Second AP* Edition
— with GridWorld

Java Methods

Object-Oriented Programming and Data Structures

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Appendix C: GUI Examples Index

For the complete list of constructors and methods refer to the Swing API documentation.

JButton

JCheckBox

JComboBox

JFileChooser

JFrame

JLabel

JMenuBar, JMenu, JMenuItem, etc.

JPanel

JPasswordField

JRadioButton

JSlider

JTextArea, JScrollPane

JTextField

JToggleButton

JButton

Constructors:

```
JButton(String text);
JButton(Icon picture);
JButton(String text, Icon picture);
```

Methods:

```
void addActionListener(ActionListener object)
void setText(String text);
void setActionCommand(String cmd);
void setIcon(Icon icon);
void setEnabled(true/false);
```

Events:

```
... class ... implements ActionListener
{
  public void actionPerformed(ActionEvent e)
  {
    JButton b = (JButton)e.getSource();
    String s = e.getActionCommand();
    ...
  }
}
```

Examples:

```
JM\Ch06\Exercises\Bmi.java
JM\Ch06\Poll\PollControlPanel.java
JM\Ch09\SnackBar\VendingMachine.java
JM\Ch10\Lipogrammer\Lipogrammer.java
JM\Ch12\Fortunes\FortuneTeller.java
JM\Ch14\Benchmarks\Benchmarks.java
JM\Ch17\Ramblecs\ControlPanel.java
JM\Ch22\Browser\BrowserControlPanel.java
JM\Ch25\Cryptogram\Cryptogram.java
JM\Ch25\Giggle\Giggle.java
```

JCheckBox

Constructors:

```
JCheckBox(String text, boolean checked);
JCheckBox(Icon icon, boolean checked);
JCheckBox(String text, Icon icon, boolean checked);
```

Methods:

```
void addActionListener(ActionListener object)
void addItemListener(ItemListener object)
boolean isSelected()
void setSelected(boolean checked)
void setText(String text);
void setIcon(Icon icon);
```

Events:

```
... class ... implements ActionListener
{
  public void actionPerformed(ActionEvent e)
  {
    JCheckBox b = (JCheckBox)e.getSource();
    if (b == checkBox1 && b.isSelected())
      ...
  }
}
```

Examples:

```
JM\Ch16\Exercises\Boxes.java
JM\Ch17\Ramblecs\RamblecsMenu.java
```

JComboBox

Constructors:

```
JComboBox(Object items[]);
 // For example:
 //   String[] items = {"One", "Two", "Three"};
 //   JComboBox cb = new JComboBox(items);
)
```

Methods:

```
void addItemListener(ItemListener object);
void addActionListener(ActionListener object);
int getSelectedIndex();
Object getSelectedItem();
 // For example, String s = (String)cb.getSelectedItem();
void setSelectedIndex(int itemNum);
void setSelectedItem(String text);
 // finds the item that matches text and
 // makes it selected item
```

Events:

```
... class ... implements ItemListener
{
  public void itemStateChanged(ItemEvent e)
  {
    JComboBox cb = (JComboBox)e.getSource();
    int index = cb.getSelectedIndex();
    String item = (String)cb.getSelectedItem();
    ...
  }
}

... class ... implements ActionListener
{
  public void actionPerformed(ActionEvent e)
  {
    ...
  }
}
```

Examples:

```
JM\Ch14\Benchmarks\Benchmarks.java
JM\Ch16\Exercises\Boxes.java
```

JFileChooser

Constructors:

```
JFileChooser(pathname);
```

Methods:

```
void setFileSelectionMode(JFileChooser.FILES_ONLY);
void showOpenDialog(this);
File getSelectedFile();
```

Examples:

```
JM\Ch10\Lipogrammer\LipogrammerMenu.java
JM\Ch25\Cryptogram\CryptogramMenu.java
JM\Ch25\Giggle\Giggle.java
```

JFrame

Constructors:

```
JFrame();
JFrame(String title);
```

Methods:

```
void setSize(int width, int height);
void setBounds(int left, int top, int width, int height);
void setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
void setResizeable(true/false);
void setVisible(true/false);
Container getContentPane();
```

