

JAVAFX EXERCISES

1. Control, Layout, Scene, Stage and how they work

Code:

```
import javafx.application.Application;
import javafx.scene.Scene;
import javafx.scene.control.*;
import javafx.scene.layout.*;
import javafx.stage.Stage;
// import java.io.*;

public class plfx extends Application {
    public static void main(String[] args) throws Exception {
        launch();
    }

    @Override
    public void start(Stage primaryStage) throws Exception {
        //adding a button - i.e a control
        Button btn = new Button("CLICK ME");

        //defining layout
        HBox root = new HBox();

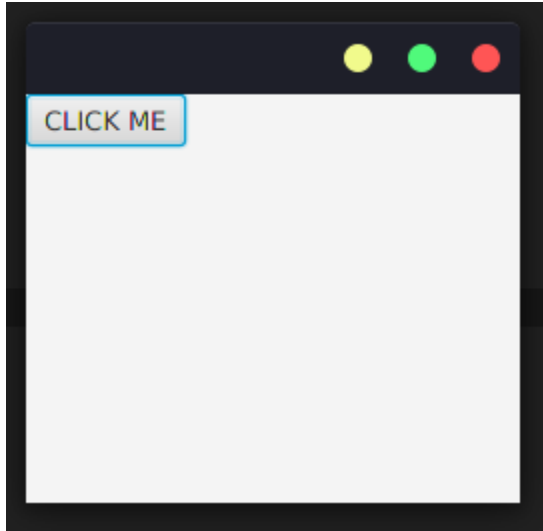
        //adding control to layout
        root.getChildren().add(btn);

        //adding layout to a scene
        Scene scn = new Scene(root);

        //adding scene to the stage
        primaryStage.setScene(scn);

        //displaying the stage
        primaryStage.show();
    }
}
```

Output:



2. Setting Height, Width and title of Stage - setHeight(), setWidth(), setTitle()

Code:

```
import javafx.application.Application;
import javafx.scene.Scene;
import javafx.scene.control.*;
import javafx.scene.layout.*;
import javafx.stage.Stage;
// import java.io.*;

public class p2fx extends Application {
    public static void main(String[] args) throws Exception {
        launch();
    }

    @Override
    public void start(Stage primaryStage) throws Exception {
        //adding a button - i.e a control
        Button btn = new Button("CLICK ME");

        //defining layout
        HBox root = new HBox();

        //adding control to layout
        root.getChildren().add(btn);

        //adding layout to a scene
        Scene scn = new Scene(root);

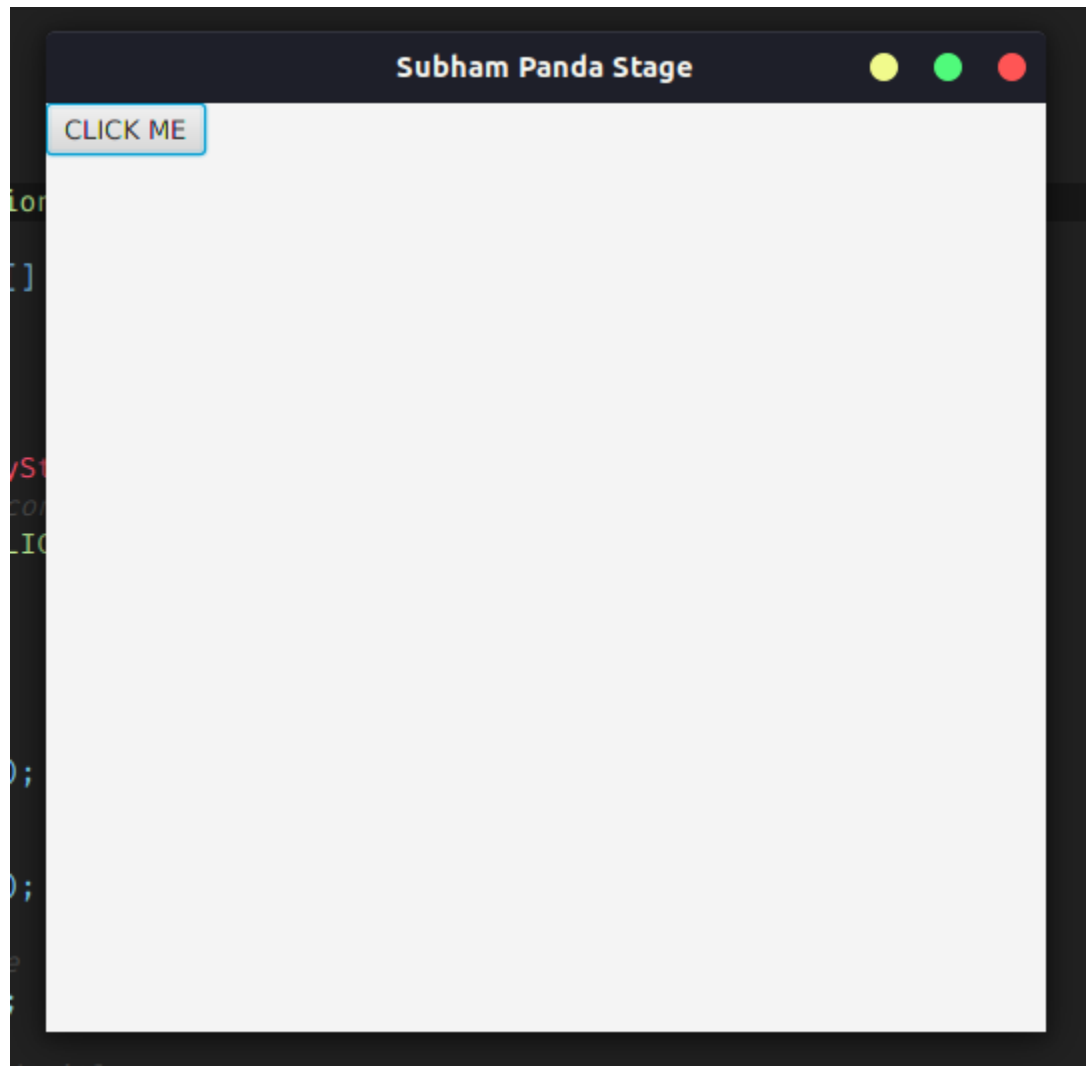
        //adding scene to the stage
        primaryStage.setScene(scn);

        //setting height, width and title to stage
        primaryStage.setHeight(500);
        primaryStage.setWidth(500);
        primaryStage.setTitle("Subham Panda Stage");

        //displaying the stage
        primaryStage.show();
    }
}
```

```
}  
}
```

Output:



3. HBox Layout

Code:

```
import javafx.application.Application;
import javafx.scene.Scene;
import javafx.scene.control.*;
import javafx.scene.layout.*;
import javafx.stage.Stage;
// import java.io.*;

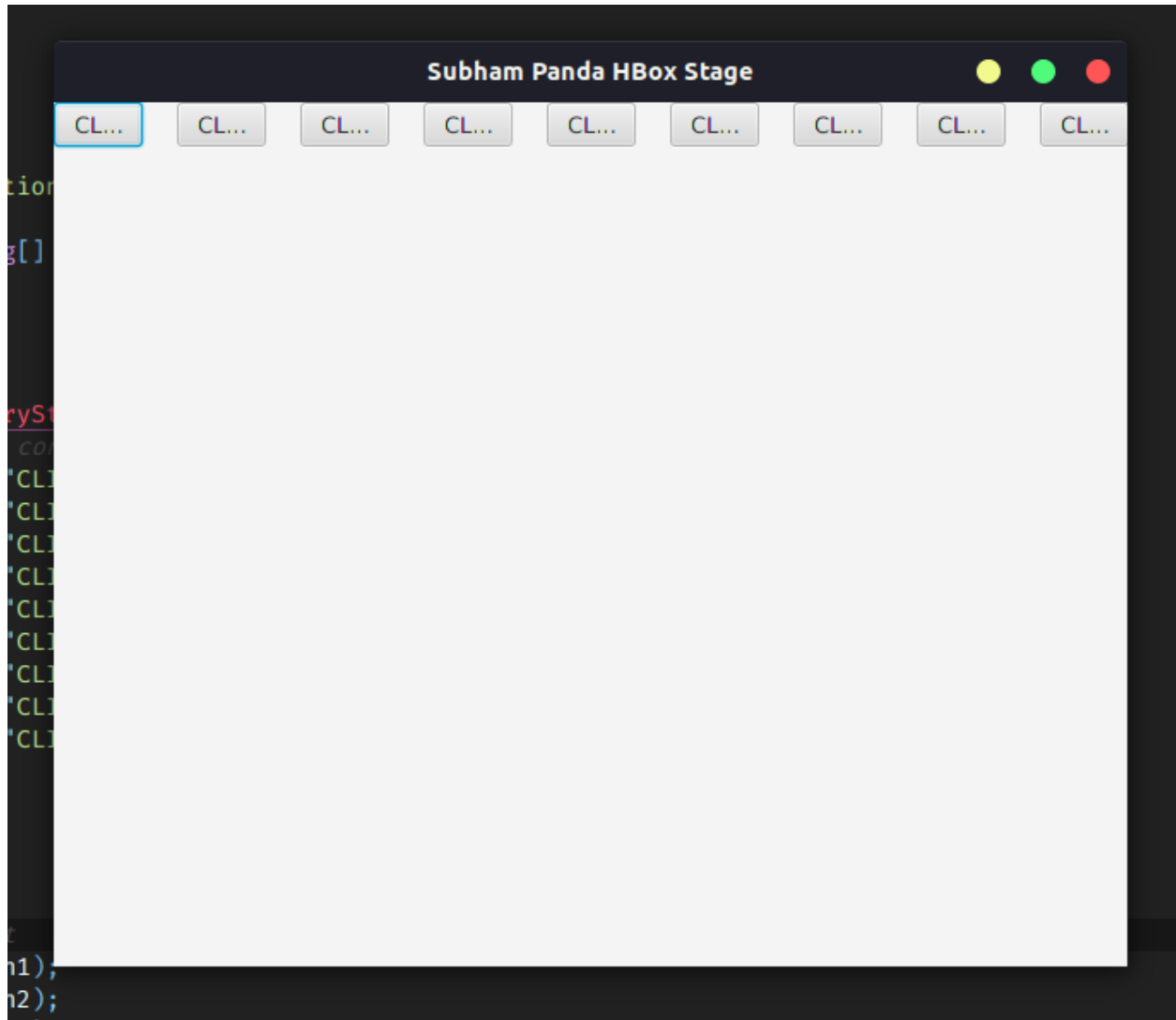
public class p3fx extends Application {
    public static void main(String[] args) throws Exception {
        launch();
    }

    @Override
    public void start(Stage primaryStage) throws Exception {
        //adding a button - i.e a control
        Button btn1 = new Button("CLICK 1");
        Button btn2 = new Button("CLICK 2");
        Button btn3 = new Button("CLICK 3");
        Button btn4 = new Button("CLICK 4");
        Button btn5 = new Button("CLICK 5");
        Button btn6 = new Button("CLICK 6");
        Button btn7 = new Button("CLICK 7");
        Button btn8 = new Button("CLICK 8");
        Button btn9 = new Button("CLICK 9");

        //defining layout
        HBox root = new HBox();
        root.setSpacing(20);
        //adding control to layout
        root.getChildren().add(btn1);
        root.getChildren().add(btn2);
        root.getChildren().add(btn3);
        root.getChildren().add(btn4);
        root.getChildren().add(btn5);
        root.getChildren().add(btn6);
```

```
root.getChildren().add(btn7);  
root.getChildren().add(btn8);  
root.getChildren().add(btn9);  
  
//adding layout to a scene  
Scene scn = new Scene(root);  
  
//adding scene to the stage  
primaryStage.setScene(scn);  
  
primaryStage.setHeight(500);  
primaryStage.setWidth(500);  
primaryStage.setTitle("Subham Panda HBox Stage");  
  
//displaying the stage  
primaryStage.show();  
}  
}
```

Output:



4. VBox Layout:

Code:

```
import javafx.application.Application;
import javafx.scene.Scene;
import javafx.scene.control.*;
import javafx.scene.layout.*;
import javafx.stage.Stage;
// import java.io.*;

public class p4fx extends Application {
    public static void main(String[] args) throws Exception {
        launch();
    }

    @Override
    public void start(Stage primaryStage) throws Exception {
        //adding a button - i.e a control
        Button btn1 = new Button("CLICK 1");
        Button btn2 = new Button("CLICK 2");
        Button btn3 = new Button("CLICK 3");
        Button btn4 = new Button("CLICK 4");
        Button btn5 = new Button("CLICK 5");
        Button btn6 = new Button("CLICK 6");
        Button btn7 = new Button("CLICK 7");
        Button btn8 = new Button("CLICK 8");
        Button btn9 = new Button("CLICK 9");

        //defining layout
        VBox root = new VBox();
        root.setSpacing(20);
        //adding control to layout
        root.getChildren().add(btn1);
        root.getChildren().add(btn2);
        root.getChildren().add(btn3);
        root.getChildren().add(btn4);
        root.getChildren().add(btn5);
        root.getChildren().add(btn6);
```



```
root.getChildren().add(btn7);
root.getChildren().add(btn8);
root.getChildren().add(btn9);

//adding layout to a scene
Scene scn = new Scene(root);

//adding scene to the stage
primaryStage.setScene(scn);

primaryStage.setHeight(500);
primaryStage.setWidth(500);
primaryStage.setTitle("Subham Panda VBox Stage");

//displaying the stage
primaryStage.show();
}
```

[illegible]

5. FlowPane Layout:

Code:

```
import javafx.application.Application;
import javafx.scene.Scene;
import javafx.scene.control.*;
import javafx.scene.layout.*;
import javafx.stage.Stage;
// import java.io.*;

public class p5fx extends Application {
    public static void main(String[] args) throws Exception {
        launch();
    }

    @Override
    public void start(Stage primaryStage) throws Exception {
        //adding a button - i.e a control
        Button btn1 = new Button("CLICK 1");
        Button btn2 = new Button("CLICK 2");
        Button btn3 = new Button("CLICK 3");
        Button btn4 = new Button("CLICK 4");
        Button btn5 = new Button("CLICK 5");
        Button btn6 = new Button("CLICK 6");
        Button btn7 = new Button("CLICK 7");
        Button btn8 = new Button("CLICK 8");
        Button btn9 = new Button("CLICK 9");

        //defining layout
        FlowPane root = new FlowPane();

        //adding control to layout
        root.getChildren().add(btn1);
        root.getChildren().add(btn2);
        root.getChildren().add(btn3);
        root.getChildren().add(btn4);
        root.getChildren().add(btn5);
        root.getChildren().add(btn6);
```

```
root.getChildren().add(btn7);  
root.getChildren().add(btn8);  
root.getChildren().add(btn9);  
  
//adding layout to a scene  
Scene scn = new Scene(root);  
  
//adding scene to the stage  
primaryStage.setScene(scn);  
  
primaryStage.setHeight(500);  
primaryStage.setWidth(500);  
primaryStage.setTitle("Subham Panda FlowPane Stage");  
  
//displaying the stage  
primaryStage.show();  
}  
}
```

