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import javax.swing.*;

import java.awt.*;

import java.awt.event.*;

public class SinglePageApplication extends JFrame {

    CardLayout cardLayout;

    JPanel mainPanel;

    public SinglePageApplication() {

        setTitle("Single Page Application - Java Example");

        setSize(600, 400);

        setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);

        setLocationRelativeTo(null);

        // Create CardLayout for multiple panels in a single page

        cardLayout = new CardLayout();

        mainPanel = new JPanel(cardLayout);

        // Create different "pages"

        JPanel homePanel = createHomePanel();

        JPanel aboutPanel = createAboutPanel();

        JPanel contactPanel = createContactPanel();

        // Add panels to the main panel

        mainPanel.add(homePanel, "Home");

        mainPanel.add(aboutPanel, "About");

        mainPanel.add(contactPanel, "Contact");
```

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// Add navigation bar
JPanel navPanel = createNavigationPanel();

// Add navigation and main content
add(navPanel, BorderLayout.NORTH);
add(mainPanel, BorderLayout.CENTER);

setVisible(true);
}

private JPanel createNavigationPanel() {
    JPanel navPanel = new JPanel();
    navPanel.setBackground(Color.DARK_GRAY);

    JButton homeBtn = new JButton("Home");
    JButton aboutBtn = new JButton("About");
    JButton contactBtn = new JButton("Contact");

    homeBtn.addActionListener(e -> cardLayout.show(mainPanel, "Home"));
    aboutBtn.addActionListener(e -> cardLayout.show(mainPanel, "About"));
    contactBtn.addActionListener(e -> cardLayout.show(mainPanel, "Contact"));

    // Styling
    for (JButton btn : new JButton[]{homeBtn, aboutBtn, contactBtn}) {
        btn.setForeground(Color.WHITE);
    }
}

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    btn.setBackground(new Color(60, 63, 65));  
    btn.setFocusPainted(false);  
}
```

```
navPanel.add(homeBtn);  
navPanel.add(aboutBtn);  
navPanel.add(contactBtn);
```

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    return navPanel;  
}
```

```
private JPanel createHomePanel() {
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```
    JPanel panel = new JPanel(new BorderLayout());  
    JLabel label = new JLabel("🏠 Welcome to the Home Page", JLabel.CENTER);  
    label.setFont(new Font("Arial", Font.BOLD, 20));  
    panel.add(label, BorderLayout.CENTER);
```

```
    JTextArea textArea = new JTextArea("This is a simple Single Page Application built in Java  
Swing.\n\n" +
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        "You can navigate between different sections without reloading the page.");  
    textArea.setEditable(false);  
    textArea.setBackground(new Color(240, 240, 240));  
    textArea.setFont(new Font("Arial", Font.PLAIN, 14));
```

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    panel.add(textArea, BorderLayout.SOUTH);  
    return panel;
```

```

    }

    private JPanel createAboutPanel() {
        JPanel panel = new JPanel(new BorderLayout());

        JLabel label = new JLabel(" i About This Application", JLabel.CENTER);
        label.setFont(new Font("Arial", Font.BOLD, 20));
        panel.add(label, BorderLayout.NORTH);

        JTextArea textArea = new JTextArea("This Java SPA demonstrates how a single
window\n" +
        "can dynamically switch between multiple views using CardLayout.\n\n" +
        "Technologies Used:\n- Java Swing (UI)\n- CardLayout (for single-page
navigation)\n- Event Handling (for buttons)");

        textArea.setEditable(false);
        textArea.setBackground(new Color(240, 240, 240));
        textArea.setFont(new Font("Arial", Font.PLAIN, 14));
        panel.add(textArea, BorderLayout.CENTER);
        return panel;
    }

```

```

private JPanel createContactPanel() {
    JPanel panel = new JPanel(new GridLayout(4, 2, 10, 10));
    panel.setBorder(BorderFactory.createEmptyBorder(20, 100, 20, 100));

    JLabel nameLabel = new JLabel("Name:");
    JTextField nameField = new JTextField();
    JLabel emailLabel = new JLabel("Email:");
    JTextField emailField = new JTextField();

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JLabel messageLabel = new JLabel("Message:");

JTextArea messageArea = new JTextArea(3, 20);

JButton sendButton = new JButton("Send");


sendButton.addActionListener(e -> {

    JOptionPane.showMessageDialog(this,

        "Thank you, " + nameField.getText() + "! Your message has been sent.",

        "Message Sent", JOptionPane.INFORMATION_MESSAGE);

    nameField.setText("");

    emailField.setText("");

    messageArea.setText("");

})

panel.add(nameLabel);

panel.add(nameField);

panel.add(emailLabel);

panel.add(emailField);

panel.add(messageLabel);

panel.add(new JScrollPane(messageArea));

panel.add(new JLabel(""));

panel.add(sendButton);

return panel;

}

public static void main(String[] args) {

    SwingUtilities.invokeLater(SinglePageApplication::new);

}

}

```