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Practical Sheet

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Program No:- 4
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T.U.Roll.No. :- 24179

Title: Implementing different types of menus.

## Introduction

### Menu and Menu Item

Menu is a graphical user interface component that presents a list of options. It is typically displayed as a drop-down or pop-up list of choices.

Menu item is an individual option within a menu. It represents an action that the user can select.

### Pop-up Menus

Pop-up menus are context-sensitive menus that appear when the user right-clicks or performs a similar action. They provide a quick and context-specific set of options based on the user's interaction.

### Mnemonics and Accelerators

Mnemonics are keyboard shortcuts associated with a specific GUI component. Users can activate the component by pressing the specified key in combination with another key.

Accelerators are keyboard shortcuts that trigger actions in a program. They are not associated with specific GUI components but are used globally to invoke certain operations.

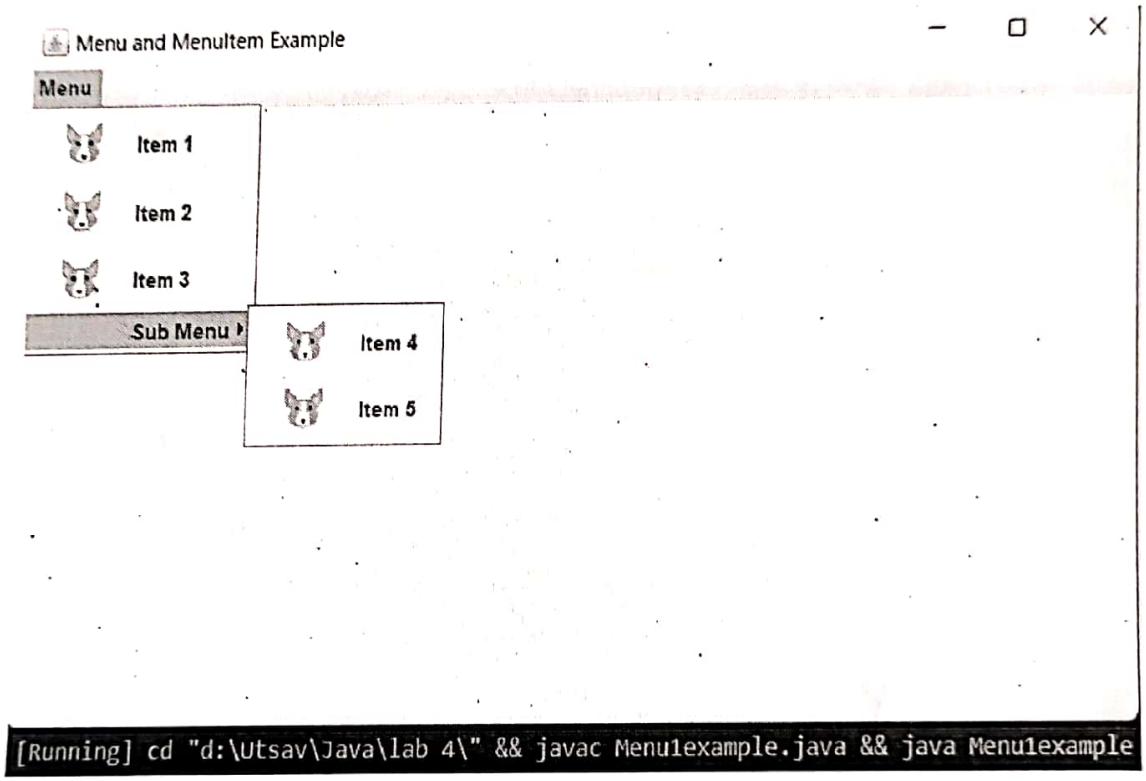
### Toolbars and Menus

Toolbars are graphical elements containing buttons or icons that represent frequently used actions or commands.

Menus present a hierarchical list of options organized in a structured manner.

