Graphical User Interface using Swing Part VI - Menus and ToolBars Samir Genaim

http://docs.oracle.com/javase/tutorial/uiswing/

http://www.macs.hw.ac.uk/guidebook

Menus in Swing - JMenuBar

```
public class MenuBarExample extends JFrame implements ... {
    private void initGUI() {
    JPanel mainPanel = new JPanel();
                                                                  0 0
                                                                                  [=] JMenuBar [=]
                                                                          Main Courses
                                                                  Starters
                                                                                       Desserts
        mainPanel.setBackground(Color.white);
                                                                            Haddock
                                                                            Steak
                                                                                            Rare
                                                                                            Well Done
                                                                            Pie
        JMenuBar menu = createMenuBar();
                                                                            Chips
                                                                            Baked Potato
                                                                            Vegetables
        this.setContentPane(mainPanel);
this.setJMenuBar(menu);
        this.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        this.pack();
this.setVisible(true);
    public JMenuBar createMenuBar() {
   JMenuBar menuBar = new JMenuBar();
                                                                           Frame
                                                                                                   avered Pane
        // add item to the menu
                                                                                  Menu Ba
        return menuBar;
                                                          Root Pane
                                                                                                    🗕 Glass Pane
                                                             Content Pane
```

Menus in Swing - JMenu

```
public JMenuBar createMenuBar() {
  JMenuBar menuBar = new JMenuBar();
  JMenu starter = new JMenu("Starters");
  JMenu maincourse = new JMenu("Main Courses");
  JMenu desserts = new JMenu("Desserts");
  menuBar.add(starter);
  menuBar.add(maincourse);
  menuBar.add(desserts);
  // starters code
  // maincourse code
  // dessert code
  return JMenuBar;
```

```
Starters Main Courses Desserts
```

Menus in Swing - JMenu

```
public JMenuBar createMenuBar() {
  JMenuBar menuBar = new JMenuBar();
  JMenu starter = new JMenu("Starters");
  JMenu maincourse = new JMenu("Main Courses");
  JMenu desserts = new JMenu("Desserts");
  menuBar.add(starter);
  menuBar.add(maincourse);
  menuBar.add(desserts);
  // starters code
  // maincourse code
  // dessert code
  return JMenuBar;
```

```
Starters Main Courses Desserts
```

Menus in Swing - JMenu

```
public JMenuBar createMenuBar() {
  JMenuBar menuBar = new JMenuBar();
  JMenu starter = new JMenu("Starters");
  JMenu maincourse = new JMenu("Main Courses");
  JMenu desserts = new JMenu("Desserts");
  menuBar.add(starter);
  menuBar.add(maincourse);
  menuBar.add(desserts);
  // starters code
  // maincourse code
  // dessert code
  return JMenuBar;
```

```
Starters Main Courses Desserts
```

Menus in Swing - JMenultem

// starters code

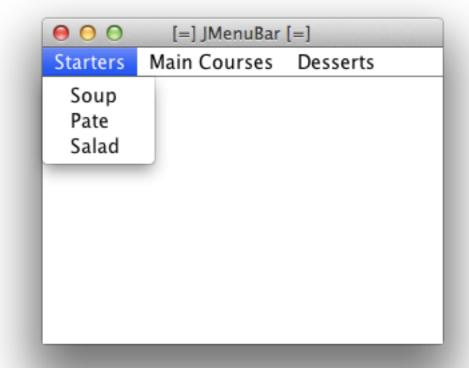
```
JMenuItem soup = new JMenuItem("Soup");
JMenuItem pate = new JMenuItem("Pate");
JMenuItem salad = new JMenuItem("Salad");
starter.add(soup);
starter.add(pate);
starter.add(salad);
```



Menus in Swing - JMenultem

// starters code

```
JMenuItem soup = new JMenuItem("Soup");
JMenuItem pate = new JMenuItem("Pate");
JMenuItem salad = new JMenuItem("Salad");
starter.add(soup);
starter.add(pate);
starter.add(salad);
```



