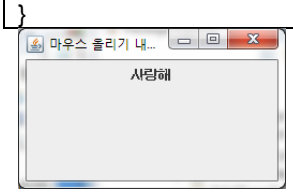
Swing응용과 애니매이션

실습예제1

마우스 이벤트를 이용하여 문장 변경하기 실습해 보시오

```
import java.awt.*;
import java.awt.event.*;
import javax.swing.*;

public class MouseEventFrame extends JFrame {
	public MouseEventFrame() {
		super("마우스 올리기 내리기 연습");
		setLayout(new FlowLayout());
		this.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);

		JLabel label = new JLabel("Love Java");
		label.addMouseListener(new MouseAdapter() {
			public void mouseEntered(MouseEvent e) {
				JLabel la = (JLabel)e.getSource();
				la.setText("Love Java");
			}
			public void mouseExited(MouseEvent e) {
				JLabel la = (JLabel)e.getSource();
				la.setText("사랑해");
			}
		});
		add(label);
		setSize(250,150);
		setVisible(true);
	}
	static public void main(String [] args) {
		new MouseEventFrame();
	}
}
```



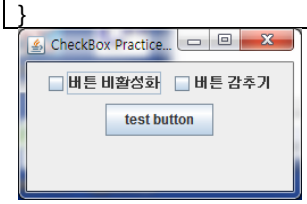
실습예제2

체크박스 연습

체크박스를 비활성화 시켜 보고 버튼 감추기도 실습해 보시오

```
import java.awt.*;
import java.awt.event.*;
import javax.swing.*;

public class CheckBoxPracticeFrame extends JFrame {
	JButton btn = new JButton("test button");
	public CheckBoxPracticeFrame() {
		super("CheckBox Practice Frame");
		this.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
```

```
                setLayout(new FlowLayout());
                JCheckBox a = new JCheckBox("버튼  비활성화");
                JCheckBox b = new JCheckBox("버튼  감추기");
                add(a);
                add(b);
                add(btn);

                a.addItemListener(new ItemListener() {
                        public void itemStateChanged(ItemEvent e) {
                                if(e.getStateChange() == ItemEvent.SELECTED)
                                        btn.setEnabled(false);
                                else
                                        btn.setEnabled(true);
                        }
                });
                b.addItemListener(new ItemListener() {
                        public void itemStateChanged(ItemEvent e) {
                                if(e.getStateChange() == ItemEvent.SELECTED)
                                        btn.setVisible(false);
                                else
                                        btn.setVisible(true);
                        }
                });

                setSize(250,150);
                setVisible(true);
        }
        public static void main(String[] args) {
                new CheckBoxPracticeFrame();
        }
}
```

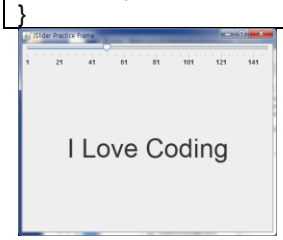


실습예제3

JSlider 를 이용해서 JLabel로 만든 글자의 크기를 변경해 보시오

```
import java.awt.*;
import javax.swing.*;
import javax.swing.event.*;

public class JSliderPractice2Frame extends JFrame {
        JSlider slider = new JSlider(1,100,50);
        JLabel label = new JLabel("     I Love Coding     ");
        public JSliderPractice2Frame() {
                super("JSlider Practice Frame");
                this.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);

                slider.setMajorTickSpacing(20);
                slider.setMinorTickSpacing(5);
                slider.setPaintLabels(true);
                slider.setPaintTicks(true);
                label.setHorizontalAlignment(JLabel.CENTER);
                label.setOpaque(true);
                label.setFont(new Font("TimesRoman", Font.PLAIN, slider.getValue()));
```

```
                add(slider, BorderLayout.NORTH);
                add(label, BorderLayout.CENTER);

                slider.addChangeListener(new ChangeListener() {
                        public void stateChanged(ChangeEvent e) {
                                JSlider s = (JSlider)e.getSource();
                                label.setFont(new Font("TimesRoman", Font.PLAIN, s.getValue()));
                        }
                });

                setSize(500,400);
                setVisible(true);
        }
        public static void main(String[] args) {
                new JSliderPractice2Frame();
        }
}
```



실습예제4

가위 바위 보 게임을 만들어 봅시다. 이때 이미지 파일을 본인의 프로젝트 아래에 가지고 와야 합니다.

```
import java.awt.*;
import java.awt.event.*;
import javax.swing.*;

public class GBBFrame extends JFrame {
        ImageIcon [] gbbImage = { new ImageIcon("images/gawi.jpg"),
                        new ImageIcon("images/bawi.jpg"),
                        new ImageIcon("images/bo.jpg")
        };
        static String SAME = "Same !!!";
        static String ME_WINNER = "ME !!!";
        static String COM_WINNER = "Computer !!!";

        MenuPanel menuPanel = new MenuPanel();
        GamePanel gamePanel = new GamePanel();

        public GBBFrame() {
                super("가위 바위 보 게임");
                this.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);

                add(menuPanel, BorderLayout.NORTH);
                add(gamePanel, BorderLayout.CENTER);

                setSize(400,300);
                setVisible(true);
        }

        class MenuPanel extends JPanel {
                JButton [] gbbBtn = new JButton [3];
                public MenuPanel() {
```