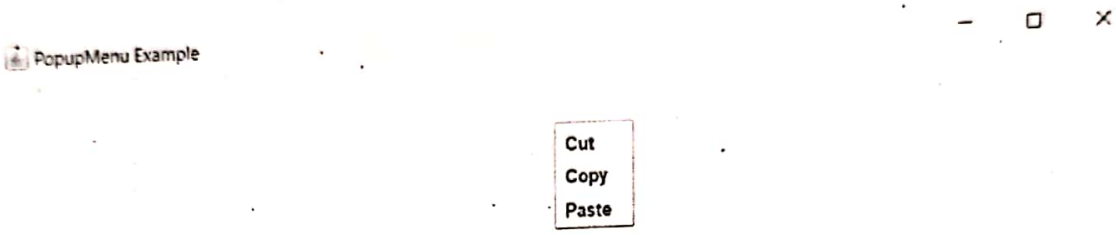
Code

```
mport javax.swing.*;
class Menu1example{
    JMenu menu, submenu;
    JMenuItem i1, i2, i3, i4, i5;

    Menu1example(){
      JFrame f= new JFrame("Menu and MenuItem Example");
      JMenuBar mb = new JMenuBar();
      menu = new JMenu ("Menu");
      submenu = new JMenu ("Sub Menu");
      i1 = new JMenuItem ("Item 1");
      i2 = new JMenuItem ("Item 2");
      i3 = new JMenuItem ("Item 3");
      i4 = new JMenuItem ("Item 4");
      i5 = new JMenu Item ("Item 5");
      ImageIcon icon1 = new ImageIcon("D:/Downloads/lab-4-files/lab
                                      -4-Files/icon.png");

      i1.setIcon(icon1);
      i2. setIcon (icon1);
      i3. setIcon (icon1);
      i4. setIcon (icon1);
      i5. setIcon (icon1);
      menu. add(i1);
      menu. add(i2);
      menu. add(i3);
      submenu .add(i4);
      submenu. add(i5);
      menu. add(submenu);
      mb. add (menu);
      f.set JMenuBar(mb);
      f.setSize (400, 400);
      f.setlayout(null);
      f.setVisible (true);
    }
    public static void main (String args[]){
      new Menu1example();
    }
}
```


Menu and MenuItem Example
Menu
Item 1
Item 2
Item 3
Sub Menu
Item 4
Item 5
[Running] cd "d:\Utsav\Java\lab 4\" && javac Menu1example.java && java Menu1example

Code:

```
import javax.swing.*;
import java.awt.event.*;
class PopupMenuExample2
{
    PopupMenuExample2(){
        final JFrame f= new JFrame("PopupMenu Example");
        final JPopupMenu popupmenu = new JPopupMenu("Edit");
        JMenuItem cut = new JMenuItem("Cut");
        JMenuItem copy = new JMenuItem("Copy");
        JMenuItem paste = new JMenuItem("Paste");
        popupmenu.add(cut);
        popupmenu.add(copy);
        popupmenu.add(paste);
            f.addMouseListener(new MouseAdapter(){
                public void mouseClicked(MouseEvent e){
                    popupmenu.show(f, e.getX(), e.getY());
                }
            });
            f.add(popupmenu);
            f.setSize(300,300);
            f.setLayout(null);
            f.setVisible(true);
    }
    public static void main(String args[])
    {
        new PopupMenuExample2();
    }
}
```



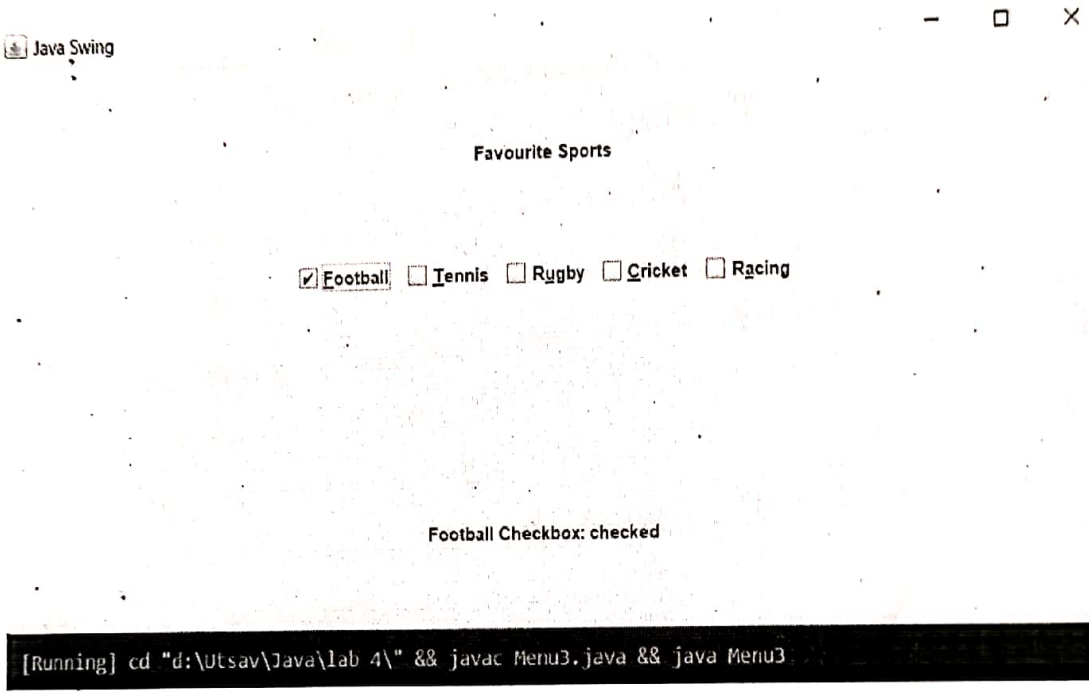

```
[Running] cd "d:\Utsav\Java\lab 4\" && javac PopupMenuExample2.java && java PopupMenuExample2
```