Menus in Swing - JMenultem

// starters code

```
JMenuItem soup = new JMenuItem("Soup");
JMenuItem pate = new JMenuItem("Pate");
JMenuItem salad = new JMenuItem("Salad");
starter.add(soup);
starter.add(pate);
starter.add(salad);
```



```
[=] JMenuBar [=]
// maincourse code
                                                                                      Main Courses
                                                                              Starters
                                                                                                   Desserts
                                                                                       Haddock
                                                                                       Steak
                                                                                                        Rare
JMenuItem fish = new JMenuItem("Haddock");
                                                                                       Pie
                                                                                                        Well Done
maincourse.add(fish);
                                                                                       Chips
                                                                                       Baked Potato
JMenu steak = new JMenu("Steak");
JMenuItem rare = new JMenuItem("Rare");
                                                                                       Vegetables
JMenuItem welldone = new JMenuItem("Well Done");
steak.add(rare);
steak.add(welldone);
maincourse.add(steak);
JMenuItem pie = new JMenuItem("Pie");
maincourse.add(pie);
maincourse.addSeparator();
JRadioButtonMenuItem chips = new JRadioButtonMenuItem("Chips");
JRadioButtonMenuItem bp = new JRadioButtonMenuItem("Baked Potato");
JRadioButtonMenuItem vege = new JRadioButtonMenuItem("Vegetables");
ButtonGroup sides = new ButtonGroup();
sides.add(chips);
sides.add(bp);
sides.add(vege);
maincourse.add(chips);
maincourse.add(bp); maincourse.add(vege);
see: examples.swinq.misc.MenuBarExample
```

```
[=] JMenuBar [=]
// maincourse code
                                                                                      Main Courses
                                                                             Starters
                                                                                                   Desserts
                                                                                       Haddock
                                                                                       Steak
                                                                                                       Rare
JMenuItem fish = new JMenuItem("Haddock");
                                                                                                       Well Done
                                                                                       Pie
maincourse.add(fish);
                                                                                       Chips
                                                                                       Baked Potato
JMenu steak = new JMenu("Steak");
JMenuItem rare = new JMenuItem("Rare");
                                                                                       Vegetables
JMenuItem welldone = new JMenuItem("Well Done");
steak.add(rare);
steak.add(welldone);
maincourse.add(steak);
JMenuItem pie = new JMenuItem("Pie");
maincourse.add(pie);
maincourse.addSeparator();
JRadioButtonMenuItem chips = new JRadioButtonMenuItem("Chips");
JRadioButtonMenuItem bp = new JRadioButtonMenuItem("Baked Potato");
JRadioButtonMenuItem vege = new JRadioButtonMenuItem("Vegetables");
ButtonGroup sides = new ButtonGroup();
sides.add(chips);
sides.add(bp);
sides.add(vege);
maincourse.add(chips);
maincourse.add(bp); maincourse.add(vege);
see: examples.swinq.misc.MenuBarExample
```

```
[=] JMenuBar [=]
// maincourse code
                                                                                      Main Courses
                                                                              Starters
                                                                                                   Desserts
                                                                                       Haddock
                                                                                       Steak
                                                                                                        Rare
JMenuItem fish = new JMenuItem("Haddock");
                                                                                                        Well Done
                                                                                       Pie
maincourse.add(fish);
                                                                                       Chips
                                                                                       Baked Potato
JMenu steak = new JMenu("Steak");
JMenuItem rare = new JMenuItem("Rare");
                                                                                       Vegetables
JMenuItem welldone = new JMenuItem("Well Done");
steak.add(rare);
steak.add(welldone);
maincourse.add(steak);
JMenuItem pie = new JMenuItem("Pie");
maincourse.add(pie);
maincourse.addSeparator();
JRadioButtonMenuItem chips = new JRadioButtonMenuItem("Chips");
JRadioButtonMenuItem bp = new JRadioButtonMenuItem("Baked Potato");
JRadioButtonMenuItem vege = new JRadioButtonMenuItem("Vegetables");
ButtonGroup sides = new ButtonGroup();
sides.add(chips);
sides.add(bp);
sides.add(vege);
maincourse. add(chips);
maincourse.add(bp); maincourse.add(vege);
see: examples.swinq.misc.MenuBarExample
```

```
[=] JMenuBar [=]
// maincourse code
                                                                                      Main Courses
                                                                              Starters
                                                                                                   Desserts
                                                                                       Haddock
                                                                                       Steak
                                                                                                        Rare
JMenuItem fish = new JMenuItem("Haddock");
                                                                                       Pie
                                                                                                        Well Done
maincourse.add(fish);
                                                                                       Chips
                                                                                       Baked Potato
JMenu steak = new JMenu("Steak");
JMenuItem rare = new JMenuItem("Rare");
                                                                                       Vegetables
JMenuItem welldone = new JMenuItem("Well Done");
steak.add(rare);
steak.add(welldone);
maincourse.add(steak);
JMenuItem pie = new JMenuItem("Pie");
maincourse.add(pie);
maincourse.addSeparator();
JRadioButtonMenuItem chips = new JRadioButtonMenuItem("Chips");
JRadioButtonMenuItem bp = new JRadioButtonMenuItem("Baked Potato");
JRadioButtonMenuItem vege = new JRadioButtonMenuItem("Vegetables");
ButtonGroup sides = new ButtonGroup();
sides.add(chips);
sides.add(bp);
sides.add(vege);
maincourse.add(chips);
maincourse.add(bp); maincourse.add(vege);
see: examples.swinq.misc.MenuBarExample
```

```
[=] JMenuBar [=]
// maincourse code
                                                                                      Main Courses
                                                                              Starters
                                                                                                   Desserts
                                                                                       Haddock
                                                                                       Steak
                                                                                                        Rare
JMenuItem fish = new JMenuItem("Haddock");
                                                                                       Pie
                                                                                                        Well Done
maincourse.add(fish);
                                                                                       Chips
                                                                                       Baked Potato
JMenu steak = new JMenu("Steak");
JMenuItem rare = new JMenuItem("Rare");
                                                                                       Vegetables
JMenuItem welldone = new JMenuItem("Well Done");
steak.add(rare);
steak.add(welldone);
maincourse.add(steak);
JMenuItem pie = new JMenuItem("Pie");
maincourse.add(pie);
maincourse.addSeparator();
JRadioButtonMenuItem chips = new JRadioButtonMenuItem("Chips");
JRadioButtonMenuItem bp = new JRadioButtonMenuItem("Baked Potato");
JRadioButtonMenuItem vege = new JRadioButtonMenuItem("Vegetables");
ButtonGroup sides = new ButtonGroup();
sides.add(chips);
sides.add(bp);
sides.add(vege);
maincourse.add(chips);
maincourse.add(bp); maincourse.add(vege);
see: examples.swinq.misc.MenuBarExample
```

```
[=] JMenuBar [=]
// maincourse code
                                                                                   Main Courses
                                                                           Starters
                                                                                                Desserts
                                                                                     Haddock
                                                                                    Steak
                                                                                                    Rare
JMenuItem fish = new JMenuItem("Haddock");
                                                                                                    Well Done
                                                                                     Pie
maincourse.add(fish);
                                                                                    Chips
                                                                                     Baked Potato
JMenu steak = new JMenu("Steak");
JMenuItem rare = new JMenuItem("Rare");
                                                                                     Vegetables
JMenuItem welldone = new JMenuItem("Well Done");
steak.add(rare);
steak.add(welldone);
maincourse.add(steak);
JMenuItem pie = new JMenuItem("Pie");
maincourse.add(pie);
maincourse.addSeparator();
JRadioButtonMenuItem chips = new JRadioButtonMenuItem("Chips");
JRadioButtonMenuItem bp = new JRadioButtonMenuItem("Baked Potato");
JRadioButtonMenuItem vege = new JRadioButtonMenuItem("Vegetables");
ButtonGroup sides = new ButtonGroup();
sides.add(chips);
sides.add(bp);
sides.add(vege);
maincourse.add(chips);
maincourse.add(bp);
maincourse.add(vege);
see: examples.swing.misc.MenuBarExample
```

```
// dessert code
```

```
JCheckBoxMenuItem cake = new JCheckBoxMenuItem("Cake");
desserts.add(cake);
JCheckBoxMenuItem sorbet = new JCheckBoxMenuItem("Sorbet");
desserts.add(sorbet);
JMenu icecream = new JMenu("Ice Cream");
JCheckBoxMenuItem choc = new JCheckBoxMenuItem("Chocolate");
JCheckBoxMenuItem vani = new JCheckBoxMenuItem("Vanilla");
icecream.add(choc);
icecream.add(vani);
desserts.add(icecream);
                                                            [=] JMenuBar [=]
                                                          Main Courses
                                                   Starters
                                                                    Desserts
                                                                      Cake
                                                                      Sorbet
                                                                                 Chocolate
                                                                      Ice Cream >

√ Vanilla
```

