OBJEKTNO PROGRAMIRANJE 2

Oznaka predmeta: OP2

Predavanje broj: 12

Nastavna jedinica: JAVA

Nastavne teme:

JavaFX Menu. JavaFX: ToggleButton. JavaFX: ComboBox, ChoiceBox. JavaFX: ColorPicker. JavaFX: PasswordField. JavaFX crtanje. JavaFX: Poziv "dijaloga". JavaFX: CrollPane, Image. JavaFX: TabPane. JavaFX: Spinner. JavaFX: TreeView. JavaFX: ListView. JavaFX: Media. JavaFX: TableView (add,edit,delete). JavaFX project.

Predavač: prof. dr Perica S. Štrbac, dipl. ing.

Literatura:

Eckel B., *Thinking in Java*, 2nd edition, Prentice-Hall, New Jersey 2000.

Cay S. Horstmann and Gary Cornell*: "Core Java, Advanced Features", Vol. 2, Prantice Hall, 2013.*

The Java Tutorial, Sun Microsystems 2001. *http://java.sun.com*

Branko Milosavljević, Vidaković M, *Java i Internet programiranje*, GInT, Novi Sad 2002.

JavaFX: Menu

```
//napisano da se vidi gde je sta smesteno
import javafx.application.Application;
import javafx.application.Platform;
import javafx.event.ActionEvent; import javafx.event.EventHandler;
import javafx.scene.Scene;
import javafx.scene.control.CheckMenuItem;
import javafx.scene.control.ContextMenu;
import javafx.scene.control.CustomMenuItem;
import javafx.scene.control.Menu;
import javafx.scene.control.MenuBar;
import javafx.scene.control.MenuItem;
import javafx.scene.control.RadioMenuItem;
import javafx.scene.control.SeparatorMenuItem;
import javafx.scene.control.Slider;
import javafx.scene.control.TextField;
import javafx.scene.control.ToggleGroup;
import javafx.scene.input.ContextMenuEvent;
import javafx.scene.input.KeyCode;
import javafx.scene.input.KeyCodeCombination;
import javafx.scene.input.KeyCombination;
import javafx.scene.input.MouseEvent;
import javafx.scene.layout.BorderPane;
import javafx.scene.paint.Color; import javafx.stage.Stage;
```

JavaFX: Menu

```
public class Menu1 extends Application {
  @Override
  public void start(Stage primaryStage) {
    BorderPane root = new BorderPane();
    Scene scene = new Scene(root, 300, 250, Color.WHITE);
    MenuBar menuBar = new MenuBar();
    menuBar.prefWidthProperty().bind(primaryStage.widthProperty());
    root.setTop(menuBar);
    // File menu - new, save, exit
    Menu fileMenu = new Menu("_File");
    fileMenu.setMnemonicParsing(true);
    MenuItem newMenuItem = new MenuItem("New");
    MenuItem saveMenuItem = new MenuItem("Save");
    saveMenuItem.setAccelerator(
       new KeyCodeCombination(KeyCode.S, KeyCombination.SHORTCUT_DOWN));
       //CONTROL_DOWN or META_DOWN
    saveMenuItem.setOnAction(e->{
                              MessageBox.show("Snimanje", "Snimanje");});
    MenuItem exitMenuItem = new MenuItem("Exit");
    exitMenuItem.setOnAction(actionEvent -> Platform.exit());
    Slider slider = new Slider();
    CustomMenuItem customMenuItem = new CustomMenuItem(slider);
    customMenuItem.setHideOnClick(false);
```

JavaFX: Menu

```
customMenuItem.setOnAction(e-> {
MessageBox.show(""+slider.getValue(), "Vrednost klizaca"); }  );
fileMenu.getItems().addAll(newMenuItem, saveMenuItem,
    new SeparatorMenuItem(), exitMenuItem, new SeparatorMenuItem(),
    customMenuItem);
Menu webMenu = new Menu("Web");
CheckMenuItem htmlMenuItem = new CheckMenuItem("HTML");
htmlMenuItem.setSelected(true);
webMenu.getItems().add(htmlMenuItem);
CheckMenuItem cssMenuItem = new CheckMenuItem("CSS");
cssMenuItem.setSelected(true);
webMenu.getItems().add(cssMenuItem);
Menu sqlMenu = new Menu("SQL");
ToggleGroup tGroup = new ToggleGroup();
RadioMenuItem mysqlItem = new RadioMenuItem("MySQL");
mysqlItem.setToggleGroup(tGroup);
RadioMenuItem oracleItem = new RadioMenuItem("Oracle");
oracleItem.setToggleGroup(tGroup);
oracleItem.setSelected(true);
oracleItem.setOnAction(e-> {MessageBox.show("ORACLE","ORACLE");});
sqlMenu.getItems().addAll(
                    mysqlItem, oracleItem,
                    new SeparatorMenuItem());
```

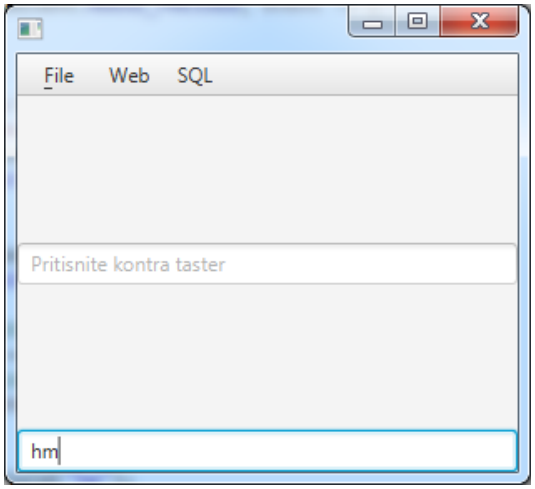
JavaFX: Menu

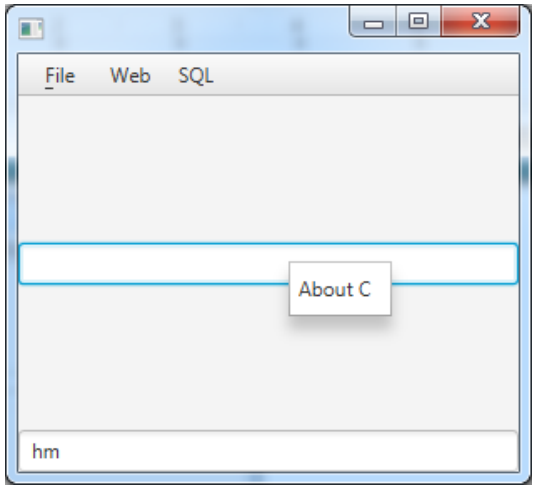
```
Menu tutorialSubMenu = new Menu("Tutorial");
tutorialSubMenu.getItems().addAll(
    new CheckMenuItem("Java"),
    new CheckMenuItem("JavaFX"),
    new CheckMenuItem("Swing"));
sqlMenu.getItems().add(tutorialSubMenu);
menuBar.getMenus().addAll(fileMenu, webMenu, sqlMenu);
MenuItem itemAbout = new MenuItem("About");
itemAbout.setOnAction(new EventHandler<ActionEvent>() {
  public void handle(ActionEvent e) {
    MessageBox.show("About", "About");
  }
});
ContextMenu contextMenu = new ContextMenu(itemAbout);
root.addEventHandler(
    ContextMenuEvent.CONTEXT_MENU_REQUESTED, event -> {
    contextMenu.show(root, event.getScreenX(), event.getScreenY());
    event.consume();
});
root.addEventHandler(MouseEvent.MOUSE_PRESSED, event -> {
    contextMenu.hide();
});
```

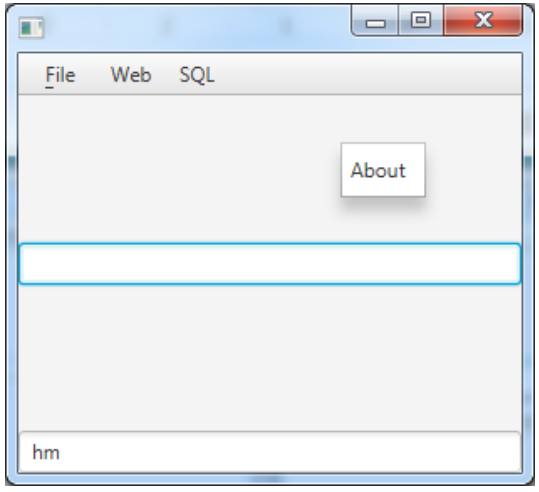
JavaFX: Menu

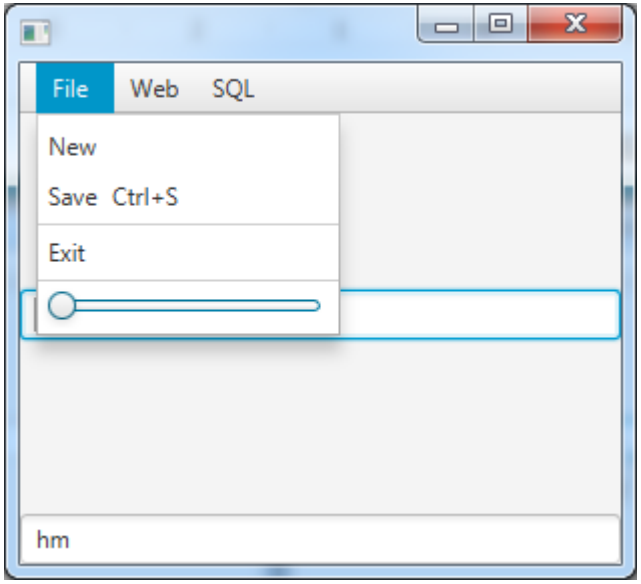
```
    MenuItem itemAboutC = new MenuItem("About C");
    itemAboutC.setOnAction(new EventHandler<ActionEvent>() {
      public void handle(ActionEvent e) {
        MessageBox.show("About C", "About C");
      }
    });
    TextField tf = new TextField();
    tf.setPromptText("Pritisnite kontra taster");
    ContextMenu contextMenuC = new ContextMenu(itemAboutC);
    //contextMenuC.show(tf, Side.BOTTOM, dx, dy);//moze u f-iji
    tf.setContextMenu(contextMenuC);
    root.setCenter(tf);

    TextField tf2 = new TextField("hm");
    root.setBottom(tf2);
    primaryStage.setScene(scene);
    primaryStage.show();
  }
  public static void main(String[] args) {    launch(args);  }
}
```

