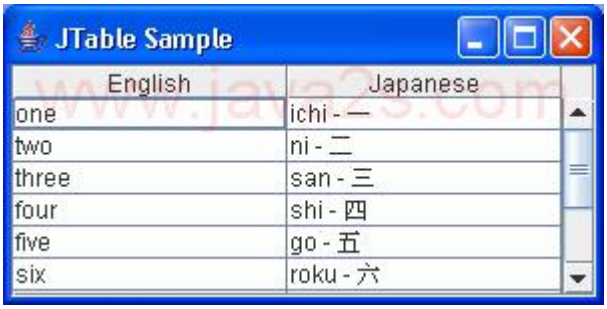
1. A sample of Tab pane


```
1.  import java.awt.*;
1.  import javax.swing.*;
2.
3.  class TabbedPaneDemo extends JFrame
4.  {
5.      private JTabbedPane jtpPane;
6.      private JPanel pnlPage1;
7.      private JPanel pnlPage2;
8.      private JPanel pnlPage3;
9.
10.     public TabbedPaneDemo()
11.     {
12.             setTitle("Tabbed Pane Application");
13.             setSize(300, 200);
14.             setBackground(Color.blue);
15.
16.             JPanel pnlMain = new JPanel();
17.             pnlMain.setLayout(new BorderLayout());
18.
19.             createPage1();
20.             createPage2();
21.             createPage3();
22.
23.             jtpPane = new JTabbedPane();
24.             jtpPane.addTab("First Page ", pnlPage1);
25.             jtpPane.addTab("Second Page ", pnlPage2);
26.             jtpPane.addTab("Third Page ", pnlPage3);
27.             pnlMain.add(jtpPane, BorderLayout.CENTER);
28.
29.             getContentPane().add(pnlMain);
30.
31.             setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
32.             setVisible(true);
33.     }
34.
35.     public void createPage1()
36.     {
37.             pnlPage1 = new JPanel();
38.             pnlPage1.setLayout(null);
39.
```

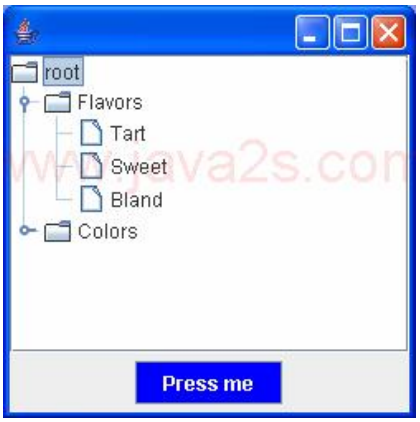
```
40.             JLabel lblUsername = new JLabel("Username :");
41.             lblUsername.setBounds(10, 15, 150, 20);
42.             pnlPage1.add(lblUsername);
43.
44.             JTextField txtUsername = new JTextField(10);
45.             txtUsername.setBounds(10, 35, 150, 20);
46.             pnlPage1.add(txtUsername);
47.
48.             JLabel lblPassword = new JLabel("Password :");
49.             lblPassword.setBounds(10, 60, 150, 20);
50.             pnlPage1.add(lblPassword);
51.
52.             JPasswordField txtPassword = new JPasswordField(10);
53.             txtPassword.setBounds(10, 80, 150, 20);
54.             pnlPage1.add(txtPassword);
55.     }
56.
57.     public void createPage2()
58.     {
59.             pnlPage2 = new JPanel();
60.             pnlPage2.setLayout(new BorderLayout());
61.
62.             pnlPage2.add(new JButton("North"), BorderLayout.PAGE_START);
63.             pnlPage2.add(new JButton("South"), BorderLayout.PAGE_END);
64.             pnlPage2.add(new JButton("East"), BorderLayout.LINE_END);
65.             pnlPage2.add(new JButton("West"), BorderLayout.LINE_START);
66.             pnlPage2.add(new JButton("Center"), BorderLayout.CENTER);
67.     }
68.
69.     public void createPage3()
70.     {
71.             pnlPage3 = new JPanel();
72.             pnlPage3.setLayout(new GridLayout(3, 2));
73.
74.             pnlPage3.add(new JLabel("Name :"));
75.             pnlPage3.add(new TextArea());
76.             pnlPage3.add(new JLabel("Address :"));
77.             pnlPage3.add(new TextArea());
78.             pnlPage3.add(new JLabel("Birth Date :"));
79.             pnlPage3.add(new TextArea());
80.     }
81.
82.     public static void main(String args[])
83.     {
84.             TabbedPaneDemo objTabbedPaneDemo = new TabbedPaneDemo();
85.     }
86. }
```