// dessert code

```
JCheckBoxMenuItem cake = new JCheckBoxMenuItem("Cake");
desserts.add(cake);
JCheckBoxMenuItem sorbet = new JCheckBoxMenuItem("Sorbet");
desserts.add(sorbet);
JMenu icecream = new JMenu("Ice Cream");
JCheckBoxMenuItem choc = new JCheckBoxMenuItem("Chocolate");
JCheckBoxMenuItem vani = new JCheckBoxMenuItem("Vanilla");
icecream.add(choc);
icecream.add(vani);
desserts.add(icecream);
                                                            [=] JMenuBar [=]
                                                          Main Courses
                                                   Starters
                                                                    Desserts
                                                                      Cake
                                                                      Sorbet
                                                                                 Chocolate
                                                                      Ice Cream >

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```

// dessert code JCheckBoxMenuItem cake = new JCheckBoxMenuItem("Cake"); desserts.add(cake); JCheckBoxMenuItem sorbet = new JCheckBoxMenuItem("Sorbet"); desserts.add(sorbet); JMenu icecream = new JMenu("Ice Cream"); JCheckBoxMenuItem choc = new JCheckBoxMenuItem("Chocolate"); JCheckBoxMenuItem vani = new JCheckBoxMenuItem("Vanilla"); icecream.add(choc); icecream.add(vani); desserts.add(icecream); [=] JMenuBar [=] Main Courses Starters Desserts Cake Sorbet Chocolate Ice Cream > √ Vanilla