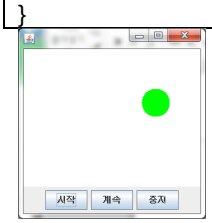
```
                setBackground(Color.GRAY);
                for(int i=0; i<gbbBtn.length; i++) {
                        gbbBtn[i] = new JButton(gbbImage[i]);
                        add(gbbBtn[i]);

                        gbbBtn[i].addActionListener(new MyActionListener());
                }
        }
}

class MyActionListener implements ActionListener {
        public void actionPerformed(ActionEvent e) {
                JButton btn = (JButton)e.getSource();
                int computerPart = (int)(Math.random()*3); // 0~2;

                String winner = SAME;

                if(btn.getIcon() == gbbImage[0] && computerPart == 2 ||
                                btn.getIcon() == gbbImage[1] && computerPart == 0 ||
                                btn.getIcon() == gbbImage[2] && computerPart == 1)
                        winner = ME_WINNER;
                else if(btn.getIcon() == gbbImage[0] && computerPart == 1 ||
                                btn.getIcon() == gbbImage[1] && computerPart == 2 ||
                                btn.getIcon() == gbbImage[2] && computerPart == 0)
                        winner = COM_WINNER;
                else
                        winner = SAME;


                gamePanel.draw(btn.getIcon(), gbbImage[computerPart], winner);
        }
}

class GamePanel extends JPanel {
        JLabel me = new JLabel("me");
        JLabel computer = new JLabel("com");
        JLabel winner = new JLabel("Winner");

        public GamePanel() {
                setBackground(Color.YELLOW);
                add(me);
                add(computer);
                add(winner);
                winner.setForeground(Color.RED);
        }

        public void draw(Icon myImage, Icon computerImage, String w) {
                me.setIcon(myImage);
                computer.setIcon(computerImage);
                winner.setText(w);

        }
}

public static void main(String[] args) {
        new GBBFrame();
}
}
```

실습예제5

버튼제어로 공 움직이기 (실습하기)

```
import java.awt.*;
import java.awt.event.*;

import javax.swing.*;

public class StartContStopAnimation {
  int x=0;
  int y=0;
  int xDir = 1;
  int yDir = 1;

  boolean cont=false;
  JFrame frame;
  public static void main(String[] args) {
    StartContStopAnimation gui = new StartContStopAnimation();
    gui.go();
  }

  public void go() {
    frame = new JFrame();
    frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);

    MyDrawPanel drawPanel = new MyDrawPanel();

    JButton startButton = new JButton("시작");
    JButton resumeButton = new JButton("계속");
    JButton stopButton = new JButton("중지");

    startButton.addActionListener(new StartButton());
    stopButton.addActionListener(new StopButton());
    resumeButton.addActionListener(new ResumeButton());

    JPanel buttonsPanel = new JPanel();
    buttonsPanel.add(startButton);
    buttonsPanel.add(resumeButton);
    buttonsPanel.add(stopButton);

    frame.getContentPane().add(BorderLayout.CENTER, drawPanel);
    frame.getContentPane().add(BorderLayout.SOUTH, buttonsPanel);

    frame.setSize(300,300);
    frame.setVisible(true);

    while (true) {
      if (cont) {
        if (x >= drawPanel.getWidth() -40 || x < 0 ) xDir *= -1;
        if (y >= drawPanel.getHeight() -40 || y < 0 ) yDir *= -1;

        x= x + xDir;
        y= y + yDir;
        drawPanel.repaint();
      }
      try {
        Thread.sleep(10);
      } catch (Exception ex) {}
    }
  }
  class MyDrawPanel extends JPanel {
    public void paintComponent(Graphics g) {
```

```
    g.setColor(Color.white);
    g.fillRect(0,0,this.getWidth(), this.getHeight());
    g.setColor(Color.green);
    g.fillOval(x,y,40,40);
   }
  }

  class StartButton implements ActionListener {
   public void actionPerformed(ActionEvent arg0) {
    cont = true;
    x=0; y=0;
   }
  }

  class StopButton implements ActionListener {
   public void actionPerformed(ActionEvent arg0) {
    cont = false;
   }
  }

  class ResumeButton implements ActionListener {
   public void actionPerformed(ActionEvent arg0) {
    cont = true;
   }
  }
}
```



