

Swing

CSSE 221

Fundamentals of Software Development Honors

Rose-Hulman Institute of Technology

Announcements

- HW3 due now
- Questions on Arrays?

This week: Fifteen assignment

- Monday:
 - Fifteen specification
 - GUIs using Java's Swing library
 - Intro to UML as a *design* tool
 - Start Fifteen
- Tuesday:
 - EventListeners: responding to user input
 - Shape classes
- Thursday:
 - Anonymous listeners
 - Exam 1

The Java Swing Library

- Use for GUIs.
- JFrame, JTextBoxes, JButtons, JScrollPanels...
what's available?
- What components will I need...
 - ...now, for Fifteen?
 - ...later, for a term project?
- Browse the [Visual Index to the Swing Components](#)
in Sun's [Java Tutorial](#).

Classes

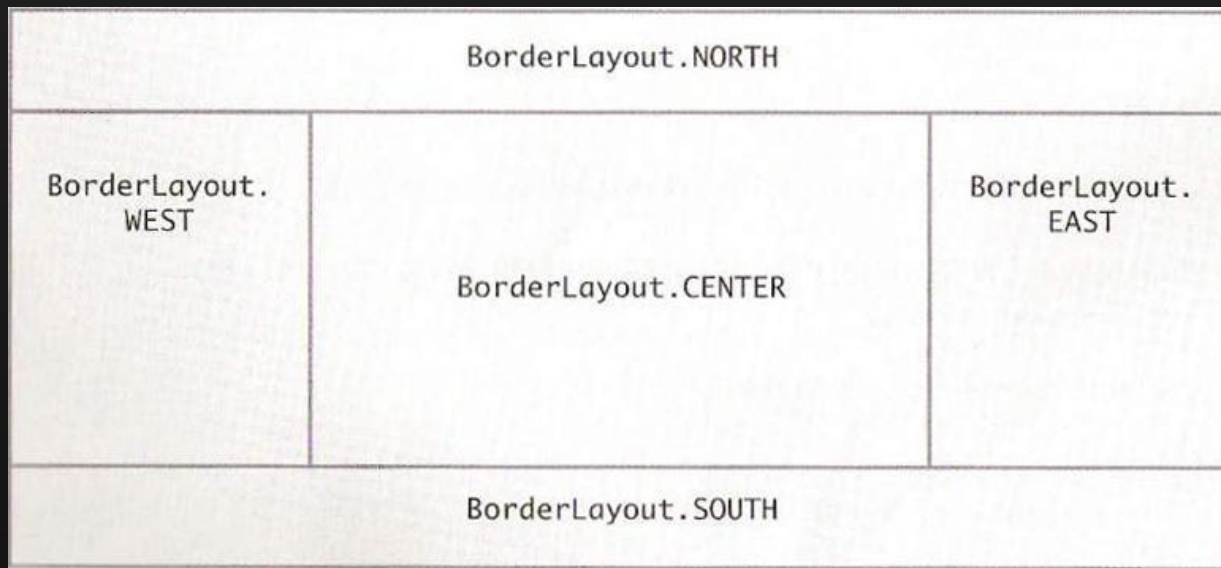
- **JFrame**: top level. Can't draw on.
- **JComponents**: can draw on
- Subclasses of **JComponent**
 - **JPanel**: Use for organization
 - Use layouts to format layout
 - **JLabel**: non-interactive. `getText()`, `setText()`
 - **JTextField**: for data entry
 - **JTextArea**: like multi-line `JTextField`
 - **JButton**: generates *actions*
 - **JToggleButton**: superclass of `JCheckBox`, `JRadioButton`

Layout: Flow Layout

- Places the components from the left side to the right side.
- Wraps around the right side.
`.setLayout(new FlowLayout());`
- No special add syntax.

Layout: Border Layout

- North, South, East, West, Center
- `setLayout(new BorderLayout());`
- `.add(component, BorderLayout.NORTH);`



Layout: Grid Layout

- Similar to flow in the left to right manner, but the grid that you define limits the size of any one component
- You can leave out a definite definition of how many rows or columns are in the grid.
- `setLayout(new GridLayout(r,c));`
- Adds in components from left to right, top to bottom. Cannot specify which block.

PaintComponent

- Called automatically, no need to invoke it.
- Use `repaint()`; to force the `paintComponent()` method to execute.

```
public void paintComponent(Graphics g) {  
    super.paintComponent(g);  
    Graphics2D g2 = (Graphics2D)g;  
    this.setBackground(Color.RED);  
    g2.draw(new Rectangle2D.Double(10,40,20,20));  
}
```

From where are x and y
measured?

Alternative designs

- I want a component to appear. Question:
 - Should I paint it? Add a new component?



Press me!

- Answer: It depends...
 - On how much control you want over its appearance
 - On how you want it to respond to events
- It's usually a tradeoff.



Finish quiz

SwingDemo; can see details instructions online if you want

Demo together

“Fifteen”

Arrays (especially 2D)

Creating GUIs
using Swing

Responding to
mouse clicks



Pair programming

- <http://agile.csc.ncsu.edu/pairlearning/educators.php#ppvideo>