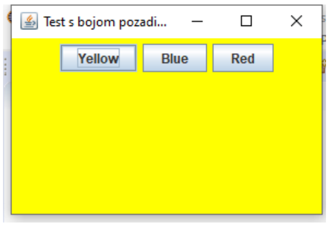
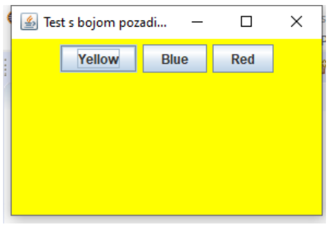
Primer 1. TestButton
Bez ugnježdavanja



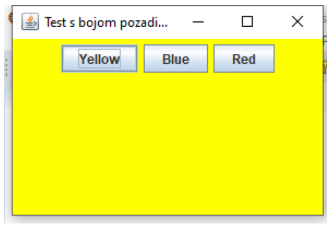
```
import java.awt.*;
import java.awt.event.*;
import javax.swing.*;
public class TestButton {
    public static void main(String[] args){
        ButtonFrame frame = new ButtonFrame();
        frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        frame.setVisible(true);
    }
}
class ButtonFrame extends JFrame {
    public ButtonFrame()
    {
        setTitle("Test s bojom pozadine");
        setSize(300,200);
        Container cp = getContentPane();
        ButtonPanel panel = new ButtonPanel();
        cp.add(panel);
    }
}
class ButtonPanel extends JPanel implements ActionListener
{
    JButton yellow;
    JButton blue;
    JButton red;
    public ButtonPanel()
    {
        yellow = new JButton("Yellow");
        blue   = new JButton("Blue");
        red    = new JButton("Red");
        add(yellow);
        add(blue);
        add(red);
        yellow.addActionListener(this);
        blue.addActionListener(this);
        red.addActionListener(this);
    }
    public void actionPerformed(ActionEvent event) {
           Object obj = event.getSource();
           if(obj.equals(yellow))    setBackground(Color.YELLOW);
            else if(obj.equals(blue)) setBackground(Color.BLUE);
            else if(obj.equals(red))  setBackground(Color.RED);
    }
}
```

Primer 1. TestButton
Sa definisanom unutrašnjom klasom



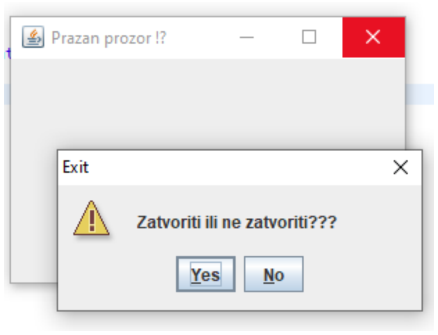
```
import java.awt.*;
import java.awt.event.*;
import javax.swing.*;

public class GridGUI {
        public static void main(String[] args){
                ButtonFrame frame = new ButtonFrame();
                frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
                frame.setVisible(true);
        }
}

class ButtonFrame extends JFrame
{
        public ButtonFrame(){
                setTitle("Test s bojom pozadine");
                setSize(300,200);
                Container cp = getContentPane();
                ButtonPanel panel = new ButtonPanel();
                cp.add(panel);
        }
}

class ButtonPanel extends JPanel{
        public ButtonPanel() {
                JButton yellow = new JButton("Yellow");
                JButton blue = new JButton("Blue");
                JButton red = new JButton("Red");
                add(yellow);
                add(blue);
                add(red);
                ColorAction yellowAction = new ColorAction(Color.YELLOW);
                ColorAction blueAction = new ColorAction(Color.BLUE);
                ColorAction redAction = new ColorAction(Color.RED);
                yellow.addActionListener(yellowAction);
                blue.addActionListener(blueAction);
                red.addActionListener(redAction);
        }
        private class ColorAction implements ActionListener
        {
                // Privatna unutasnja klasa - ColorAction() konstruktor ne mora
                // dobiti referencu na ButtonPanel koja bi joj trebala da dohvati
                // ButtonPanel.setBackground(backgroundColor)
                private Color bgColor;
                public ColorAction(Color c)
                {
                        bgColor = c;
                }
                public void actionPerformed(ActionEvent e)
                {
                        // metoda JComponent klase
                        setBackground(bgColor);
                }
        }


}
```

