GUI I

IS 313
2.6.03
Outline

- Homework #1 solution
- GUI components
Homework #1

- Ave: 10.5
- High: 12
- Low: 8
- but ...
Solution

- MemberMap
Simple Swing Application
Standard UI program

- Main program
  - Creates a window
  - Adds components
  - Displays

- Component maker
  - Creates, customizes components
  - Sets event handlers
Application Architecture
Java UI Topics

- UI Components
- Containment hierarchy
- Layout management
- Event handling
Top-Level Components

- Applet
- Dialog
- Frame
Intermediate Containers

Panel

ScrollPane

SplitPane

TabbedPane

Toolbar
Basic Controls

**Buttons**

- Check 1
- Radio 2
- OK

**ComboBox**

- Monday
- Tuesday
- Wednesday
- Thursday
- Friday

**List**

- January
- February
- March
- April

**Menu**

- Theme
- Help
- metal
- Organic
- metal2

**Slider**

**TextField**

- George Washington
- Thomas Jefferson
- Benjamin Franklin
- Thomas Faine
Non-editable Display

Label  ProgressBar  ToolTip
**Editable Display**

### Table

<table>
<thead>
<tr>
<th>First Name</th>
<th>Last Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mark</td>
<td>Andrews</td>
</tr>
<tr>
<td>Tom</td>
<td>Ball</td>
</tr>
<tr>
<td>Alan</td>
<td>Chung</td>
</tr>
<tr>
<td>Jeff</td>
<td>Dinkins</td>
</tr>
</tbody>
</table>

### Text

Verify that the RJ45 cable is connected to the WAN plug on the back of the Pipeline unit.

### Tree

- ![Tree Diagram](tabs3.gif)
  - Tree View
    - drawing
    - treeview
Text Components

This is an editable JTextArea that has been initialized with the setText method. A text area is a "plain" text component, which means that although it can display text in any font, all of the text is in the same font.

This is an uneditable JEditorPane, which was initialized with HTML text from a URL.

This is an editable JTextPane, another styled text component, which supports embedded components...

...and embedded icons...
Examples

- Example 2
  - two-tiered architecture

- Example 3
  - specialized component design
JComponents Methods

- Primary properties
  - how it appears

- Secondary properties
  - role in the interface
  - visual relationship to other components

- Tertiary properties
  - computational properties
  - content properties
Primary properties

- Border
- Color
  - foreground
  - background
- Font
- Locale
- Size
  - minimum size
  - maximum size
  - preferred size
  - actual size
- Visible
Secondary properties

- Enabled
- Containment
  - parent
  - children
- Drag and Drop
- Focus
  - accepts
  - keys to traverse
- ToolTip
Tertiary properties

- **Content**
  - different for every type of component

- **Computational**
  - listeners
  - all available
  - one typically used
Swing Components

- Subclasses of JComponent
  - all primary and secondary properties
- Plus component-specific properties
- Plus relevant listeners
JLabel

- Content property
  - Text
JMenuItem

- Hierarchy
  - JMenuBar
  - JMenu
  - JMenuItem

- Content
  - Text

- Computation
  - ActionEvent

- Subtypes
  - JCheckboxMenuItem
  - JRadioButtonMenuItem
  - JMenuItem
JButton

- Content
  - Text
- Computation
  - ActionListener
JRadioButton

- Content
  - Text
  - Selected

- Relationship
  - ButtonGroup
JTextField

- Content
  - Text
  - Editable

- Computation
  - ActionListener
    - handle return or tab
  - KeyListener
    - handles individual letters typed
Complex components

- Content is represented indirectly
  - model
- Model = interface
- Idea
  - Component C uses Model M
  - existing data D
  - create wrapper class encapsulating D implementing interface M
  - data is displayable in C
JList

- Content
  - ListModel
- Computation
  - MouseListener
  - SelectionModel
JComboBox

- Combination of text field and list
- Content
  - ComboBoxModel
- Computation
  - ActionEvent
Example

- Label
- TextField
- JButton
- JRadioButton, JList, JComboBox
Dialog Issue

- UI components are both
  - input and output

- Input
  - state of the control when user clicks “OK”

- Output
  - state of the control when it is shown
  - should reflect state of application