2. A sample of JTable




```
import java.awt.BorderLayout;
import javax.swing.JFrame;
import javax.swing.JTable;
public class ScrollTableSample {
  public static void main(String args[]) {
    Object rows[][] = { { "one", "ichi - \u4E00" },
        { "two", "ni - \u4E8C" }, { "three", "san - \u4E09" },
        { "four", "shi - \u56DB" }, { "five", "go - \u4E94" },
        { "six", "roku - \u516D" }, { "seven", "shichi - \u4E03" },
        { "eight", "hachi - \u516B" }, { "nine", "kyu - \u4E5D" },
        { "ten", "ju - \u5341" } };
    Object headers[] = { "English", "Japanese" };
    JFrame frame = new JFrame("Scrollless Table");
    JTable table = new JTable(rows, headers);
    frame.getContentPane().add(table, BorderLayout.CENTER);
    frame.setSize(300, 150);
    frame.setVisible(true);
  }
}
```

3. A sample of JTree




```
import java.awt.BorderLayout;
import java.awt.Color;
import java.awt.Container;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;

import javax.swing.JApplet;
import javax.swing.JButton;
import javax.swing.JFrame;
import javax.swing.JPanel;
import javax.swing.JScrollPane;
import javax.swing.JTree;
import javax.swing.tree.DefaultMutableTreeNode;
import javax.swing.tree.DefaultTreeModel;

// Takes an array of Strings and makes the first
// element a node and the rest leaves:
class Branch {
  private DefaultMutableTreeNode r;

  public Branch(String[] data) {
    r = new DefaultMutableTreeNode(data[0]);
    for (int i = 1; i < data.length; i++)
```

```
      r.add(new DefaultMutableTreeNode(data[i]));
  }

  public DefaultMutableTreeNode node() {
    return r;
  }
}

public class Trees extends JApplet {
  private String[][] data = { { "Colors", "Red", "Blue", "Green" },
      { "Flavors", "Tart", "Sweet", "Bland" },
      { "Length", "Short", "Medium", "Long" },
      { "Volume", "High", "Medium", "Low" },
      { "Temperature", "High", "Medium", "Low" },
      { "Intensity", "High", "Medium", "Low" }, };

  private static int i = 0;

  private DefaultMutableTreeNode root, child, chosen;

  private JTree tree;

  private DefaultTreeModel model;

  public void init() {
    Container cp = getContentPane();
    root = new DefaultMutableTreeNode("root");
    tree = new JTree(root);
    // Add it and make it take care of scrolling:
    cp.add(new JScrollPane(tree), BorderLayout.CENTER);
    // Capture the tree's model:
    model = (DefaultTreeModel) tree.getModel();
    JButton test = new JButton("Press me");
    test.addActionListener(new ActionListener() {
      public void actionPerformed(ActionEvent e) {
        if (i < data.length) {
          child = new Branch(data[i++]).node();
          // What's the last one you clicked?
          chosen = (DefaultMutableTreeNode) tree
              .getLastSelectedPathComponent();
          if (chosen == null)
            chosen = root;
          // The model will create the appropriate event.
          // In response, the tree will update itself:
          model.insertNodeInto(child, chosen, 0);
          // Puts the new node on the chosen node.
        }
      }
    });
    // Change the button's colors:
    test.setBackground(Color.BLUE);
    test.setForeground(Color.WHITE);
    JPanel p = new JPanel();
    p.add(test);
    cp.add(p, BorderLayout.SOUTH);
  }
```

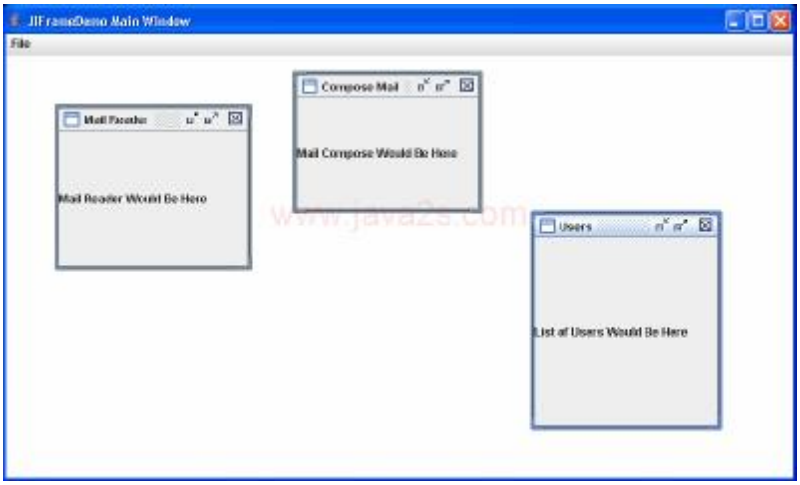
```
  public static void main(String[] args) {
    run(new Trees(), 250, 250);
  }

  public static void run(JApplet applet, int width, int height) {
    JFrame frame = new JFrame();
    frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
    frame.getContentPane().add(applet);
    frame.setSize(width, height);
    applet.init();
    applet.start();
    frame.setVisible(true);
  }
} ///:~
```