Examples:

```
JM\Ch02\HelloGui\HelloGraphics.java
JM\Ch02\HelloGui\HelloGui.java
JM\Ch05\Syntax\MovingDisk.java
JM\Ch06\Poll\Poll.java
JM\Ch07\Craps\Craps.java
JM\Ch07\Craps\CrapsStats.java
JM\Ch07\Craps\CrapsTest1.java
JM\Ch09\SnackBar\SnackBar.java
JM\Ch10\Lipogrammer\Lipogrammer.java
JM\Ch12\Chomp\Chomp.java
JM\Ch14\Benchmarks\Benchmarks.java
JM\Ch16\Puzzle\Puzzle.java
JM\Ch17\Ramblecs\Ramblecs.java
JM\Ch20\SafeTrade\SafeTrade.java
JM\Ch21\Teletext\Teletext.java
JM\Ch22\Actors\ThreeKittens.java
JM\Ch22\Browser\LineCruiser.java
JM\Ch24\Messenger\Messenger.java
JM\Ch24\MorseCode\Telegraph.java
JM\Ch25\Cryptogram\Cryptogram.java
JM\Ch25\Giggle\Giggle.java
```

JLabel

Constructors:

```
JLabel(String text);
JLabel(Icon icon);
JLabel(String text, Icon icon, JLabel.LEFT);
        // or CENTER, RIGHT, LEADING, TRAILING.
```

Methods:

```
void setText(String text);
void setIcon(Icon icon);
```

Events: None

Examples:

```
JM\Ch07\Craps\CrapsStats.java
JM\Ch07\Craps\CrapsTest1.java
JM\Ch09\SnackBar\SnackBar.java
JM\Ch14\Benchmarks\Benchmarks.java
JM\Ch17\Ramblecs\ControlPanel.java
JM\Ch25\Cryptogram\Cryptogram.java
JM\Ch25\Giggle\Giggle.java
```

JMenuBar, JMenu, JMenuItem, etc.

Constructors:

```
JMenuBar();

JMenu(String text);
JMenuItem(String text);
JMenuItem(Icon icon);
JMenuItem(String text, Icon icon);
JMenuItem(String text, int kbMnemonic);

JCheckBoxMenuItem(String text);
JCheckBoxMenuItem(Icon icon);
JCheckBoxMenuItem(String text, Icon icon);
JCheckBoxMenuItem(String text, boolean checked);
JCheckBoxMenuItem(String text, Icon icon, boolean checked);

JRadioButtonMenuItem(String text);
JRadioButtonMenuItem(Icon icon);
JRadioButtonMenuItem(String text, Icon icon);
JRadioButtonMenuItem(String text, boolean selected);
JRadioButtonMenuItem(Icon icon, boolean selected);
JRadioButtonMenuItem(String text, Icon icon, boolean selected);
```

Methods:

```
void add(JMenu);
void addSeparator();
void addActionListener(ActionListener object)
void setText(String text);
void setActionCommand(String cmd);
void setIcon(Icon icon);
void setEnabled(true/false);
```

Examples:

```
JM\Ch10\Lipogrammer\Lipogrammer.java
JM\Ch10\Lipogrammer\LipogrammerMenu.java
JM\Ch17\Ramblecs\Ramblecs.java
JM\Ch17\Ramblecs\RamblecsMenu.java
JM\Ch25\Cryptogram\Cryptogram.java
JM\Ch25\Cryptogram\CryptogramMenu.java
JM\Ch25\Giggle\Giggle.java
```

JPanel

Constructors:

```
JPanel();
```

Methods:

```
void addMouseListener(ActionListener object)
void add(JComponent component);
void paintComponent(Graphics g);
```

Events:

```
... class ... implements MouseListener
{
  public void mousePressed(MouseEvent e)
  {
    int x = e.getX();
    int y = e.getY();
    ...
  }
}
```

