COM6516
Object Oriented Programming and Software Design

The contents of this module has been developed by Adam Funk, Kirill Bogdanov, Mark Stevenson, Richard Clayton and Heidi Christensen

Practical 6

2D graphics and GUI

- Drawing a frame

- Using buttons

Drawing a frame

```java
import javax.swing.*;

public class SimpleFrame extends JFrame {
    public SimpleFrame() {
        setTitle("frame");



    }



    public static void main (String[] args) {
        JFrame frm = new SimpleFrame();
        frm.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        frm.setVisible(true);
    }
}
```

Drawing a frame
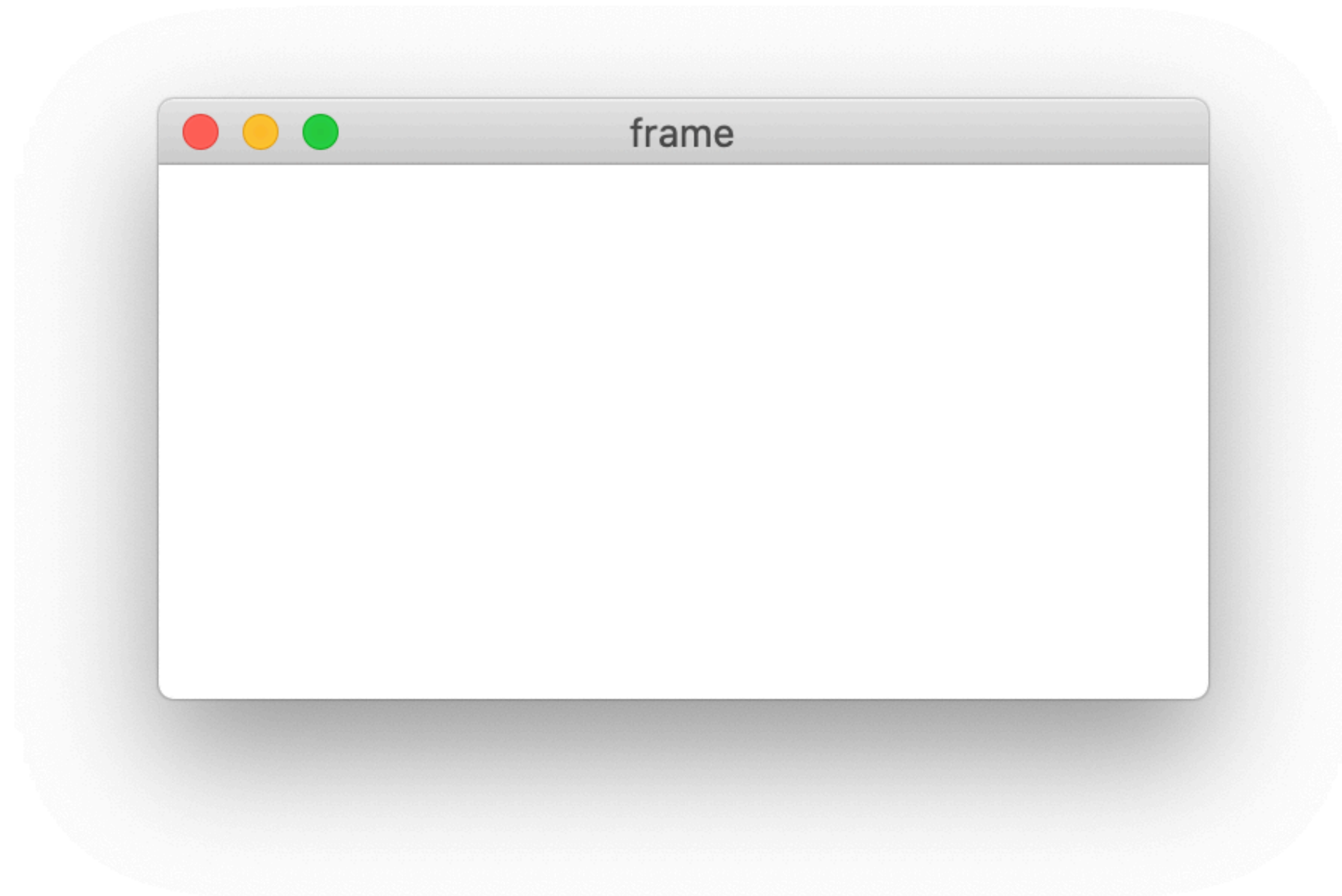
Drawing a frame

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

public class SimpleFrame2 extends JFrame {
    public SimpleFrame2() {
        setTitle("frame");
        setSize(350, 200);
        Container contentPane = this.getContentPane();
        myDrawing = new MyPanel();
        contentPane.add(myDrawing);
    }

    private MyPanel myDrawing;

    public static void main (String[] args) {
        JFrame frm = new SimpleFrame2();
        frm.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        frm.setVisible(true);
    }
}
```

Drawing a frame

Components and containers

```
Object
  Component
    Container        ⟵
      Window
        Frame
          JFrame     ⟵
    JComponent
      AbstractButton
        JButton
        JMenuItem
          JMenu
        JToggleButton
          JCheckBox
          JRadioButton
      ...
      JPanel
      JTextComponent
        JTextField
        JTextArea
      ...
```

`setLocation, setBounds` methods are defined here
`contentPane` is `Container`

`SimpleFrame extends JFrame`

Drawing a frame

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

public class MyPanel extends JPanel {
    public MyPanel() {
        setBackground(Color.white);
    }

    public void paintComponent(Graphics g) {
        super.paintComponent(g);
    }
}
```