4. A sample of using JEditorPane to display a web page


```
import java.awt.BorderLayout;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;
import java.awt.event.WindowAdapter;
import java.awt.event.WindowEvent;
import java.io.IOException;

import javax.swing.JEditorPane;
import javax.swing.JFrame;
import javax.swing.JLabel;
import javax.swing.JOptionPane;
import javax.swing.JPanel;
import javax.swing.JScrollPane;
import javax.swing.JTextField;
import javax.swing.UIManager;

public class EditorPaneExample1 extends JFrame {
  public EditorPaneExample1() {
```

```
    super("JEditorPane Example 1");

    pane = new JEditorPane();
    pane.setEditable(false); // Read-only
    getContentPane().add(new JScrollPane(pane), "Center");

    JPanel panel = new JPanel();
    panel.setLayout(new BorderLayout(4, 4));
    JLabel urlLabel = new JLabel("URL: ", JLabel.RIGHT);
    panel.add(urlLabel, "West");
    textField = new JTextField(32);
    panel.add(textField, "Center");

    getContentPane().add(panel, "South");

    // Change page based on text field
    textField.addActionListener(new ActionListener() {
      public void actionPerformed(ActionEvent evt) {
        String url = textField.getText();
        try {
          // Try to display the page
          pane.setPage(url);
        } catch (IOException e) {
          JOptionPane.showMessageDialog(pane, new String[] {
              "Unable to open file", url }, "File Open Error",
              JOptionPane.ERROR_MESSAGE);
        }
      }
    });
  }

  public static void main(String[] args) {
    try {
        UIManager.setLookAndFeel("com.sun.java.swing.plaf.windows.WindowsLookAndFe
el");
    } catch (Exception evt) {}

    JFrame f = new EditorPaneExample1();

    f.addWindowListener(new WindowAdapter() {
      public void windowClosing(WindowEvent evt) {
        System.exit(0);
      }
    });
    f.setSize(500, 400);
    f.setVisible(true);
  }

  private JEditorPane pane;

  private JTextField textField;
}
```

5. A sample application with many sub-windows




```
import java.awt.Dimension;
import java.awt.Toolkit;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;
import java.awt.event.WindowAdapter;
import java.awt.event.WindowEvent;

import javax.swing.JDesktopPane;
import javax.swing.JFrame;
import javax.swing.JInternalFrame;
import javax.swing.JLabel;
import javax.swing.JMenu;
import javax.swing.JMenuBar;
import javax.swing.JMenuItem;

/**
 * Internal Frames Demo
 *
 * @version $Id: JIFrameDemo.java,v 1.4 2003/07/15 01:46:47 ian Exp $
 */
public class JIFrameDemo {

  /* Main View */
  public static void main(String[] a) {
    final JFrame jf = new JFrame("JIFrameDemo Main Window");

    Dimension screenSize = Toolkit.getDefaultToolkit().getScreenSize();
    screenSize.width -= 42;
    screenSize.height -= 42;
    jf.setSize(screenSize);
    jf.setLocation(20, 20);

    JMenuBar mb = new JMenuBar();
    jf.setJMenuBar(mb);
    JMenu fm = new JMenu("File");
    mb.add(fm);
    JMenuItem mi;
    fm.add(mi = new JMenuItem("Exit"));
    mi.addActionListener(new ActionListener() {
      public void actionPerformed(ActionEvent e) {
```