```
// dessert code
```

```
JCheckBoxMenuItem cake = new JCheckBoxMenuItem("Cake");
desserts.add(cake);
JCheckBoxMenuItem sorbet = new JCheckBoxMenuItem("Sorbet");
desserts.add(sorbet);
JMenu icecream = new JMenu("Ice Cream");
JCheckBoxMenuItem choc = new JCheckBoxMenuItem("Chocolate");
JCheckBoxMenuItem vani = new JCheckBoxMenuItem("Vanilla");
icecream.add(choc);
icecream.add(vani);
desserts.add(icecream);
                                                            [=] JMenuBar [=]
                                                          Main Courses
                                                    Starters
                                                                    Desserts
                                                                      Cake
                                                                      Sorbet
                                                                                 Chocolate
                                                                      Ice Cream >

√ Vanilla
```

Menus in Swing - Listeners

```
public JMenuBar createMenuBar() {
                                                            \Theta \Theta \Theta
                                                                     [=] JMenuBar [=]
                                                            Starters
                                                             Soup
 JMenuItem soup = new JMenuItem("Soup");
 soup.addActionListener(this);
                                                             Steak
                                                                          Rare
                                                                          Well Done
                                                             Chips
   JMenuItem rare = new JMenuItem("Rare");
                                                             Baked Potato
   rare.addActionListener(this);
                                                             Cake
                                                             Sorbet
 JMenuItem welldone = new JMenuItem("Well Done");
 welldone.addActionListener(this);
 JRadioButtonMenuItem chips = new JRadioButtonMenuItem("Chips");
 JRadioButtonMenuItem bp = new JRadioButtonMenuItem("Baked Potato");
   chips.addActionListener(this);
   bp.addActionListener(this);
   cake = new JCheckBoxMenuItem("Cake");
   sorbet = new JCheckBoxMenuItem("Sorbet");
   sorbet.addItemListener(this);
   cake.addItemListener(this);
```

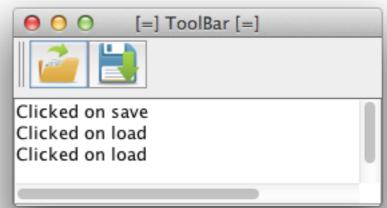
Menus in Swing - Listeners

```
public JMenuBar createMenuBar() {
                                                                   \Theta \Theta \Theta
                                                                             [=] JMenuBar [=]
                                                                   Starters
 JMenuItem soup = new JMenuItem("Soup");
                                                                    Soup
 soup.addActionListener(this);
                                                                    Steak
                                                                                   Rare
                                                                                   Well Done
                                                                    Chips
   JMenuItem rare = new JMenuItem("Rare");
                                                                    Baked Potato
   rare.addActionListener(this);
                                                                    Cake
                                                                    Sorbet
 JMenuItem welldone = new JMenuItem("Well Done");
 welldone.addActionListener(this);
 JRadioButtonMenuItem chips = new JRadioButtonMenuItem("Chips");
 JRadioButtonMenuItem bp = new JPadioButtonMenuItem("Baked Potato").
                                           public void actionPerformed(ActionEvent e) {
   chips.addActionListener(this);
                                                whitebox.append(
   bp.addActionListener(this);
                                                      e.getActionCommand() + " Selected \n");
   cake = new JCheckBoxMenuItem(
                                           public void itemStateChanged(ItemEvent e) {
                                              if(e.getSource() == cake) {
    whitebox.append("Cake Clicked\n");
    } else if(e.getSource() == sorbet) {
     whitebox.append("Sorbet Clicked\n");
}
   sorbet = new JCheckBoxMenuIter
   sorbet.addItemListener(this);
   cake.addItemListener(this);
```

Menu - Mnemonic/Accelerators