Examples:

```
JM\Ch02\HelloGui\HelloGraphics.java
JM\Ch05\Syntax\MovingDisk.java
JM\Ch06\Poll\PollControlPanel.java
JM\Ch06\Poll\PollDisplayPanel.java
JM\Ch07\Craps\Craps.java
JM\Ch09\SnackBar\SnackBar.java
JM\Ch09\SnackBar\VendingMachine.java
JM\Ch16\Puzzle\Puzzle.java
JM\Ch16\Puzzle\PuzzleCell.java
JM\Ch17\Ramblecs\ControlPanel.java
JM\Ch21\Teletext\TeletextDisplay.java
JM\Ch21\Teletext\TeletextInput.java
JM\Ch22\Browser\BrowserControlPanel.java
JM\Ch22\Browser\BrowserView.java
JM\Ch25\Cryptogram\Cryptogram.java
JM\Ch25\Giggle\Giggle.java
```

JPasswordField

extends JTextField

Constructors:

```
JPasswordField(String text);
JPasswordField(int cols);
JPasswordField(String text, int cols);
```

Methods:

```
void addActionListener(ActionListener object)
void setText(String text);
void setBackground(Color c);
void setForeground(Color c);
void setFont(Font font);
void requestFocus();
char[] getPassword();
void selectAll();
```

Events:

```
... class ... implements ActionListener
{
  public void actionPerformed(ActionEvent e)
  {
    // When the user strikes <Enter>:
    JPasswordField pf = (JPasswordField)e.getSource();
    String s = new String(pf.getPassword());
    ...
  }
}
```

Examples:

```
JM\Ch09\SnackBar\SnackBar.java
```

JRadioButton

Constructors:

```
JRadioButton(String text);  // default: unselected
JRadioButton(String text, boolean selected);
JRadioButton(Icon icon);
JRadioButton(Icon icon, boolean selected);
JRadioButton(String text, Icon icon, boolean selected);
```

Methods:

```
void addActionListener(ActionListener object)
boolean isSelected()
void setSelected(boolean selected)
void setText(String text);
void setIcon(Icon icon);

...
ButtonGroup gr = new ButtonGroup();
gr.add(radioButton1);
gr.add(radioButton2);
...
```

Events:

```
... class ... implements ActionListener
{
  public void actionPerformed(ActionEvent e)
  {
    JRadioButton b = (JRadioButton)e.getSource();
    if (b == radioButton1 && b.isSelected())
      ...
  }
}
```

Examples:

```
JM\Ch07\Exercises\Rps.java
```

JSlider

Imports (Not in java.awt.event.*)

```
import javax.swing.event.ChangeListener;
import javax.swing.event.ChangeEvent;
```

Constructors:

```
JSlider(JSlider.VERTICAL, int min, int max, int current);
      // or HORIZONTAL
```

Methods:

```
void addChangeListener(ChangeListener object);
void setInverted(true/false);
void setMajorTickSpacing(int n); // in "slider" units
void setMinorTickSpacing(int n);
void setPaintLabels(true/false);
void setPaintTicks(true/false);
int getValue();
void setValue(int x);  // calls listener's stateChanged
```

Events:

```
... class ... implements ChangeListener
{
  public void stateChanged(ChangeEvent e)
  {
    JSlider slider = (JSlider)e.getSource();
    int x = slider.getValue();
    ...
  }
}
```

Examples:

```
JM\Ch17\Ramblecs\ControlPanel.java
```

JTextArea

Constructors:

```
JTextArea(String text);
JTextArea(int rows, int cols);
JTextArea(String text, int rows, int cols);
```

Methods:

```
void setEditable(true/false);
int getCaretPosition();
void append(String text);
void insert(String text, int pos);
void setText(String text);
void setBackground(Color c);
void setForeground(Color c);
void setFont(Font font);
void requestFocus();
String getText();
void selectAll();
void setCaretPosition(int pos);
void moveCaretPosition(int pos);
```

Examples:

```
JM\Ch07\Craps\CrapsTest1.java
JM\Ch10\Lipogrammer\Lipogrammer.java
JM\Ch22\Actors\ThreeKittens.java
JM\Ch24\MorseCode\Telegraph.java
JM\Ch25\Cryptogram\Cryptogram.java
JM\Ch25\Giggle\Giggle.java
JM\Ch26\Exercises\Giggle.java
```

Examples with `JScrollPane`:

```
JM\Ch07\Craps\CrapsTest1.java
JM\Ch10\Lipogrammer\Lipogrammer.java
JM\Ch22\Actors\ThreeKittens.java
JM\Ch25\Cryptogram\Cryptogram.java
JM\Ch25\Giggle\Giggle.java
JM\Ch26\Exercises\Giggle.java
```