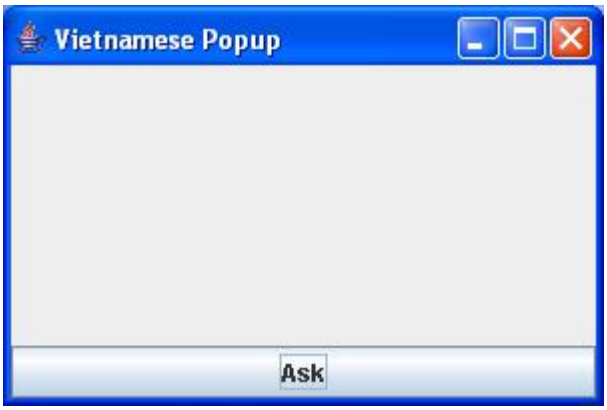
```
        System.exit(0);
      }
    });

    JDesktopPane dtp = new JDesktopPane();
    //dtp.setBackground(Color.GREEN);
    jf.setContentPane(dtp);

    JInternalFrame mboxFrame = new JInternalFrame("Mail Reader", true,
        true, true, true);
    JLabel reader = new JLabel("Mail Reader Would Be Here");
    mboxFrame.setContentPane(reader);
    mboxFrame.setSize(400, 300);
    mboxFrame.setLocation(50, 50);
    mboxFrame.setVisible(true);
    dtp.add(mboxFrame);

    JInternalFrame compFrame = new JInternalFrame("Compose Mail", true,
        true, true, true);
    JLabel composer = new JLabel("Mail Compose Would Be Here");
    compFrame.setContentPane(composer);
    compFrame.setSize(300, 200);
    compFrame.setLocation(200, 200);
    compFrame.setVisible(true);
    dtp.add(compFrame);

    JInternalFrame listFrame = new JInternalFrame("Users", true, true,
        true, true);
    JLabel list = new JLabel("List of Users Would Be Here");
    listFrame.setContentPane(list);
    listFrame.setLocation(400, 400);
    listFrame.setSize(500, 200);
    listFrame.setVisible(true);
    dtp.add(listFrame);

    jf.setVisible(true);
    jf.addWindowListener(new WindowAdapter() {
      public void windowClosing(WindowEvent e) {
        jf.setVisible(false);
        jf.dispose();
        System.exit(0);
      }
    });
  }
}
```

6. A sample to capture key press event


```
import java.awt.BorderLayout;
import java.awt.Container;
import java.awt.event.KeyEvent;
import java.awt.event.KeyListener;

import javax.swing.JFrame;
import javax.swing.JTextField;

public class KeyTest {
  public static void main(String args[]) {
    JFrame frame = new JFrame("Key Listener");
    Container contentPane = frame.getContentPane();

    KeyListener listener = new KeyListener() {
      public void keyPressed(KeyEvent e) {
        dumpInfo("Pressed", e);
      }

      public void keyReleased(KeyEvent e) {
        dumpInfo("Released", e);
      }

      public void keyTyped(KeyEvent e) {
        dumpInfo("Typed", e);
      }

      private void dumpInfo(String s, KeyEvent e) {
        System.out.println(s);
        int code = e.getKeyCode();
        System.out.println("\tCode: " + KeyEvent.getKeyText(code));
        System.out.println("\tChar: " + e.getKeyChar());
        int mods = e.getModifiersEx();
        System.out.println("\tMods: "
            + KeyEvent.getModifiersExText(mods));
        System.out.println("\tLocation: "
            + location(e.getKeyLocation()));
        System.out.println("\tAction? " + e.isActionKey());
      }

      private String location(int location) {
        switch (location) {
        case KeyEvent.KEY_LOCATION_LEFT:
          return "Left";
        case KeyEvent.KEY_LOCATION_RIGHT:
```

```
          return "Right";
        case KeyEvent.KEY_LOCATION_NUMPAD:
          return "NumPad";
        case KeyEvent.KEY_LOCATION_STANDARD:
          return "Standard";
        case KeyEvent.KEY_LOCATION_UNKNOWN:
        default:
          return "Unknown";
        }
      }
    };

    JTextField text = new JTextField();
    text.addKeyListener(listener);
    contentPane.add(text, BorderLayout.NORTH);
    frame.pack();
    frame.show();
  }
}
```

7. Use Resource Bundle to create an application that enables changing language by changing locale.




```
import java.awt.BorderLayout;
import java.awt.Component;
import java.awt.Container;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;
import java.util.Locale;
import java.util.ResourceBundle;

import javax.swing.JButton;
import javax.swing.JFrame;
import javax.swing.JOptionPane;
import javax.swing.UIManager;

public class VietnamesePopup {
  public static void main(String args[]) {
    // Get bundle
    Locale locale = new Locale("vi", "VN");
    ResourceBundle bundle = ResourceBundle.getBundle("i18nstudy/popup", locale);

    // Get strings
```