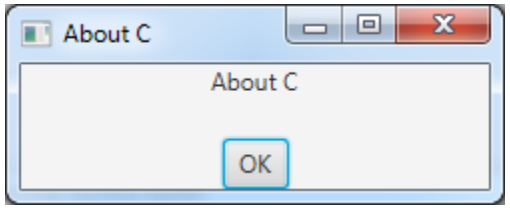
JavaFX: Menu

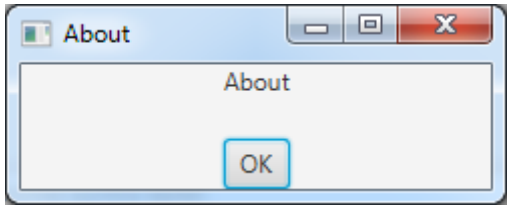

File Web SQL
Pritisnite kontra taster
hm

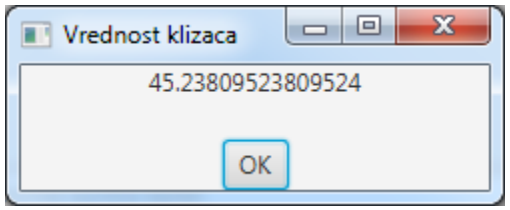

File Web SQL
About C
hm

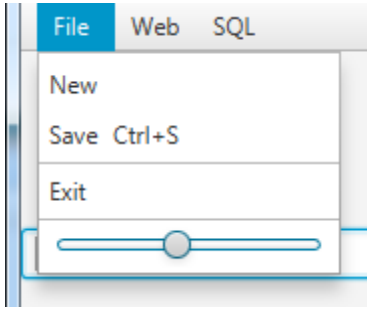

File Web SQL
About
hm

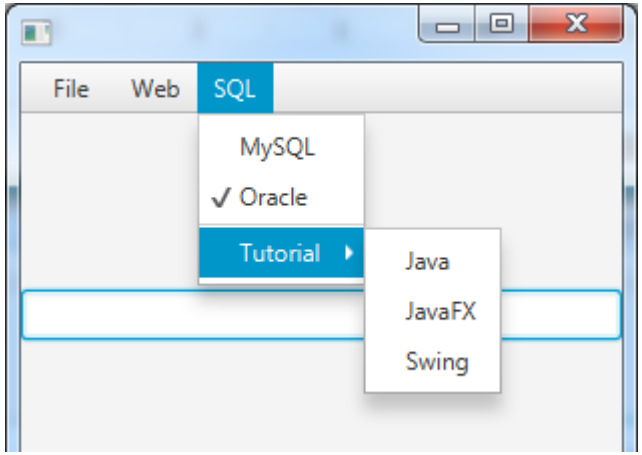

File Web SQL
New
Save Ctrl+S
Exit
hm


About C
About C
OK


About
About
OK


Vrednost klizaca
45.23809523809524
OK


File Web SQL
New
Save Ctrl+S
Exit


File Web SQL
MySQL
Oracle
Tutorial
Java
JavaFX
Swing

JavaFX: ToggleButton

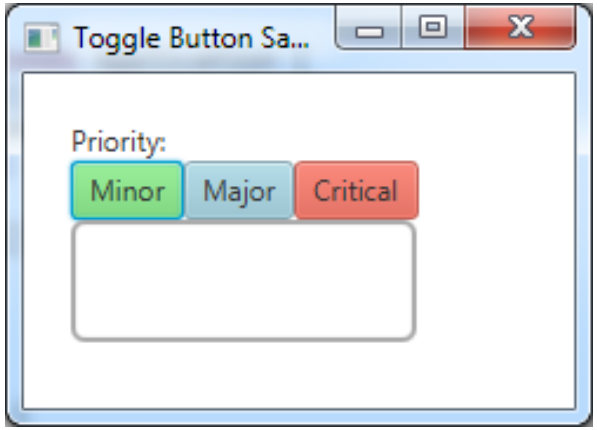
```
import javafx.application.Application;
import javafx.beans.value.ChangeListener;
import javafx.beans.value.ObservableValue;
import javafx.geometry.Insets;import javafx.scene.Group;
import javafx.scene.Scene;import javafx.scene.control.Label;
import javafx.scene.control.Toggle;
import javafx.scene.control.ToggleButton;
import javafx.scene.control.ToggleGroup;
import javafx.scene.layout.HBox;
import javafx.scene.layout.VBox; import javafx.scene.paint.Color;
import javafx.scene.shape.Rectangle; import javafx.stage.Stage;

public class ToggleButtonSample extends Application {
    Rectangle rect = new Rectangle(145, 50);
    private static final Label label = new Label ("Priority:");

    public static void main(String[] args) { launch(args); }
    @Override
    public void start(Stage stage) {
        Scene scene = new Scene(new Group());
        stage.setTitle("Toggle Button Sample");
        stage.setWidth(250);          stage.setHeight(180);
        rect.setFill(Color.WHITE);    rect.setStroke(Color.DARKGRAY);
        rect.setStrokeWidth(2);
```

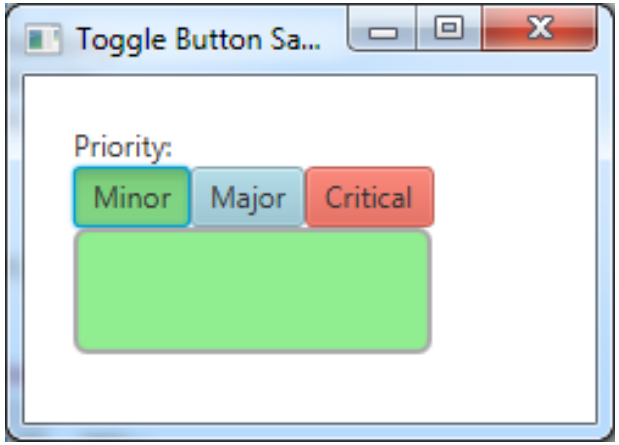
JavaFX: ToggleButton

```
final ToggleGroup group = new ToggleGroup();
group.selectedToggleProperty().addListener(
  new ChangeListener<Toggle>(){
    public void changed(ObservableValue<? extends Toggle> ov,
                        Toggle toggle, Toggle new_toggle) {
      if (new_toggle == null)    rect.setFill(Color.WHITE);
      else rect.setFill(
             (Color) group.getSelectedToggle().getUserData() );
    }
});
ToggleButton tb1 = new ToggleButton("Minor");
tb1.setToggleGroup(group);
tb1.setUserData(Color.LIGHTGREEN);
tb1.setSelected(true);
tb1.setStyle("-fx-base: lightgreen;");
ToggleButton tb2 = new ToggleButton("Major");
tb2.setToggleGroup(group);
tb2.setUserData(Color.LIGHTBLUE);
tb2.setStyle("-fx-base: lightblue;");
ToggleButton tb3 = new ToggleButton("Critical");
tb3.setToggleGroup(group);
tb3.setUserData(Color.SALMON);
tb3.setStyle("-fx-base: salmon;");
```

JavaFX: ToggleButton

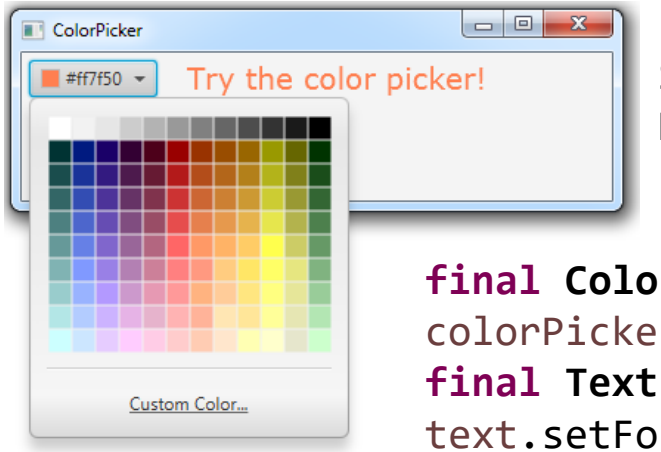
```
        HBox hbox = new HBox();
        hbox.getChildren().add(tb1);
        hbox.getChildren().add(tb2);
        hbox.getChildren().add(tb3);

        rect.setArcHeight(10);
        rect.setArcWidth(10);

        VBox vbox = new VBox();
        vbox.getChildren().add(label);
        vbox.getChildren().add(hbox);
        vbox.getChildren().add(rect);
        vbox.setPadding(new Insets(20, 10, 10, 20));

        ((Group) scene.getRoot()).getChildren().add(vbox);
        stage.setScene(scene);
        stage.show();
    }
}
```





JavaFX: ColorPicker

```
import javafx.application.Application; import javafx.event.*;
import javafx.scene.Scene; import javafx.scene.control.ColorPicker;
import javafx.geometry.Insets; import javafx.scene.layout.HBox;
import javafx.scene.paint.Color; import javafx.scene.text.*;
import javafx.stage.Stage;
public class ColorPickerSample extends Application {
  public static void main(String[] args) { launch(args); }
  @Override public void start(Stage stage) {
```




```
    stage.setTitle("ColorPicker");
    Scene scene = new Scene(new HBox(20),400,100);
    HBox box = (HBox)scene.getRoot();
    box.setPadding(new Insets(5));

    final ColorPicker colorPicker = new ColorPicker();
    colorPicker.setValue(Color.CORAL);
    final Text text = new Text("Try the color picker!");
    text.setFont(Font.font ("Verdana", 20));
    text.setFill(colorPicker.getValue());
    colorPicker.setOnAction(e->{text.setFill(colorPicker.getValue());});
    box.getChildren().addAll(colorPicker, text);
    stage.setScene(scene); stage.show();
  }
}//final: method, class, primitive_var, parameter,  blank_var, static blank_var, reference
```

JavaFX: ComboBox, ChoiceBox

```
import javafx.scene.shape.Rectangle;
import javafx.application.Application;
import javafx.beans.value.ChangeListener;
import javafx.beans.value.ObservableValue;
import javafx.collections.FXCollections;
import javafx.collections.ObservableList;
import javafx.geometry.Insets;
import javafx.scene.Cursor;
import javafx.scene.Group;
import javafx.scene.Scene;
import javafx.scene.control.Button;
import javafx.scene.control.ChoiceBox;
import javafx.scene.control.ComboBox;
import javafx.scene.control.ContentDisplay;
import javafx.scene.control.Label;
import javafx.scene.control.ListCell;
import javafx.scene.control.ListView;
import javafx.scene.layout.GridPane;
import javafx.scene.paint.Color;
import javafx.stage.Stage;
import javafx.util.Callback;
import javafx.scene.control.Tooltip;
```

