Object obj)                       boolean
finalize()                                  void
getClass()                              Class<?>
getDelegateComponent()                JComponent
getDelegateKeyStrokes()              KeyStroke[]
getSelectedHint()                         Object
getTextComponent()                JTextComponent
hashCode()                                   int
```

If your hints are more complex and cannot be represented by a JList, you will have to extend *AbstractIntelliHints* and create your own content for the popup.

IntelliHints is very useful usability feature. If you use it at the right places, it will increase the usability of your application significantly. Just imagine how dependent you are on the code-completion feature provided by your Java IDE, why not provide a similar feature to your end users as well? They will appreciate it. With the help of IntelliHints, it's not far away.

AutoCompletion

AutoCompletion is a helper class to make *JTextComponent* or *JComboBox* auto-complete based on a list of known items.

There are three constructors. The simplest one is *AutoCompletion(JComboBox)*. It takes any combobox and make it auto completion. If you are looking for an auto-complete combobox solution, this is all you need. However *AutoCompletion* can do more than that. There are two more constructors. One is *AutoCompletion(JTextComponent, Searchable)*. It will use *Searchable* which is another component available in JIDE to make the *JTextCompoent* auto-complete. We used Searchable here because it provides a common interface to access the element in *JTree*, *JList* or *JTable*. In the other word, the known list item we used to auto-complete can be got from *JTree* or *JList* or even *JTable* or any other component as long as it has *Searchable* interface implemented. The last constructor takes any *java.util.List* and use it as auto completion list.

AutoCompletion has a couple options

- setStrict(boolean). Sets the strict property. If true, it will not allow user to type in anything that is not in the known item list. If false, user can type in whatever he/she wants. If the text can match with a item in the known item list, it will still auto-complete.
- setStrictCompletion(boolean). If true, in case insensitive searching, it will always use the exact item in the Searchable to replace whatever user types. For example, when Searchable has an item "Arial" and user types in "AR", if this flag is true, it will auto-completed as "Arial". If false, it will be auto-completed as "ARial". Of course, this flag will only make a difference if Searchable is case insensitive.

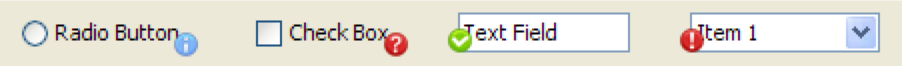
Classes, Interfaces and Demos

Classes	
AutoCompletion (com.jidesoft.swing)	The main class for *AutoCompletion*.
AutoCompletionComboBox (com.jidsoft.swing)	A JComboBox that has auto-completion feature.
Demos	
AutoCompletionDemo (examples\B13.AutoCompletion)	A demo to demonstrate the *AutoCompletion*.

Overlayable