Output:



6. GridPane Layout

Code:

```
import javafx.application.Application;
import javafx.scene.Scene;
import javafx.scene.control.*;
import javafx.scene.layout.*;
import javafx.stage.Stage;
// import java.io.*;

public class p6fx extends Application {
    public static void main(String[] args) throws Exception {
        launch();
    }

    @Override
    public void start(Stage primaryStage) throws Exception {
        // adding a button - i.e a control
        Button btn1 = new Button("CLICK 1");
        Button btn2 = new Button("CLICK 2");
        Button btn3 = new Button("CLICK 3");

        // defining layout
        GridPane root = new GridPane();

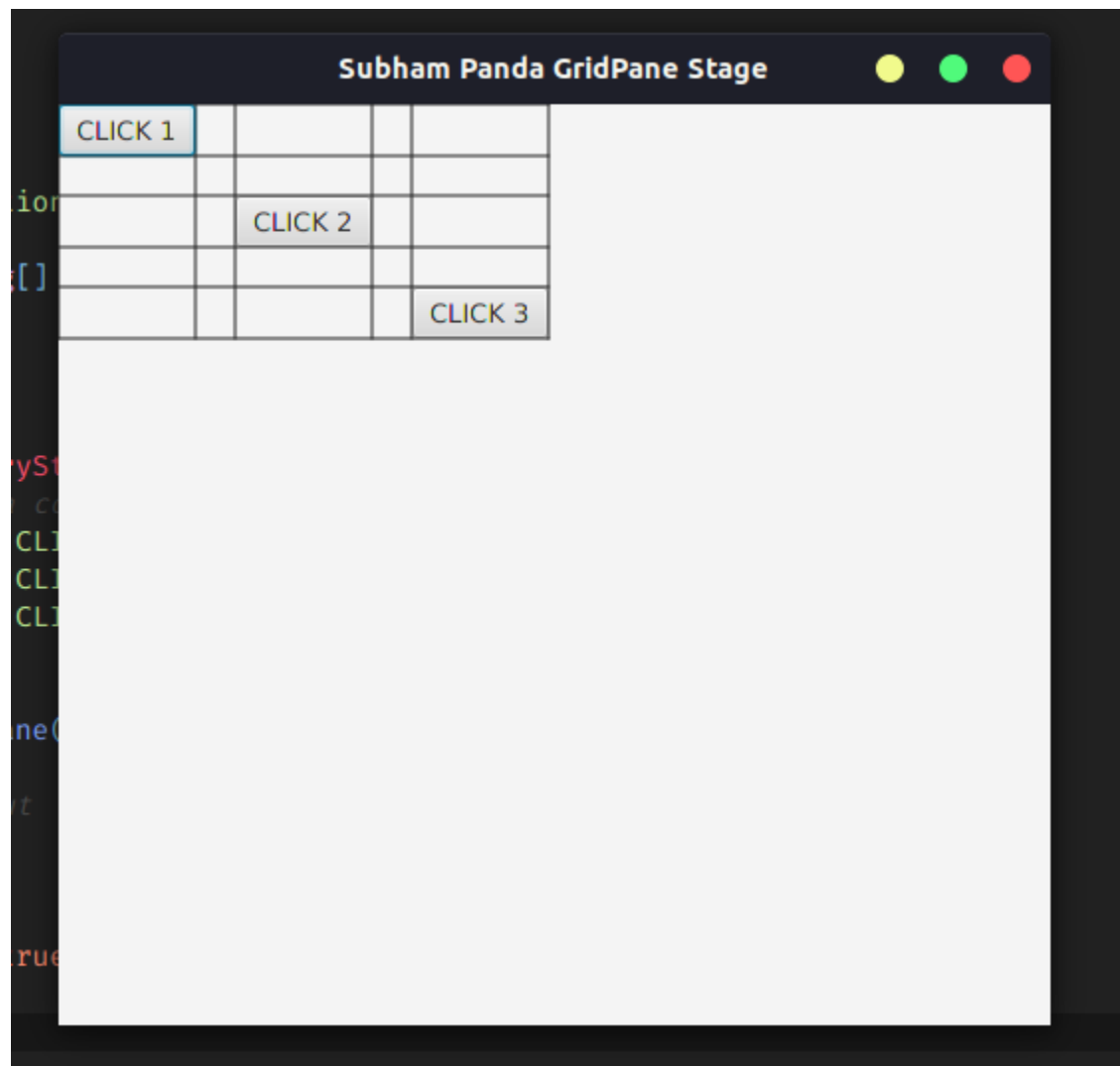
        // adding control to layout
        root.add(btn1, 0, 0);
        root.add(btn2, 1, 1);
        root.add(btn3, 2, 2);
        root.setGridLinesVisible(true);
        root.setHgap(20);
        root.setVgap(20);

        // adding layout to a scene
        Scene scn = new Scene(root);

        // adding scene to the stage
        primaryStage.setScene(scn);
```

```
primaryStage.setHeight(500);  
primaryStage.setWidth(500);  
primaryStage.setTitle("Subham Panda GridPane Stage");  
  
// displaying the stage  
primaryStage.show();  
}  
}
```

Output:



7. BorderPane Layout

Code:

```
import javafx.application.Application;
import javafx.scene.Scene;
import javafx.scene.control.*;
import javafx.scene.layout.*;
import javafx.stage.Stage;
// import java.io.*;

public class p7fx extends Application {
    public static void main(String[] args) throws Exception {
        launch();
    }

    @Override
    public void start(Stage primaryStage) throws Exception {
        // adding a button - i.e a control
        Button btn1 = new Button("SET BOTTOM");
        Button btn2 = new Button("SET CENTER");
        Button btn3 = new Button("SET LEFT");
        Button btn4 = new Button("SET TOP");
        Button btn5 = new Button("SET RIGHT");

        // defining layout
        BorderPane root = new BorderPane();

        // adding control to layout
        root.setBottom(btn1);
        root.setCenter(btn2);
        root.setLeft(btn3);
        root.setTop(btn4);
        root.setRight(btn5);

        // adding layout to a scene
        Scene scn = new Scene(root);

        // adding scene to the stage
```

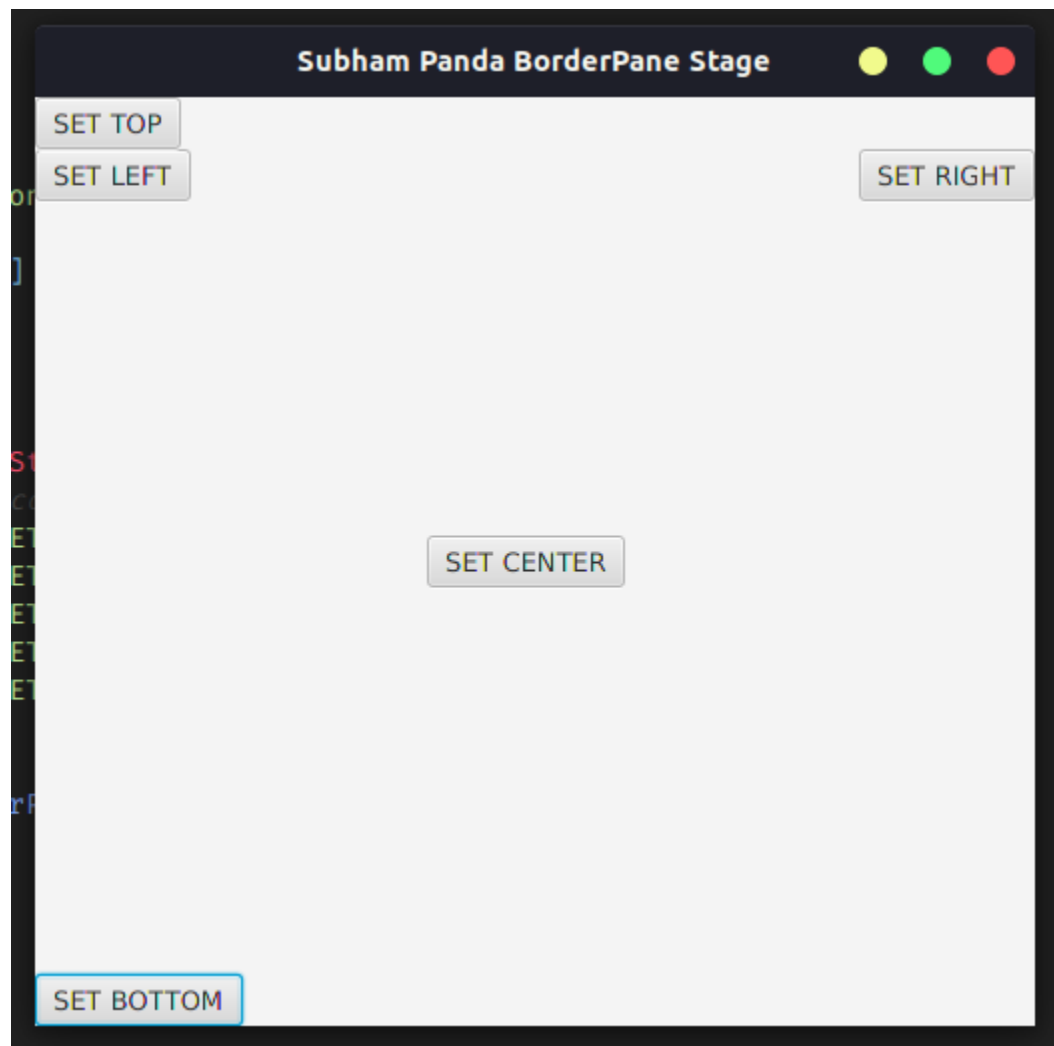


```
primaryStage.setScene(scen);

primaryStage.setHeight(500);
primaryStage.setWidth(500);
primaryStage.setTitle("Subham Panda BorderPane Stage");

// displaying the stage
primaryStage.show();
}
```

Output:



8. Label

Code:

```
import javafx.application.Application;
import javafx.scene.Scene;
import javafx.scene.control.*;
import javafx.scene.layout.*;
import javafx.scene.paint.Color;
import javafx.scene.text.Font;
import javafx.scene.text.TextAlignment;
import javafx.stage.Stage;
// import java.io.*;

public class p8fx extends Application {
    public static void main(String[] args) throws Exception {
        launch();
    }

    @Override
    public void start(Stage primaryStage) throws Exception {
        // adding a label - i.e a control
        Label lbl = new Label("Original Label Text");
        lbl.setText("Label Text set using setText. This text is long in
length and will span over multiple lines.");
        lbl.setTextFill(Color.RED);
        lbl.setFont(new Font("Times New Roman", 32));
        lbl.setTextAlignment(TextAlignment.CENTER);
        lbl.setWrapText(true);

        // defining layout
        HBox root = new HBox();

        // adding control to layout
        root.getChildren().add(lbl);

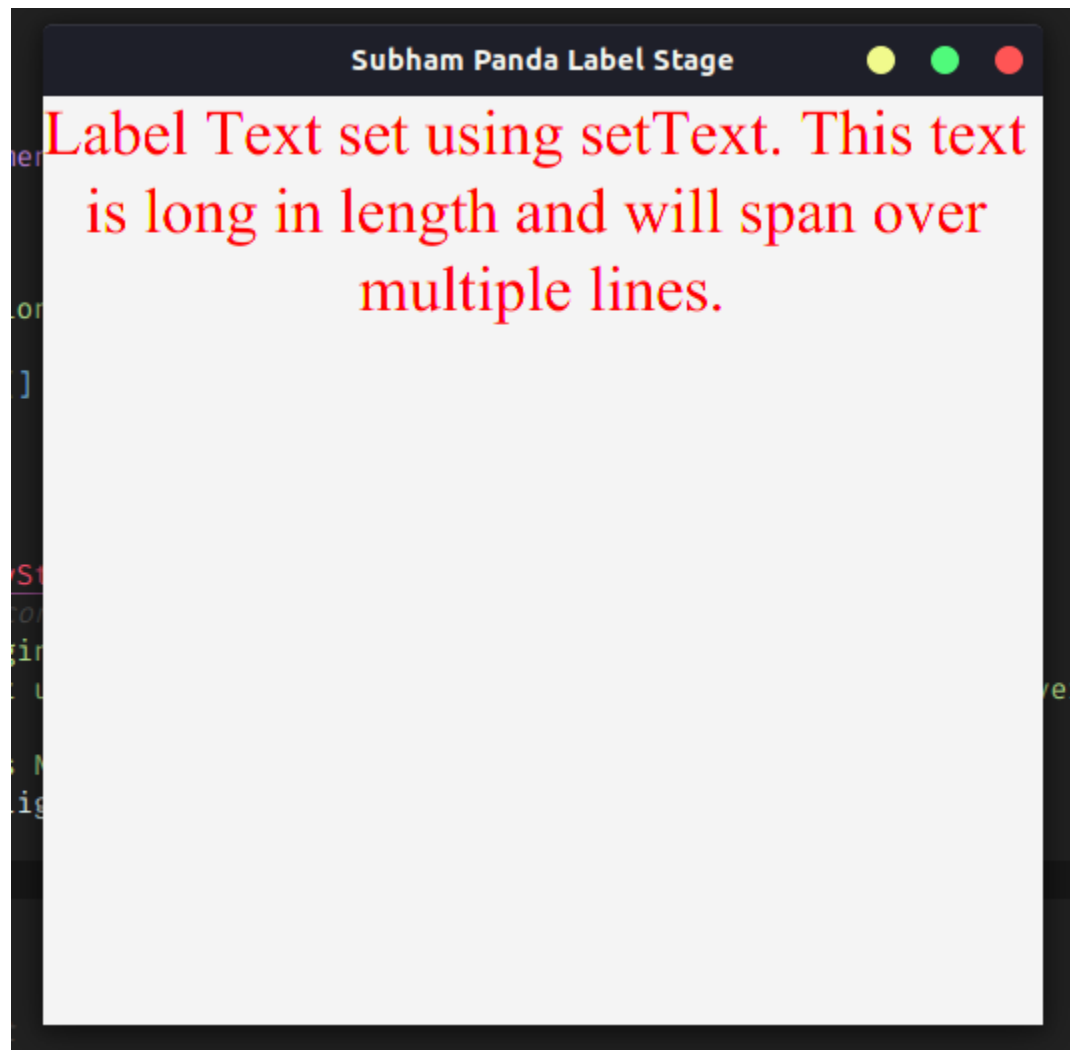
        // adding layout to a scene
        Scene scn = new Scene(root);
```

```
// adding scene to the stage
primaryStage.setScene(scen);

primaryStage.setHeight(500);
primaryStage.setWidth(500);
primaryStage.setTitle("Subham Panda Label Stage");

// displaying the stage
primaryStage.show();
}
```