Code:

```
import java.awt.*;
import java.awt.event.*;
import javax.swing.*;
public class Menu3 {
    private JFrame mainFrame;
    private JLabel headerLabel;
    private JLabel statusLabel;
    private JPanel controlPanel;
    public Menu3(){
        prepareGUI();
    }
    public static void main(String[] args){
        Menu3 menu3obj = new Menu3();
        menu3obj.showCheckBoxDemo();
    }
    private void prepareGUI(){
        mainFrame = new JFrame("Java Swing");
        mainFrame.setSize(600,400);
        mainFrame.setLayout(new GridLayout(3,1));
        mainFrame.addWindowListener(new WindowAdapter(){
            public void windowClosing(WindowEvent windowEvent){
                System.exit(0);
            }
        });
        headerLabel = new JLabel("", JLabel.CENTER);
        statusLabel = new JLabel("", JLabel.CENTER);
        statusLabel.setSize(350,100);
        controlPanel = new JPanel();
        controlPanel.setLayout(new FlowLayout());
        mainFrame.add(headerLabel);
        mainFrame.add(controlPanel);
        mainFrame.add(statusLabel);
        mainFrame.setVisible(true);
    }
```

```
private void showCheckBoxDemo(){
    headerLabel.setText("Favourite Sports");
    final JCheckBox checkBox1 = new JCheckBox("Football");
    final JCheckBox checkBox2 = new JCheckBox("Tennis");
    final JCheckBox checkBox3 = new JCheckBox("Rugby");
    final JCheckBox checkBox4 = new JCheckBox("Cricket");
    final JCheckBox checkBox5 = new JCheckBox("Racing");

    checkBox1.setMnemonic(KeyEvent.VK_F);
    checkBox2.setMnemonic(KeyEvent.VK_T);
    checkBox3.setMnemonic(KeyEvent.VK_U);
    checkBox4.setMnemonic(KeyEvent.VK_C);
    checkBox5.setMnemonic(KeyEvent.VK_A);

    checkBox1.addItemListener(new ItemListener(){
        public void itemStateChanged(ItemEvent e){
            statusLabel.setText("Football Checkbox: "+(e.getStateChange()==1?"checked":"unchecked"));
        }
    });
    checkBox2.addItemListener(new ItemListener(){
        public void itemStateChanged(ItemEvent e){
            statusLabel.setText("Tennis Checkbox: "+(e.getStateChange()==1?"checked":"unchecked"));
        }
    });
    checkBox3.addItemListener(new ItemListener(){
        public void itemStateChanged(ItemEvent e){
            statusLabel.setText("Rugby Checkbox: "+(e.getStateChange()==1?"Checked":"unchecked"));
        }
    });
    checkBox4.addItemListener(new ItemListener(){
        public void itemStateChanged(ItemEvent e){
            statusLabel.setText("Cricket Checkbox: "+(e.getStateChange()==1?"Checked":"unchecked"));
        }
    });
    checkBox5.addItemListener(new ItemListener(){
        public void itemStateChanged(ItemEvent e){
            statusLabel.setText("Racing Checkbox: "+(e.getStateChange()==1?"Checked":"unchecked"));
        }
    });
```