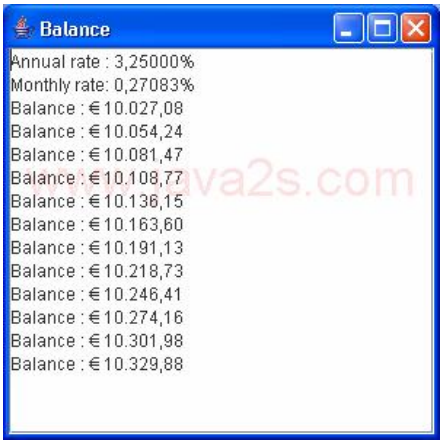
```
    String ok = bundle.getString("ok");
    String cancel = bundle.getString("cancel");
    String yes = bundle.getString("yes");
    String no = bundle.getString("no");

    // Localize buttons for French
    UIManager.put("OptionPane.cancelButtonText", cancel);
    UIManager.put("OptionPane.noButtonText", no);
    UIManager.put("OptionPane.okButtonText", ok);
    UIManager.put("OptionPane.yesButtonText", yes);

    JFrame frame = new JFrame("Vietnamese Popup");
    frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
    JButton button = new JButton("Ask");
    ActionListener actionListener = new ActionListener() {
      public void actionPerformed(ActionEvent actionEvent) {
        Component source = (Component) actionEvent.getSource();
        int result = JOptionPane.showConfirmDialog(source,
            ResourceBundle.getBundle("i18nstudy/popup", new Locale("vi",
"VN")).getString("question"),
            ResourceBundle.getBundle("i18nstudy/popup", new Locale("vi",
"VN")).getString("choice"),
            JOptionPane.YES_NO_CANCEL_OPTION);
        if (result == JOptionPane.YES_OPTION) {
          System.out.println("Yes");
        } else if (result == JOptionPane.NO_OPTION) {
          System.out.println("No");
        } else if (result == JOptionPane.CANCEL_OPTION) {
          System.out.println("Cancel");
        } else if (result == JOptionPane.CLOSED_OPTION) {
          System.out.println("Closed");
        }
      }
    };
    button.addActionListener(actionListener);
    Container contentPane = frame.getContentPane();
    contentPane.add(button, BorderLayout.SOUTH);
    frame.setSize(300, 200);
    frame.setVisible(true);
  }
}
```

+ Create a file named “popup_vi_VN.properties” by an editor (if you use Netbeans, you can type directly the Vietnamese strings).

```
#Button captions on dialog
ok=Ch\u1EA5p nh\u1EADn

cancel=H\u1EE7y b\u1ECF

yes=\u0110\u1ED3ng \u00FD

no=Kh\u00F4ng \u0111\u1ED3ng \u00FD

#Another strings
question=H\u1ECDc Swing th\u00FA v\u1ECB \u0111\u1EA5y ch\u1EE9?
```

```
choice=L\u1EF1a ch\u1ECDn c\u00E2u tr\u1EA3 l\u1EDDi
```

8. Number Format sample




```
import java.math.BigDecimal;
import java.text.DecimalFormat;
import java.text.NumberFormat;
import java.util.Locale;

import javax.swing.JFrame;
import javax.swing.JScrollPane;
import javax.swing.JTextArea;

public class BigDecFormat {
  public static void main(String args[]) {
    StringBuffer buffer = new StringBuffer();
    Locale italian = new Locale("it", "IT", "EURO");
    Locale.setDefault(italian);
    BigDecimal rate = new BigDecimal(".03250000");
    BigDecimal months = new BigDecimal("12");
    BigDecimal monthlyRate = rate
        .divide(months, BigDecimal.ROUND_HALF_DOWN);
    NumberFormat pf = new DecimalFormat("#,##0.00000%");
    buffer.append("Annual rate : " + pf.format(rate.doubleValue()) + "\n");
    buffer.append("Monthly rate: " + pf.format(monthlyRate.doubleValue())
        + "\n");
    BigDecimal balance = new BigDecimal("10000.0000");
    NumberFormat nf = NumberFormat.getCurrencyInstance();
    for (int i = 0; i < 12; i++) {
      BigDecimal interest = balance.multiply(monthlyRate);
      balance = balance.add(interest);
      buffer.append("Balance : " + nf.format(balance.doubleValue())
          + "\n");
    }
    JFrame frame = new JFrame("Balance");
    JTextArea text = new JTextArea(buffer.toString());
    JScrollPane pane = new JScrollPane(text);
    frame.getContentPane().add(pane);
    frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
    frame.setSize(300, 300);
    frame.show();
  }
}
```