Primer 1. TestButton
Anonimna klasa



```
import java.awt.*;
import java.awt.event.*;
import javax.swing.*;
public class GridGUI {
        public static void main(String[] args){
                ButtonFrame frame = new ButtonFrame();
                frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
                frame.setVisible(true);
        }
}
class ButtonFrame extends JFrame {
        public ButtonFrame(){
                setTitle("Test s bojom pozadine");
                setSize(300,200);
                Container cp = getContentPane();
                ButtonPanel panel = new ButtonPanel();
                cp.add(panel);
        }
}
class ButtonPanel extends JPanel {
        public ButtonPanel() {
                makeButton("Yellow", Color.YELLOW);
                makeButton("Blue", Color.BLUE);
                makeButton("Red", Color.RED);
        }
        void makeButton(String labela, final Color bojaPozadine)
        {
                JButton gumb = new JButton(labela);
                add(gumb);
                gumb.addActionListener(new ActionListener() {
                                        public void actionPerformed(ActionEvent e) {
                                                setBackground(bojaPozadine);
                                                }
                                        }
                );
        }
}
```

Primer 2. WindowListener
Adapterska klasa

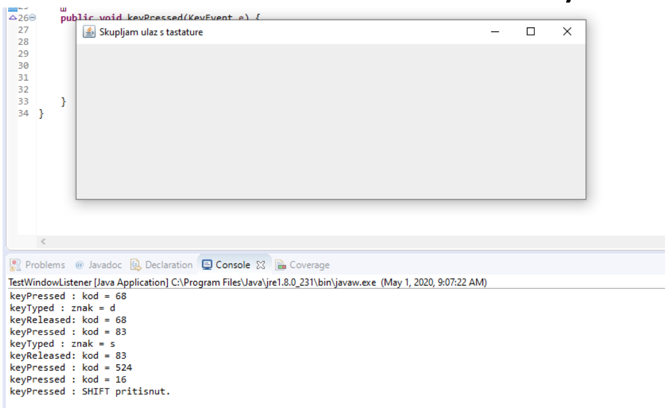

Exit

Zatvoriti ili ne zatvoriti???

```
import java.awt.event.*;
import javax.swing.*;
public class TestWindowListener {
        public static void main(String[] args){
                SmartFrame frame = new SmartFrame();
                frame.setDefaultCloseOperation(JFrame.DO_NOTHING_ON_CLOSE );
                frame.setVisible(true);
        }
}
class SmartFrame extends JFrame {
        public SmartFrame()
        {
                setTitle("Prazan prozor !?");
                setSize(300,200);
                WindowListener wl = new Terminator();
                addWindowListener(wl);
        }
}
class Terminator extends WindowAdapter {
        public void windowClosing(WindowEvent e){
                int i=JOptionPane.showConfirmDialog(null, "Zatvoriti ili ne zatvoriti???",
                                "Exit", JOptionPane.YES_NO_OPTION,
                                JOptionPane.WARNING_MESSAGE);
                If (i == JOptionPane.OK_OPTION)
                        System.exit(0);
        }
}
```

Primer 3. WindowListener

KeyListener

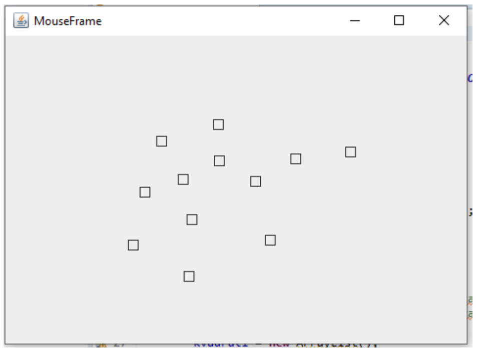


```
public void keyPressed(KeyEvent e) {
    }
}
```

```
TestWindowListener [Java Application] C:\Program Files\Java\jre1.8.0_231\bin\javaw.exe (May 1, 2020, 9:07:22 AM)
keyPressed : kod = 68
keyTyped : znak = d
keyReleased: kod = 68
keyPressed : kod = 83
keyTyped : znak = s
keyReleased: kod = 83
keyPressed : kod = 524
keyPressed : kod = 16
keyPressed : SHIFT pritisnut.
```

```java
import java.awt.event.*;
import javax.swing.*;
public class TestWindowListener2 {
        public static void main(String[] args) {
                MyFrame frame = new MyFrame();
                frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE );
                frame.setVisible(true);
        }
}
// Svaka komponenta moze biti KeyListener pa stoga
// necemo kreirati panel vec ce frame slusati tastaturu.
class MyFrame extends JFrame implements KeyListener {
        public MyFrame() {
                setTitle("Skupljam ulaz s tastature");
                setSize(300,200);
                addKeyListener(this);
        }
        public void keyTyped(KeyEvent e) {
                char c = e.getKeyChar();
                System.out.println("keyTyped : znak = "+c);
        }
        public void keyReleased(KeyEvent e) {
                int kod = e.getKeyCode();
                System.out.println("keyReleased: kod = "+kod);
        }
        public void keyPressed(KeyEvent e) {
                int kod = e.getKeyCode();
                System.out.println("keyPressed : kod = "+kod);
                if(kod == KeyEvent.VK_SHIFT)
                        System.out.println("keyPressed : SHIFT pritisnut.");
                if(kod == KeyEvent.VK_C && e.isShiftDown() && e.isControlDown())
                        System.out.println("keyPressed : SHIFT_CTRL_C pritisnut");
        }
}
```