JavaFX: ComboBox, ChoiceBox

```
public class Combo extends Application {
  ObservableList cursors = FXCollections.observableArrayList(
    Cursor.DEFAULT, Cursor.CROSSHAIR, Cursor.WAIT,
    Cursor.TEXT, Cursor.HAND, Cursor.MOVE, Cursor.N_RESIZE,
    Cursor.NE_RESIZE, Cursor.E_RESIZE, Cursor.SE_RESIZE,
    Cursor.S_RESIZE, Cursor.SW_RESIZE, Cursor.W_RESIZE,
    Cursor.NW_RESIZE, Cursor.NONE);
  public static void main(String[] args) {Application.launch(args); }
  @Override
  public void start(Stage stage) {
    stage.setTitle("ComboBoxSample");
    Scene scene = new Scene(new Group(), 450, 250);
    scene.setFill(Color.ALICEBLUE);
    ComboBox carComboBox = new ComboBox();
    carComboBox.getItems().addAll("Porsche", "Mercedes", "Audi");
    carComboBox.setEditable(true);
    carComboBox.setValue("Porsche"); //za null nema podrazumevanog. aut.
    carComboBox.valueProperty().addListener(
       new ChangeListener<String>() {
          @Override
          public void changed(ObservableValue ov, String t, String t1) {
            System.out.println(ov); System.out.println(t);
            System.out.println(t1);} });
```

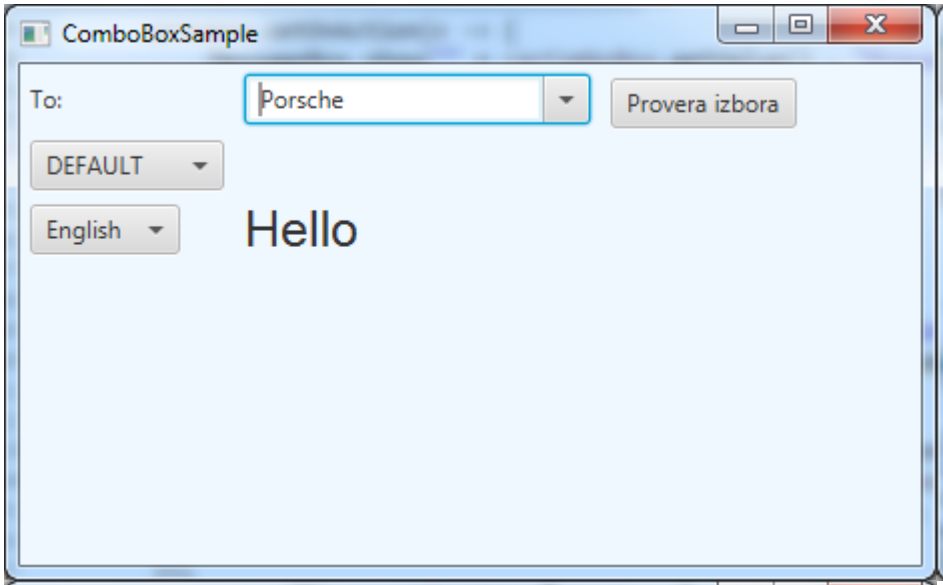
JavaFX: ComboBox, ChoiceBox

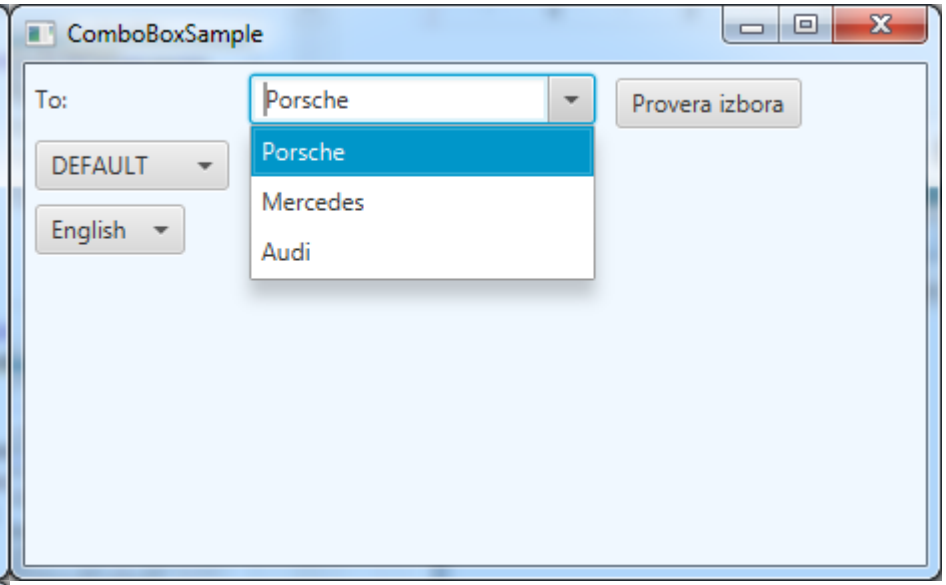
```
Button provera = new Button("Provera izbora");
provera.setOnAction(e -> {
  MessageBox.show(""   + carComboBox.getValue() , "Provera");
});
ChoiceBox choiceBox = new ChoiceBox<Cursor>(cursors);
choiceBox.setValue(Cursor.DEFAULT);
Label label = new Label("Hello");
label.setStyle("-fx-font: 25 arial;");
final String[] greetings = new String[] {
                                "Hello", "Hola", "Ciao", "Sawubona" };
final ChoiceBox prevod = new ChoiceBox
 (FXCollections.observableArrayList(
                            "English", "Espanol", "Italian", "Zulu"));
prevod.setValue("English");
prevod.setTooltip(new Tooltip("Select the language"));
prevod.getSelectionModel().selectedIndexProperty().addListener(
  new ChangeListener<Number>() {
    public void changed(
              ObservableValue ov, Number value, Number new_value) {
      label.setText(greetings[new_value.intValue()]);
    }
});
```

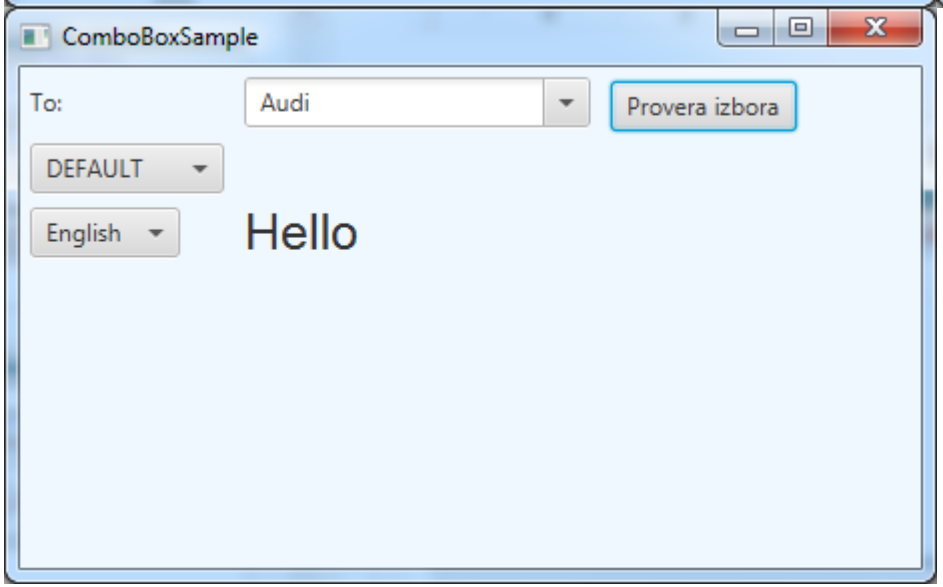
JavaFX: ComboBox, ChoiceBox

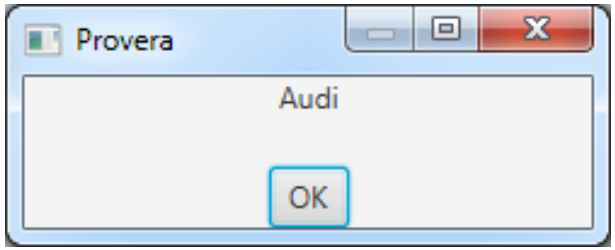
```
    GridPane grid = new GridPane();
    grid.setVgap(4);
    grid.setHgap(10);
    grid.setPadding(new Insets(5));
    grid.add(new Label("To: "), 0, 0);
    grid.add(carComboBox, 1, 0);
    grid.add(provera , 2, 0, 2, 2);
    grid.add(choiceBox, 0, 2);
    grid.add(prevod, 0, 3);
    grid.add(label, 1, 3);
    Group root = (Group) scene.getRoot();
    root.getChildren().add(grid);
    stage.setScene(scene);
    stage.show();
    scene.cursorProperty().bind(
      choiceBox.getSelectionModel().selectedItemProperty());
  }
}
```