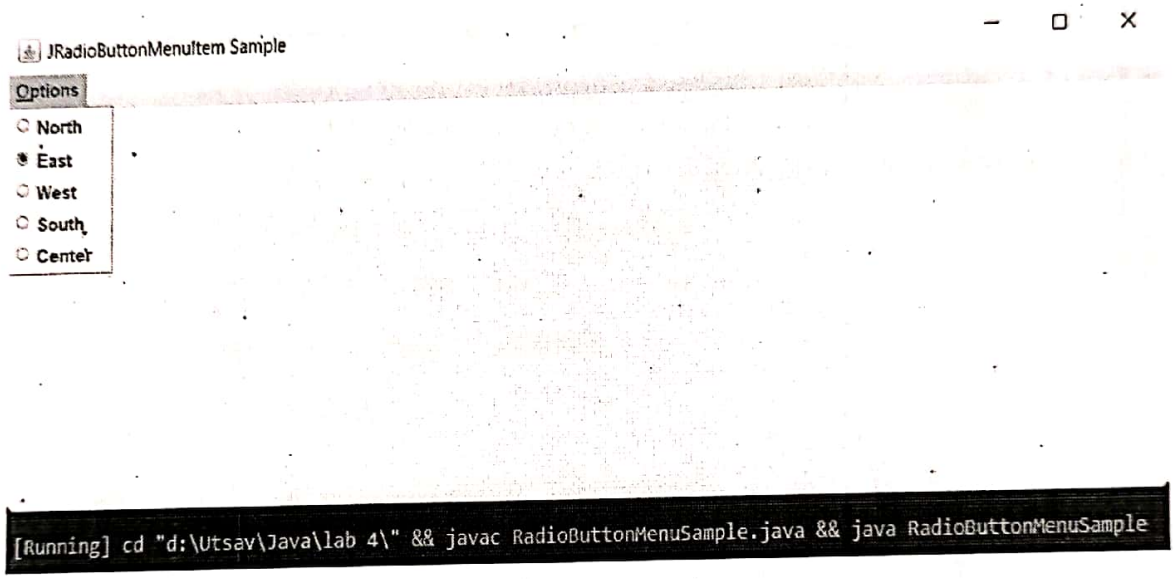
```
        controlPanel.add(checkBox1);
        controlPanel.add(checkBox2);
        controlPanel.add(checkBox3);
        controlPanel.add(checkBox4);
        controlPanel.add(checkBox5);

        mainFrame.setVisible(true);
    }
}
```




```
[Running] cd "d:\Utsav\Java\lab 4\" && javac Menu3.java && java Menu3
```

Code:

```
import java.awt.event.KeyEvent;
import javax.swing.ButtonGroup;
import javax.swing.JFrame;
import javax.swing.JMenu;
import javax.swing.JMenuBar;
import javax.swing.JRadioButtonMenuItem;
public class RadioButtonMenuSample {
    public static void main(String args[]) {
        JFrame f = new JFrame("JRadioButtonMenuItem Sample");
        f.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        JMenuBar bar = new JMenuBar();
        JMenu menu = new JMenu("Options");
        menu.setMnemonic(KeyEvent.VK_O);
        ButtonGroup group = new ButtonGroup();
        JRadioButtonMenuItem menuItem = new JRadioButtonMenuItem
                                        ("North");
        group.add(menuItem);
        menu.add(menuItem);
        menuItem = new JRadioButtonMenuItem("East");
        group.add(menuItem);
        menu.add(menuItem);
        menuItem = new JRadioButtonMenuItem("West");
        group.add(menuItem);
        menu.add(menuItem);
        menuItem = new JRadioButtonMenuItem("South");
        group.add(menuItem);
        menu.add(menuItem);
        menuItem = new JRadioButtonMenuItem("Center");
        group.add(menuItem);
        menu.add(menuItem);
        bar.add(menu);
        f.setJMenuBar(bar);
        f.setSize(300,200);
        f.setVisible(true);
    }
}
```



