CS2832: MODULAR SOFTWARE DEVELOPMENT

GRAPHICAL USER INTERFACES

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BEFORE WE START! (AGAIN)

```
[root@localhost ~]# ping -q fa.wikipedia.org
PING text.pmtpa.wikimedia.org (208.80.152.2) 56(84) bytes of data.
^C
--- text.pmtpa.wikimedia.org ping statistics ---
1 packets transmitted, 1 received, 0% packet loss, time 0ms
rtt min/avg/max/mdev = 540.528/540.528/540.528/0.000 ms
[root@localhost ~]# pwd
/root
[root@localhost ~]# cd /var
[root@localhost var]# ls -la
total 72
drwxr-xr-x. 18 root root 4096 Jul 30 22:43 .
drwxr-xr-x. 23 root root 4096 Sep 14 20:42 ..
drwxr-xr-x.  2 root root 4096 May 14 00:15 account
drwxr-xr-x. 11 root root 4096 Jul 31 22:26 cache
drwxr-xr-x.  3 root root 4096 May 18 16:03 db
drwxr-xr-x.  3 root root 4096 May 18 16:03 empty
drwxr-xr-x.  2 root root 4096 May 18 16:03 games
drwxrwx--T.  2 root gdm  4096 Jun  2 18:39 gdm
drwxr-xr-x. 38 root root 4096 May 18 16:03 lib
drwxr-xr-x.  2 root root 4096 May 18 16:03 local
lrwxrwxrwx.  1 root root   11 May 14 00:12 lock -> ../run/lock
drwxr-xr-x. 14 root root 4096 Sep 14 20:42 log
lrwxrwxrwx.  1 root root   10 Jul 30 22:43 mail -> spool/mail
drwxr-xr-x.  2 root root 4096 May 18 16:03 nis
drwxr-xr-x.  2 root root 4096 May 18 16:03 opt
drwxr-xr-x.  2 root root 4096 May 18 16:03 preserve
drwxr-xr-x.  2 root root 4096 Jul  1 22:11 report
lrwxrwxrwx.  1 root root    6 May 14 00:12 run -> ../run
drwxr-xr-x. 14 root root 4096 May 18 16:03 spool
drwxrwxrwt.  4 root root 4096 Sep 12 23:50 tmp
drwxr-xr-x.  2 root root 4096 May 18 16:03 yp
[root@localhost var]# yum search wiki
Loaded plugins: langpacks, presto, refresh-packagekit, remove-with-leaves
rpmfusion-free-updates                                          | 2.7 kB     00:00
rpmfusion-free-updates/primary_db                               | 206 kB     00:04
rpmfusion-nonfree-updates                                       | 2.7 kB     00:00
updates/metalink                                                | 5.9 kB     00:00
updates                                                         | 4.7 kB     00:00
(u)pdates/primary_db                      73% [=====================        ]  62 kB/s | 2.6 MB     00:15 ETA
```

Command Line Interface (CLI)

Graphical User Interface (GUI)

WHY?

How?

By using Java packages

- AWT
- **Swing**
- SWT
- OpenJFX / JavaFX
- And many more…

Some facts!

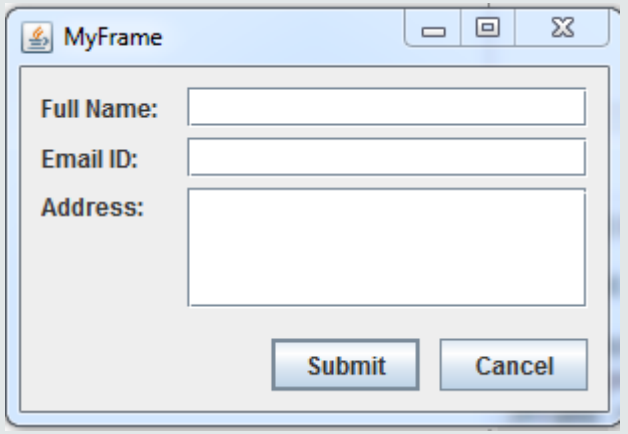
- Java ≠ Javascript
- All classes in java are inherited from Object class.