JavaFX: ComboBox, ChoiceBox

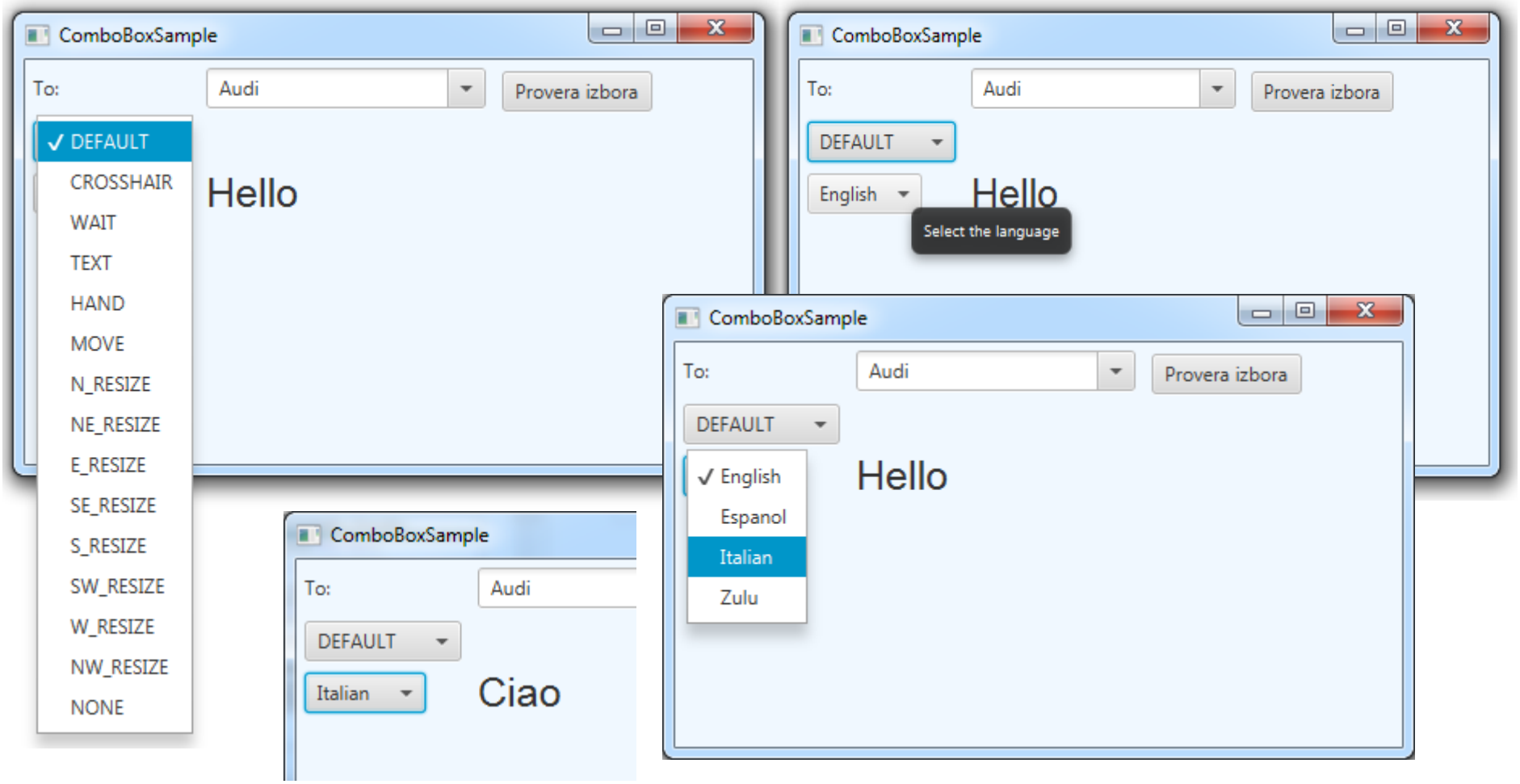








JavaFX: ComboBox, ChoiceBox



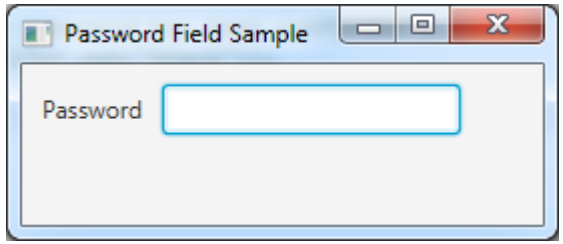

```
ObjectProperty [bean: ComboBox@31fe1e14[styleClass=combo-box-base combo-box], name:
value, value: Audi]
Mercedes
Audi
```

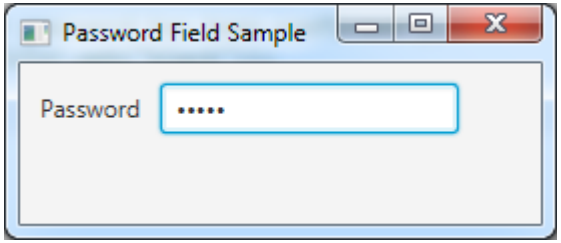
JavaFX: PasswordField

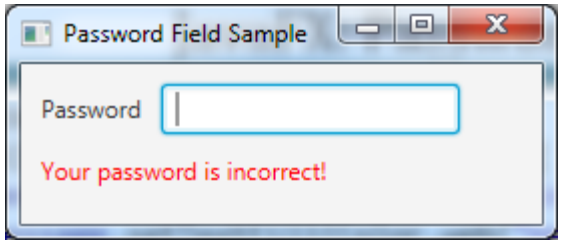
```
import javafx.application.Application;
import javafx.geometry.Insets; import javafx.geometry.Pos;
import javafx.scene.Group; import javafx.scene.Scene;
import javafx.scene.control.Label;
import javafx.scene.control.PasswordField;
import javafx.scene.layout.HBox; import javafx.scene.layout.VBox;
import javafx.scene.paint.Color; import javafx.stage.Stage;
public class Password extends Application {
  final Label message = new Label("");
  @Override
  public void start(Stage stage) {
    Group root = new Group();
    Scene scene = new Scene(root, 260, 80);
    stage.setScene(scene);
    stage.setTitle("Password Field Sample");
    VBox vb = new VBox();
    vb.setPadding(new Insets(10, 0, 0, 10));
    vb.setSpacing(10);
    HBox hb = new HBox();
    hb.setSpacing(10);
    hb.setAlignment(Pos.CENTER_LEFT);
    Label label = new Label("Password");
    final PasswordField pb = new PasswordField();
```

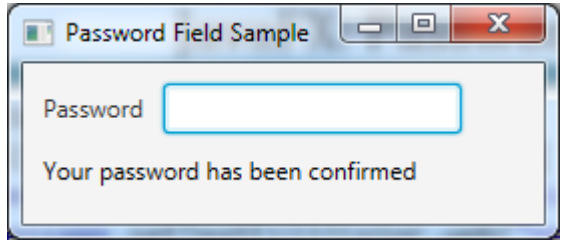
JavaFX: PasswordField

```
        pb.setOnAction(e->{
            if (!pb.getText().equals("abcde")) {
              message.setText("Your password is incorrect!");
              message.setTextFill(Color.web("red"));
            } else {
              message.setText("Your password has been confirmed");
              message.setTextFill(Color.web("black"));
            }
            pb.setText("");
        });
        hb.getChildren().addAll(label, pb);
        vb.getChildren().addAll(hb, message);
        scene.setRoot(vb);     stage.show();
    }
    public static void main(String[] args) {      launch(args);    }
}
```



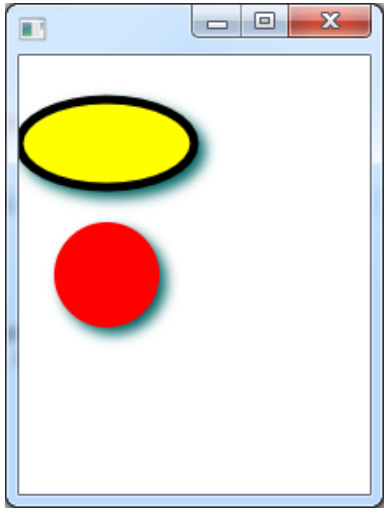






JavaFX: Crtanje

```
import javafx.application.Application; import javafx.scene.Group;
import javafx.scene.Scene; import javafx.scene.effect.DropShadow;
import javafx.scene.paint.Color; import javafx.scene.shape.Circle;
import javafx.scene.shape.Ellipse; import javafx.stage.Stage;
public class CirclePrimer extends Application {
  public static void main(String[] args) { launch(args); }
  public void start(Stage primaryStage) {
    Group root = new Group();
    Scene scene = new Scene(root, 200, 250, Color.WHITE);
    DropShadow ds = new DropShadow();
    ds.setOffsetX(4.0);    ds.setOffsetY(4.0);
    ds.setColor(Color.color(0.0, 0.4, 0.4)); //cyan
    Circle c = new Circle();
    c.setEffect(ds);c.setCenterX(50.0);c.setCenterY(125.0);
    c.setRadius(30.0);   c.setFill(Color.RED); c.setCache(true);
    Ellipse e = new Ellipse();
    e.setCenterX(50.0f);      e.setCenterY(50.0f);  e.setRadiusX(50.0f);
    e.setRadiusY(25.0f);      e.setFill(Color.YELLOW);
    e.setStroke(Color.BLACK); e.setStrokeWidth(5);  e.setEffect(ds);
    root.getChildren().addAll(c, e);
    primaryStage.setScene(scene);     primaryStage.show();
  }
}
```



JavaFX: Poziv "dijaloga"

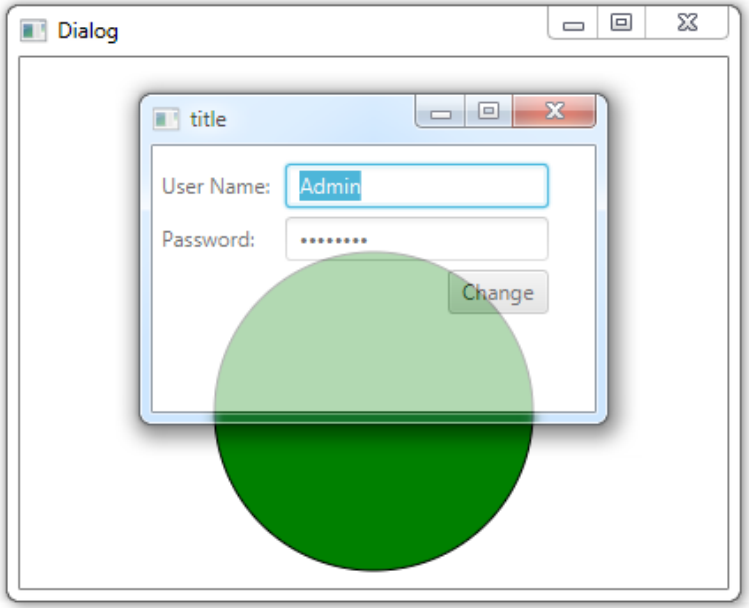
```
import javafx.application.Application;import javafx.scene.Group;
import javafx.scene.Scene;import javafx.scene.paint.Color;
import javafx.scene.shape.Circle; import javafx.stage.Stage;
public class CallDialog extends Application {
    public static void main(String[] args) { launch(args);     }
    public void start(final Stage primaryStage) {
        primaryStage.setTitle("Dialog");
        Group root = new Group();
        Scene scene = new Scene(root, 400, 300, Color.WHITE);
        Circle c = new Circle();
        c.setCenterX(200);   c.setCenterY(200); c.setRadius(90);
        c.setFill(Color.GREEN);  c.setStroke(Color.BLACK);

        root.getChildren().add(c);
        primaryStage.setScene(scene);
        primaryStage.show();

        Stage myDialog = new MyDialog(primaryStage);
        myDialog.sizeToScene();
        myDialog.show();
     }
}
```