9. String format sample

```
D:\Java_Dev\WEB\java2s>java DateNumberSample
3.5K was deleted on 4/30/05 2:14 PM.
```

```
import java.text.MessageFormat;
import java.util.Date;
```

```
public class DateNumberSample {
  public static void main(String args[]) {
    Double kb = new Double(3.5);
    Date today = new Date();

    String pattern = "{0}K was deleted on {1}.";
    Object[] arguments = { kb, today };
    System.out.println(MessageFormat.format(pattern, arguments));
  }
}
```

10. Date Format sample

```
import java.text.SimpleDateFormat;
import java.util.Date;
import java.util.Locale;

public class SimpleDateFormatDemo {

  static public void displayDate(Locale currentLocale) {

    Date today;
    String result;
    SimpleDateFormat formatter;

    formatter = new SimpleDateFormat("EEE d MMM yy", currentLocale);
    today = new Date();
    result = formatter.format(today);

    System.out.println("Locale: " + currentLocale.toString());
    System.out.println("Result: " + result);
  }

  static public void displayPattern(String pattern, Locale currentLocale) {

    Date today;
    SimpleDateFormat formatter;
    String output;

    formatter = new SimpleDateFormat(pattern, currentLocale);
    today = new Date();
    output = formatter.format(today);

    System.out.println(pattern + "    " + output);
  }

  static public void main(String[] args) {

    Locale[] locales = { new Locale("fr", "FR"), new Locale("de", "DE"),
        new Locale("en", "US") };

    for (int i = 0; i < locales.length; i++) {
      displayDate(locales[i]);
```

```
      System.out.println();
    }

    String[] patterns = { "dd.MM.yy", "yyyy.MM.dd G 'at' hh:mm:ss z",
        "EEE, MMM d, ''yy", "h:mm a", "H:mm", "H:mm:ss:SSS",
        "K:mm a,z", "yyyy.MMMMM.dd GGG hh:mm aaa" };

    for (int k = 0; k < patterns.length; k++) {
      displayPattern(patterns[k], new Locale("en", "US"));
      System.out.println();
    }

    System.out.println();
  }
}
```

5. Apply many Format types

```
import java.text.ChoiceFormat;
import java.text.Format;
import java.text.MessageFormat;
import java.text.NumberFormat;
import java.util.Locale;
import java.util.ResourceBundle;

public class ChoiceFormatDemo {

  static void displayMessages(Locale currentLocale) {

    System.out.println("currentLocale = " + currentLocale.toString());
    System.out.println();

    ResourceBundle bundle = ResourceBundle.getBundle("ChoiceBundle",
        currentLocale);

    MessageFormat messageForm = new MessageFormat("");
    messageForm.setLocale(currentLocale);

    double[] fileLimits = { 0, 1, 2 };

    String[] fileStrings = { bundle.getString("noFiles"),
        bundle.getString("oneFile"), bundle.getString("multipleFiles") };

    ChoiceFormat choiceForm = new ChoiceFormat(fileLimits, fileStrings);

    String pattern = bundle.getString("pattern");
    Format[] formats = { choiceForm, null, NumberFormat.getInstance() };

    messageForm.applyPattern(pattern);
    messageForm.setFormats(formats);

    Object[] messageArguments = { null, "XDisk", null };

    for (int numFiles = 0; numFiles < 4; numFiles++) {
```