Output:



9. Label - Setting Image inside Label

Code:

```
import java.io.FileInputStream;

import javafx.application.Application;
import javafx.scene.Scene;
import javafx.scene.control.*;
import javafx.scene.image.Image;
import javafx.scene.image.ImageView;
import javafx.scene.layout.*;
import javafx.stage.Stage;
// import java.io.*;

public class p9fx extends Application {
    public static void main(String[] args) throws Exception {
        launch();
    }

    @Override
    public void start(Stage primaryStage) throws Exception {
        // adding a label - i.e a control
        FileInputStream input = new
FileInputStream("/home/subham/Documents/WINSEM20-21/JAVA
LAB/DA5/JAVAFX/src/java.png");
        Image img = new Image(input);
        ImageView imgview = new ImageView(img);
        Label lbl = new Label("Label With Image", imgview);

        // defining layout
        HBox root = new HBox();

        // adding control to layout
        root.getChildren().add(lbl);

        // adding layout to a scene
        Scene scn = new Scene(root);
```

```
// adding scene to the stage
primaryStage.setScene(scen);

primaryStage.setHeight(500);
primaryStage.setWidth(500);
primaryStage.setTitle("Subham Panda Label with Image Stage");

// displaying the stage
primaryStage.show();
}
```

Output:



10. Button

Code:

```
import javafx.application.Application;
import javafx.scene.Scene;
import javafx.scene.control.*;
import javafx.scene.layout.*;
import javafx.stage.Stage;
// import java.io.*;

public class p10fx extends Application {
    public static void main(String[] args) throws Exception {
        launch();
    }

    @Override
    public void start(Stage primaryStage) throws Exception {
        // adding a button - i.e a control
        Button btn = new Button("Original Button Text");
        btn.setText("Button Text set using setText. This text is long in
length and will span over multiple lines.");
        btn.setWrapText(true);

        // defining layout
        HBox root = new HBox();

        // adding control to layout
        root.getChildren().add(btn);

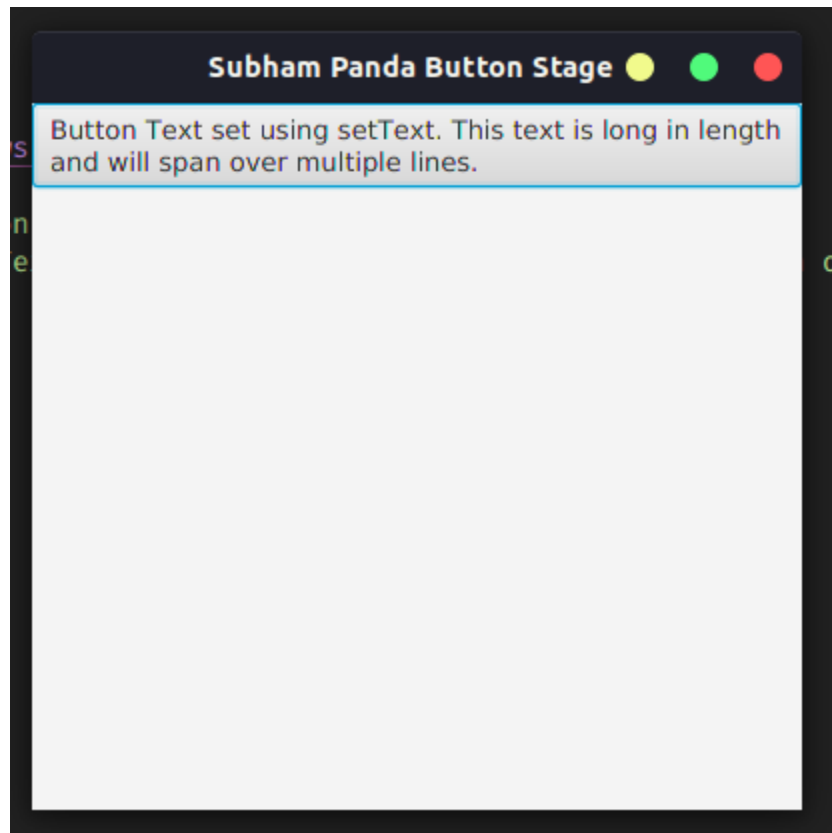
        // adding layout to a scene
        Scene scn = new Scene(root);

        // adding scene to the stage
        primaryStage.setScene(scn);

        primaryStage.setHeight(300);
        primaryStage.setWidth(300);
        primaryStage.setTitle("Subham Panda Button Stage");
    }
}
```

```
// displaying the stage  
primaryStage.show();  
}  
}
```

Output:



11. Disabled Button

Code:

```
import javafx.application.Application;
import javafx.scene.Scene;
import javafx.scene.control.*;
import javafx.scene.layout.*;
import javafx.stage.Stage;
// import java.io.*;

public class pl1fx extends Application {
    public static void main(String[] args) throws Exception {
        launch();
    }

    @Override
    public void start(Stage primaryStage) throws Exception {
        // adding a button - i.e a control
        Button btn = new Button("Original Button Text");
        btn.setText("Button Text set using setText. This text is long in
length and will span over multiple lines.");
        btn.setWrapText(true);
        btn.setDisable(true);

        // defining layout
        HBox root = new HBox();

        // adding control to layout
        root.getChildren().add(btn);

        // adding layout to a scene
        Scene scn = new Scene(root);

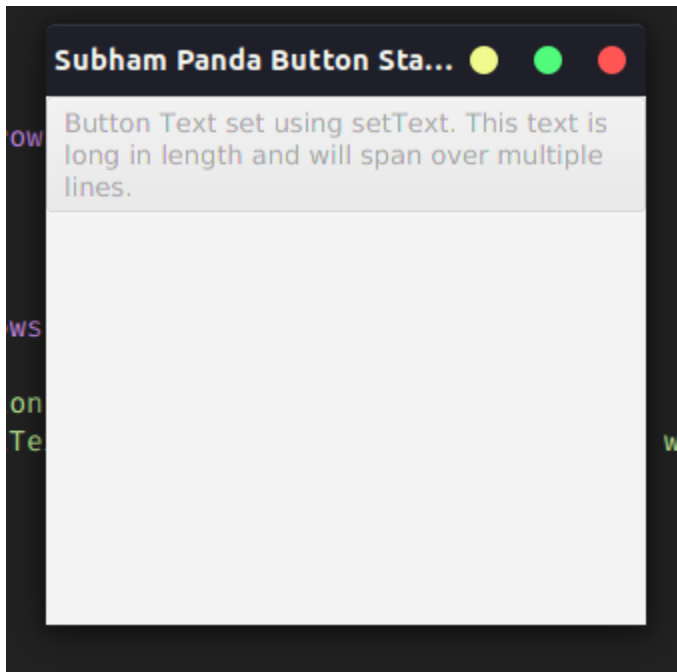
        // adding scene to the stage
        primaryStage.setScene(scn);

        primaryStage.setHeight(300);
        primaryStage.setWidth(300);
    }
}
```



```
primaryStage.setTitle("Subham Panda Button Stage");  
  
// displaying the stage  
primaryStage.show();  
}  
}
```

Output:



12. Button with Image:

Code:

```
import javafx.application.Application;
import javafx.scene.Scene;
import javafx.scene.control.*;
import javafx.scene.image.Image;
import javafx.scene.image.ImageView;
import javafx.scene.layout.*;
import javafx.stage.Stage;
import java.io.*;

public class pl2fx extends Application {
    public static void main(String[] args) throws Exception {
        launch();
    }

    @Override
    public void start(Stage primaryStage) throws Exception {
        // adding a button - i.e a control
        FileInputStream input = new
FileInputStream("/home/subham/Documents/WINSEM20-21/JAVA
LAB/DA5/JAVAFX/src/java.png");
        Image img = new Image(input);
        ImageView imgview = new ImageView(img);
        Button btn = new Button("CLICK ME", imgview);
        btn.setWrapText(true);

        // defining layout
        HBox root = new HBox();

        // adding control to layout
        root.getChildren().add(btn);

        // adding layout to a scene
        Scene scn = new Scene(root);

        // adding scene to the stage
        primaryStage.setScene(scn);
```

```
primaryStage.setHeight(300);  
primaryStage.setWidth(300);  
primaryStage.setTitle("Subham Panda Button Stage");  
  
// displaying the stage  
primaryStage.show();  
}  
}
```

Output:



13. Radio Buttons

Code:

```
import javafx.application.Application;
import javafx.scene.Scene;
import javafx.scene.control.*;
import javafx.scene.layout.*;
import javafx.stage.Stage;

public class p13fx extends Application {
    public static void main(String[] args) throws Exception {
        launch();
    }

    @Override
    public void start(Stage primaryStage) throws Exception {
        //creating toggle group
        ToggleGroup group = new ToggleGroup();
        RadioButton opt1 = new RadioButton("Option 1");
        RadioButton opt2 = new RadioButton("Option 2");
        RadioButton opt3 = new RadioButton("Option 3");
        RadioButton opt4 = new RadioButton("Option 4");
        opt1.setToggleGroup(group);
        opt2.setToggleGroup(group);
        opt3.setToggleGroup(group);
        opt4.setToggleGroup(group);

        // defining layout
        VBox root = new VBox();

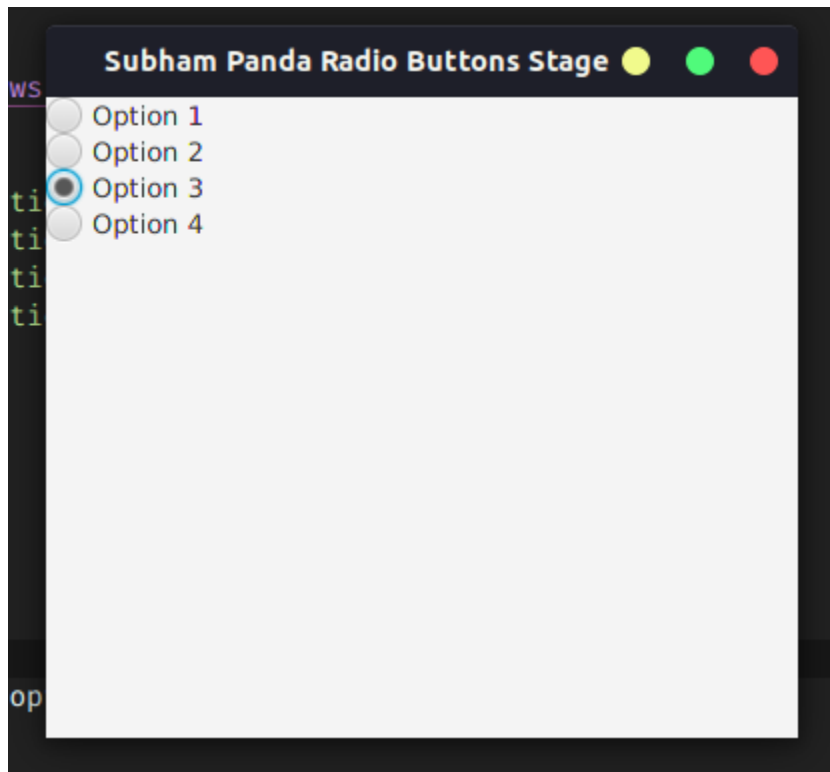
        // adding control to layout
        root.getChildren().addAll(opt1, opt2, opt3, opt4);

        // adding layout to a scene
        Scene scn = new Scene(root);

        // adding scene to the stage
        primaryStage.setScene(scn);
    }
}
```

```
primaryStage.setHeight(300);  
primaryStage.setWidth(300);  
primaryStage.setTitle("Subham Panda Radio Buttons Stage");  
  
// displaying the stage  
primaryStage.show();  
}  
}
```

Output:



14. Checkboxes

Code:

```
import javafx.application.Application;
import javafx.scene.Scene;
import javafx.scene.control.*;
import javafx.scene.layout.*;
import javafx.stage.Stage;

public class pl4fx extends Application {
    public static void main(String[] args) throws Exception {
        launch();
    }

    @Override
    public void start(Stage primaryStage) throws Exception {
        //creating check boxes
        CheckBox opt1 = new CheckBox("Option 1");
        CheckBox opt2 = new CheckBox("Option 2");
        CheckBox opt3 = new CheckBox("Option 3");
        CheckBox opt4 = new CheckBox("Option 4");

        // defining layout
        VBox root = new VBox();

        // adding control to layout
        root.getChildren().addAll(opt1, opt2, opt3, opt4);

        // adding layout to a scene
        Scene scn = new Scene(root);

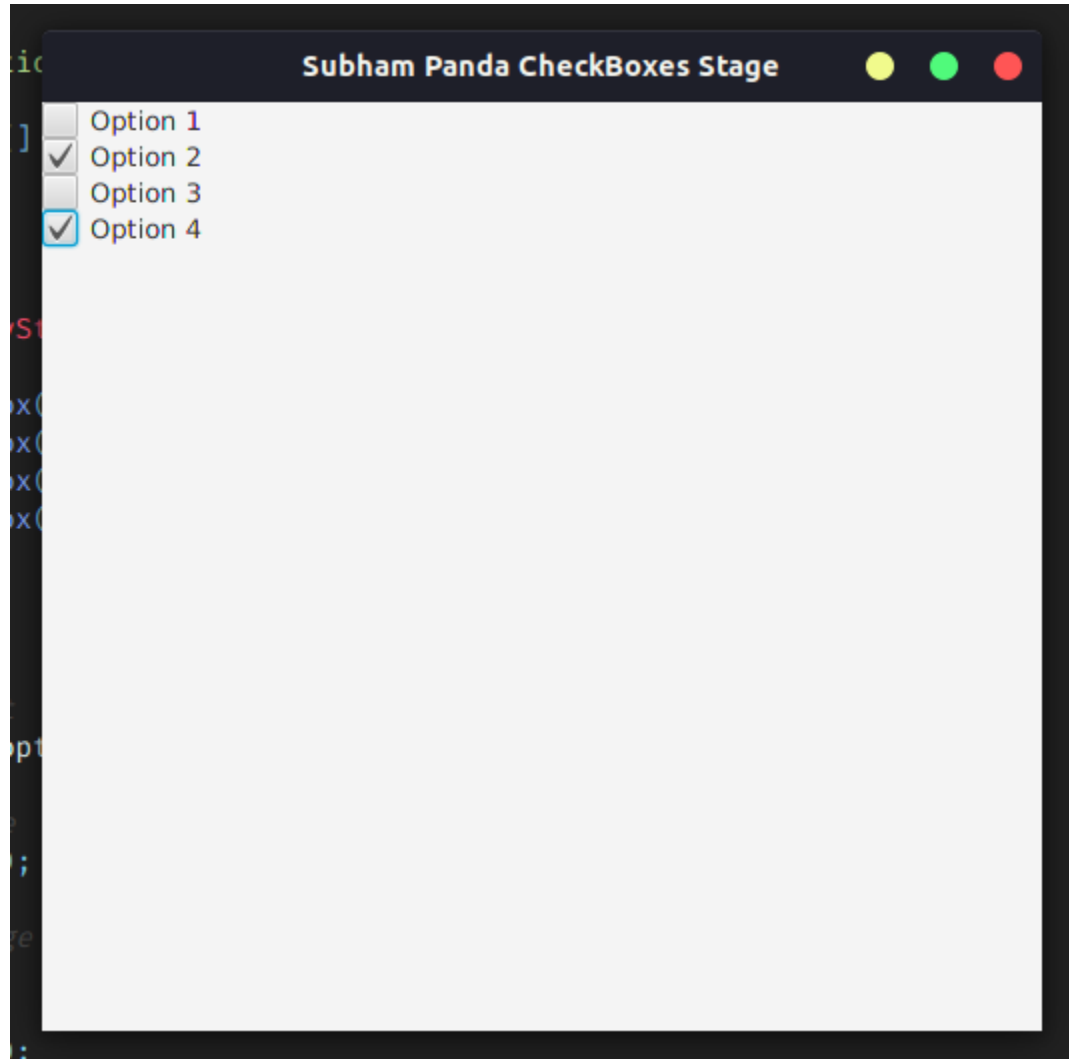
        // adding scene to the stage
        primaryStage.setScene(scn);

        primaryStage.setHeight(500);
        primaryStage.setWidth(500);
        primaryStage.setTitle("Subham Panda Radio Buttons Stage");

        // displaying the stage
```

```
primaryStage.show();  
}  
}
```