JavaFX: Poziv "dijaloga"

```
import javafx.geometry.HPos;import javafx.geometry.Insets;
import javafx.scene.Group;import javafx.scene.Scene;
import javafx.scene.control.Button;import javafx.scene.control.Label;
import javafx.scene.control.PasswordField;
import javafx.scene.control.TextField;
import javafx.scene.layout.GridPane;import javafx.scene.paint.Color;
import javafx.stage.Stage;
class MyDialog extends Stage {
    public MyDialog(Stage owner) {
        super();
        initOwner(owner);
        setTitle("title");
        setOpacity(.80);
        Group root = new Group();
        Scene scene = new Scene(root, 250, 150, Color.WHITE);
        setScene(scene);
        GridPane gridpane = new GridPane();
        gridpane.setPadding(new Insets(5));
        gridpane.setHgap(5);
        gridpane.setVgap(5);
        Label userNameLbl = new Label("User Name: ");
        gridpane.add(userNameLbl, 0, 1);
```

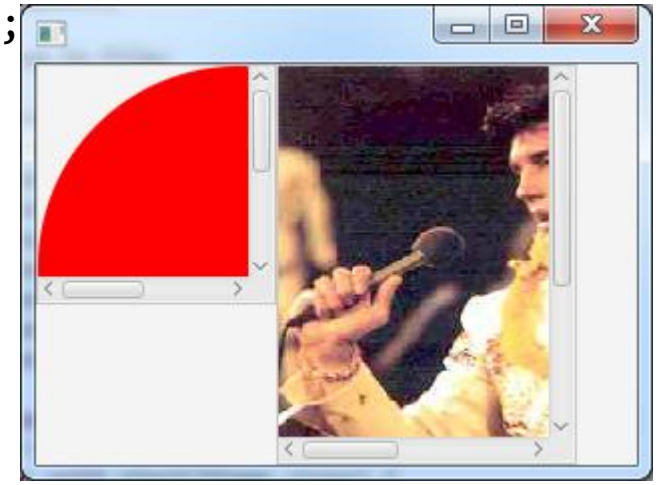
JavaFX: Poziv "dijaloga"

```
        Label passwordLbl = new Label("Password: ");
        gridpane.add(passwordLbl, 0, 2);
        final TextField userNameFld = new TextField("Admin");
        gridpane.add(userNameFld, 1, 1);
        final PasswordField passwordFld = new PasswordField();
        passwordFld.setText("password");
        gridpane.add(passwordFld, 1, 2);
        Button login = new Button("Change");
        login.setOnAction(e-> {close();});
        gridpane.add(login, 1, 3);
        GridPane.setHalignment(login, HPos.RIGHT);
        root.getChildren().add(gridpane);
    }
}
```



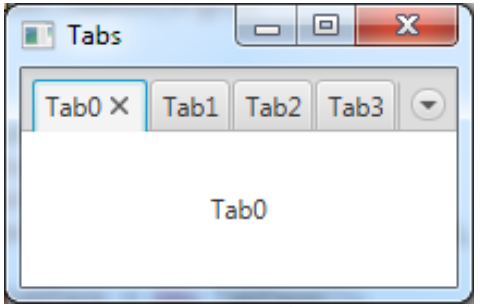
JavaFX: ScrollPane, Image

```
import java.io.File; import javafx.application.Application;
import javafx.scene.Scene; import javafx.scene.control.ScrollPane;
import javafx.scene.image.Image; import javafx.scene.image.ImageView;
import javafx.scene.layout.HBox; import javafx.scene.paint.Color;
import javafx.scene.shape.Circle; import javafx.stage.Stage;
public class ScrollPanePrimer_1 extends Application {
  @Override public void start(Stage stage) { HBox root = new HBox();
    Scene scene = new Scene(root, 300, 200); stage.setScene(scene);
    Circle circle = new Circle(200, 200,100, Color.RED);
    ScrollPane s1 = new ScrollPane(); s1.setMinSize(120,120);
    s1.setMaxSize(120,120); s1.setContent(circle);
    final ImageView imageview=new ImageView();
    Image image1 = new Image(
     new File("elvis.jpg").toURI().toString(),
     300,300,false,false);
    //uri,requested width,requested height,
    //preserve aspect ratio, smooth
    imageview.setImage(image1);
    ScrollPane scrolpane2 = new ScrollPane();
    scrolpane2.setPrefSize(150,200);
    scrolpane2.setContent(imageview);//scrollPane2.setVvalue(scrollPane2.getVmax());
    root.getChildren().addAll(s1, scrolpane2); stage.show();    }
 public static void main(String[] args) { launch(args);     }  }
```



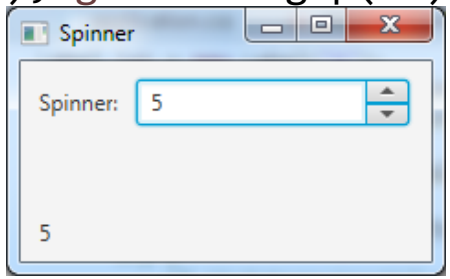
JavaFX: TabPane

```
import javafx.application.Application; import javafx.geometry.Pos;
import javafx.scene.Group; import javafx.scene.Scene;
import javafx.scene.control.Label; import javafx.scene.control.Tab;
import javafx.scene.control.TabPane;
import javafx.scene.layout.BorderPane; import javafx.scene.layout.HBox;
import javafx.scene.paint.Color; import javafx.stage.Stage;
public class TabPanePrimer extends Application {
 public static void main(String[] args) { launch(args); }
 @Override public void start(Stage primaryStage) {
  primaryStage.setTitle("Tabs");
  Group root = new Group();
  Scene scene=new Scene(root,200,100,Color.WHITE);
  TabPane tabPane = new TabPane();
  BorderPane borderPane = new BorderPane();
  for (int i = 0; i < 5; i++) { Tab tab=new Tab(); tab.setText("Tab"+i);
   HBox hbox = new HBox(); hbox.getChildren().add(new Label("Tab" + i));
   hbox.setAlignment(Pos.CENTER); tab.setContent(hbox);
   tabPane.getTabs().add(tab);
 }
 borderPane.prefHeightProperty().bind(scene.heightProperty());
 borderPane.prefWidthProperty().bind(scene.widthProperty());
 borderPane.setCenter(tabPane); root.getChildren().add(borderPane);
 primaryStage.setScene(scene); primaryStage.show(); } }
```



JavaFX: Spinner

```
import javafx.application.Application;import javafx.geometry.Insets;
import javafx.scene.Scene;import javafx.scene.control.Label;
import javafx.scene.control.Spinner;
import javafx.scene.control.SpinnerValueFactory;
import javafx.scene.layout.GridPane;import javafx.stage.Stage;
public class SpinnerPrimer extends Application {
  public static void main(String[] args) { launch(args); }
    @Override public void start(Stage stage) {
    Label lab = new Label("5");
    final Spinner spinner = new Spinner();
    spinner.setValueFactory(
      new SpinnerValueFactory.IntegerSpinnerValueFactory(0, 10));
    spinner.getValueFactory().setValue(Integer.parseInt("5"));
    //ili setValue(5)
    spinner.getEditor().textProperty().addListener(
      (observable, oldValue, newValue) -> { lab.setText(""+newValue);});
    GridPane grid = new GridPane(); grid.setHgap(10); grid.setVgap(10);
    grid.setPadding(new Insets(10));
    grid.add(new Label("Spinner:"), 0, 0);
    grid.add(spinner, 1, 0);
    grid.add(lab, 0, 5);
    Scene scene = new Scene(grid, 350, 300);
    stage.setTitle("Spinner");stage.setScene(scene);stage.show(); }}
```

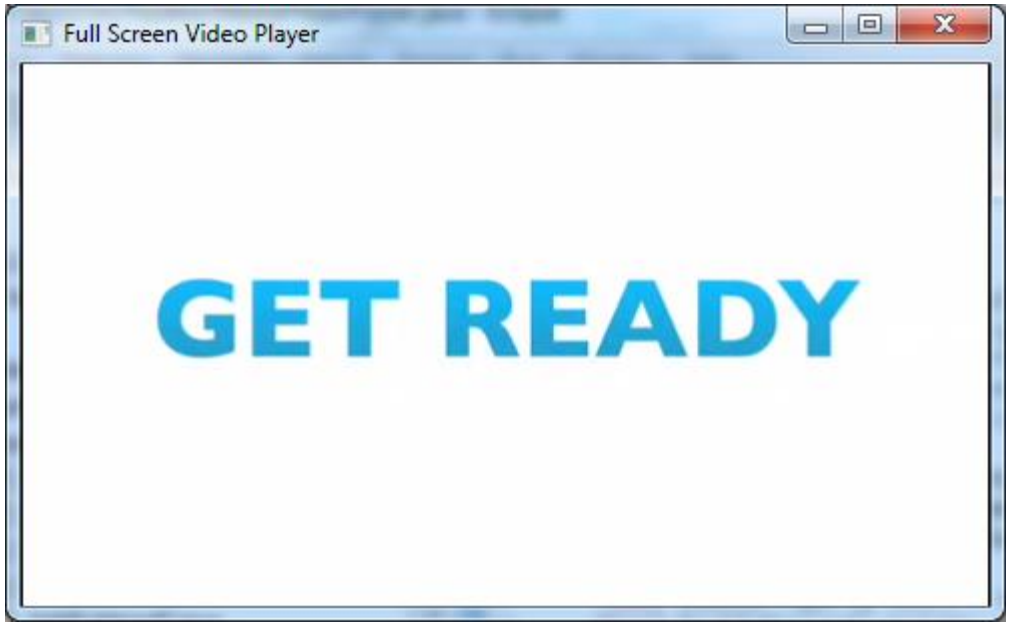


JavaFX: Media

```
import java.io.File; import javafx.application.Application;
import javafx.beans.binding.Bindings;
import javafx.beans.property.DoubleProperty;
import javafx.scene.Scene; import javafx.scene.layout.StackPane;
import javafx.scene.media.Media; import javafx.scene.media.MediaPlayer;
import javafx.scene.media.MediaView; import javafx.scene.paint.Color;
import javafx.stage.Stage;
public class MediaPlayerPrimer extends Application {
  public static void main(String[] args) {   launch(args);  }
  @Override public void start(Stage primaryStage) {
    final File f = new
             File("C:/video/trailer.mp4");
    final Media m = new Media(f.toURI().toString());
    final MediaPlayer mp = new MediaPlayer(m);
    final MediaView mv = new MediaView(mp);
    final DoubleProperty width = mv.fitWidthProperty();
    final DoubleProperty height = mv.fitHeightProperty();
    width.bind(Bindings.selectDouble(mv.sceneProperty(), "width"));
    height.bind(Bindings.selectDouble(mv.sceneProperty(), "height"));
    mv.setPreserveRatio(true);
    StackPane root = new StackPane();
    root.getChildren().add(mv);
```