The overlayable feature provides a way to put a component on top of another component. A typical usage is to display a small "x" icon on the corner of the component to indicate a validation error. However, the overlayable feature is much more useful than this.

Here is a screenshot of overlay component on several Swing controls.



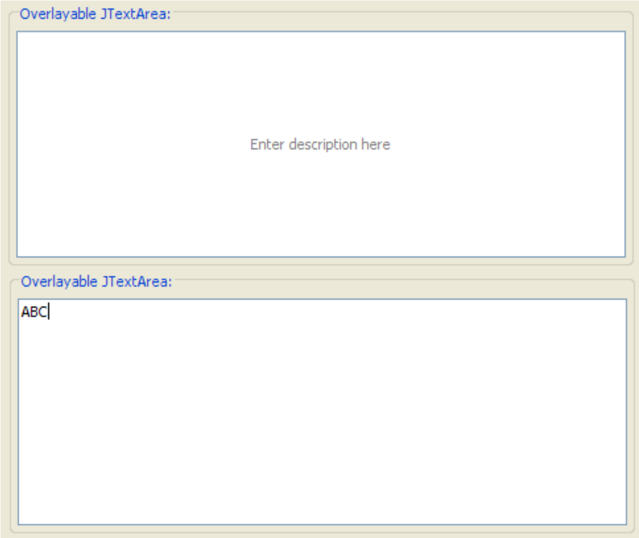
The overlay is a real component, not just a painted image. It supports tooltip, mouse listener etc just like a regular component. This is very important, as developer always want to associate an action with the overlay component.

To make it easy for you, we included the following icons as part of the package. You just need to call OverlayableIconsFactory.getImageIcon(FULL_CONSTANT_NAME) to get the icon.

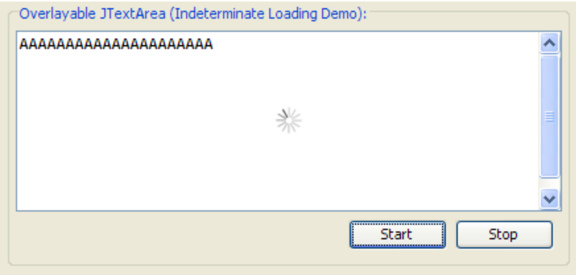
OverlayableIconsFactory

Name	Image	File Name	Full Constant Name
ATTENTION	!	icons/overlay_attention.png	OverlayableIconsFactory.ATTENTION
CORRECT	✓	icons/overlay_correct.png	OverlayableIconsFactory.CORRECT
ERROR	✖	icons/overlay_error.png	OverlayableIconsFactory.ERROR
INFO	ℹ	icons/overlay_info.png	OverlayableIconsFactory.INFO
QUESTION	?	icons/overlay_question.png	OverlayableIconsFactory.QUESTION

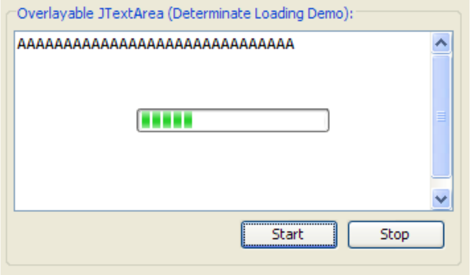
Here is a way to provide a description to a JTextArea (or JTable, JTree etc) using *Overlayable*. The label "Enter description here" is an overlay component. You can control when to show and hide the overlay component. In this example, when the JTextArea gains focus, we will hide the overlay component.



Here is one more way to use this feature. See screenshot below, we put a progress spin (marked with the red arrow) over a JTextArea (picture on the left). You can add a real JProgressBar as the overlay component (picture on the right).



AAAAAAAAAAAAAAAAAAAAA

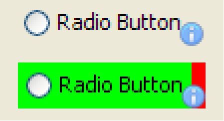


AAAAAAAAAAAAAAAAAAAAAAAAAAAAAA

How to use the API

Overlayable is the interface to make something overlayable. Instead of making every component overlayable, which will change too many classes, we decide to create a default implement that makes a JPanel overlayable. For example, you want to add an overlay component to a check box. You can simply add the check box to this overlayable panel, and then add overlay components to this overlayable panel. It looks like the overlay component is on the check box although it is actually on the check box parent.

Here is an example of an overlay component on a radio button.



The top one shows what it looks like. The icon seems like part of the radio button but it is not. As you can see from the bottom screenshot, the green rectangle is the boundary of the radio button. The red rectangle (plus the green rectangle as the green paints over the red) is the boundary of the overlayable panel. The icon is on the bottom right corner of the overlayable panel, not the radio button.

Comparing the code change

Before adding the overlay component, we have code like below. The controlPanel is the panel that contains the radio button.