실습예제6

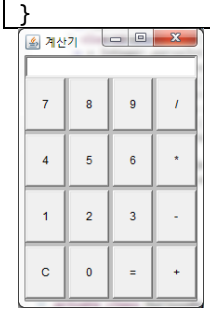
계산기 프로그램 예제 (실습)

```
import java.awt.*;
import java.awt.event.*;

public class Cal extends Frame implements ActionListener {
 Panel buttons;
 TextField tf;
 Button one, two, three, four, five, six, seven, eight, nine, zero, plus,
   minus, times, division, equalls, c;
 String s1, s2, s3, s4, s5;
 int c1, c2, c3, c4, n;

 Cal(String title) {
  super(title);
  tf = new TextField("");
  buttons = new Panel();
  one = new Button("1");
  one.addActionListener(this);
  two = new Button("2");
  two.addActionListener(this);
  three = new Button("3");
  three.addActionListener(this);
  four = new Button("4");
  four.addActionListener(this);
  five = new Button("5");
  five.addActionListener(this);
```

```
  six = new Button("6");
  six.addActionListener(this);
  seven = new Button("7");
  seven.addActionListener(this);
  eight = new Button("8");
  eight.addActionListener(this);
  nine = new Button("9");
  nine.addActionListener(this);
  zero = new Button("0");
  zero.addActionListener(this);
  plus = new Button("+");
  plus.addActionListener(this);
  minus = new Button("-");
  minus.addActionListener(this);
  times = new Button("*");
  times.addActionListener(this);
  division = new Button("/");
  division.addActionListener(this);
  equalls = new Button("=");
  equalls.addActionListener(this);
  c = new Button("C");
  c.addActionListener(this);

  buttons.setLayout(new GridLayout(4, 4, 4, 4));
  buttons.setBackground(Color.LIGHT_GRAY);
  buttons.add(seven);
  buttons.add(eight);
  buttons.add(nine);
  buttons.add(division);
  buttons.add(four);
  buttons.add(five);
  buttons.add(six);
  buttons.add(times);
  buttons.add(one);
  buttons.add(two);
  buttons.add(three);
  buttons.add(minus);
  buttons.add(c);
  buttons.add(zero);
  buttons.add(equalls);
  buttons.add(plus);

  add(tf, "North");
  add(buttons, "Center");

  setSize(200, 300);
  setVisible(true);
  addWindowListener(new MyCloseButtonHandler());
 }

 public void actionPerformed(ActionEvent e) {
  if (e.getSource() == one) {
   s3 = tf.getText();
   s4 = "1";
   s5 = s3 + s4;
   tf.setText(s5);
  }
  if (e.getSource() == two) {
   s3 = tf.getText();
   s4 = "2";
   s5 = s3 + s4;
   tf.setText(s5);
  }
  if (e.getSource() == three) {
```

```
 s3 = tf.getText();
 s4 = "3";
 s5 = s3 + s4;
 tf.setText(s5);
}
if (e.getSource() == four) {
 s3 = tf.getText();
 s4 = "4";
 s5 = s3 + s4;
 tf.setText(s5);
}
if (e.getSource() == five) {
 s3 = tf.getText();
 s4 = "5";
 s5 = s3 + s4;
 tf.setText(s5);
}
if (e.getSource() == six) {
 s3 = tf.getText();
 s4 = "6";
 s5 = s3 + s4;
 tf.setText(s5);
}
if (e.getSource() == seven) {
 s3 = tf.getText();
 s4 = "7";
 s5 = s3 + s4;
 tf.setText(s5);
}
if (e.getSource() == eight) {
 s3 = tf.getText();
 s4 = "8";
 s5 = s3 + s4;
 tf.setText(s5);
}
if (e.getSource() == nine) {
 s3 = tf.getText();
 s4 = "9";
 s5 = s3 + s4;
 tf.setText(s5);
}
if (e.getSource() == zero) {
 s3 = tf.getText();
 s4 = "0";
 s5 = s3 + s4;
 tf.setText(s5);
}
if (e.getSource() == plus) {
 s1 = tf.getText();
 tf.setText("");
 c1 = 1;
}
if (e.getSource() == minus) {
 s1 = tf.getText();
 tf.setText("");
 c2 = 1;
}
if (e.getSource() == times) {
 s1 = tf.getText();
 tf.setText("");
 c3 = 1;
}
if (e.getSource() == division) {
 s1 = tf.getText();
```

```
   tf.setText("");
   c4 = 1;
  }
  if (e.getSource() == c) {
   tf.setText("");
  }
  if (e.getSource() == equalls) {
   s2 = tf.getText();
   if (c1 == 1) {
    n = Integer.parseInt(s1) + Integer.parseInt(s2);
    tf.setText(String.valueOf(n));
   } else if (c2 == 1) {
    n = Integer.parseInt(s1) - Integer.parseInt(s2);
    tf.setText(String.valueOf(n));
   } else if (c3 == 1) {
    n = Integer.parseInt(s1) * Integer.parseInt(s2);
    tf.setText(String.valueOf(n));
   } else if (c4 == 1) {
    int p = Integer.parseInt(s2);
    if (p != 0) {
     n = Integer.parseInt(s1) / Integer.parseInt(s2);
     tf.setText(String.valueOf(n));
    } else
     tf.setText("");

   }
  }

 }

 private class MyCloseButtonHandler extends WindowAdapter {
  @Override
  public void windowClosing(WindowEvent e) {
   System.exit(0);
  }
 }

 public static void main(String[] args) {
  Cal c = new Cal("계산기");
 }
}
```



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