JTextField

Constructors:

```
JTextField(String text);
JTextField(int cols);
JTextField(String text, int cols);
```

Methods:

```
void addActionListener(ActionListener object)
void setEditable(true/false);
void setText(String text);
void setBackground(Color c);
void setForeground(Color c);
void setFont(Font font);
void requestFocus();
String getText();
void selectAll();
void setCaretPosition(int pos);
void moveCaretPosition(int pos);
```

Events:

```
... class ... implements ActionListener
{
  public void actionPerformed(ActionEvent e)
  {
    // <Enter> is pressed:
    JTextField tf = (JTextField)e.getSource();
    String s = tf.getText();
  }
}
```

Examples:

```
JM\Ch02\HelloGui\HelloGui.java
JM\Ch07\Craps\CrapsStats.java
JM\Ch07\Craps\CrapsTest1.java
JM\Ch09\SnackBar\VendingMachine.java
JM\Ch10\Exercises\StringTest.java
JM\Ch12\Chomp\Chomp.java
JM\Ch12\Fortunes\FortuneTeller.java
JM\Ch14\Benchmarks\Benchmarks.java
JM\Ch17\Ramblecs\ControlPanel.java
JM\Ch21\Teletext\TeletextInput.java
JM\Ch24\MorseCode\Telegraph.java
JM\Ch25\Cryptogram\Cryptogram.java
JM\Ch25\Giggle\Giggle.java
```

JToggleButton

Constructors:

```
JToggleButton(String text, boolean selected);
JToggleButton(Icon icon, boolean selected);
JToggleButton(String text, Icon icon, boolean selected);
```

Methods:

```
void addActionListener(ActionListener object)
boolean isSelected()
void setSelected(boolean selected)
void setText(String text);
void setIcon(Icon icon);
```

Events:

```
class ... implements ActionListener
{
  public void actionPerformed(ActionEvent e)
  {
    JToggleButton tb = (JToggleButton)e.getSource();
    if (tb.isSelected())
      ...
  }
}
```

Appendix C: GUI Examples Index

For the complete list of constructors and methods refer to the Swing API documentation.

JButton

JCheckBox

JComboBox

JFileChooser

JFrame

JLabel

JMenuBar, JMenu, JMenuItem, etc.

JPanel

JPasswordField

JRadioButton

JSlider

JTextArea, JScrollPane

JTextField

JToggleButton

JButton

Constructors:

```
JButton(String text);
JButton(Icon picture);
JButton(String text, Icon picture);
```

Methods:

```
void addActionListener(ActionListener object)
void setText(String text);
void setActionCommand(String cmd);
void setIcon(Icon icon);
void setEnabled(true/false);
```

Events:

```
... class ... implements ActionListener
{
  public void actionPerformed(ActionEvent e)
  {
    JButton b = (JButton)e.getSource();
    String s = e.getActionCommand();
    ...
  }
}
```

Examples:

```
JM\Ch06\Exercises\Bmi.java
JM\Ch06\Poll\PollControlPanel.java
JM\Ch09\SnackBar\VendingMachine.java
JM\Ch10\Lipogrammer\Lipogrammer.java
JM\Ch12\Fortunes\FortuneTeller.java
JM\Ch14\Benchmarks\Benchmarks.java
JM\Ch17\Ramblecs\ControlPanel.java
JM\Ch22\Browser\BrowserControlPanel.java
JM\Ch25\Cryptogram\Cryptogram.java
JM\Ch25\Giggle\Giggle.java
```

JCheckBox

Constructors:

```
JCheckBox(String text, boolean checked);
JCheckBox(Icon icon, boolean checked);
JCheckBox(String text, Icon icon, boolean checked);
```

Methods:

```
void addActionListener(ActionListener object)
void addItemListener(ItemListener object)
boolean isSelected()
void setSelected(boolean checked)
void setText(String text);
void setIcon(Icon icon);
```

Events:

```
... class ... implements ActionListener
{
  public void actionPerformed(ActionEvent e)
  {
    JCheckBox b = (JCheckBox)e.getSource();
    if (b == checkBox1 && b.isSelected())
      ...
  }
}
```