Output:



15. Hyperlink

Code:

```
import javafx.application.Application;
import javafx.scene.Scene;
import javafx.scene.control.*;
import javafx.scene.layout.*;
import javafx.stage.Stage;

public class p15fx extends Application {
    public static void main(String[] args) throws Exception {
        launch();
    }

    @Override
    public void start(Stage primaryStage) throws Exception {
        //creating hyperlink
        Hyperlink hl = new Hyperlink("https://www.google.com");

        // defining layout and adding hyperlink to it
        VBox root = new VBox(hl);

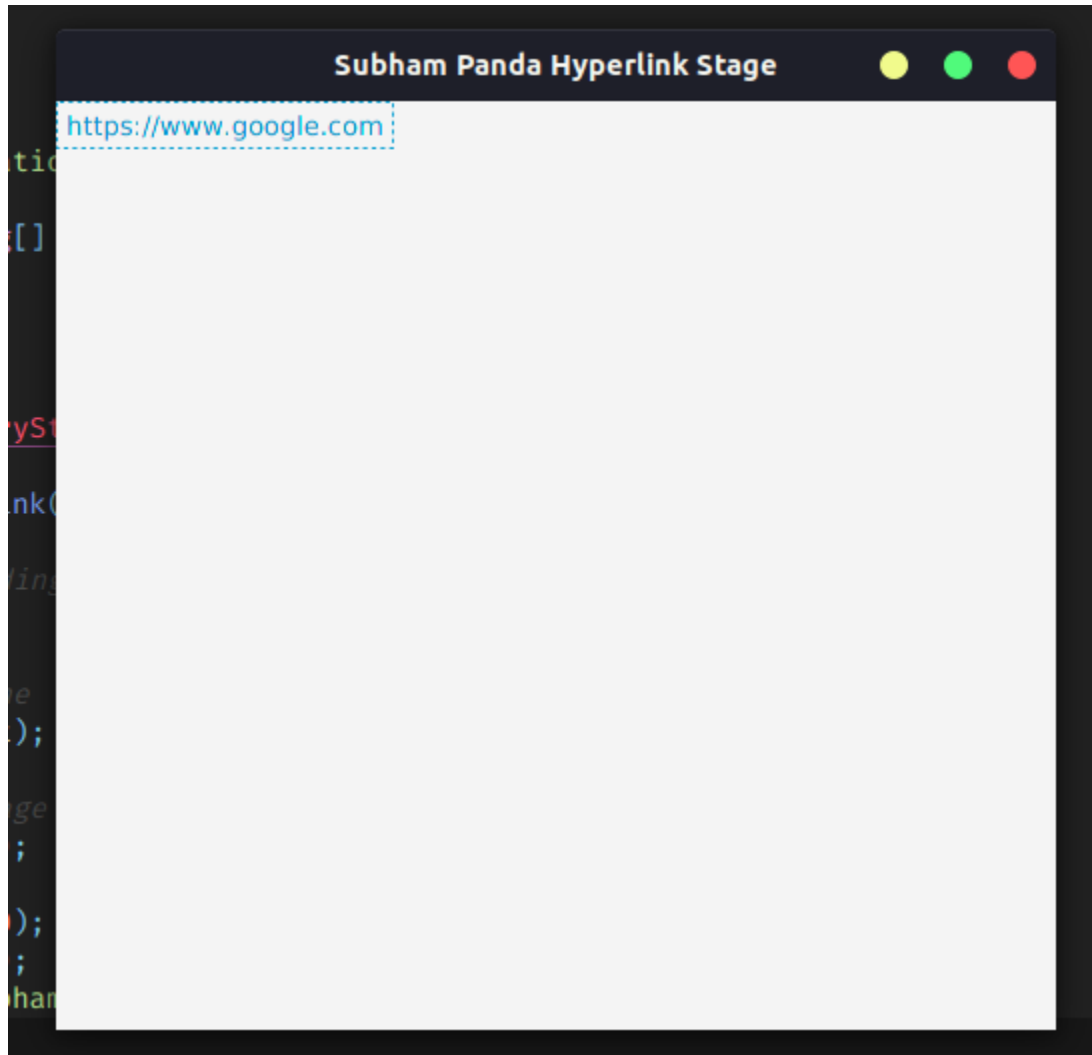
        // adding layout to a scene
        Scene scn = new Scene(root);

        // adding scene to the stage
        primaryStage.setScene(scn);

        primaryStage.setHeight(500);
        primaryStage.setWidth(500);
        primaryStage.setTitle("Subham Panda Hyperlink Stage");

        // displaying the stage
        primaryStage.show();
    }
}
```


Output:



16. Combo Box

Code:

```
import javafx.application.Application;
import javafx.scene.Scene;
import javafx.scene.control.*;
import javafx.scene.layout.*;
import javafx.stage.Stage;

public class pl6fx extends Application {
    public static void main(String[] args) throws Exception {
        launch();
    }

    @Override
    public void start(Stage primaryStage) throws Exception {
        //creating combo box
        ComboBox<String> options = new ComboBox<String>();
        options.getItems().add("Option 1");
        options.getItems().add("Option 2");
        options.getItems().add("Option 3");
        options.getItems().add("Option 4");

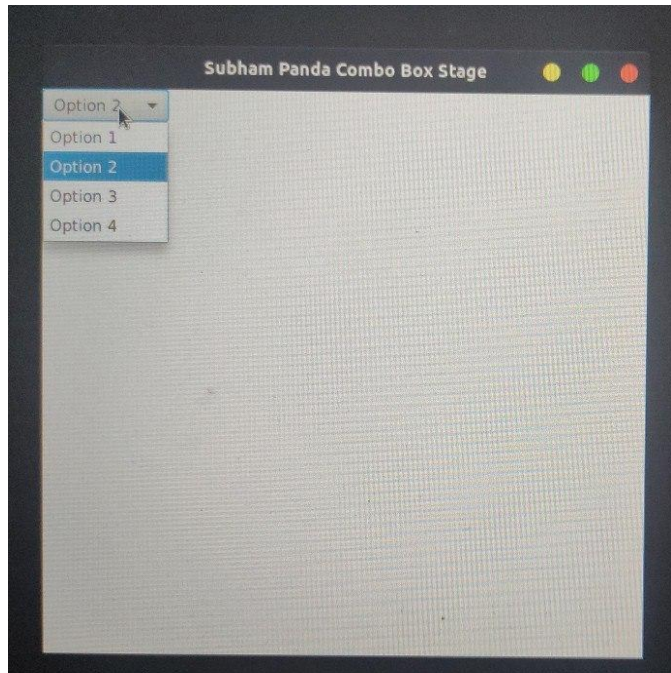
        // defining layout and adding control
        VBox root = new VBox(options);

        // adding layout to a scene
        Scene scn = new Scene(root);

        // adding scene to the stage
        primaryStage.setScene(scn);
        primaryStage.setHeight(500);
        primaryStage.setWidth(500);
        primaryStage.setTitle("Subham Panda Combo Box Stage");

        // displaying the stage
        primaryStage.show();
    }
}
```

Output:



17. ListView

Code:

```
import javafx.application.Application;
import javafx.scene.Scene;
import javafx.scene.control.*;
import javafx.scene.layout.*;
import javafx.stage.Stage;

public class p17fx extends Application {
    public static void main(String[] args) throws Exception {
        launch();
    }

    @Override
    public void start(Stage primaryStage) throws Exception {
        //creating list view
        ListView<String> options = new ListView<String>();

options.getSelectionModel().setSelectionMode(SelectionMode.MULTIPLE);
        options.getItems().add("Option 1");
        options.getItems().add("Option 2");
        options.getItems().add("Option 3");
        options.getItems().add("Option 4");

        // defining layout and adding control
        VBox root = new VBox(options);

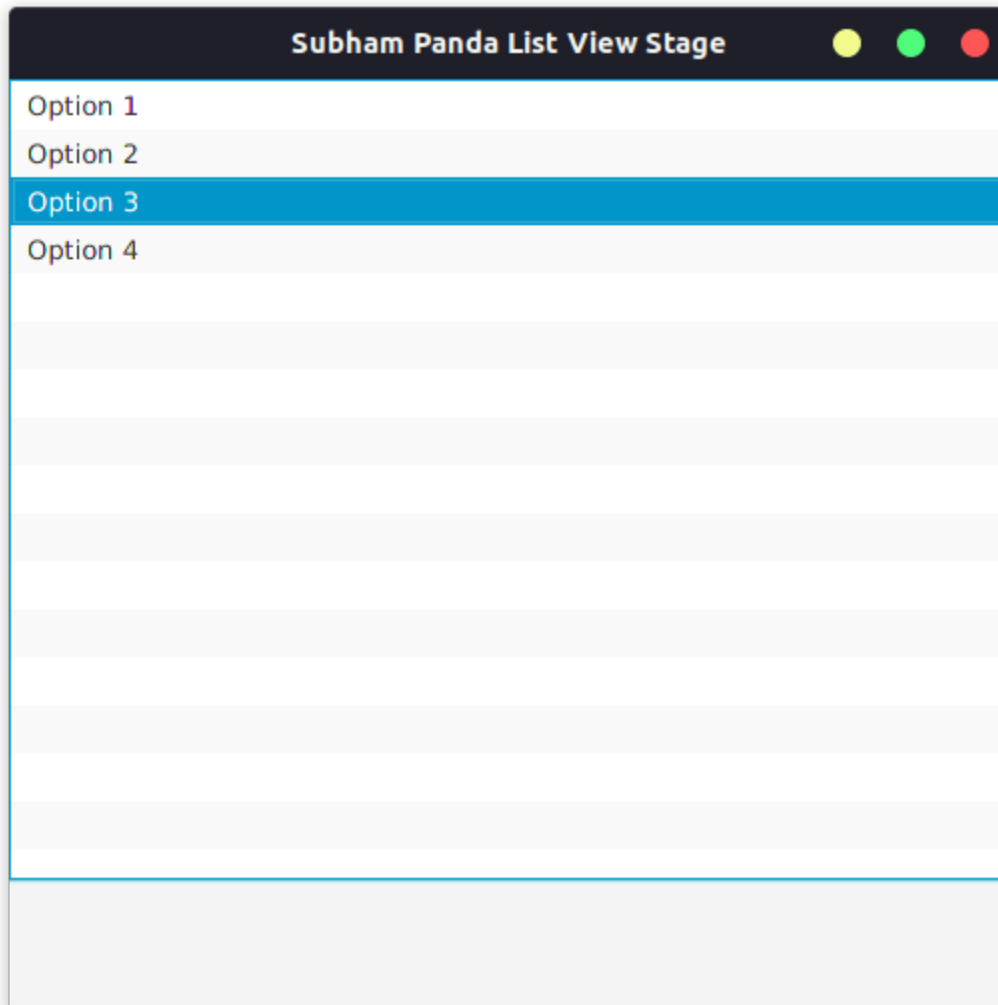
        // adding layout to a scene
        Scene scn = new Scene(root);

        // adding scene to the stage
        primaryStage.setScene(scn);
        primaryStage.setHeight(500);
        primaryStage.setWidth(500);
        primaryStage.setTitle("Subham Panda List View Stage");

        // displaying the stage
        primaryStage.show();
    }
}
```

```
}  
}
```

Output:



18. TextField and PasswordField

Code:

```
import javafx.application.Application;
import javafx.scene.Scene;
import javafx.scene.control.*;
import javafx.scene.layout.*;
import javafx.stage.Stage;

public class p18fx extends Application {
    public static void main(String[] args) throws Exception {
        launch();
    }

    @Override
    public void start(Stage primaryStage) throws Exception {
        //creating text field and password field
        TextField name = new TextField();
        name.setMaxWidth(300);
        PasswordField pass = new PasswordField();
        pass.setMaxWidth(300);

        // defining layout and adding control
        VBox root = new VBox();
        root.getChildren().addAll(name, pass);

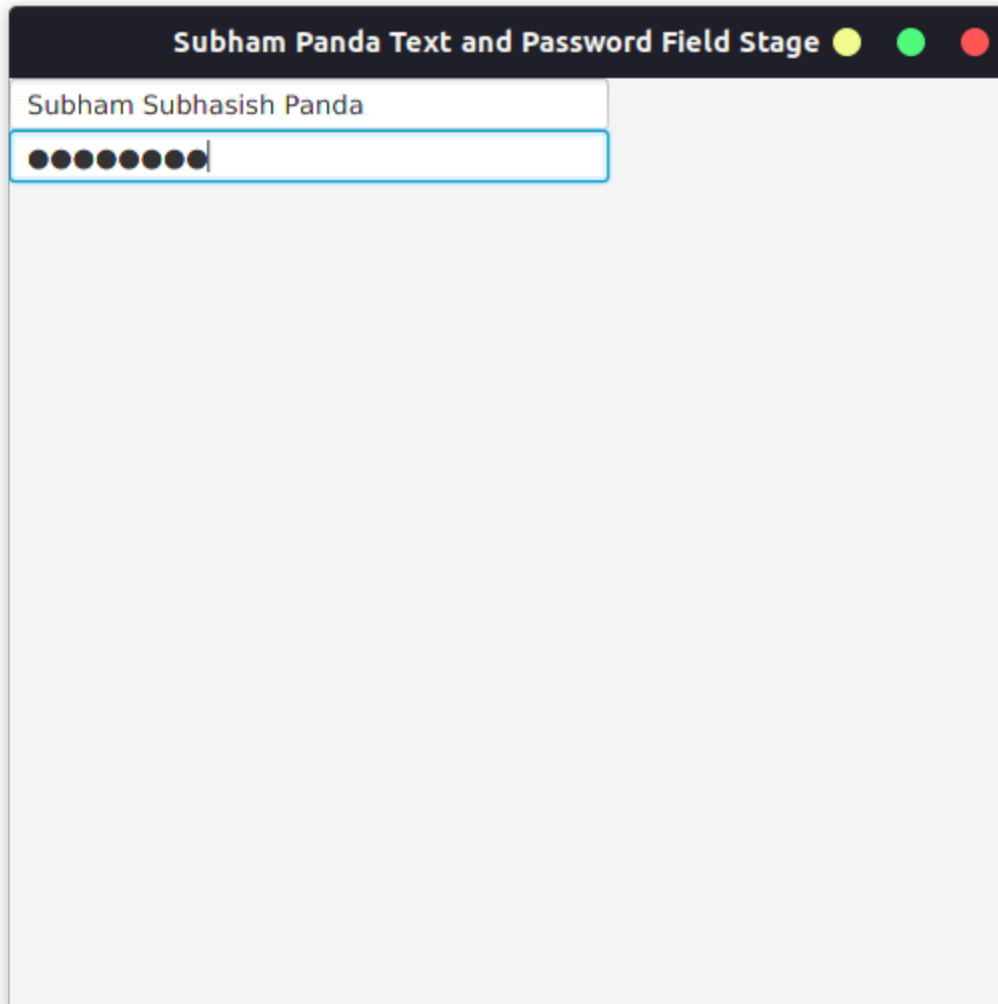
        // adding layout to a scene
        Scene scn = new Scene(root);

        // adding scene to the stage
        primaryStage.setScene(scn);
        primaryStage.setHeight(500);
        primaryStage.setWidth(500);
        primaryStage.setTitle("Subham Panda Text and Password Field
Stage");

        // displaying the stage
        primaryStage.show();
    }
}
```

```
}
```

Output:



The screenshot shows a Java Swing window titled "Subham Panda Text and Password Field Stage". The window has a dark title bar with standard macOS-style window controls (yellow, green, and red buttons). Inside the window, there is a text field containing the text "Subham Subhasish Panda" and a password field below it, represented by 10 black dots. The password field is currently selected, indicated by a blue border and a cursor at the end of the dots.

19. Menu, MenuBar, MenuItem, Submenu

Code:

```
import javafx.application.Application;
import javafx.scene.Scene;
import javafx.scene.control.Menu;
import javafx.scene.control.MenuBar;
import javafx.scene.control.MenuItem;
import javafx.scene.layout.BorderPane;
import javafx.stage.Stage;

public class p19fx extends Application {
    public static void main(String[] args) throws Exception {
        launch();
    }

    @Override
    public void start(Stage primaryStage) throws Exception {
        MenuBar main_menu = new MenuBar();

        Menu File = new Menu("File");
        Menu Edit = new Menu("Edit");
        Menu Selection = new Menu("Selection");
        Menu View = new Menu("View");
        main_menu.getMenus().add(File);
        main_menu.getMenus().add(Edit);
        main_menu.getMenus().add(Selection);
        main_menu.getMenus().add(View);

        MenuItem newFile = new MenuItem("New File");
        MenuItem newWindow = new MenuItem("New Window");
        MenuItem openFile = new MenuItem("Open File");
        MenuItem openFolder = new MenuItem("Open Folder");
        Menu preferences = new Menu("Preferences");
        MenuItem settings = new MenuItem("Settings");
        MenuItem extensions = new MenuItem("Extensions");
        MenuItem snippets = new MenuItem("Snippets");
        MenuItem colortheme = new MenuItem("Color Theme");
```



```
        preferences.getItems().addAll(settings, extensions, snippets,
colortheme);
        File.getItems().addAll(newFile, newWindow, openFile, openFolder,
preferences);

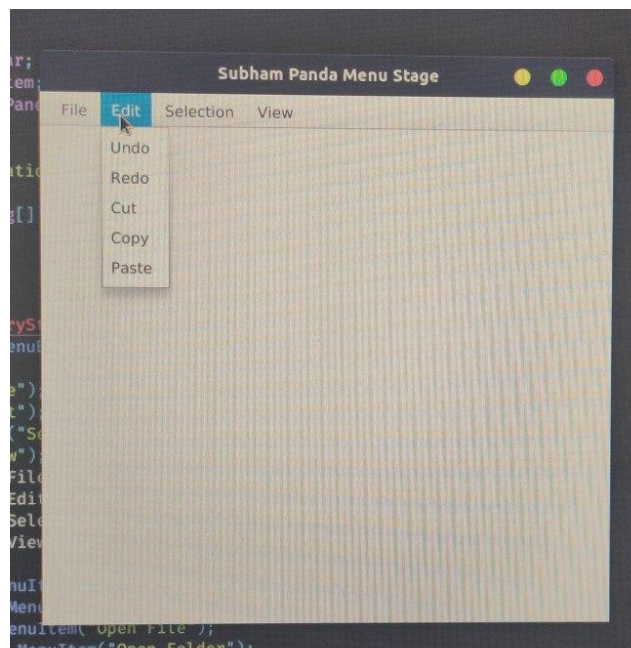
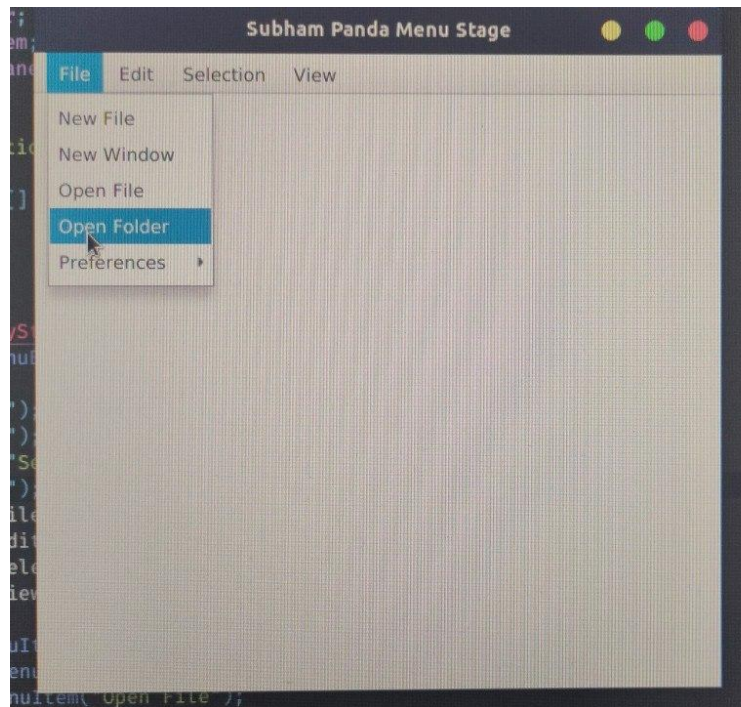
        MenuItem undo = new MenuItem("Undo");
        MenuItem redo = new MenuItem("Redo");
        MenuItem cut = new MenuItem("Cut");
        MenuItem copy = new MenuItem("Copy");
        MenuItem paste = new MenuItem("Paste");
        Edit.getItems().addAll(undo, redo, cut, copy, paste);

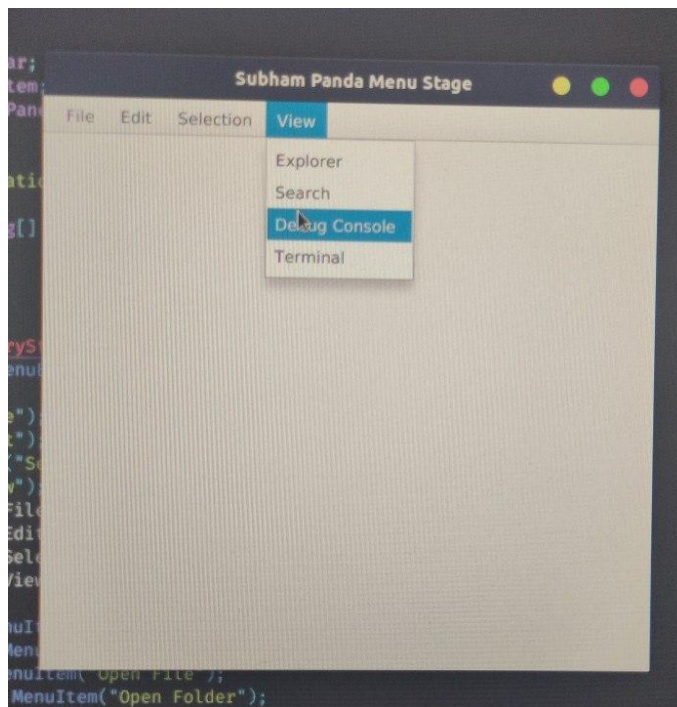
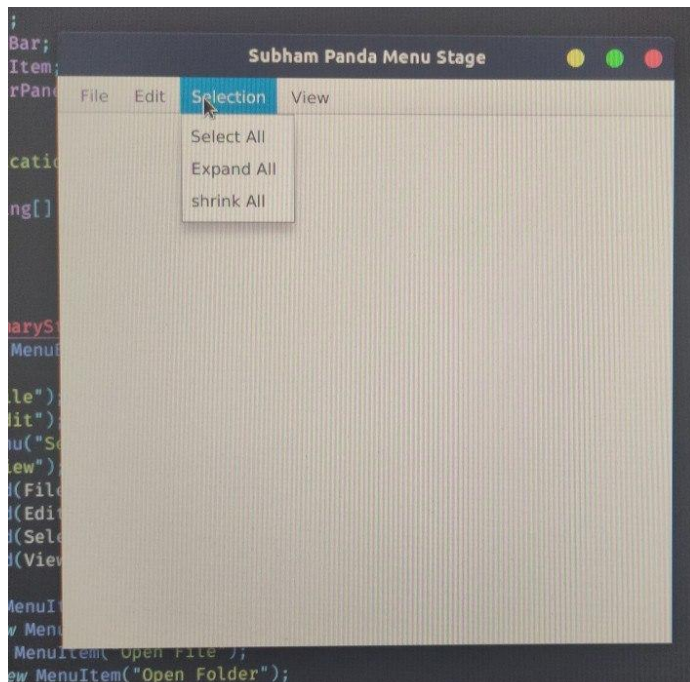
        MenuItem selectAll = new MenuItem("Select All");
        MenuItem expandAll = new MenuItem("Expand All");
        MenuItem shrinkAll = new MenuItem("shrink All");
        Selection.getItems().addAll(selectAll, expandAll, shrinkAll);

        MenuItem explorer = new MenuItem("Explorer");
        MenuItem search = new MenuItem("Search");
        MenuItem debugConsole = new MenuItem("Debug Console");
        MenuItem terminal = new MenuItem("Terminal");
        View.getItems().addAll(explorer, search, debugConsole, terminal);

        BorderPane root = new BorderPane();
        root.setTop(main_menu);
        Scene scn = new Scene(root);
        primaryStage.setScene(scn);
        primaryStage.setWidth(500);
        primaryStage.setHeight(500);
        primaryStage.setTitle("Subham Panda Menu Stage");
        primaryStage.show();
    }
}
```

Output:





20. Button setOnAction Event

Code:

```
import javafx.application.Application;
import javafx.event.ActionEvent;
import javafx.event.EventHandler;
import javafx.scene.Scene;
import javafx.scene.control.Button;
import javafx.scene.control.Label;
import javafx.scene.layout.VBox;
import javafx.stage.Stage;

public class p20fx extends Application {
    public static void main(String[] args) throws Exception {
        launch();
    }

    @Override
    public void start(Stage primaryStage) throws Exception {
        Button btn = new Button("Click here");
        Label lbl = new Label();

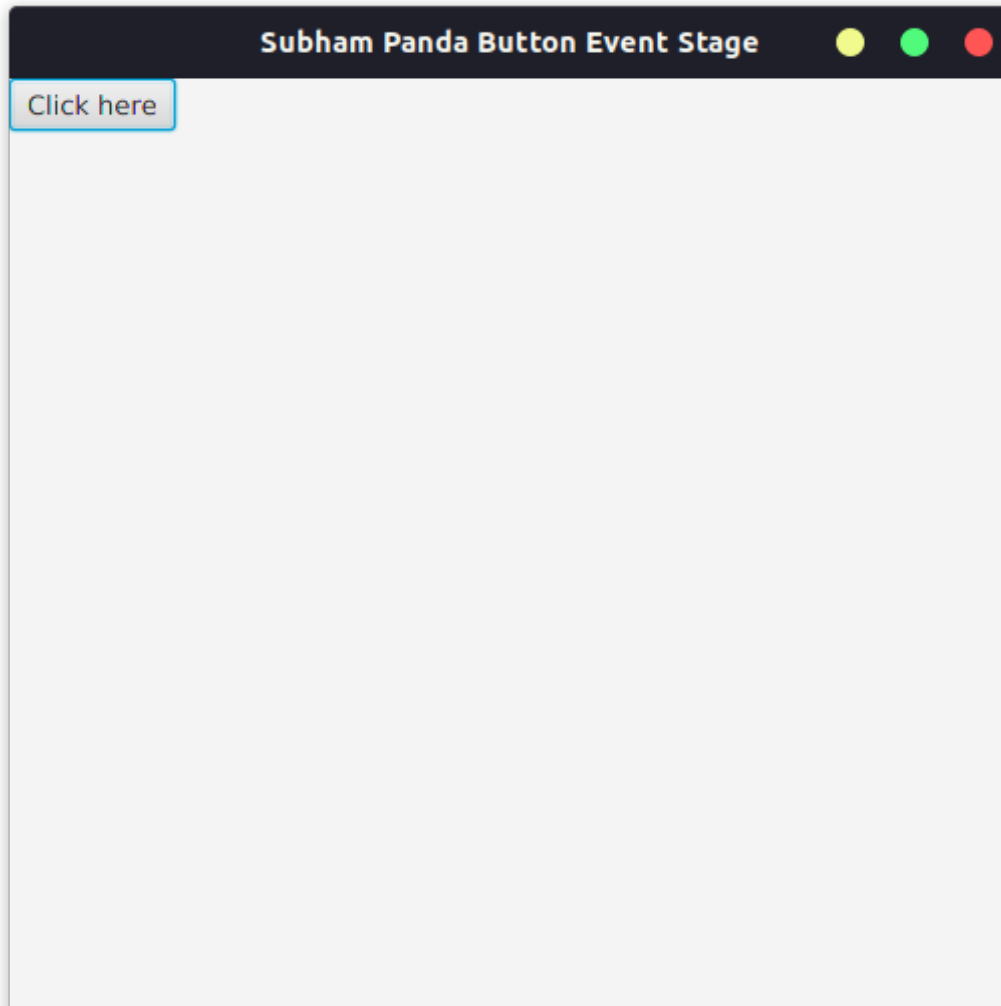
        btn.setOnAction(new EventHandler<ActionEvent>() {

            @Override
            public void handle(ActionEvent event) {
                lbl.setText("You have clicked the button");
            }
        });

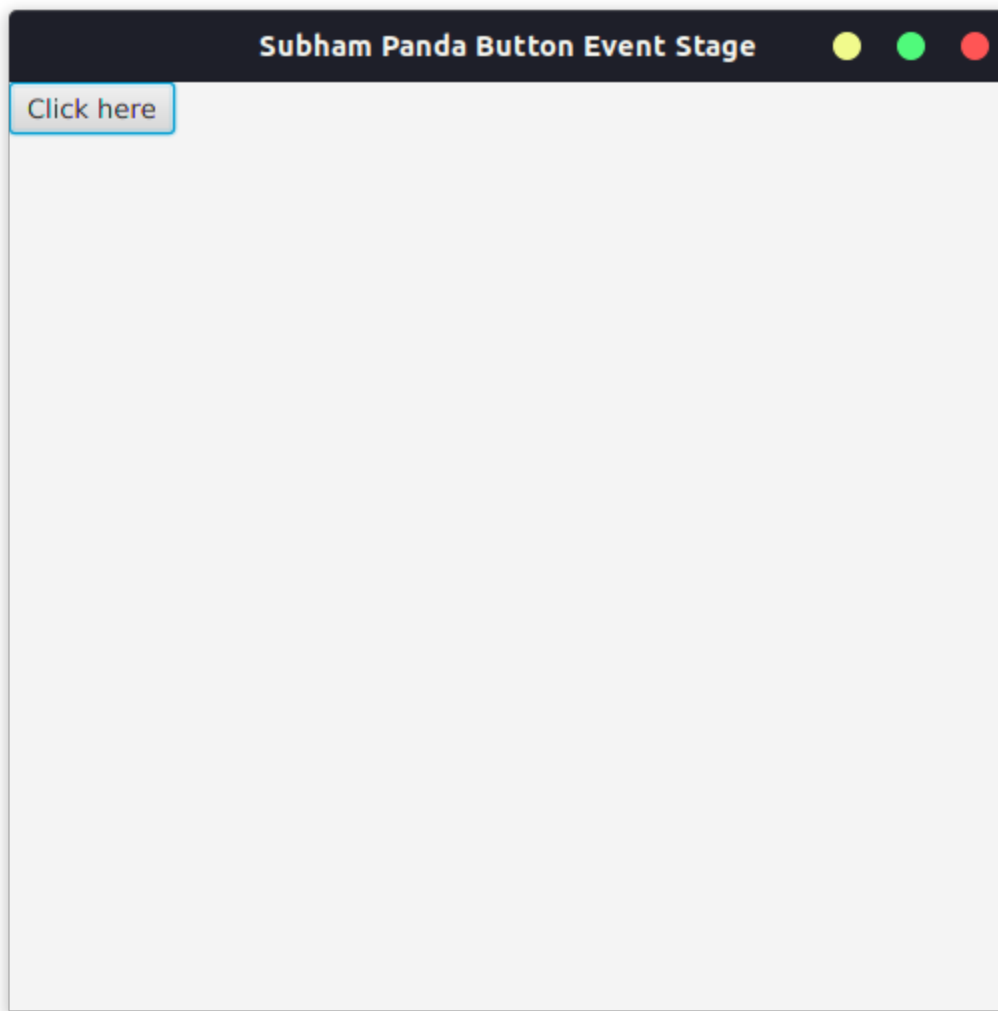
        VBox root = new VBox();
        root.getChildren().addAll(btn, lbl);
        Scene scn = new Scene(root);
        primaryStage.setScene(scn);
        primaryStage.setWidth(500);
        primaryStage.setHeight(500);
        primaryStage.setTitle("Subham Panda Button Event Stage");
        primaryStage.show();
    }
}
```

```
}
```

Output (Before click):



Output (After click):



21. Getting Input from TextField

Code:

```
import javafx.application.Application;
import javafx.event.ActionEvent;
import javafx.event.EventHandler;
import javafx.scene.Scene;
import javafx.scene.control.*;
import javafx.scene.layout.*;
import javafx.stage.Stage;

public class p21fx extends Application {
    public static void main(String[] args) throws Exception {
        launch();
    }

    @Override
    public void start(Stage primaryStage) throws Exception {
        TextField name = new TextField();
        name.setMaxWidth(300);
        Button btn = new Button("SUBMIT");
        Label lbl = new Label();

        btn.setOnAction(new EventHandler<ActionEvent>() {

            @Override
            public void handle(ActionEvent event) {
                if (name.getText().isEmpty()) {
                    lbl.setText("Please enter some name");
                } else {
                    lbl.setText("Welcome Mr."+name.getText());
                }
            }
        });

        // defining layout and adding control
        VBox root = new VBox();
        root.getChildren().addAll(name,btn, lbl);
```

```
// adding layout to a scene
Scene scn = new Scene(root);

// adding scene to the stage
primaryStage.setScene(scn);
primaryStage.setHeight(500);
primaryStage.setWidth(500);
primaryStage.setTitle("Subham Panda Text Field Stage");

// displaying the stage
primaryStage.show();
}
}
```

Output (Before Click):



Output (After Click):



The image shows a Java Swing window titled "Subham Panda Text and Field Stage". The window has a dark blue title bar with standard macOS-style window control buttons (yellow, green, and red) on the right. Inside the window, there is a white text field with a blue border and a vertical cursor. Below the text field is a grey button with the word "SUBMIT" in blue capital letters. The main area of the window is a light grey rectangle.

22. Getting Input From Radio Button

Code:

```
import javafx.application.Application;
import javafx.event.ActionEvent;
import javafx.event.EventHandler;
import javafx.scene.Scene;
import javafx.scene.control.*;
import javafx.scene.layout.*;
import javafx.stage.Stage;

public class p22fx extends Application {
    public static void main(String[] args) throws Exception {
        launch();
    }

    @Override
    public void start(Stage primaryStage) throws Exception {
        ToggleGroup group = new ToggleGroup();
        RadioButton opt1 = new RadioButton("Option 1 - Correct answer");
        RadioButton opt2 = new RadioButton("Option 2 - Wrong answer");
        RadioButton opt3 = new RadioButton("Option 3 - Wrong Answer");
        RadioButton opt4 = new RadioButton("Option 4 - Wrong Answer");
        Button btn = new Button("SUBMIT");
        Label lbl = new Label();
        opt1.setToggleGroup(group);
        opt2.setToggleGroup(group);
        opt3.setToggleGroup(group);
        opt4.setToggleGroup(group);

        btn.setOnAction(new EventHandler<ActionEvent>() {

            @Override
            public void handle(ActionEvent event) {
                if (opt1.isSelected()) {
                    lbl.setText("You have selected the correct answer: " +
opt1.getText());
                } else if (!opt1.isSelected() && !opt2.isSelected() &&
!opt3.isSelected() && !opt4.isSelected()) {
```

```
        lbl.setText("Select some answer");
    } else {
        lbl.setText("You have selected the wrong answer");
    }
}
});

// defining layout
VBox root = new VBox();

// adding control to layout
root.getChildren().addAll(opt1, opt2, opt3, opt4, btn, lbl);

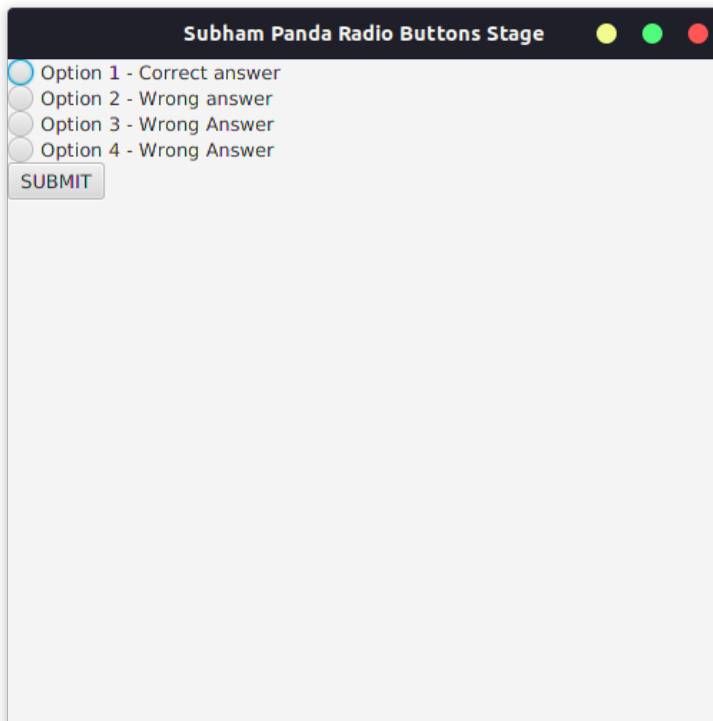
// adding layout to a scene
Scene scn = new Scene(root);

// adding scene to the stage
primaryStage.setScene(scn);

primaryStage.setHeight(500);
primaryStage.setWidth(500);
primaryStage.setTitle("Subham Panda Radio Buttons Stage");

// displaying the stage
primaryStage.show();
}
}
```

Output (Before Click):



The screenshot shows a Java Swing window titled "Subham Panda Radio Buttons Stage". Inside the window, there are four radio button options listed vertically: "Option 1 - Correct answer", "Option 2 - Wrong answer", "Option 3 - Wrong Answer", and "Option 4 - Wrong Answer". The first option, "Option 1 - Correct answer", is selected, indicated by a blue highlight around its radio button. Below the options is a button labeled "SUBMIT".

Output (After Click):



The screenshot shows the same Java Swing window after the "SUBMIT" button has been clicked. The "Option 1 - Correct answer" radio button remains selected. Below the "SUBMIT" button, a message has appeared: "You have selected the correct answer: Option 1 - Correct answer".

23. Getting Input From Check Box

Code:

```
import javafx.application.Application;
import javafx.event.ActionEvent;
import javafx.event.EventHandler;
import javafx.scene.Scene;
import javafx.scene.control.*;
import javafx.scene.layout.*;
import javafx.stage.Stage;

public class p23fx extends Application {
    public static void main(String[] args) throws Exception {
        launch();
    }

    @Override
    public void start(Stage primaryStage) throws Exception {
        CheckBox opt1 = new CheckBox("Option 1");
        CheckBox opt2 = new CheckBox("Option 2");
        CheckBox opt3 = new CheckBox("Option 3");
        CheckBox opt4 = new CheckBox("Option 4");
        Button btn = new Button("SUBMIT");
        Label lbl = new Label();
        btn.setOnAction(new EventHandler<ActionEvent>() {

            @Override
            public void handle(ActionEvent event) {
                String selectedText = "";
                if (opt1.isSelected()) {
                    selectedText += opt1.getText() + " ";
                }
                if (opt2.isSelected()) {
                    selectedText += opt2.getText() + " ";
                }
                if (opt3.isSelected()) {
                    selectedText += opt3.getText() + " ";
                }
                if (opt4.isSelected()) {
```

```
        selectedText += opt4.getText() + " ";
    }
    if (selectedText.isEmpty()) {
        lbl.setText("Please select some option");
    } else {
        lbl.setText("You have selected: "+selectedText);
    }
}
});

// defining layout
VBox root = new VBox();

// adding control to layout
root.getChildren().addAll(opt1, opt2, opt3, opt4, btn, lbl);

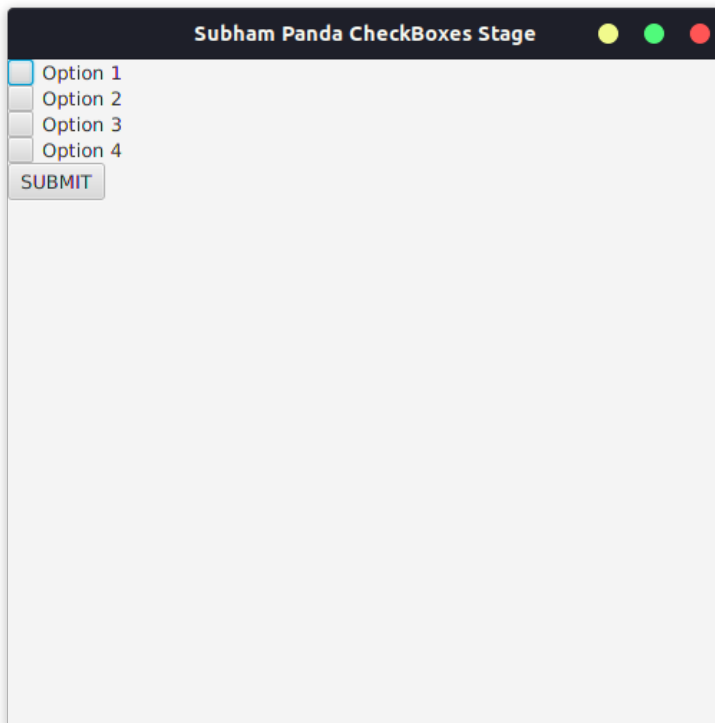
// adding layout to a scene
Scene scn = new Scene(root);

// adding scene to the stage
primaryStage.setScene(scn);

primaryStage.setHeight(500);
primaryStage.setWidth(500);
primaryStage.setTitle("Subham Panda CheckBoxes Stage");

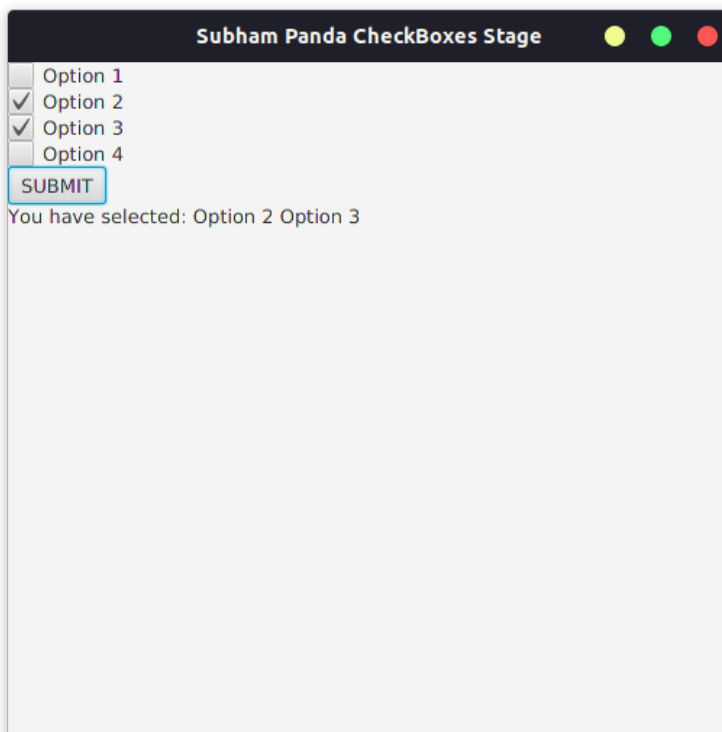
// displaying the stage
primaryStage.show();
}
}
```

Output (Before Click):



The screenshot shows a Java Swing window titled "Subham Panda CheckBoxes Stage". Inside the window, there are four checkboxes stacked vertically, each followed by a label: "Option 1", "Option 2", "Option 3", and "Option 4". All checkboxes are currently unchecked. Below the checkboxes is a button labeled "SUBMIT".