JavaFX: Media

```
        final Scene scene = new Scene(root, 960, 540);
        scene.setFill(Color.BLACK);
        primaryStage.setScene(scene);
        primaryStage.setTitle("Full Screen Video Player");
        primaryStage.setFullScreen(true);
        primaryStage.show();
        mp.play();
    }
}
```



JavaFX: TreeView

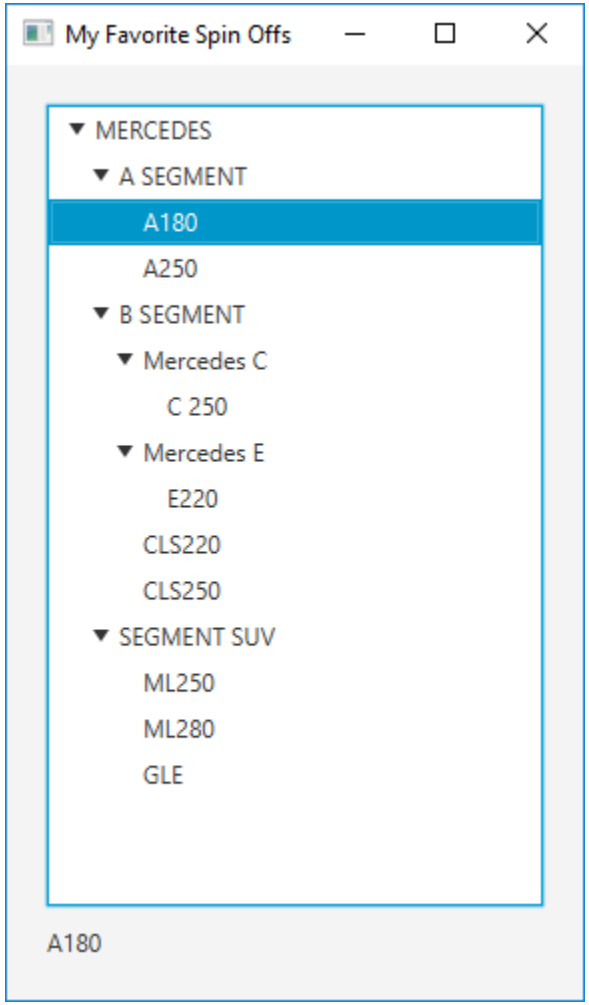
```
import javafx.application.*; import javafx.stage.*;
import javafx.scene.*; import javafx.scene.layout.*;
import javafx.scene.control.*; import javafx.geometry.*;
public class Mercedes extends Application {
    public static void main(String[] args){ launch(args);    }
    TreeView<String> tree;
    Label lblShowName;
    @Override public void start(Stage primaryStage) {
        TreeItem<String>  root, csegment, bsegment,
                suvsegment, mercedesc, mercedese;
        root = new TreeItem<String>("MERCEDES");
        root.setExpanded(true);
            csegment = makeShow("C SEGMENT", root);
                makeShow("A180", csegment);
                makeShow("A250", csegment);
            bsegment = makeShow("D SEGMENT", root);
                mercedesc = makeShow("Mercedes C", bsegment);
                    makeShow("C 250", mercedesc);
                mercedese = makeShow("Mercedes CLA", bsegment);
                    makeShow("CLA220", mercedese);
                makeShow("Electric 1", bsegment);
                makeShow("Electric 2", bsegment);
            suvsegment = makeShow("SEGMENT SUV", root);
```

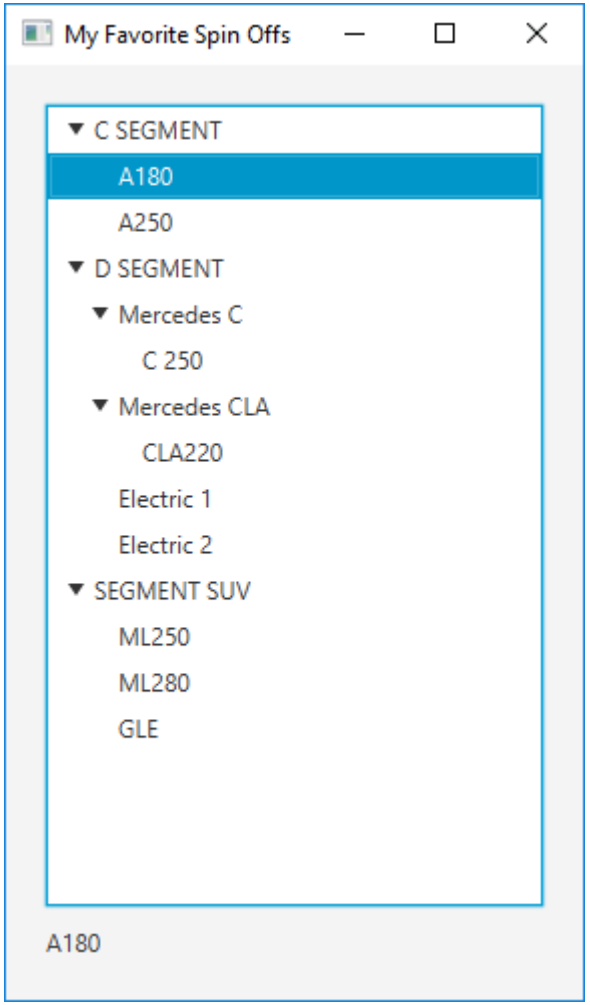
JavaFX: TreeView

```
                makeShow("ML250", suvsegment);
                makeShow("ML280", suvsegment);
                makeShow("GLE", suvsegment);
        tree = new TreeView<String>(root);
        tree.setShowRoot(true);
        tree.getSelectionModel().selectedItemProperty()
            .addListener( (v, oldValue, newValue) ->
                tree_SelectionChanged(newValue) );
        lblShowName = new Label();
        VBox pane = new VBox(10);
        pane.setPadding(new Insets(20,20,20,20));
        pane.getChildren().addAll(tree, lblShowName);
        Scene scene = new Scene(pane);
        primaryStage.setScene(scene);
        primaryStage.setTitle("MERCEDES");
        primaryStage.show();
}
public TreeItem<String> makeShow(String title, TreeItem<String> parent){
        TreeItem<String> show = new TreeItem<String>(title);
        show.setExpanded(true);
        parent.getChildren().add(show);
        return show;
}
```

JavaFX: TreeView

```
public void tree_SelectionChanged(TreeItem<String> item){
        if (item != null){
            lblShowName.setText(item.getValue());
        }
 }
}
```





JavaFX: ListView

```
import javafx.application.Application;
import javafx.collections.FXCollections;
import javafx.collections.ObservableList;
import javafx.event.ActionEvent;
import javafx.event.EventHandler;
import javafx.geometry.HPos;
import javafx.geometry.Insets;
import javafx.geometry.VPos;
import javafx.scene.Group;
import javafx.scene.Scene;
import javafx.scene.control.Button;
import javafx.scene.control.Label;
import javafx.scene.control.ListView;
import javafx.scene.layout.GridPane;
import javafx.scene.layout.VBox;
import javafx.scene.paint.Color;
import javafx.stage.Stage;

public class ListViewPrimer extends Application {
    public static void main(String[] args) {
        Application.launch(args);
    }
```

JavaFX: ListView

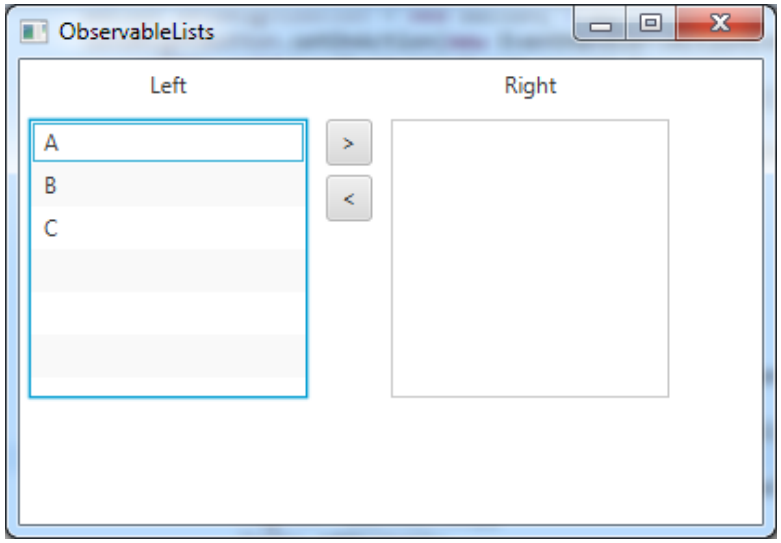
```
@Override public void start(Stage primaryStage) {
    primaryStage.setTitle("ObservableLists");
    Group root = new Group();
    Scene scene = new Scene(root, 400, 250, Color.WHITE);
    GridPane gridpane = new GridPane();
    gridpane.setPadding(new Insets(5));
    gridpane.setHgap(10);
    gridpane.setVgap(10);
    Label candidatesLbl = new Label("Left");
    GridPane.setHalignment(candidatesLbl, HPos.CENTER);
    gridpane.add(candidatesLbl, 0, 0);
    Label heroesLbl = new Label("Right");
    gridpane.add(heroesLbl, 2, 0);
    GridPane.setHalignment(heroesLbl, HPos.CENTER);
    final ObservableList<String> lefts =
                        FXCollections.observableArrayList("A","B","C");
    final ListView<String> leftListView =
                                          new ListView<String>(lefts);
    leftListView.setPrefWidth(150);
    leftListView.setPrefHeight(150);
    gridpane.add(leftListView, 0, 1);
    final ObservableList<String> rights =
                                      FXCollections.observableArrayList();
```

JavaFX: ListView

```
final ListView<String> rightListView =
                                        new ListView<String>(rights);
rightListView.setPrefWidth(150);
rightListView.setPrefHeight(150);
gridpane.add(rightListView, 2, 1);
Button sendRightButton = new Button(">");
sendRightButton.setOnAction(new EventHandler<ActionEvent>() {
    public void handle(ActionEvent event) {
        String item =
             leftListView.getSelectionModel().getSelectedItem();
        if (item != null) {
            leftListView.getSelectionModel().clearSelection();
            lefts.remove(item);
            rights.add(item);
        }
    }
});
Button sendLeftButton = new Button("<");
sendLeftButton.setOnAction(new EventHandler<ActionEvent>() {
    public void handle(ActionEvent event) {
        String item =
        rightListView.getSelectionModel().getSelectedItem();
```