Top-level containers

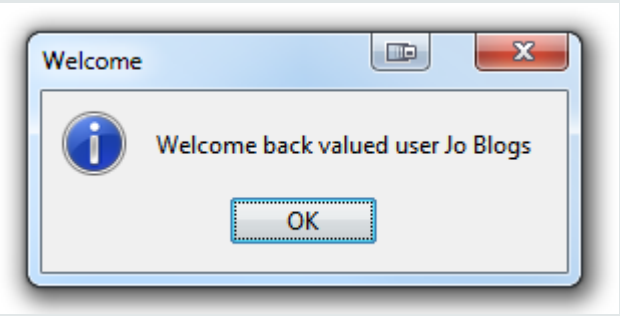
- JFrame (What is usually the main container)
- JDialog (The small popups)

You can add to your project by,

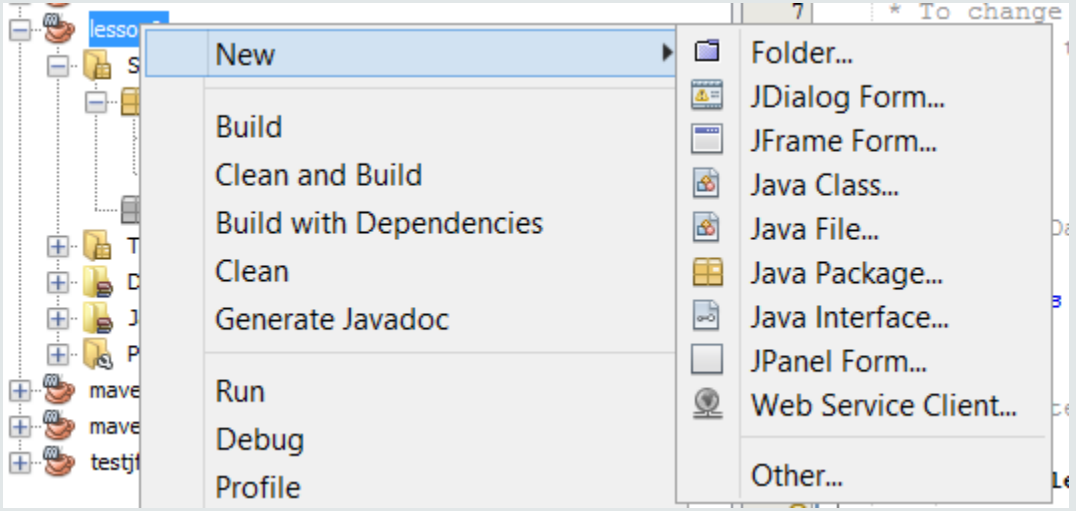
- Right click project -> New -> JFrame / JDialog Form

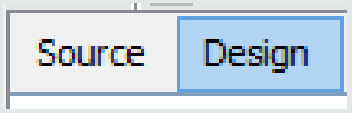


JFrame



JDialog





Source Design History

To change layout manager of a container use Set Layout submenu from its context menu. x

Swing Containers
Panel | Tabbed Pane | Split Pane | Scroll Pane | Tool Bar | Desktop Pane | Internal Frame
Layered Pane

Swing Controls
Label | Button | Toggle Button | Check Box | Radio Button | Button Group | Combo Box
List | Text Field | Text Area | Scroll Bar | Slider | Progress Bar | Formatted Field
Password Field | Spinner | Separator | Text Pane | Editor Pane | Tree | Table

Swing Menus
Menu Bar | Menu | Menu Item | Menu Item / CheckBox | Menu Item / RadioButto
Popup Menu | Separator

Swing Windows
Dialog | Frame | Color Chooser | File Chooser | Option Pane

Swing Fillers
Glue | Horizontal Glue | Horizontal Strut | Rigid Area | Vertical Glue | Vertical Strut