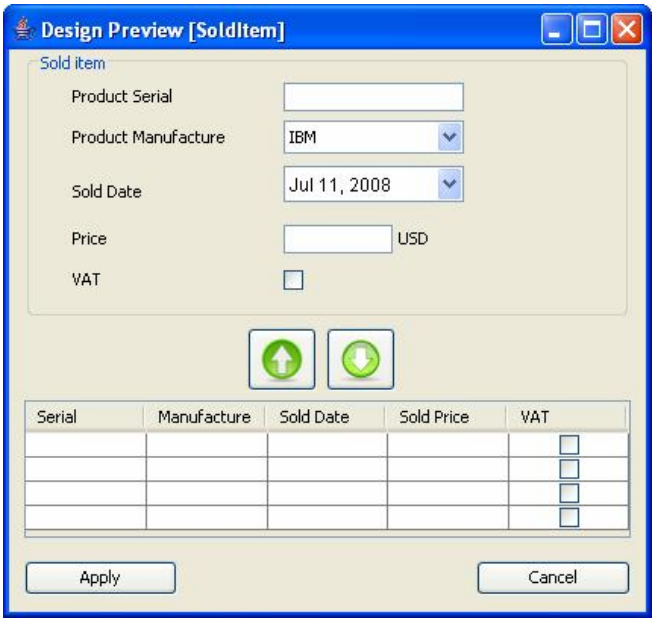
```
      messageArguments[0] = new Integer(numFiles);
      messageArguments[2] = new Integer(numFiles);
      String result = messageForm.format(messageArguments);
      System.out.println(result);
    }
  }

  static public void main(String[] args) {
    displayMessages(new Locale("en", "US"));
    System.out.println();
    displayMessages(new Locale("fr", "FR"));
  }
}

//File: ChoiceBundle.properties
/*
# Choice.properties
noFiles = are no files
oneFile = is one file
multipleFiles = are {2} files
pattern = There {0} on {1}.
*/

//File: ChoiceBundle_fr_FR.properties
/*
# Choice.properties_fr_FR
noFiles = n' y a pas des fichiers
oneFile = y a un fichier
multipleFiles = y a {2} fichiers
pattern = Il {0} sur {1}.


*/
//File: ChoiceBundle_en_US.properties
/*
# Choice.properties_en_US
noFiles = are no files
oneFile = is one file
multipleFiles = are {2} files
pattern = There {0} on {1}.

*/
```

Do It Yourself

3.1. Do workshop 5, 6

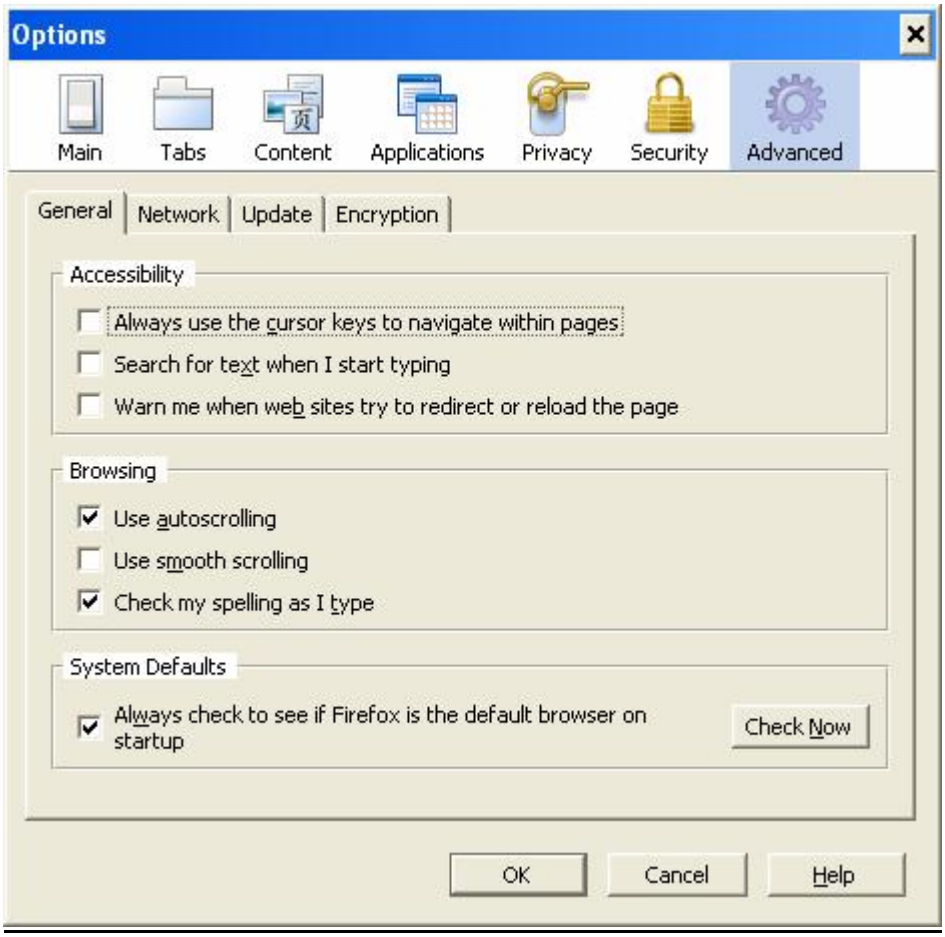
3.2. Create a directory tree of the C drive (like Windows Explorer)

3.3. Create a table to store sold products. When user clicks down-arrow button, the details of the sold item is pushed down the table.