Examples:

```
JM\Ch16\Exercises\Boxes.java
JM\Ch17\Ramblecs\RamblecsMenu.java
```

JComboBox

Constructors:

```
JComboBox(Object items[]);
 // For example:
 //   String[] items = {"One", "Two", "Three"};
 //   JComboBox cb = new JComboBox(items);
)
```

Methods:

```
void addItemListener(ItemListener object);
void addActionListener(ActionListener object);
int getSelectedIndex();
Object getSelectedItem();
 // For example, String s = (String)cb.getSelectedItem();
void setSelectedIndex(int itemNum);
void setSelectedItem(String text);
 // finds the item that matches text and
 // makes it selected item
```

Events:

```
... class ... implements ItemListener
{
  public void itemStateChanged(ItemEvent e)
  {
    JComboBox cb = (JComboBox)e.getSource();
    int index = cb.getSelectedIndex();
    String item = (String)cb.getSelectedItem();
    ...
  }
}

... class ... implements ActionListener
{
  public void actionPerformed(ActionEvent e)
  {
    ...
  }
}
```

Examples:

```
JM\Ch14\Benchmarks\Benchmarks.java
JM\Ch16\Exercises\Boxes.java
```

JFileChooser

Constructors:

```
JFileChooser(pathname);
```

Methods:

```
void setFileSelectionMode(JFileChooser.FILES_ONLY);
void showOpenDialog(this);
File getSelectedFile();
```

Examples:

```
JM\Ch10\Lipogrammer\LipogrammerMenu.java
JM\Ch25\Cryptogram\CryptogramMenu.java
JM\Ch25\Giggle\Giggle.java
```

JFrame

Constructors:

```
JFrame();
JFrame(String title);
```

Methods:

```
void setSize(int width, int height);
void setBounds(int left, int top, int width, int height);
void setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
void setResizeable(true/false);
void setVisible(true/false);
Container getContentPane();
```

Examples:

```
JM\Ch02\HelloGui\HelloGraphics.java
JM\Ch02\HelloGui\HelloGui.java
JM\Ch05\Syntax\MovingDisk.java
JM\Ch06\Poll\Poll.java
JM\Ch07\Craps\Craps.java
JM\Ch07\Craps\CrapsStats.java
JM\Ch07\Craps\CrapsTest1.java
JM\Ch09\SnackBar\SnackBar.java
JM\Ch10\Lipogrammer\Lipogrammer.java
JM\Ch12\Chomp\Chomp.java
JM\Ch14\Benchmarks\Benchmarks.java
JM\Ch16\Puzzle\Puzzle.java
JM\Ch17\Ramblecs\Ramblecs.java
JM\Ch20\SafeTrade\SafeTrade.java
JM\Ch21\Teletext\Teletext.java
JM\Ch22\Actors\ThreeKittens.java
JM\Ch22\Browser\LineCruiser.java
JM\Ch24\Messenger\Messenger.java
JM\Ch24\MorseCode\Telegraph.java
JM\Ch25\Cryptogram\Cryptogram.java
JM\Ch25\Giggle\Giggle.java
```

JLabel

Constructors:

```
JLabel(String text);
JLabel(Icon icon);
JLabel(String text, Icon icon, JLabel.LEFT);
        // or CENTER, RIGHT, LEADING, TRAILING.
```

Methods:

```
void setText(String text);
void setIcon(Icon icon);
```

Events: None

Examples:

```
JM\Ch07\Craps\CrapsStats.java
JM\Ch07\Craps\CrapsTest1.java
JM\Ch09\SnackBar\SnackBar.java
JM\Ch14\Benchmarks\Benchmarks.java
JM\Ch17\Ramblecs\ControlPanel.java
JM\Ch25\Cryptogram\Cryptogram.java
JM\Ch25\Giggle\Giggle.java
```

JMenuBar, JMenu, JMenuItem, etc.