AWT

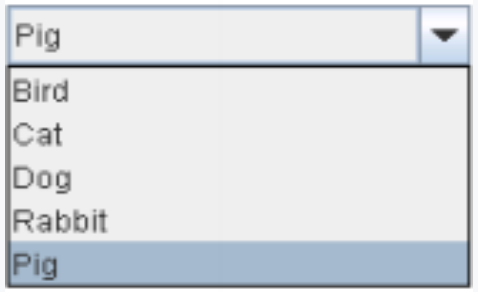
Beans

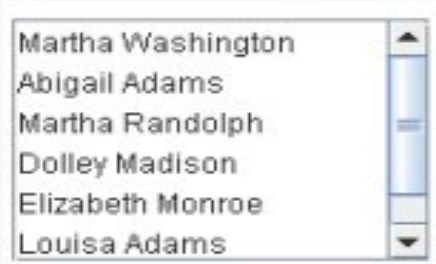
[JFrame] - Properties

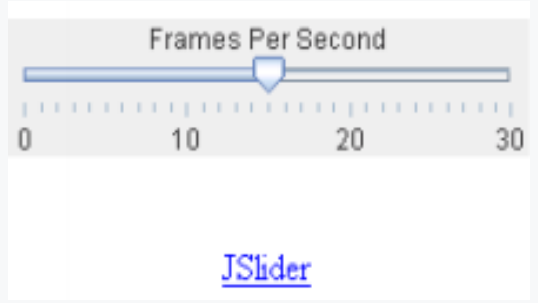
Properties | Events | Code

Properties	
defaultCloseOperation	EXIT_ON_CLOSE
title	
Other Properties	
alwaysOnTop	☐
alwaysOnTopSupported	☑
autoRequestFocus	☑
background	[240,240,240]
bounds	<Not Set>
cursor	Default Cursor
enabled	☑
extendedState	0
focusCycleRoot	☑
focusTraversalPolicy	<default>
focusTraversalPolicyProvider	☐
focusable	☑
focusableWindowState	☑
font	null
foreground	null
graphics	<none>

[JFrame]



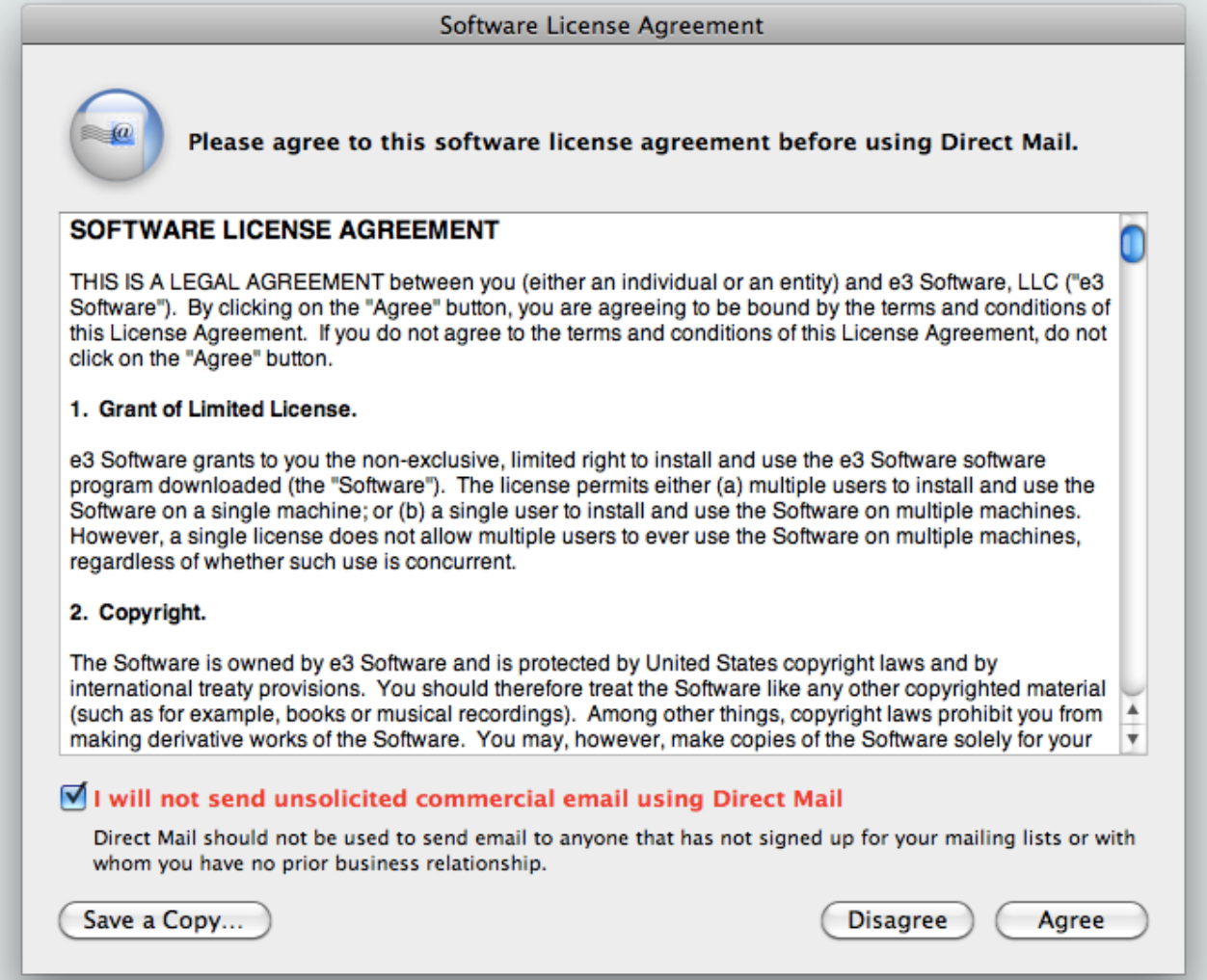




Some swing components

Which one to use?