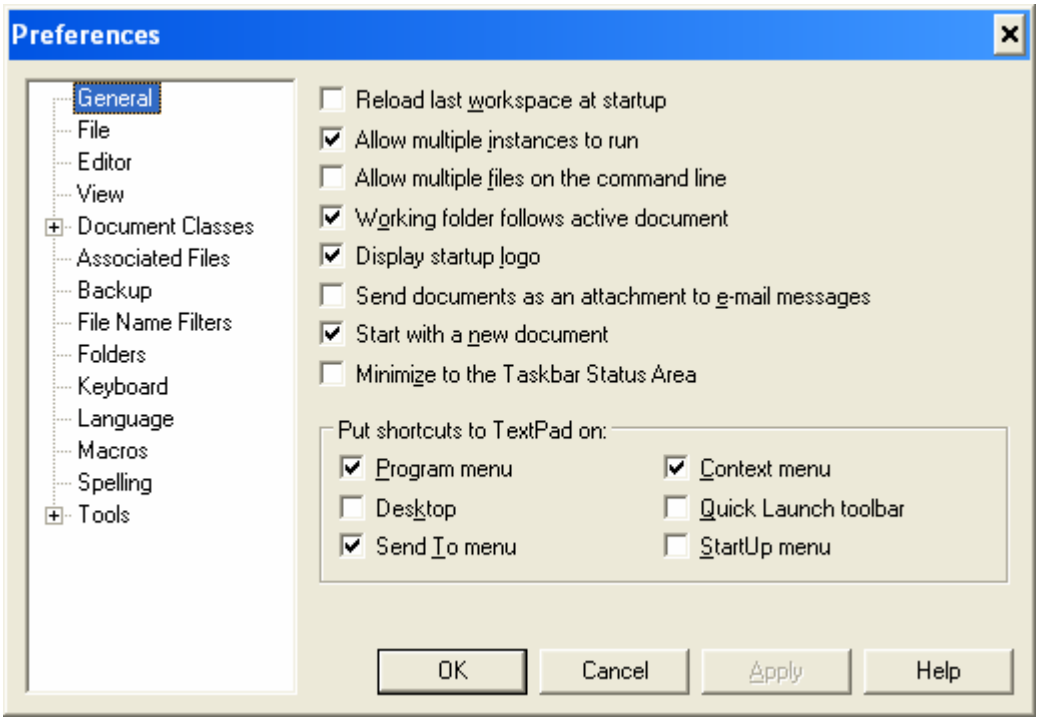


3.4. Create a simple web browser. It inclides a textfield to input an URL and a textarea to display web page. You should use JEditorPane to do this.

3.5. Use Netbeans to create a window like the Options window of Firefox.



3.6. Use JTree to create a frame like this:



3.7. Convert menu of Notepad into Vietnamese by using I18N

3.8. Continue developing sample 5 in the lab 2, add more menu “Language”. When user changes the language radion button, change language for all menu items.

Self-study Samples

+ Menu samples on java2s.com
http://www.java2s.com/Code/Java/Swing-JFC/CatalogSwing-JFC.htm
http://www.java2s.com/Code/Java/Swing-JFC/Formatted-TextField.htm
http://www.java2s.com/Code/Java/Swing-JFC/Text-EditorPane.htm
http://www.java2s.com/Code/Java/Swing-JFC/InternalFrame.htm
http://www.java2s.com/Code/Java/Swing-JFC/MDI.htm
http://www.java2s.com/Code/Java/Swing-JFC/Tooltip.htm
http://www.java2s.com/Code/Java/Swing-JFC/Tree.htm

http://www.java2s.com/Code/Java/Swing-JFC/TabbedPane.htm
http://www.java2s.com/Code/Java/Swing-JFC/Timer.htm
http://www.java2s.com/Code/Java/Swing-JFC/Various-Event-Listener.htm

+ Java tutorial

+ Samples about I18N on java2s.com
http://www.java2s.com/Code/Java/Development-Class/I18N.htm

+ I18N guide in Java Tutorial
/tutorial/i18n/index.html

+ I18N tutorial in Netbeans
http://www.netbeans.org/kb/articles/gui-i18n.html

+ javapassion.com