Output (After Click):



The screenshot shows the same Java Swing window after the "SUBMIT" button has been clicked. The checkboxes for "Option 2" and "Option 3" are now checked, while "Option 1" and "Option 4" remain unchecked. Below the "SUBMIT" button, a text label displays the message: "You have selected: Option 2 Option 3".

24. Getting Input From Combo Box

Code:

```
import javafx.application.Application;
import javafx.event.ActionEvent;
import javafx.event.EventHandler;
import javafx.scene.Scene;
import javafx.scene.control.*;
import javafx.scene.layout.*;
import javafx.stage.Stage;

public class p24fx extends Application {
    public static void main(String[] args) throws Exception {
        launch();
    }

    @Override
    public void start(Stage primaryStage) throws Exception {
        //creating combo box
        ComboBox<String> options = new ComboBox<String>();
        options.getItems().add("Option 1");
        options.getItems().add("Option 2");
        options.getItems().add("Option 3");
        options.getItems().add("Option 4");
        Button btn = new Button("SUBMIT");
        Label lbl = new Label();
        btn.setOnAction(new EventHandler<ActionEvent>() {

            @Override
            public void handle(ActionEvent event) {
                if (options.getValue() == null) {
                    lbl.setText("Please select an option");
                } else {
                    lbl.setText("You have selected "+options.getValue());
                }
            }
        });

        // defining layout and adding control
        VBox root = new VBox(options,btn,lbl);
```

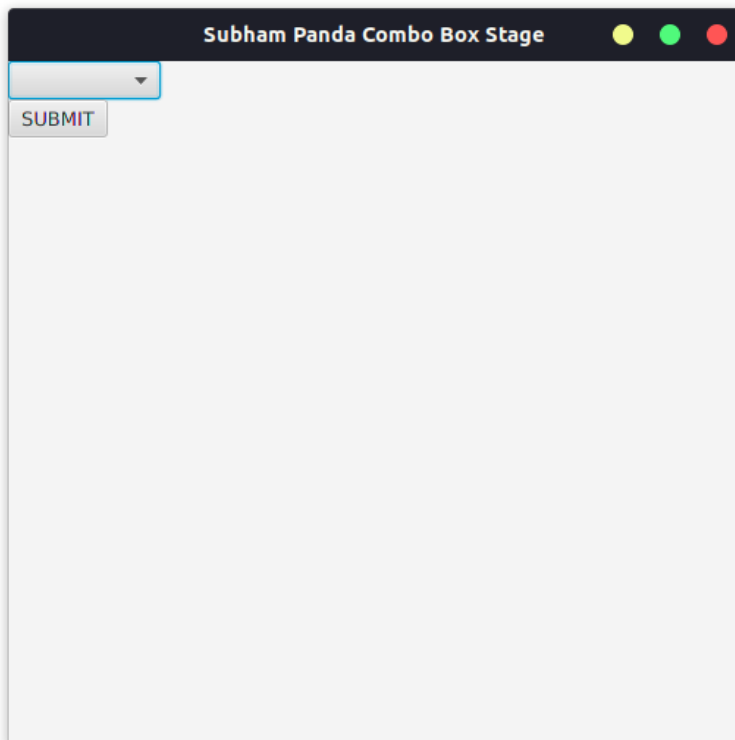


```
// adding layout to a scene
Scene scn = new Scene(root);

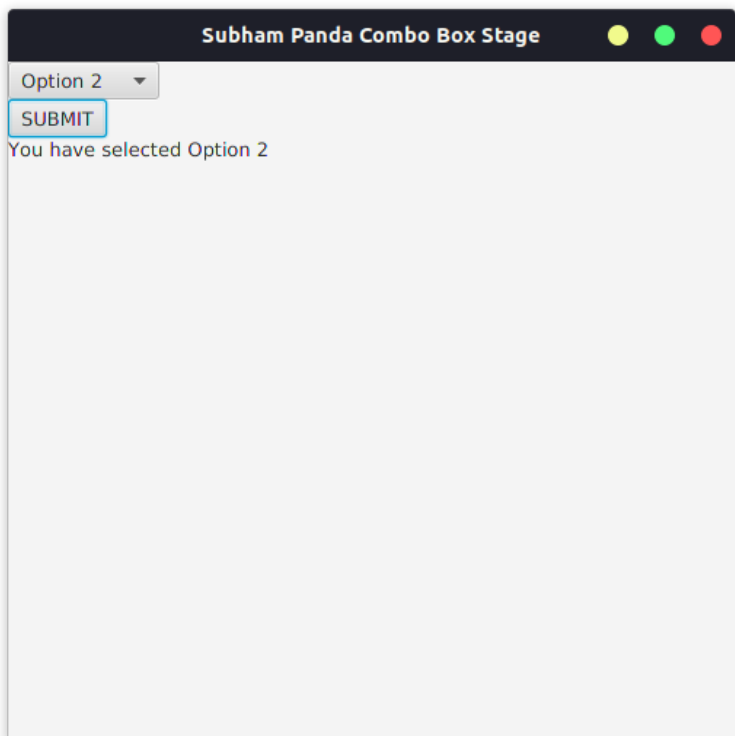
// adding scene to the stage
primaryStage.setScene(scn);
primaryStage.setHeight(500);
primaryStage.setWidth(500);
primaryStage.setTitle("Subham Panda Combo Box Stage");

// displaying the stage
primaryStage.show();
}
}
```

Output (Before Click):



Output (After Click):



25. Event on Click over Label

Code:

```
import javafx.application.Application;
import javafx.event.Event;
import javafx.event.EventHandler;
import javafx.scene.Scene;
import javafx.scene.control.*;
import javafx.scene.layout.*;
import javafx.scene.paint.Color;
import javafx.scene.text.Font;
import javafx.stage.Stage;

public class p25fx extends Application {
    public static void main(String[] args) throws Exception {
        launch();
    }

    @Override
    public void start(Stage primaryStage) throws Exception {
        Label lblMain = new Label ("Click on this label");
        Label lbl = new Label();
        lbl.setFont(new Font("Times New Roman", 32));
        lbl.setTextFill(Color.RED);
        lblMain.setOnMouseClicked(new EventHandler<Event>(){

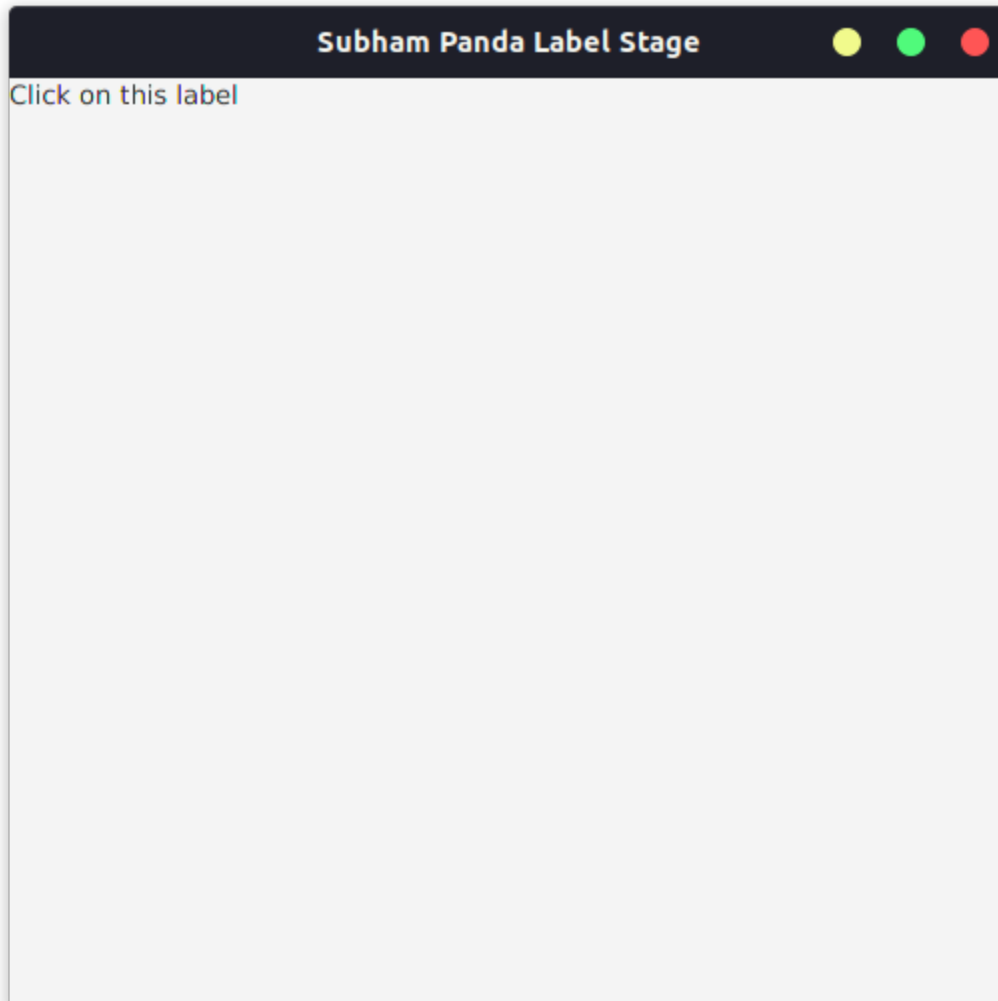
            @Override
            public void handle(Event event) {
                lbl.setText("You have clicked on the label");
            }
        });
        // defining layout and adding control
        VBox root = new VBox(lblMain, lbl);

        // adding layout to a scene
        Scene scn = new Scene(root);

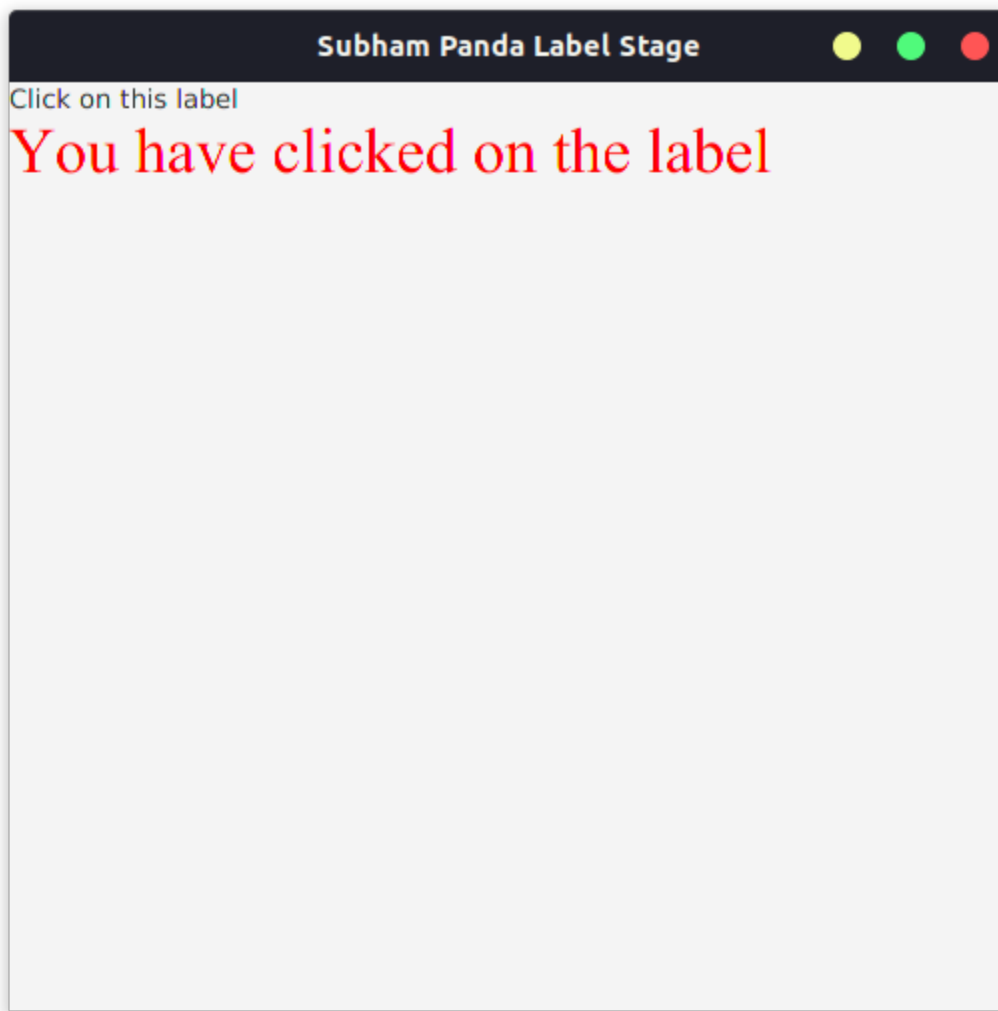
        // adding scene to the stage
        primaryStage.setScene(scn);
    }
}
```

```
primaryStage.setHeight(500);  
primaryStage.setWidth(500);  
primaryStage.setTitle("Subham Panda Label Stage");  
  
// displaying the stage  
primaryStage.show();  
}  
}
```