JavaFX: ListView

```
            if (item != null) {
                    rightListView.getSelectionModel().clearSelection();
                    rights.remove(item);
                    lefts.add(item);
                }
            }
        });
        VBox vbox = new VBox(5);
        vbox.getChildren().addAll(sendRightButton,sendLeftButton);
        gridpane.add(vbox, 1, 1);
        root.getChildren().add(gridpane);
        primaryStage.setScene(scene);
        primaryStage.show();
    }
}
```



JavaFX: TableView

- Za podatke koji se unose u TableView neka je data jednostavna klasa:

```
public class Movie {

    private String title;
    private int year;
    private double price;

    public Movie()    {
        this.title = "";
        this.year = 0;
        this.price = 0.0;
    }

    public Movie(String title, int year, double price) {
        this.title = title;
        this.year = year;
        this.price = price;
    }

    public String getTitle()           {       return this.title;    }
    public void setTitle(String title) {       this.title = title;   }
    public int getYear()               {       return this.year;     }
    public void setYear(int year)      {       this.year = year;     }
    public double getPrice()           {       return this.price;    }
    public void setPrice(double price) {       this.price = price;   }
}
```

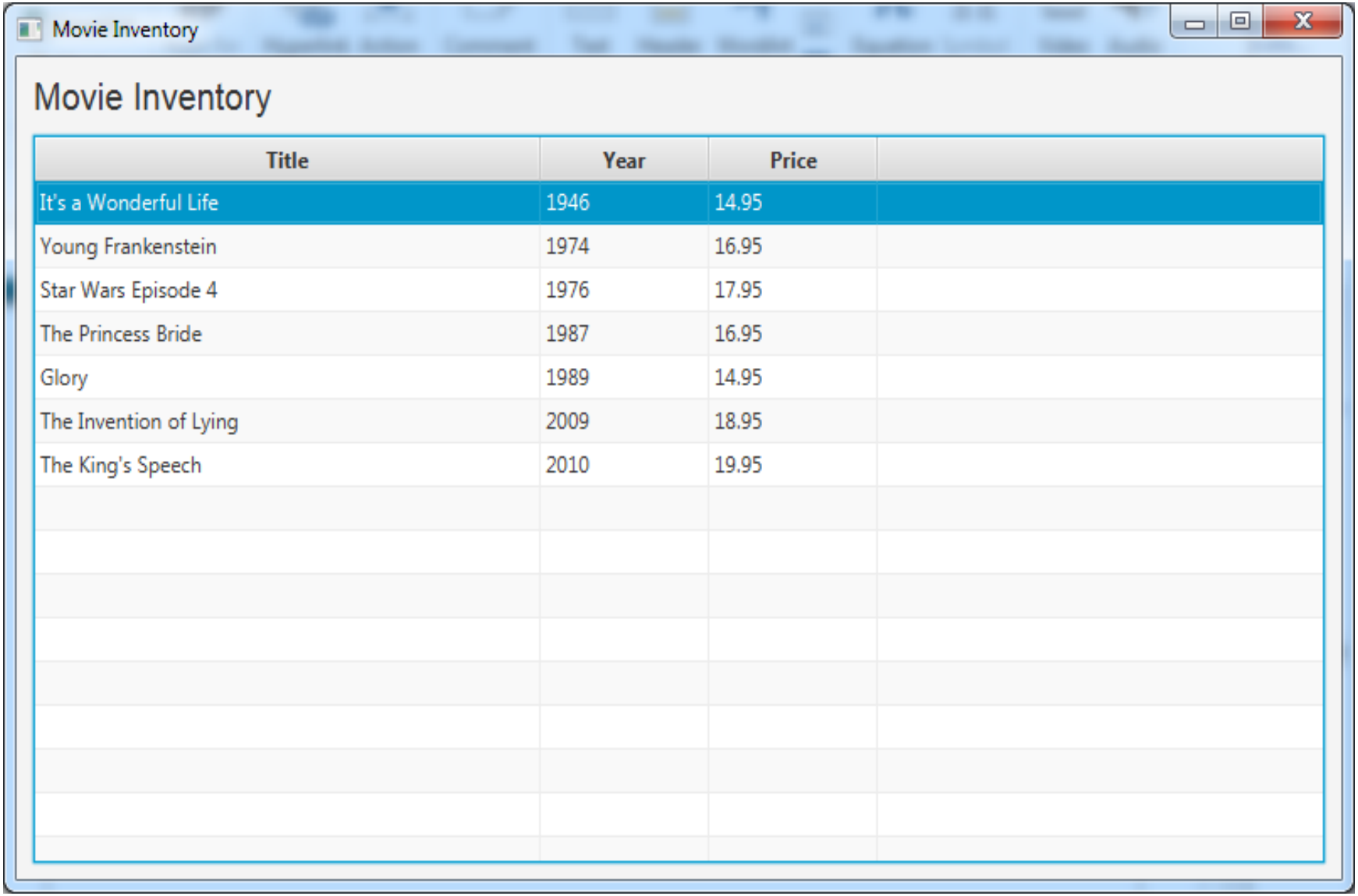
JavaFX: TableView

```
import javafx.application.*;  import javafx.stage.*;
import javafx.scene.*;        import javafx.scene.control.*;
import javafx.scene.layout.*; import javafx.scene.text.*;
import javafx.scene.control.cell.*; import javafx.collections.*;
import javafx.geometry.*;
public class MovieInventory extends Application {
  public static void main(String[] args) { launch(args); }
  @Override
  public void start(Stage primaryStage) {
    Label lblHeading = new Label("Movie Inventory");
    lblHeading.setFont(new Font("Arial", 20));
    TableView<Movie> table = new TableView<Movie>();
    table.setItems(loadData());
    TableColumn<Movie, String> colTitle = new TableColumn("Title");
    colTitle.setMinWidth(300);
    colTitle.setCellValueFactory(
              new PropertyValueFactory<Movie,String>("title"));
    TableColumn<Movie, Integer> colYear = new TableColumn("Year");
    colYear.setMinWidth(100);
    colYear.setCellValueFactory(
             new PropertyValueFactory<Movie, Integer>("year"));
    TableColumn<Movie, Double> colPrice = new TableColumn("Price");
    colPrice.setMinWidth(100);
```

JavaFX: TableView

```
        colPrice.setCellValueFactory(
                    new PropertyValueFactory<Movie, Double>("price"));
        table.getColumns().addAll(colTitle, colYear, colPrice);
        VBox paneMain = new VBox();
        paneMain.setSpacing(10);
        paneMain.setPadding(new Insets(10, 10, 10, 10));
        paneMain.getChildren().addAll(lblHeading, table);
        Scene scene = new Scene(paneMain);
        primaryStage.setScene(scene);
        primaryStage.setTitle("Movie Inventory");
        primaryStage.show();
    }
    public ObservableList<Movie> loadData() {
        ObservableList<Movie> data = FXCollections.observableArrayList();
        data.add(new Movie("It's a Wonderful Life", 1946, 14.95));
        data.add(new Movie("Young Frankenstein", 1974, 16.95));
        data.add(new Movie("Star Wars Episode 4", 1976, 17.95));
        data.add(new Movie("Glory", 1989, 14.95));
        data.add(new Movie("The Invention of Lying", 2009, 18.95));
        data.add(new Movie("The King's Speech", 2010, 19.95));
        return data;
    }
}
```

JavaFX: TableView



JavaFX: TableView (add,edit,delete)

- Sledi kod koji omogućuje editovanje, dodavanja i brisanje elemenata tabele.

```
import javafx.application.*; import javafx.stage.*;
import javafx.scene.*; import javafx.scene.control.*;
import javafx.scene.layout.*; import javafx.scene.text.*;
import javafx.event.*; import javafx.scene.control.cell.*;
import javafx.beans.property.*; import javafx.collections.*;
import javafx.geometry.*; import javafx.util.converter.*;
public class MovieInventoryEditor extends Application {
  public static void main(String[] args) { launch(args); }
  private TableView<Movie> table;
  private TextField txtTitle, txtYear, txtPrice;
  @Override
  public void start(Stage primaryStage) {
    Label lblHeading = new Label("Movie Inventory");
    lblHeading.setFont(new Font("Arial", 20));
    table = new TableView<Movie>();
    table.setEditable(true);
    table.setItems(loadData());
    TableColumn colTitle = new TableColumn("Title");
    colTitle.setMinWidth(300);
    colTitle.setCellValueFactory(
                new PropertyValueFactory<Movie, String>("title"));
    colTitle.setCellFactory(TextFieldTableCell.forTableColumn());
```

JavaFX: TableView (add,edit,delete)

```
colTitle.setOnEditCommit(e -> colTitle_OnEditCommit(e));
TableColumn colYear = new TableColumn("Year");
colYear.setMinWidth(100);
colYear.setCellValueFactory(
          new PropertyValueFactory<Movie, Integer>("year"));
colYear.setCellFactory(
   TextFieldTableCell.forTableColumn(new IntegerStringConverter()));
colYear.setOnEditCommit(e -> colYear_OnEditCommit(e));
TableColumn colPrice = new TableColumn("Price");
colPrice.setMinWidth(100);
colPrice.setCellValueFactory(
            new PropertyValueFactory<Movie, Double>("price"));
colPrice.setCellFactory(
    TextFieldTableCell.forTableColumn(new DoubleStringConverter()));
colPrice.setOnEditCommit(e -> colPrice_OnEditCommit(e));
table.getColumns().addAll(colTitle, colYear, colPrice);
txtTitle = new TextField();
txtTitle.setPromptText("Title");
txtTitle.setMinWidth(100);
txtYear = new TextField();
txtYear.setMaxWidth(100);
txtYear.setPromptText("Year");
```

JavaFX: TableView (add,edit,delete)

```
        txtPrice = new TextField();
        txtPrice.setMaxWidth(100);
        txtPrice.setPromptText("Price");
        Button btnAdd = new Button("Add");
        btnAdd.setMinWidth(60);
        btnAdd.setOnAction(e -> btnAdd_Clicked());
        Button btnDelete = new Button("Delete");
        btnDelete.setMinWidth(60);
        btnDelete.setOnAction(e -> btnDelete_Clicked());
        HBox paneAdd = new HBox();
        paneAdd.setSpacing(8);
        paneAdd.getChildren().addAll(txtTitle, txtYear, txtPrice, btnAdd,
                                     btnDelete);
        VBox paneMain = new VBox();
        paneMain.setSpacing(10);
        paneMain.setPadding(new Insets(10, 10, 10, 10));
        paneMain.getChildren().addAll(lblHeading, table, paneAdd);
        Scene scene = new Scene(paneMain);
        primaryStage.setScene(scene);
        primaryStage.setTitle("Movie Inventory");
        primaryStage.show();
    }
```