Primer 3. TestMouseListener



```
import java.awt.*;
import java.awt.event.*;
import java.awt.geom.*;
import javax.swing.*;
import java.util.*;
public class TestMouseListener {
        public static void main(String[] args) {
                MouseFrame mf = new MouseFrame();
                mf.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
                mf.setVisible(true);
        }
}
class MouseFrame extends JFrame {
        public MouseFrame() {
                setTitle("MouseFrame");
                setSize(300,200);
                MousePanel mp = new MousePanel();
                Container contentPane = getContentPane();
                contentPane.add(mp);
        }
}
class MousePanel extends JPanel {
        private static final int DUZINA = 10;
        private ArrayList kvadrati; // lista kvadrata
        private Rectangle2D trenutni; // aktuelni kvadrat
        public MousePanel() {
                kvadrati = new ArrayList();
                trenutni = null;
                addMouseListener(new MouseHandler());
                addMouseMotionListener(new MouseMotionHandler());
        }
        // Iscrtavanje panela
        public void paintComponent(Graphics g) {
                super.paintComponent(g);
                Graphics2D g2 = (Graphics2D) g;
                for(int i=0; i<kvadrati.size(); ++i)
                        g2.draw((Rectangle2D) kvadrati.get(i));
        }
        // Rutine za manipulaciju s listom kvadrata: add, find, remove
        // Dodaj novi kvadrat s centrom u tacki p.
        public void add(Point2D p) {
                double x = p.getX();
                double y = p.getY();
                trenutni = new Rectangle2D.Double(x-DUZINA/2, y-DUZINA/2,DUZINA, DUZINA);
                kvadrati.add(trenutni);
                repaint();
        }
        // Pronadji element u listi koji sadrzi tacku p. Vrati null ako takvog nema.
        public Rectangle2D find(Point2D p) {
                // Provera da li se tacka nalazi u prostoru objekta Rectangle2D
                // tacka unutar kvadrata.
                for(int i=0; i<kvadrati.size(); ++i){
                        Rectangle2D rec=(Rectangle2D) kvadrati.get(i);
                        if(rec.contains(p)) return (Rectangle2D) kvadrati.get(i);
                }
                return null;
        }
        // Odstrani element iz liste
        public void remove(Rectangle2D r) {
                if(r == null) return;
                if(r == trenutni) trenutni = null;
                kvadrati.remove(r);
                repaint();
        }
        // Rutine za procesiranje dogadjaja.

        private class MouseHandler extends MouseAdapter {
                // Pritiskom na levi taster misa kreiramo novi kvadrat
                public void mousePressed(MouseEvent e) {
                        // Da li se pritisak dogodio unutar nekog kvadrata?
                        trenutni = find(e.getPoint());
                        if(trenutni == null) // nije
                                add(e.getPoint()); // dodaj novi
                }
                // Dvostruki klik na kvadrat brise taj kvadrat
                public void mouseClicked(MouseEvent e) {
                        // Da li se pritisak dogodio unutar nekog kvadrata?
                        trenutni = find(e.getPoint());
                        if(trenutni != null && e.getClickCount() >=2 ) // da, bar dva puta
                                remove(trenutni);
                }
        }

        private class MouseMotionHandler implements MouseMotionListener {
                public void mouseMoved(MouseEvent e) {
                        // Ako se kretanje desava unutar kvadrata promeni kursor
                        if(find(e.getPoint()) == null)
                                setCursor(Cursor.getDefaultCursor());
                        else
                                setCursor(Cursor.getPredefinedCursor(Cursor.CROSSHAIR_CURSOR));
                }
                public void mouseDragged(MouseEvent e) {
                        if(trenutni != null)
                        {
                                int x = e.getX();
                                int y = e.getY();
                                // Vucemo kvadrat
                                trenutni.setFrame(x-DUZINA/2, y-DUZINA/2, DUZINA, DUZINA);
                                repaint();
                        }
                }
        }
}
```