Output (Before Click):



Output (After Click):



JDBC EXERCISES

1. Basic SQL Commands

Starting MySQL and logging in:

```
subham@subham-swirl:~/Documents/WINSEM20-21/JAVA LAB/DA5$ mycli -u guest -p -h127.0.0.1
~/Documents/WINSEM20-21/JAVA LAB/DA5$ mycli -u guest -p -h127.0.0.1
(2003, "Can't connect to MySQL server on 'localhost' ([Errno 2] No such file or directory)")
Failed to connect by socket, retrying over TCP/IP
Password:
mysql 8.0.25
mycli 1.20.1
Chat: https://gitter.im/dbcli/mycli
Mail: https://groups.google.com/forum/#!forum/mycli-users
Home: http://mycli.net
Thanks to the contributor - Open Query Pty Ltd
```

Creating Database:

```
mysql guest@localhost:(none)> create database vitSubham;

Query OK, 1 row affected
Time: 0.012s
mysql guest@localhost:(none)> show databases;

+-----+
| Database |
+-----+
| information_schema |
| main |
| mysql |
| performance_schema |
| sys |
| vitSubham |
+-----+

6 rows in set
Time: 0.029s
```

Selecting Database:

```
mysql guest@localhost:(none)> use vitSubham;

You are now connected to database "vitSubham" as user "guest"
Time: 0.001s
```

Creating Table:

```
mysql guest@localhost:vitSubham> create table students ( name VARCHAR(20),password VARCHAR(20), country VARCHAR(20), marks INT );
Query OK, 0 rows affected
Time: 0.067s
mysql guest@localhost:vitSubham> show tables;

+-----+
| Tables_in_vitSubham |
+-----+
| students             |
+-----+
1 row in set
Time: 0.031s
```

Insert Command:

```
mysql guest@localhost:vitSubham> insert into students values ("Subham Panda","password","India",85);

Query OK, 1 row affected
Time: 0.026s
mysql guest@localhost:vitSubham> insert into students values ("Anmol Kumar","australiapassword","Australia",89);

Query OK, 1 row affected
Time: 0.004s
```

Select query:

```
mysql guest@localhost:vitSubham> select * from students;
```

| name | password | country | marks |
|--------------|-------------------|-----------|-------|
| Subham Panda | password | India | 85 |
| Anmol Kumar | australiapassword | Australia | 89 |

2 rows in set

Time: 0.028s

```
mysql guest@localhost:vitSubham> select * from students where country="India";
```

| name | password | country | marks |
|--------------|----------|---------|-------|
| Subham Panda | password | India | 85 |

1 row in set

Time: 0.029s

```
mysql guest@localhost:vitSubham> select * from students where marks > 85;
```

| name | password | country | marks |
|-------------|-------------------|-----------|-------|
| Anmol Kumar | australiapassword | Australia | 89 |

1 row in set

Time: 0.012s

Update query:

```
mysql guest@localhost:vitSubham> update students set password="testpass" where name="Anmol Kumar";
```

Query OK, 1 row affected

Time: 0.007s

```
mysql guest@localhost:vitSubham> select password from students where name="Anmol Kumar";
```

| password |
|----------|
| testpass |

1 row in set

Time: 0.012s

Delete query:

```
mysql guest@localhost:vitSubham> delete from students where name="Subham Panda"

You're about to run a destructive command.
Do you want to proceed? (y/n): y
Your call!
Query OK, 1 row affected
Time: 0.006s
mysql guest@localhost:vitSubham> select * from students;

+-----+-----+-----+-----+
| name      | password | country | marks |
+-----+-----+-----+-----+
| Anmol Kumar | testpass | Australia | 89    |
+-----+-----+-----+-----+
1 row in set
Time: 0.027s
```

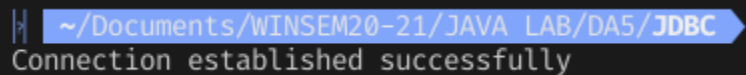
2. Connecting to Database

Code:

```
import java.sql.*;

public class pljdbc {
    public static void main(String[] args) {
        String DB_URL = "jdbc:mysql://localhost:3306/vitSubham";
        String USER = "guest";
        String PASS = "guest123";
        try {
            Connection con = DriverManager.getConnection(DB_URL, USER,
PASS);
            System.out.println("Connection established successfully");
            con.close();
        } catch (SQLException e) {
            System.out.println(e.getMessage());
        }
    }
}
```

Output:

A terminal window with a dark background. The title bar is light blue and contains the text '~/.Documents/WINSEM20-21/JAVA LAB/DA5/JDBC'. The terminal output shows the text 'Connection established successfully' in white.

~/.Documents/WINSEM20-21/JAVA LAB/DA5/JDBC
Connection established successfully

3. Inserting record

Code:

```
// Inserting record
import java.sql.*;

public class p2jdbc {
    public static void main(String[] args) {
        String DB_URL = "jdbc:mysql://localhost:3306/vitSubham";
        String USER = "guest";
        String PASS = "guest123";
        try {
            Connection con = DriverManager.getConnection(DB_URL, USER,
PASS);
            System.out.println("Connection established successfully");
            Statement smt = con.createStatement();
            smt.executeUpdate("insert into students values
('Tommy','test','UK',95);");
            System.out.println("Record inserted successfully");
            smt.close();
            con.close();
        } catch (SQLException e) {
            System.out.println(e.getMessage());
        }
    }
}
```

Output:

```
| ~/Documents/WINSEM20-21/JAVA LAB/DA5/JDBC | cd "/home/subham/  
ng=UTF-8 @/tmp/cp_4dr11bhptrymayeic800forzp.argfile p2jdbc  
Connection established successfully  
Record inserted successfully
```

```
mysql guest@localhost: vitSubham> select * from students  
+-----+-----+-----+-----+  
| name      | password | country | marks |  
+-----+-----+-----+-----+  
| Anmol Kumar | testpass | Australia | 89 |  
| Tommy      | test     | UK       | 95 |  
+-----+-----+-----+-----+  
2 rows in set  
Time: 0.011s
```

4. Update operation

Code:

```
// updating record
import java.sql.*;

public class p3jdbc {
    public static void main(String[] args) {
        String DB_URL = "jdbc:mysql://localhost:3306/vitSubham";
        String USER = "guest";
        String PASS = "guest123";
        try {
            Connection con = DriverManager.getConnection(DB_URL, USER,
PASS);
            System.out.println("Connection established successfully");
            Statement smt = con.createStatement();
            smt.executeUpdate("update students set password='testpass1'
where name='Tommy'");
            System.out.println("Record updated successfully");
            smt.close();
            con.close();
        } catch (SQLException e) {
            System.out.println(e.getMessage());
        }
    }
}
```

Output:

```
| | ~/Documents/WINSEM20-21/JAVA LAB/DA5/JDBC | cd "/home/subham/D
ng=UTF-8 @/tmp/cp_4dr11bhptrymayeic800forzp.argfile p3jdbc
Connection established successfully
Record updated successfully
```

```
mysql guest@localhost:~> select * from students
+-----+-----+-----+-----+
| name      | password | country | marks |
+-----+-----+-----+-----+
| Anmol Kumar | testpass | Australia | 89 |
| Tommy      | testpass1 | UK | 95 |
+-----+-----+-----+-----+
2 rows in set
Time: 0.018s
```

5. Delete operation

Code:

```
// deleting record
import java.sql.*;

public class p4jdbc {
    public static void main(String[] args) {
        String DB_URL = "jdbc:mysql://localhost:3306/vitSubham";
        String USER = "guest";
        String PASS = "guest123";
        try {
            Connection con = DriverManager.getConnection(DB_URL, USER,
PASS);

            System.out.println("Connection established successfully");
            Statement smt = con.createStatement();
            smt.executeUpdate("delete from students where name='Tommy'");
            System.out.println("Record deleted successfully");
            smt.close();
            con.close();
        } catch (SQLException e) {
            System.out.println(e.getMessage());
        }
    }
}
```

Output:

```
| ~/Documents/WINSEM20-21/JAVA LAB/DA5/JDBC | cd "/home/subham/Do  
ng=UTF-8 @/tmp/cp_4dr11bhpttrymayeic800forzp.argfile p4jdbc  
Connection established successfully  
Record deleted successfully
```

```
mysql guest@localhost:vitSubham> select * from students  
+-----+-----+-----+-----+  
| name      | password | country | marks |  
+-----+-----+-----+-----+  
| Anmol Kumar | testpass | Australia | 89 |  
+-----+-----+-----+-----+  
1 row in set  
Time: 0.027s
```


6. Fetching records

Code:

```
// fetching records - select * from students;
import java.sql.*;

public class p5jdbc {
    public static void main(String[] args) {
        String DB_URL = "jdbc:mysql://localhost:3306/vitSubham";
        String USER = "guest";
        String PASS = "guest123";
        try {
            Connection con = DriverManager.getConnection(DB_URL, USER,
PASS);

            System.out.println("Connection established successfully");
            Statement smt =
con.createStatement(ResultSet.TYPE_SCROLL_INSENSITIVE,ResultSet.CONCUR_UPD
ATABLE);

            ResultSet rs = smt.executeQuery("select * from students;");
            if (rs.next() == false) {
                System.out.println("The table is empty");
            } else {
                rs.previous();
                while (rs.next()) {
                    System.out.println("Name: "+rs.getString(1)+"",
Password: "+rs.getString(2)+"", Country: "+rs.getString(3)+"", Marks:
"+rs.getInt(4));
                }
            }
            smt.close();
            con.close();
        } catch (SQLException e) {
            System.out.println(e.getMessage());
        }
    }
}
```

Output:

```
| | ~/Documents/WINSEM20-21/JAVA LAB/DA5/JDBC | cd "/home/subham/Documents
ng=UTF-8 @/tmp/cp_4dr11bhptrymayeic800forzp.argfile p5jdbc
Connection established successfully
Name: Anmol Kumar, Password: testpass, Country: Australia, Marks: 89
Name: Subham Panda, Password: password, Country: India, Marks: 85
Name: Tommy, Password: test, Country: UK, Marks: 95
```

```
mysql guest@localhost:vitSubham> select * from students
+-----+-----+-----+-----+
| name      | password | country | marks |
+-----+-----+-----+-----+
| Anmol Kumar | testpass | Australia | 89 |
| Subham Panda | password | India | 85 |
| Tommy      | test     | UK      | 95 |
+-----+-----+-----+-----+
3 rows in set
Time: 0.025s
```

6. Fetching records - using where clause

Code:

```
// fetching records - select * from students where name='Subham Panda';
import java.sql.*;

public class p6jdbc {
    public static void main(String[] args) {
        String DB_URL = "jdbc:mysql://localhost:3306/vitSubham";
        String USER = "guest";
        String PASS = "guest123";
        try {
            Connection con = DriverManager.getConnection(DB_URL, USER,
PASS);
            System.out.println("Connection established successfully");
            Statement smt =
con.createStatement(ResultSet.TYPE_SCROLL_INSENSITIVE,ResultSet.CONCUR_UPD
ATABLE);
            ResultSet rs = smt.executeQuery("select * from students where
name = 'Subham Panda'");
            if (rs.next() == false) {
                System.out.println("No such record found in database");
            } else {
                rs.previous();
                while (rs.next()) {
                    System.out.println("Name: "+rs.getString(1)+"",
Password: "+rs.getString(2)+"", Country: "+rs.getString(3)+"", Marks:
"+rs.getInt(4));
                }
            }
            smt.close();
            con.close();
        } catch (SQLException e) {
            System.out.println(e.getMessage());
        }
    }
}
```

Output:

```
| ~/Documents/WINSEM20-21/JAVA LAB/DA5/JDBC | cd "/home/subham/Documents/
ng=UTF-8 @/tmp/cp_4dr11bhptrymayeic800forzp.argfile p6jdbc
Connection established successfully
Name: Subham Panda, Password: password, Country: India, Marks: 85

mysql guest@localhost: vitSubham> select * from students where name = 'Subham Panda'
+-----+-----+-----+-----+
| name      | password | country | marks |
+-----+-----+-----+-----+
| Subham Panda | password | India   | 85    |
+-----+-----+-----+-----+
1 row in set
Time: 0.028s
```

7. Get details of student from user and insert record

Code:

```
// Getting details of student from user and Inserting record
import java.sql.*;
import java.util.Scanner;

public class p7jdbc {
    public static void main(String[] args) {
        String DB_URL = "jdbc:mysql://localhost:3306/vitSubham";
        String USER = "guest";
        String PASS = "guest123";
        try {
            Connection con = DriverManager.getConnection(DB_URL, USER,
PASS);

            System.out.println("Connection established successfully");
            Scanner sc = new Scanner(System.in);
            System.out.print("Enter name of student: ");
            String name = sc.nextLine();
            System.out.print("Enter password: ");
            String password = sc.nextLine();
            System.out.print("Enter country name: ");
            String country = sc.nextLine();
            System.out.print("Enter marks: ");
            int marks = sc.nextInt();
            String sql = "insert into students values (?, ?, ?, ?)";
            PreparedStatement smt = con.prepareStatement(sql);
            smt.setString(1, name);
            smt.setString(2, password);
            smt.setString(3, country);
            smt.setInt(4, marks);
            smt.execute();
            System.out.println("Record inserted successfully");
            smt.close();
            con.close();
        } catch (SQLException e) {
            System.out.println(e.getMessage());
        }
    }
}
```

```
}
```

Output:

```
~/Documents/WINSEM20-21/JAVA LAB/DA5/JDBC cd "/home/subham/Document
ng=UTF-8 @/tmp/cp_4dr11bhptrymayeic800forzp.argfile p7jdbc
Connection established successfully
Enter name of student: Saurav
Enter password: sauravpass
Enter country name: Canada
Enter marks: 95
Record inserted successfully
```

```
mysql guest@localhost:vitSubham> select * from students
+-----+-----+-----+-----+
| name      | password | country | marks |
+-----+-----+-----+-----+
| Anmol Kumar | testpass | Australia | 89 |
| Subham Panda | password | India | 85 |
| Tommy      | test     | UK       | 95 |
| Saurav     | sauravpass | Canada | 95 |
+-----+-----+-----+-----+
4 rows in set
Time: 0.031s
```