Constructors:

```
JMenuBar();

JMenu(String text);
JMenuItem(String text);
JMenuItem(Icon icon);
JMenuItem(String text, Icon icon);
JMenuItem(String text, int kbMnemonic);

JCheckBoxMenuItem(String text);
JCheckBoxMenuItem(Icon icon);
JCheckBoxMenuItem(String text, Icon icon);
JCheckBoxMenuItem(String text, boolean checked);
JCheckBoxMenuItem(String text, Icon icon, boolean checked);

JRadioButtonMenuItem(String text);
JRadioButtonMenuItem(Icon icon);
JRadioButtonMenuItem(String text, Icon icon);
JRadioButtonMenuItem(String text, boolean selected);
JRadioButtonMenuItem(Icon icon, boolean selected);
JRadioButtonMenuItem(String text, Icon icon, boolean selected);
```

Methods:

```
void add(JMenu);
void addSeparator();
void addActionListener(ActionListener object)
void setText(String text);
void setActionCommand(String cmd);
void setIcon(Icon icon);
void setEnabled(true/false);
```

Examples:

```
JM\Ch10\Lipogrammer\Lipogrammer.java
JM\Ch10\Lipogrammer\LipogrammerMenu.java
JM\Ch17\Ramblecs\Ramblecs.java
JM\Ch17\Ramblecs\RamblecsMenu.java
JM\Ch25\Cryptogram\Cryptogram.java
JM\Ch25\Cryptogram\CryptogramMenu.java
JM\Ch25\Giggle\Giggle.java
```

JPanel

Constructors:

```
JPanel();
```

Methods:

```
void addMouseListener(ActionListener object)
void add(JComponent component);
void paintComponent(Graphics g);
```

Events:

```
... class ... implements MouseListener
{
  public void mousePressed(MouseEvent e)
  {
    int x = e.getX();
    int y = e.getY();
    ...
  }
}
```

Examples:

```
JM\Ch02\HelloGui\HelloGraphics.java
JM\Ch05\Syntax\MovingDisk.java
JM\Ch06\Poll\PollControlPanel.java
JM\Ch06\Poll\PollDisplayPanel.java
JM\Ch07\Craps\Craps.java
JM\Ch09\SnackBar\SnackBar.java
JM\Ch09\SnackBar\VendingMachine.java
JM\Ch16\Puzzle\Puzzle.java
JM\Ch16\Puzzle\PuzzleCell.java
JM\Ch17\Ramblecs\ControlPanel.java
JM\Ch21\Teletext\TeletextDisplay.java
JM\Ch21\Teletext\TeletextInput.java
JM\Ch22\Browser\BrowserControlPanel.java
JM\Ch22\Browser\BrowserView.java
JM\Ch25\Cryptogram\Cryptogram.java
JM\Ch25\Giggle\Giggle.java
```

JPasswordField

extends JTextField

Constructors:

```
JPasswordField(String text);
JPasswordField(int cols);
JPasswordField(String text, int cols);
```

Methods:

```
void addActionListener(ActionListener object)
void setText(String text);
void setBackground(Color c);
void setForeground(Color c);
void setFont(Font font);
void requestFocus();
char[] getPassword();
void selectAll();
```

Events:

```
... class ... implements ActionListener
{
  public void actionPerformed(ActionEvent e)
  {
    // When the user strikes <Enter>:
    JPasswordField pf = (JPasswordField)e.getSource();
    String s = new String(pf.getPassword());
    ...
  }
}
```

Examples:

```
JM\Ch09\SnackBar\SnackBar.java
```

JRadioButton

Constructors:

```
JRadioButton(String text);  // default: unselected
JRadioButton(String text, boolean selected);
JRadioButton(Icon icon);
JRadioButton(Icon icon, boolean selected);
JRadioButton(String text, Icon icon, boolean selected);
```

Methods:

```
void addActionListener(ActionListener object)
boolean isSelected()
void setSelected(boolean selected)
void setText(String text);
void setIcon(Icon icon);

...
ButtonGroup gr = new ButtonGroup();
gr.add(radioButton1);
gr.add(radioButton2);
...
```

Events:

```
... class ... implements ActionListener
{
  public void actionPerformed(ActionEvent e)
  {
    JRadioButton b = (JRadioButton)e.getSource();
    if (b == radioButton1 && b.isSelected())
      ...
  }
}
```