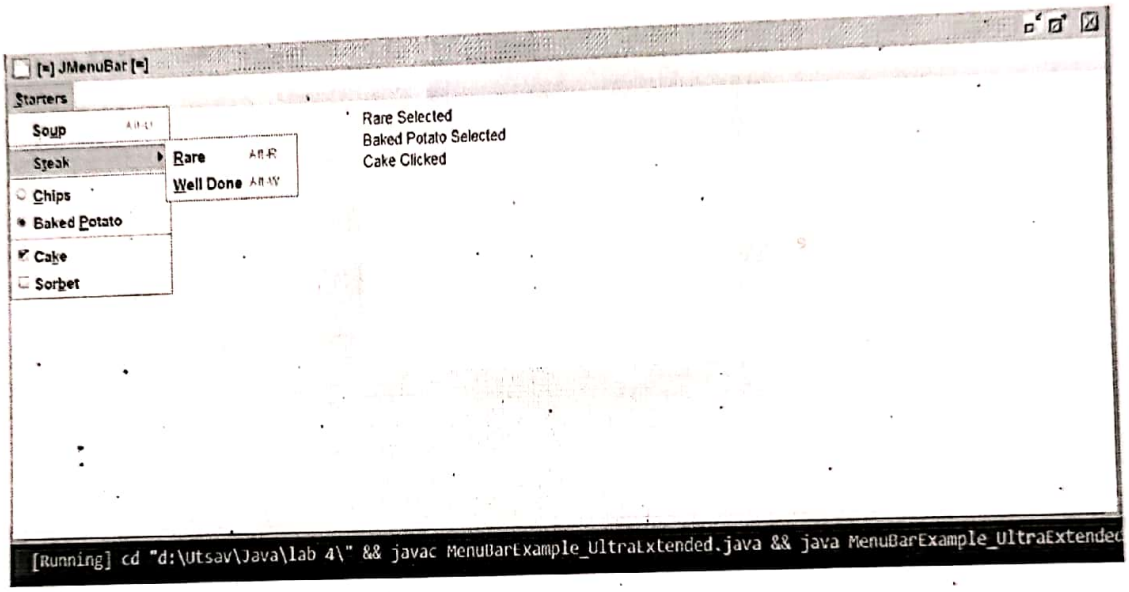

```
[Running] cd "d:\Utsav\Java\lab 4\" && javac RadioButtonMenuSample.java && java RadioButtonMenuSample
```

Code:

```
import javax.swing.*;
import java.awt.*;
import java.awt.event.*;
public class MenuBarExample_UltraExtended implements ActionListener,
    ItemListener {
        JTextArea whitebox;
        JCheckBoxMenuItem cake, sorbet;
        public Container createContentPane()
        {
            whitebox = new JTextArea();
            whitebox.setEditable(false);
            whitebox.setLineWrap(true);
            whitebox.setWrapStyleWord(true);
            whitebox.setMinimumSize(new Dimension(300,200));
            whitebox.setPreferredSize(new Dimension(300,200));
            whitebox.setMaximumSize(new Dimension(300,200));
            JPanel totalGUI = new JPanel();
            totalGUI.add(whitebox);
            totalGUI.setOpaque(true);
            return totalGUI;
        }
        public JMenuBar createMenuBar()
        {
            JMenuBar menuBar = new JMenuBar();
            JMenu starter = new JMenu("Starters");
            starter.setMnemonic(KeyEvent.VK_S);
            menuBar.add(starter);
            JMenu soup = new JMenuItem("Soup");
            soup.setMnemonic(KeyEvent.VK_U);
            soup.setAccelerator(KeyStroke.getKeyStroke(KeyEvent.
                VK_U, ActionEvent.ALT_MASK));
            soup.addActionListener(this);
            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));
rare.addActionListener(this);

JMenuItem welldone = new JMenuItem("Well Done");
welldone.setMnemonic(KeyEvent.VK_W);
welldone.setAccelerator(KeyStroke.getKeyStroke(KeyEvent.
                    VK_W, ActionEvent.ALT_MASK));
welldone.addActionListener(this);

steak.add(rare);
steak.add(welldone);
JRadioButtonMenuItem chips = new JRadioButtonMenuItem
                    ("Chips");
chips.setMnemonic(KeyEvent.VK_C);
chips.addActionListener(this);
JRadioButtonMenuItem potato = new JRadioButtonMenuItem("Baked
                    Potato");
potato.setMnemonic(KeyEvent.VK_P);
potato.addActionListener(this);

ButtonGroup sides = new ButtonGroup();
sides.add(chips);
sides.add(potato);
cake = new JCheckBoxMenuItem("Cake");
cake.setMnemonic(KeyEvent.VK_K);
cake.addItemListener(this);
sorbet = new JCheckBoxMenuItem("Sorbet");
sorbet.setMnemonic(KeyEvent.VK_B);
sorbet.addItemListener(this);
starter.add(soup);
starter.addSeparator();
starter.add(steak);
starter.addSeparator();
starter.add(chips);
starter.add(potato);
```