```
controlPanel.add(new JRadioButton("Radio Button"));
```

If you want to add an icon as overlay component, we need to create a label first.

```
JLabel info = new JLabel(OverlayableUtils.getPredefinedOverlayIcon(OverlayableIconsFactory.INFO));
```

Next, we need to wrap the radio button to a DefaultOverlayable. We also need to override a method in radio button to repaint the overlay component correctly. The code will be like below.

```
controlPanel.add(new DefaultOverlayable(new JRadioButton("Radio Button"){
        public void repaint(long tm, int x, int y, int width, int height) {
            super.repaint(tm, x, y, width, height);
            OverlayableUtils.repaintOverlayable(this);
```

```
            }
        }, info, DefaultOverlayable.SOUTH_EAST));
```

Alternatively, if you use one of the pre-build radio buttons, you can save the overridden method. *OverlayRadioButton* is nothing but a *JRadioButton* that overrides the repaint method as shown above.

```
    controlPanel.add(new DefaultOverlayable(new OverlayRadioButton("Radio Button"), info,
DefaultOverlayable.SOUTH_EAST));
```

The code is still more complex than the original code. Nevertheless, considering the powerful feature it added, it is worth the added complexity.

Adding multiple overlay components

Overlayable supports multiple overlay components. *DefaultOverlayable*'s constructor can take one overlay component. You can still add more by calling *addOverlayComponent()*. For each overlay component, you can control the position, the order relative to other overlay components and visibility independently. The *removeOverlayComponent()* method will remove it and *getOverlayComponents()* will return all the overlay components.

Putting overlay components beyond the component

Overlayable also has the *setOverlayLocationInsets()* method. We noticed many other implementations has the limitation that the overlay component must be within the boundary of the component itself. This is annoying as the overlay component might cover portion of the component. That is why we added this overlayLocationInsets concept. If you want to place the overlay component outside the east border, you just give a positive number on the east edge of the insets.

See below for an example. The first one has 0 on the east edge; 5 for the second one and 10 for the last one.

Advantages and disadvantages

When we designed the overlayable components, we had the following goals in mind.

1. API ease of use – least code change to add an overlay component
2. API easy to understand

3. The overlay component is a real component, not just a painted image so that user can add mouse listener to it or set tooltip etc.
4. Can be placed beyond the component boundary
5. Handle scroll pane well[11]
6. Support any LookAndFeels without extra code.
7. Can add overlay component to any component
8. Can use any component as the overlay component

We knew many different ways[12] to implement this feature. However, after we look at the criteria above, we ruled out many of the alternatives. JLayeredPane/GlassPane is ruled out because of bullet 5. Overriding paint method approach is ruled out because of bullet 3 and 4. Extending or multiplex L&F approach is ruled out because of bullet 6 and 7. Finally, we come up with this design. I want to point out, although it satisfies almost all the criteria, it is still not perfect especially we still have to override repaint method. One way to solve it is to provide our own RepaintManager but it will probably make API harder to understand. If Swing provided a hook into RepaintManager, it would be perfect. In conclusion, if we would give a rating to this design from 1 to 5 with 5 being the best, we would give 5 for bullet 3 to bullet 8 and give 3 to bullet 1 and 2. There is still room for improvement in these two bullets.

IMAGES and ICONS Related CLASSES

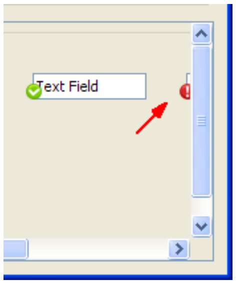
ColorFilter, GrayFilter and TintFilter

A disabled button will normally display a disabled icon. However, it's a pain to create two icons for each button. Why not just pass in the normal icon and use Java code to create a disabled icon for you?

Image ColorFilter.createDimmedImage(Image i)

---

[11] The screenshot below shows how it should behave inside a scroll pane. If you use using JLayerPane, you will see the error icon is painted above the scroll bar, which is wrong.



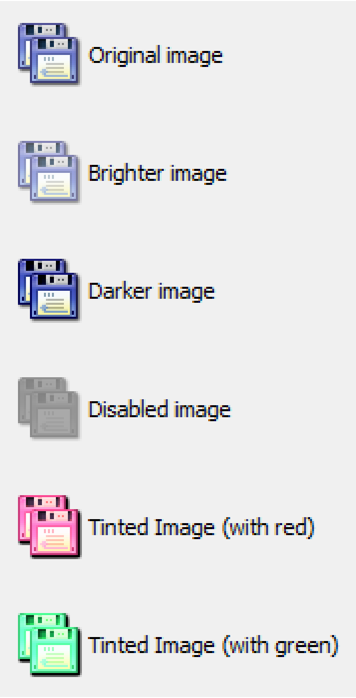
[12] It is worth reading the blog of Kirill Grouchnikov at http://www.pushing-pixels.org/?p=110. He has a series of blogs on how to support validation overlay.

Image ColorFilter.createBrighterImage(Image i)

Image GrayFilter.createDisabledImage(Image i)

Image TintFilter.createTintedImage(Image i, Color color, Insets insets)

See below for the effect of above methods.



IconsFactory

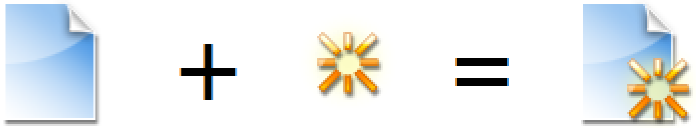
In Java/Swing, you can load an image file as a disk file or as a resource. We found that it's easier and faster to load image files as resources. This class is designed to encourage the use of images and icons as resources.

The IconsFactory acts as a cache manager for *ImageIcons* and has three static methods:

```
public static ImageIcon getImageIcon(Class clazz, String fileName);
public static ImageIcon getDisabledImageIcon(Class clazz, String fileName);
public static ImageIcon getBrighterImageIcon (Class clazz, String fileName);
```

Each time you call the method, the icon that is returned will be kept in a cache.

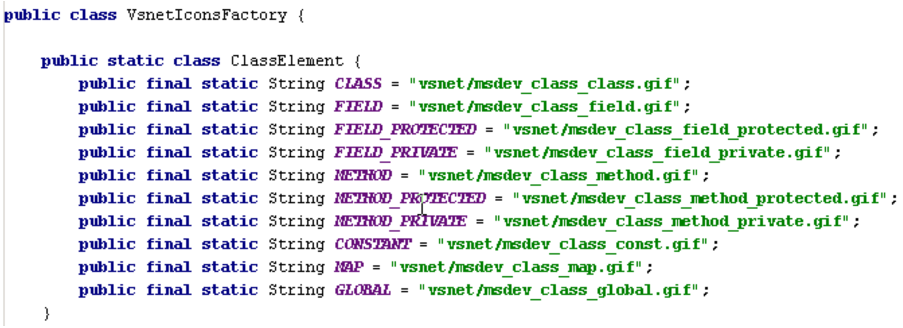
Creating overlay icon is a feature of *IconsFactory*. Imaging you have a "File" icon and a "New" icon, you want to create a create-a-new-file icon. Of course, you can use Photoshop to create one. But to make it easy to create those kinds of compound icons on the fly, it'd better you can use *getOverlayIcon*(…) method at *IconsFactory*.



Another useful method is getIcon(…) method, which takes a portion of a large icon to create small icons. You can use this method to split a larger into several small icons.

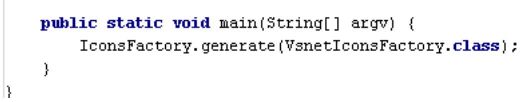
In addition, to the points mentioned above, *IconsFactory* also has a special usage: applications typically use hundreds of icons and images. Management of these objects can easily get out of control. In addition, you might have issues such as duplicate icons, inconsistent use of icons, difficulty in locating the right icon etc. However with the help of IconsFactory, these issues become much less of a problem.

In the release, there is a class called VsnetIconsFactory.java[13], which looks like this:



```
public class VsnetIconsFactory {

    public static class ClassElement {
        public final static String CLASS = "vsnet/msdev_class_class.gif";
        public final static String FIELD = "vsnet/msdev_class_field.gif";
        public final static String FIELD_PROTECTED = "vsnet/msdev_class_field_protected.gif";
        public final static String FIELD_PRIVATE = "vsnet/msdev_class_field_private.gif";
        public final static String METHOD = "vsnet/msdev_class_method.gif";
        public final static String METHOD_PROTECTED = "vsnet/msdev_class_method_protected.gif";
        public final static String METHOD_PRIVATE = "vsnet/msdev_class_method_private.gif";
        public final static String CONSTANT = "vsnet/msdev_class_const.gif";
        public final static String MAP = "vsnet/msdev_class_map.gif";
        public final static String GLOBAL = "vsnet/msdev_class_global.gif";
    }
```

…….



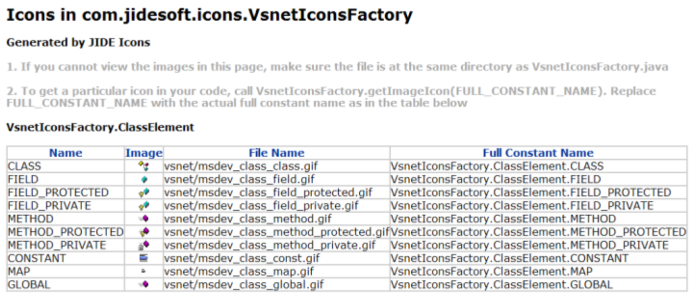
```
    public static void main(String[] argv) {
        IconsFactory.generate(VsnetIconsFactory.class);
    }
}
```

If you follow this pattern to create your own Icons Factory, you will get two benefits:

- The first is the handy display you see below. Looking at the listing of VsnetIconsFactory above, notice that there is a 'main' method. Run it and an html file will be generated in the current directory, as shown in the example below. It will have a list of all icons in the factory, organized into different sections as a table. In the table, you can see what the icons look like, what the actual image file names are, and how to use them in the code. Developers should never get lost!

---

[13] VsnetIconsFactory is just for tutorial purpose to teach you how to create an IconsFactory. Please do not use any icons from VsnetIconsFactory in your applications because they are copyrighted by Microsoft.



Icons in com.jidesoft.icons.VsnetIconsFactory

Generated by JIDE Icons

1. If you cannot view the images in this page, make sure the file is at the same directory as VsnetIconsFactory.java

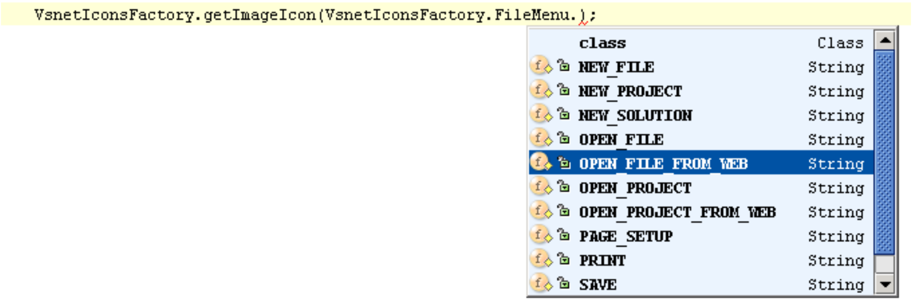
2. To get a particular icon in your code, call VsnetIconsFactory.getImageIcon(FULL_CONSTANT_NAME). Replace FULL_CONSTANT_NAME with the actual full constant name as in the table below

VsnetIconsFactory.ClassElement

Name	Image	File Name	Full Constant Name
CLASS		vsnet/msdev_class_class.gif	VsnetIconsFactory.ClassElement.CLASS
FIELD	◆	vsnet/msdev_class_field.gif	VsnetIconsFactory.ClassElement.FIELD
FIELD_PROTECTED	◆	vsnet/msdev_class_field_protected.gif	VsnetIconsFactory.ClassElement.FIELD_PROTECTED
FIELD_PRIVATE	◆	vsnet/msdev_class_field_private.gif	VsnetIconsFactory.ClassElement.FIELD_PRIVATE
METHOD	◆	vsnet/msdev_class_method.gif	VsnetIconsFactory.ClassElement.METHOD
METHOD_PROTECTED	◆	vsnet/msdev_class_method_protected.gif	VsnetIconsFactory.ClassElement.METHOD_PROTECTED
METHOD_PRIVATE	◆	vsnet/msdev_class_method_private.gif	VsnetIconsFactory.ClassElement.METHOD_PRIVATE
CONSTANT	▤	vsnet/msdev_class_const.gif	VsnetIconsFactory.ClassElement.CONSTANT
MAP	▪	vsnet/msdev_class_map.gif	VsnetIconsFactory.ClassElement.MAP
GLOBAL	◆	vsnet/msdev_class_global.gif	VsnetIconsFactory.ClassElement.GLOBAL

…….

- The second benefit is that with the help of IntelliSense in most Java IDEs, you can easily locate an icon right in your editor. See overleaf for a screenshot from IntelliJ IDEA when using IconsFactory.



```
VsnetIconsFactory.getImageIcon(VsnetIconsFactory.FileMenu.);
```

Internationalization Support

All of the Strings used in *JIDE Common Layer* are contained in properties files

Note that we have not done any localization: if you want to support languages other than English, just extract the properties file, translate it to the language you want, add the correct language postfix and then jar it back into the jide jars. You are welcome to send the translated properties file back to us if you want to share it!