Examples:

```
JM\Ch07\Exercises\Rps.java
```

JSlider

Imports (Not in java.awt.event.*)

```
import javax.swing.event.ChangeListener;
import javax.swing.event.ChangeEvent;
```

Constructors:

```
JSlider(JSlider.VERTICAL, int min, int max, int current);
      // or HORIZONTAL
```

Methods:

```
void addChangeListener(ChangeListener object);
void setInverted(true/false);
void setMajorTickSpacing(int n); // in "slider" units
void setMinorTickSpacing(int n);
void setPaintLabels(true/false);
void setPaintTicks(true/false);
int getValue();
void setValue(int x);  // calls listener's stateChanged
```

Events:

```
... class ... implements ChangeListener
{
  public void stateChanged(ChangeEvent e)
  {
    JSlider slider = (JSlider)e.getSource();
    int x = slider.getValue();
    ...
  }
}
```

Examples:

```
JM\Ch17\Ramblecs\ControlPanel.java
```

JTextArea

Constructors:

```
JTextArea(String text);
JTextArea(int rows, int cols);
JTextArea(String text, int rows, int cols);
```

Methods:

```
void setEditable(true/false);
int getCaretPosition();
void append(String text);
void insert(String text, int pos);
void setText(String text);
void setBackground(Color c);
void setForeground(Color c);
void setFont(Font font);
void requestFocus();
String getText();
void selectAll();
void setCaretPosition(int pos);
void moveCaretPosition(int pos);
```

Examples:

```
JM\Ch07\Craps\CrapsTest1.java
JM\Ch10\Lipogrammer\Lipogrammer.java
JM\Ch22\Actors\ThreeKittens.java
JM\Ch24\MorseCode\Telegraph.java
JM\Ch25\Cryptogram\Cryptogram.java
JM\Ch25\Giggle\Giggle.java
JM\Ch26\Exercises\Giggle.java
```

Examples with `JScrollPane`:

```
JM\Ch07\Craps\CrapsTest1.java
JM\Ch10\Lipogrammer\Lipogrammer.java
JM\Ch22\Actors\ThreeKittens.java
JM\Ch25\Cryptogram\Cryptogram.java
JM\Ch25\Giggle\Giggle.java
JM\Ch26\Exercises\Giggle.java
```

JTextField

Constructors:

```
JTextField(String text);
JTextField(int cols);
JTextField(String text, int cols);
```

Methods:

```
void addActionListener(ActionListener object)
void setEditable(true/false);
void setText(String text);
void setBackground(Color c);
void setForeground(Color c);
void setFont(Font font);
void requestFocus();
String getText();
void selectAll();
void setCaretPosition(int pos);
void moveCaretPosition(int pos);
```

Events:

```
... class ... implements ActionListener
{
  public void actionPerformed(ActionEvent e)
  {
    // <Enter> is pressed:
    JTextField tf = (JTextField)e.getSource();
    String s = tf.getText();
  }
}
```

Examples:

```
JM\Ch02\HelloGui\HelloGui.java
JM\Ch07\Craps\CrapsStats.java
JM\Ch07\Craps\CrapsTest1.java
JM\Ch09\SnackBar\VendingMachine.java
JM\Ch10\Exercises\StringTest.java
JM\Ch12\Chomp\Chomp.java
JM\Ch12\Fortunes\FortuneTeller.java
JM\Ch14\Benchmarks\Benchmarks.java
JM\Ch17\Ramblecs\ControlPanel.java
JM\Ch21\Teletext\TeletextInput.java
JM\Ch24\MorseCode\Telegraph.java
JM\Ch25\Cryptogram\Cryptogram.java
JM\Ch25\Giggle\Giggle.java
```

JToggleButton

Constructors:

```
JToggleButton(String text, boolean selected);
JToggleButton(Icon icon, boolean selected);
JToggleButton(String text, Icon icon, boolean selected);
```

Methods:

```
void addActionListener(ActionListener object)
boolean isSelected()
void setSelected(boolean selected)
void setText(String text);
void setIcon(Icon icon);
```

Events:

```
class ... implements ActionListener
{
  public void actionPerformed(ActionEvent e)
  {
    JToggleButton tb = (JToggleButton)e.getSource();
    if (tb.isSelected())
      ...
  }
}
```