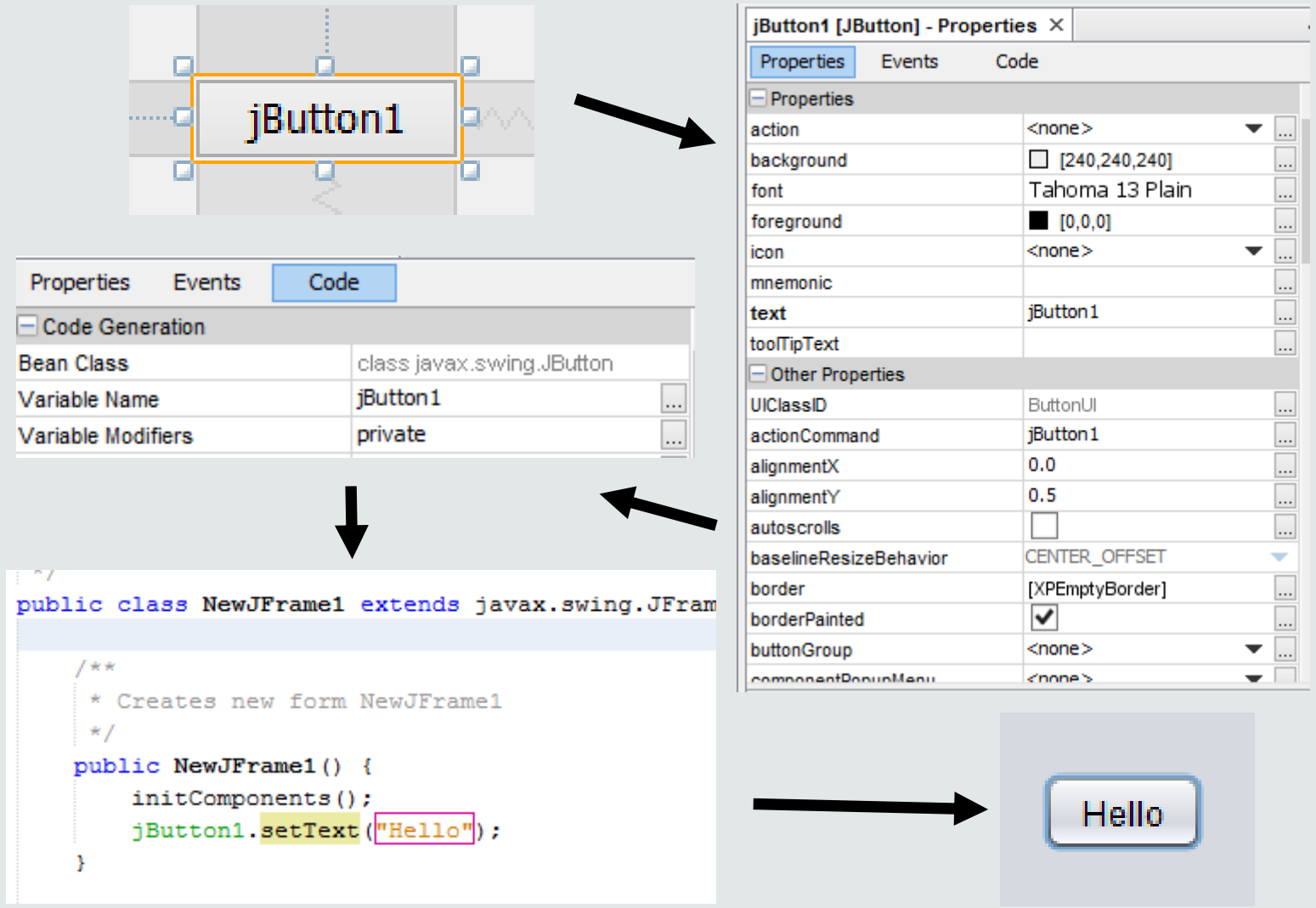
Assume that you have to chose the perfect GUI component for getting the user's agreement for the End-user license agreement.