```
public JMenuBar createMenuBar() {
                                                                                              Starters
                                                                                              Soup
                                                                                                      DD.
    JMenu starter = new JMenu("Starters");
starter.setMnemonic(KeyEvent.VK_S);
menuBar.add(starter);
                                                                                                            Rare
                                                                                              Steak
                                                                                                                   \sqrt{R}
                                                                                                           Chips
                                                                                               Baked Potato
                                                                                              Cake
    JMenuItem soup = new JMenuItem("Soup");
soup.setMnemonic(KeyEvent.VK_U);
soup.setAccelerator(
                                                                                              Sorbet
    Key'Stroke.getKeyStroke(KeyEvent.VK_U,ActionEvent.ALT_MASK));
    JMenu steak = new JMenu("Steak");
    steak.setMnemonic(KeyEvent.VK_T);
    JMenuItem rare = new JMenuItem("Rare");
rare.setMnemonic(KeyEvent.VK_R);
rare.setAccelerator(
     KeyStroke.getKeyStroke(KeyEvent.VK_R,ActionEvent.ALT_MASK));
    JMenuItem welldone = new JMenuItem("Well Done");
    welldone.setMnemonic(KeyEvent.VK_W);
    welldone.setAccelerator(
       KeyStroke.getKeyStroke(KeyEvent.VK_W, ActionEvent.ALT_MASK));
    JRadioButtonMenuItem chips = new JRadioButtonMenuItem("Chips"); chips.setMnemonic(KeyEvent.VK_C); JRadioButtonMenuItem bp = new JRadioButtonMenuItem("Baked Potato"); bp.setMnemonic(KeyEvent.VK_P);
see: examples.swing.misc.MenuBarExample_2
```

```
public JPanel createContentPane() {
  JPanel totalGUI = new JPanel(new BorderLayout(5, 5));
  textArea = new JTextArea(5, 30);
  JToolBar toolBar = new JToolBar("Still draggable");
totalGUI.add(toolBar, BorderLayout.PAGE_START);
  JButton load = new JButton();
load.setActionCommand("load");
load.setToolTipText("Load a file");
load.addActionListener(this);
  load.setIcon( createImageIcon("open.png") );
  toolBar.add(load);
  JButton save = new JButton();
  save.setActionCommand("save");
save.setToolTipText("Save a file");
save.addActionListener(this);
save.setIcon( createImageIcon("save.png") );
  toolBar.add(save);
public void actionPerformed(ActionEvent e) {
    textArea.append("Clicked on "+e.getActionCommand() +"\n");
```



```
public JPanel createContentPane() {
  JPanel totalGUI = new JPanel(new BorderLayout(5, 5));
  textArea = new JTextArea(5, 30);
  JToolBar toolBar = new JToolBar("Still draggable");
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save.setIcon( createImageIcon("save.png") );
  toolBar.add(save);
public void actionPerformed(ActionEvent e) {
    textArea.append("Clicked on "+e.getActionCommand() +"\n");
```

```
Clicked on save
Clicked on load
Clicked on load
```

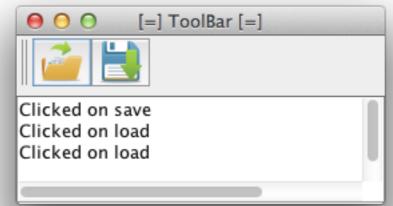
```
public JPanel createContentPane() {
  JPanel totalGUI = new JPanel(new BorderLayout(5, 5));
  textArea = new JTextArea(5, 30);
  JToolBar toolBar = new JToolBar("Still draggable"); totalGUI.add(toolBar, BorderLayout.PAGE_START);
  JButton load = new JButton();
  load.setActionCommand("load");
load.setToolTipText("Load a file");
load.addActionListener(this);
   load.setIcon( createImageIcon("open.png") );
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save.setIcon( createImageIcon("save.png") );
  toolBar.add(save);
public void actionPerformed(ActionEvent e) {
    textArea.append("Clicked on "+e.getActionCommand() +"\n");
```