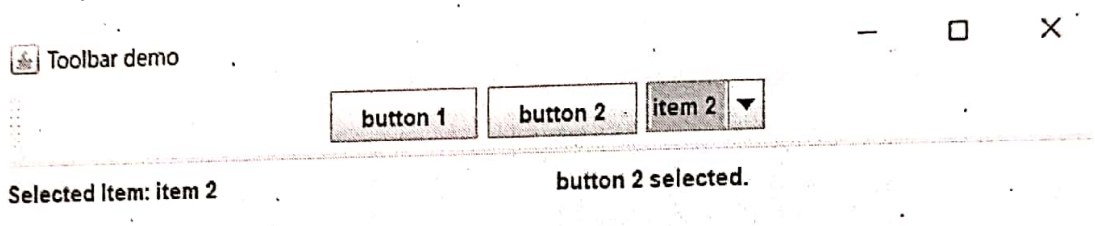
```
        starter.addSeparator();
        starter.add(cake);
        starter.add(sorbet);
        action menuBar;
    }
    public void actionPerformed(ActionEvent e)
    {
        whitebox.append(e.getActionCommand() + "selected\n");
    }
    public void itemStateChanged(ItemEvent e)
    {
        if(e.getSource() == cake){
            whitebox.append("Cake Clicked\n");
        }
        else if(e.getSource() == sorbet){
            whitebox.append("Sorbet Clicked\n");
        }
    }
    private static void createAndShowGUI(){
        JFrame.setDefaultLookAndFeelDecorated(true);
        JFrame frame = new JFrame("[=]MenuBar[=]");
        MenuBarExample-UltraExtended demo = new MenuBarExample-
                                        UltraExtended();
        frame.setContentPane(demo.createContentPane());
        frame.setJMenuBar(demo.createMenuBar());
        frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        frame.pack();
        frame.setVisible(true);
    }
    public static void main(String[] args){
        SwingUtilities.invokeLater(new Runnable(){
            public void run(){
                createAndShowGUI();
            }
        });
    }
}
```


[=] JMenuBar [=]
Starters
Soup
Steak
Rare
Well Done
Chips
Baked Potato
Cake
Sorbet
Rare Selected
Baked Potato Selected
Cake Clicked
[Running] cd "d:\Utsav\Java\lab 4\" && javac MenuBarExample_UltraExtended.java && java MenuBarExample_UltraExtended

Code:

```
import java.awt.*;
import javax.swing.*;
import java.awt.event.*;
public class Tool extends JFrame implements ActionListener, ItemListener{
    static JToolBar tb;
    static JButton b1;
    static JButton b2;
    static JFrame f;
    static JComboBox<String> x;
    static JLabel l;
    static JLabel selectedItemLabel;
    public static void main(String args[]){
        Tool to = new Tool();
        l = new JLabel("nothing selected");
        selectedItemLabel = new JLabel("Selected Item: ");
        f = new JFrame("Toolbar Demo");
        f.setLayout(new BorderLayout());
        tb = new JToolBar();
        JPanel p = new JPanel();
        x = new JComboBox<>(new String[]{"item1","item2"});
        x.addItemListener(to);
        b1. = new JButton("button 1");
        b2 = new JButton("button 2");
        b1.addActionListener(to);
        b2.addActionListener(to);
        p.add(b1);
        p.add(b2);
        p.add(x);
        tb.add(p);
        JPanel p2 = new JPanel();
        p2.add(selectedItemLabel);
        JPanel p1 = new JPanel();
        p1.add(l);
```

```
        F.add(tb, BorderLayout.NORTH);
        F.add(p2, BorderLayout.WEST);
        F.add(p1, BorderLayout.CENTER);
        F.setSize(600,500);
        F.setVisible(true);
    }
    public void actionPerformed(ActionEvent e){
        d.setText(e.getActionCommand()+"selected!");
    }
    public void itemStateChanged(ItemEvent e){
        if(e.getStateChange() ==ItemEvent.SELECTED){
            String selectedText = e.getItem().toString();
            selectedItemLabel.setText("Selected Item: "+selectedText);
        }
    }
}
```




```
[Running] cd "d:\Utsav\Java\lab 4\" && javac Tool.java && java Tool
```