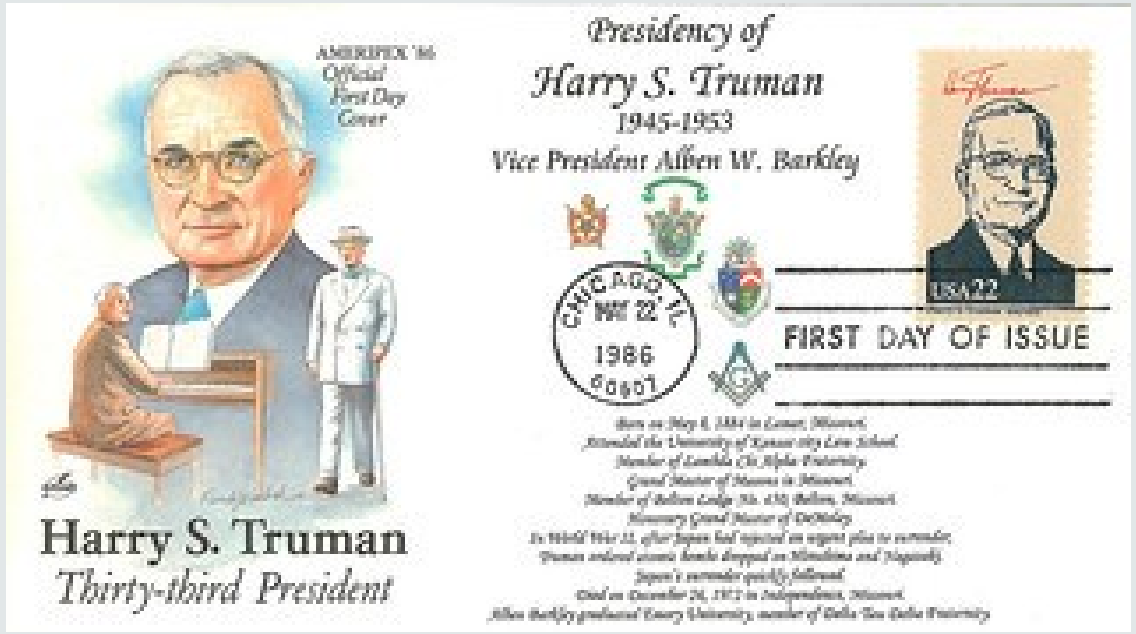


Component properties

You can change via,

- The IDE (In situations where you are starting off with that property)
- Code (If you want to change while running the program)

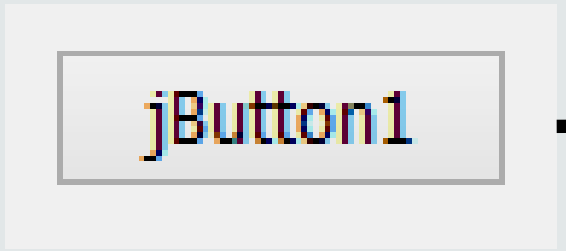




Event – **Release** of a First Day Cover

Listener – **Postal Service in Sri Lanka**

Reaction - **Send** the First Day Cover to the home



Event – Click the button
Listener - mouseClicked
Reaction – clickPerformed(ActionEvent e)