```
Clicked on save
Clicked on load
Clicked on load
```

```
public JPanel createContentPane() {
  JPanel totalGUI = new JPanel(new BorderLayout(5, 5));
  textArea = new JTextArea(5, 30);
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load.addActionListener(this);
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  toolBar.add(load);
  JButton save = new JButton();
  save.setActionCommand("save");
save.setToolTipText("Save a file");
save.addActionListener(this);
save.setIcon( createImageIcon("save.png") );
  toolBar.add(save);
public void actionPerformed(ActionEvent e) {
    textArea.append("Clicked on "+e.getActionCommand() +"\n");
```

```
Clicked on save
Clicked on load
Clicked on load
```

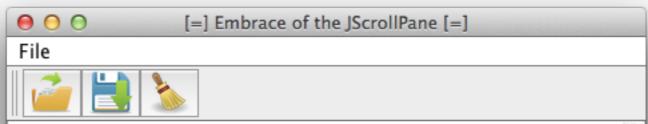
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public JPanel createContentPane() {
  JPanel totalGUI = new JPanel(new BorderLayout(5, 5));
  textArea = new JTextArea(5, 30);
  JToolBar toolBar = new JToolBar("Still draggable");
totalGUI.add(toolBar, BorderLayout.PAGE_START);
  JButton load = new JButton();
  load.setActionCommand("load");
load.setToolTipText("Load a file");
load.addActionListener(this);
  load.setIcon( createImageIcon("open.png") );
  toolBar.add(load);
 JButton save = new JButton();
save.setActionCommand("save");
save.setToolTipText("Save a file");
save.addActionListener(this);
save.setIcon( createImageIcon("save.png") );
  toolBar.add(save);
public void actionPerformed(ActionEvent e) {
    textArea.append("Clicked on "+e.getActionCommand() +"\n");
```



setActionCommand is useful when we use the same handler for several swing components. You can use it anywhere (menus, button, etc.) not only in tools bars.

```
public JPanel createContentPane() {
                                                                                                [=] ToolBar [=]
  JPanel totalGUI = new JPanel(new BorderLayout(5, 5));
  textArea = new JTextArea(5, 30);
                                                                                    Clicked on load
                                                                                     Clicked on load
  JToolBar toolBar = new JToolBar("Still draggable");
totalGUI.add(toolBar, BorderLayout.PAGE_START);
                                                                               setActionCommand is useful
  JButton load = new JButton();
 load.setActionCommand("load");
load.setToolTipText("Load a file");
load.addActionListener(this);
                                                                               when we use the same
                                                                               handler for several swing
  load.setIcon( createImageIcon("open.png") );
                                                                               components. You can use it
  toolBar.add(load);
                                                                               anywhere (menus, button,
 JButton save = new JButton();
save.setActionCommand("save");
save.setToolTipText("Save a file");
save.addActionListener(this);
                                                                               etc.) not only in tools bars.
                                                                             We can add (almost) anything
  save.setIcon( createImageIcon("save.png") );
                                                                             to a JToolBar
  toolBar.add(save);
                                                                                       [=] ToolBar [=]
                                                                                 Times Roman
public void actionPerformed(ActionEvent e) {
    textArea.append("Clicked on "+e.getActic Clicked on load Clicked on save
                                                                  Clicked on save
see: examples.swing.misc.ToolBarExample
```

A Text Editor Example



The Swing library makes heavy use of the Model/View/Controller software design pattern,[6] which conceptually decouples the data being viewed from the user interface controls through which it is viewed. Because of this, most Swing components have associated models (which are specified in terms of Java interfaces), and the programmers can use various default implementations or provide their own. The framework provides default implementations of model interfaces for all of its concrete components. The typical use of the Swing framework does not require the creation of custom models, as the framework provides a set of default implementations that are transparently, by default, associated with the corresponding JComponent child class in the Swing library. In general, only complex components, such as tables, trees and sometimes lists, may require the custom model implementations around the application-specific data structures. To get a good sense of the potential that the Swing architecture makes possible, consider the hypothetical situation where custom models for tables and lists are uranners over DAO and for FIR convises