Components and containers

```
Object
  Component
    Container
      Window
        Frame
          JFrame
      JComponent          default paintComponent method is defined here
        AbstractButton
          JButton
          JMenuItem
            JMenu
          JToggleButton
            JCheckBox
            JRadioButton
        ...
        JPanel              MyPanel extends JPanel
        JTextComponent
          JTextField
          JTextArea
        ...
```
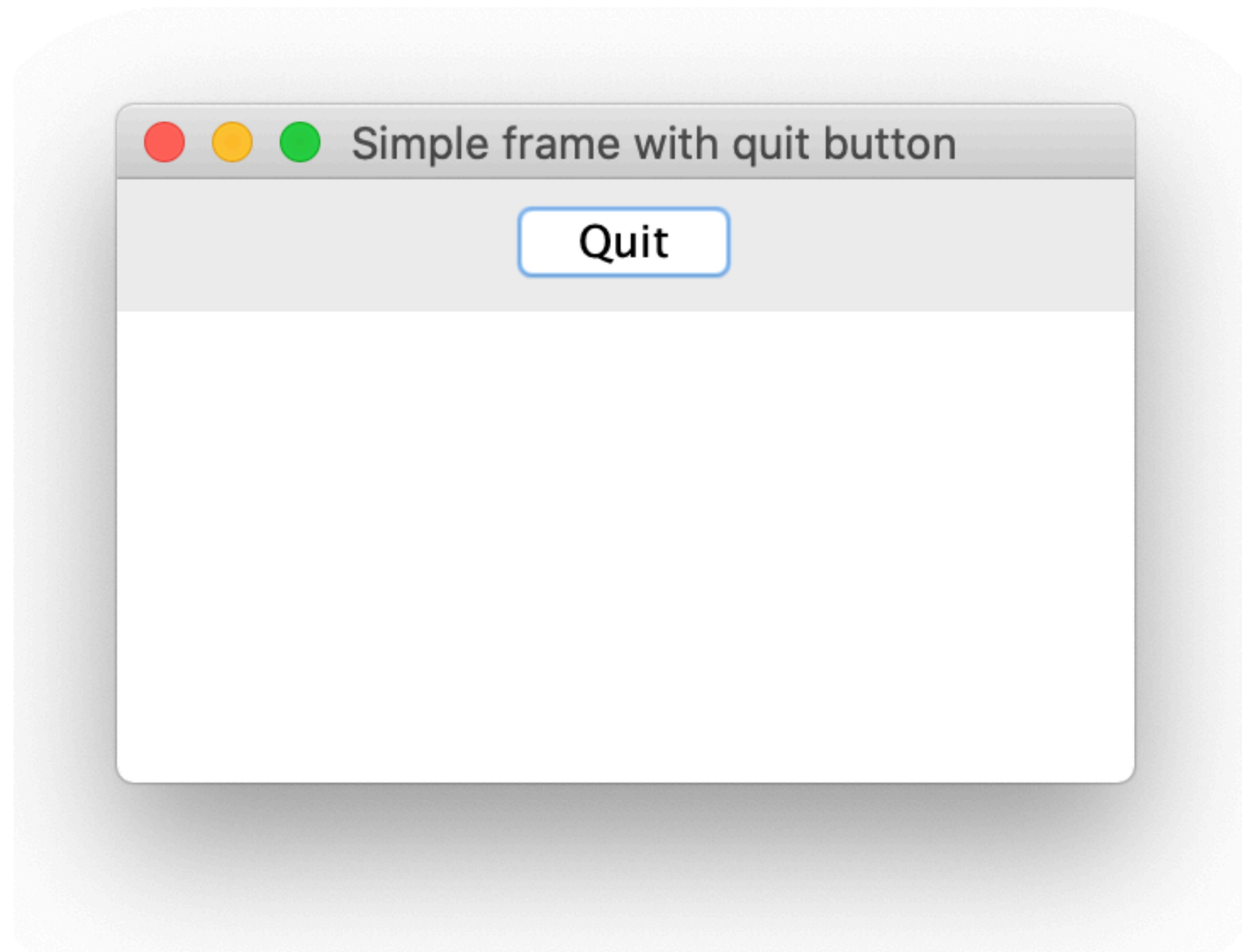
Using buttons

```java
public class SimpleFrameWithQuitButton extends JFrame implements ActionListener {
    ….
    private JButton quitButton;

    public SimpleFrameWithQuitButton() {
        …
        JPanel p = new JPanel();
        quitButton = new JButton("Quit");
        quitButton.addActionListener(this);
        p.add(quitButton);
    }

    @Override
    public void actionPerformed(ActionEvent event) {
        Object source = event.getSource();
        if (source == quitButton) {
            System.exit(0);
        }
    }
    ….
}
```

Using buttons

Components and containers

```
Object
  Component
    Container
      Window
        Frame
          JFrame        ⟵————————  SimpleFrameWithQuitButton extends JFrame
        JComponent
          AbstractButton
            JButton      ⟵————————  quitButton is JButton
            JMenuItem
              JMenu
            JToggleButton
              JCheckBox
              JRadioButton
          ...
          JPanel         ⟵————————  P is JPanel
          JTextComponent
            JTextField
            JTextArea
          ...
```