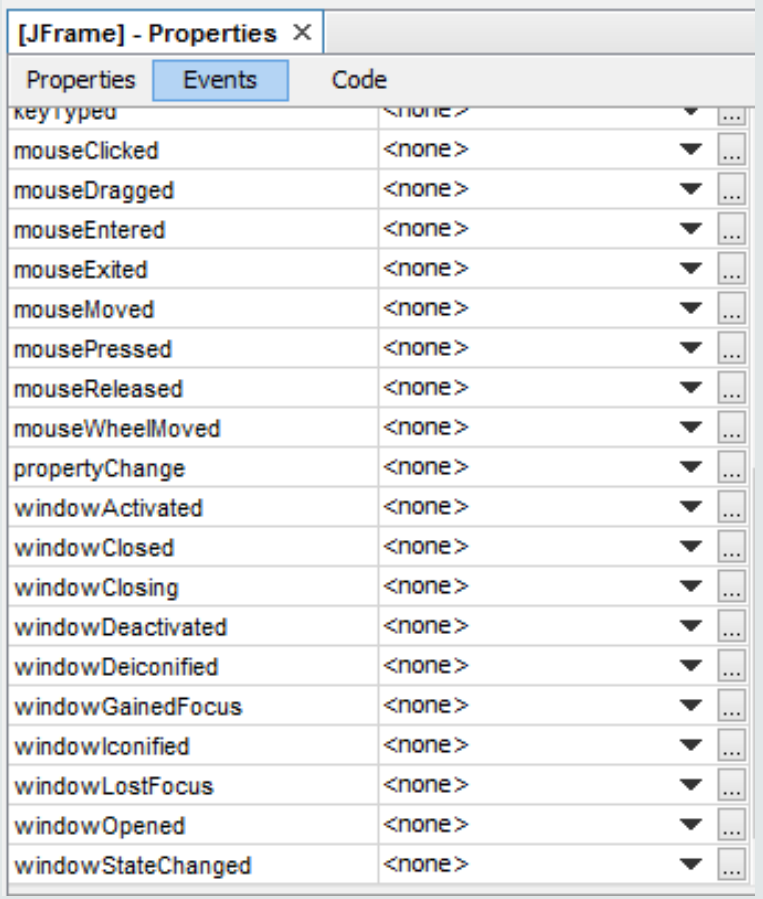
Event – Move the mouse over the button
Listener - mouseMoved
Reaction – mouseMovePerformed(ActionEvent e)

Event – Move the mouse out of the button
Listener - mouseExited
Reaction – mouseExitPerformed(ActionEvent e)

Event Listeners

- **Listeners are objects which “listen” for a particular event and then react to it.**

- **Listeners comes as interfaces found in java.awt.event.**
- *WindowListener*
- *ActionListener*



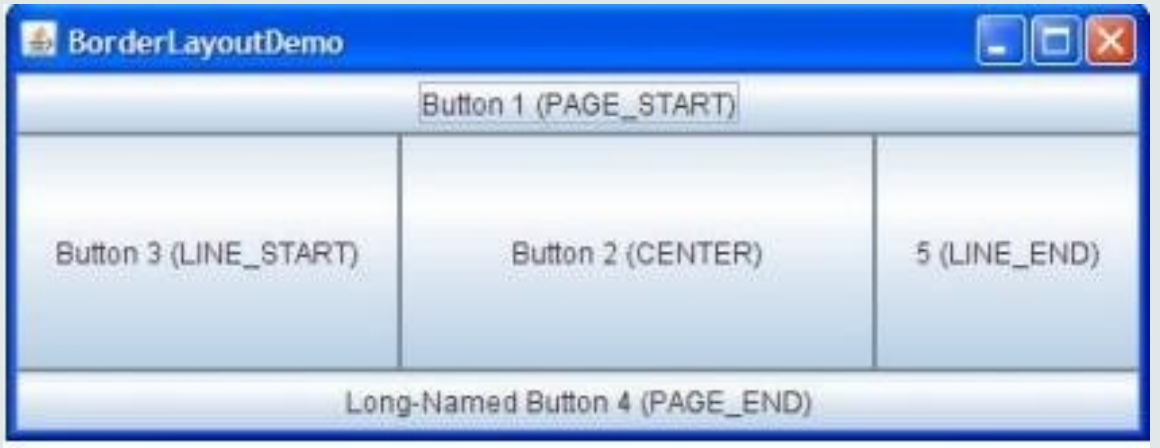
Some interesting ActionListner Methods

- Object getSource()
  - Returns the object that fired the event.
  - Ex - evt.getSource()

- int getModifiers()
  - Returns an integer representing the modifier keys the user was pressing when the action event occurred.
  - Ex - evt.getModifiers()

Layout managers

- Different layout managers specify different ways of placing components.
- NetBeans provide “Free Design” option which is very flexible.
- You can also select a layout as well by,
  Right click -> Set layout ->
  Select some layout



BorderLayout

Some interesting points regarding certain GUI components

- JComboBox
  - jcbox1.addItem("Mr.");
  - jcbox1.getSelectedItem();
- JCheckBox
  - jchkbox1.isSelected();
  - jchkbox1.setSelected(false);
- JList
  - jList1.getSelectedValuesList() (or getSelectedValue())
- jRadioButton - Only one button from a group can be selected
  - ButtonGroup gender = new ButtonGroup(); group.add(radioButton1); (or by the properties window)
  - boolean sel = jRadioButton1.isSelected()

THANK YOU!

IF YOU HAVE ANY QUESTIONS, PLEASE BRING THEM UP IN THE FORUMS!