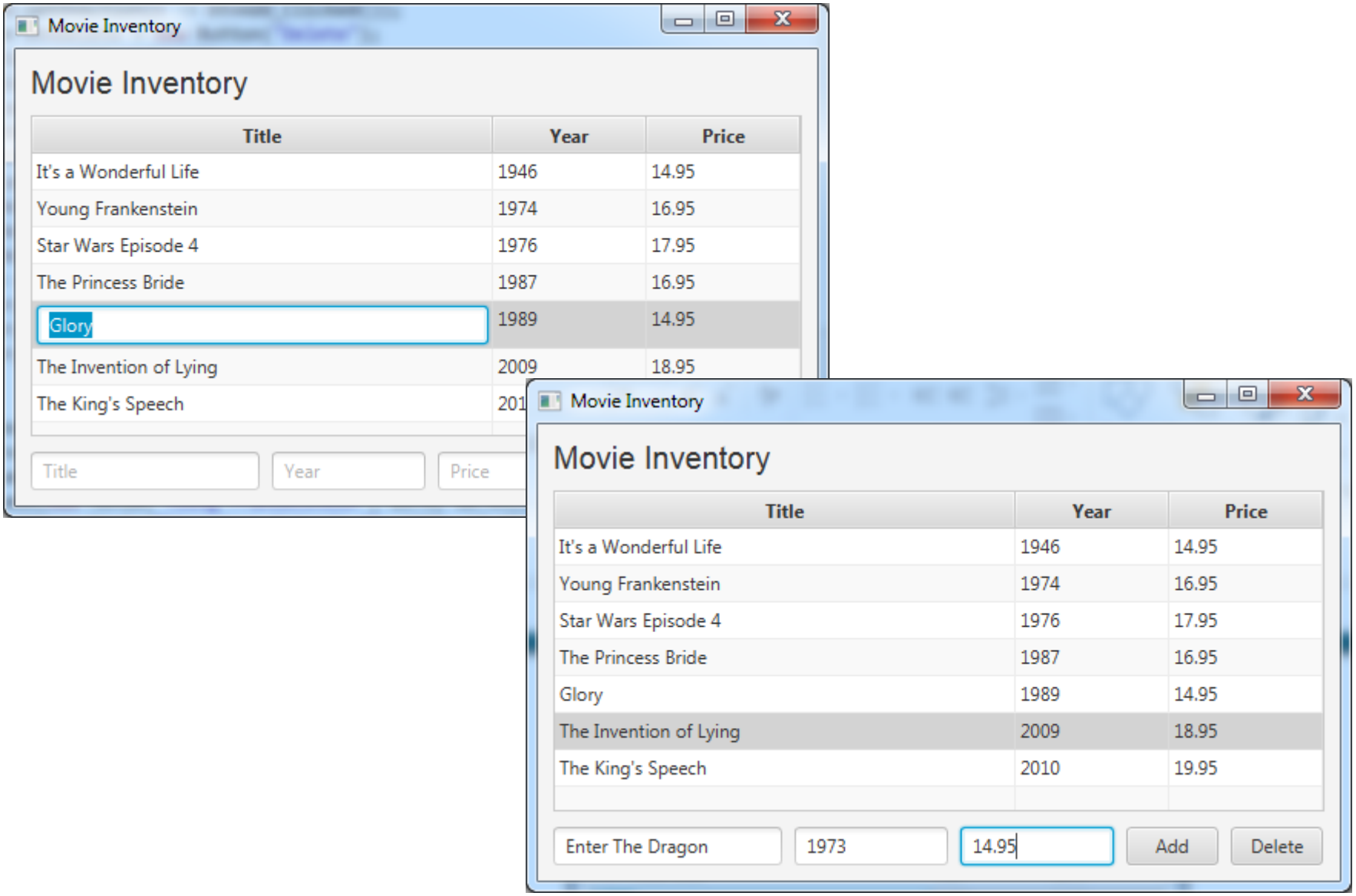
JavaFX: TableView (add,edit,delete)

```
public ObservableList<Movie> loadData() {
  ObservableList<Movie> data = FXCollections.observableArrayList();
  data.add(new Movie("It's a Wonderful Life", 1946, 14.95));
  data.add(new Movie("Young Frankenstein", 1974, 16.95));
  data.add(new Movie("Star Wars Episode 4", 1976, 17.95));
  data.add(new Movie("The Princess Bride", 1987, 16.95));
  data.add(new Movie("Glory", 1989, 14.95));
  data.add(new Movie("The Invention of Lying", 2009, 18.95));
  data.add(new Movie("The King's Speech", 2010, 19.95));
  return data;
}
public void colTitle_OnEditCommit(Event e) {
  TableColumn.CellEditEvent<Movie, String> ce;
  ce = (TableColumn.CellEditEvent<Movie, String>) e;
  Movie m = ce.getRowValue();
  m.setTitle(ce.getNewValue());
}
public void colYear_OnEditCommit(Event e) {
  TableColumn.CellEditEvent<Movie, Integer> ce;
  ce = (TableColumn.CellEditEvent<Movie, Integer>) e;
  Movie m = ce.getRowValue();
  m.setYear(ce.getNewValue());
}
```

JavaFX: TableView (add,edit,delete)

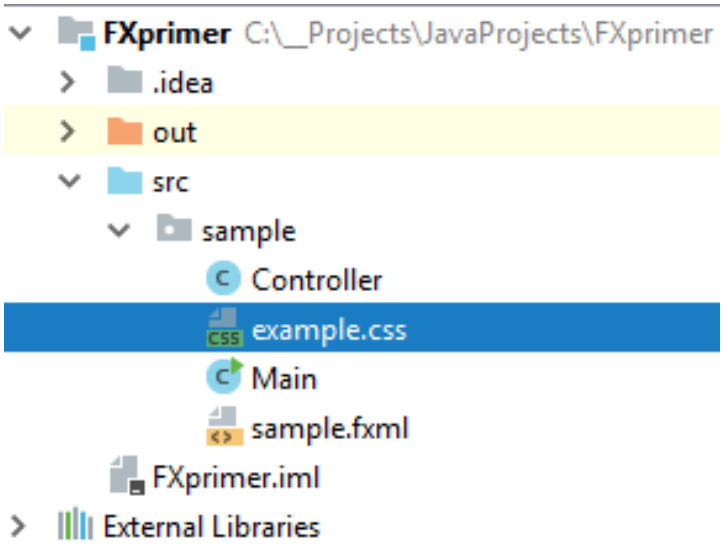
```
  public void colPrice_OnEditCommit(Event e) {
    TableColumn.CellEditEvent<Movie, Double> ce;
    ce = (TableColumn.CellEditEvent<Movie, Double>) e;
    Movie m = ce.getRowValue();
    m.setPrice(ce.getNewValue());
  }
  public void btnAdd_Clicked() {
    Movie m = new Movie();
    m.setTitle(txtTitle.getText());
    m.setYear(Integer.parseInt(txtYear.getText()));
    m.setPrice(Double.parseDouble(txtPrice.getText()));
    table.getItems().add(m);
    txtTitle.clear();
    txtYear.clear();
    txtPrice.clear();
  }
  public void btnDelete_Clicked() {
    ObservableList<Movie> sel, items;
    items = table.getItems();
    sel = table.getSelectionModel().getSelectedItems();
    for (Movie m : sel) items.remove(m);
  }
}//za multisel. table.getSelectionModel().setSelectionMode(SelectionMode.MULTIPLE);
```

JavaFX: TableView (add,edit,delete)



JavaFX project

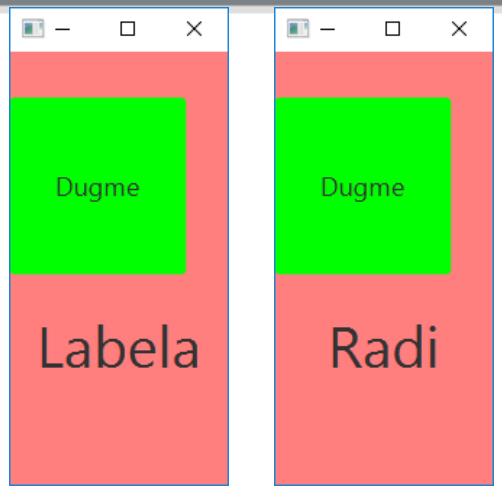
- Instalirati: najnoviji JDK , u IntelliJ odabrati projekat JavaFX.
- Osnovna ideja je da se ubrza razvoj aplikacije, te da se odvoje elementi modela, kontrole i izgleda (MVC paradigma).



- Kreiranjem JavaFX projekta potrebno je kreirati stablo kao na slici.
- Main.java sadrži elemente modela.
- Fajl sample.fxml sadrži deklarativni opis izgleda komponenti (scene).
- Controller sadrži kod koji kontroliše reagovanje na komponente pogleda.
- Datoteka example.css ima ulogu da dodeli stilove elementima projekta.

JavaFX project

- Datoteka Main.java




```
import javafx.application.Application;
import javafx.fxml.FXMLLoader;
import javafx.scene.Parent;
import javafx.scene.Scene;
import javafx.stage.Stage;

public class Main extends Application {
  @Override
  public void start(Stage primaryStage) throws Exception{
    primaryStage.setTitle("Hello World");
    Parent root = FXMLLoader.load(getClass().getResource("sample.fxml"));
    Scene scena = new Scene(root, 150, 300);
scena.getStylesheets().add(getClass().getResource("example.css").toExtern
alForm());
    primaryStage.setScene(scena);
    primaryStage.show();
  }

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

JavaFX project

- Datoteka sample.fxml

```
<?xml version="1.0" encoding="UTF-8"?>

<?import javafx.scene.control.Button?>
<?import javafx.scene.control.Label?>
<?import javafx.scene.layout.ColumnConstraints?>
<?import javafx.scene.layout.GridPane?>
<?import javafx.scene.layout.RowConstraints?>
<?import javafx.scene.layout.VBox?>
<?import javafx.scene.text.Font?>

<GridPane alignment="center" hgap="10" vgap="10"
xmlns="http://javafx.com/javafx/8.0.121"
xmlns:fx="http://javafx.com/fxml/1" fx:controller="sample.Controller">
   <columnConstraints>
      <ColumnConstraints />
   </columnConstraints>
   <rowConstraints>
      <RowConstraints />
   </rowConstraints>
   <children>
      <VBox prefHeight="236.0" prefWidth="386.0">
```

JavaFX project

```
        <children>
            <Button fx:id="but" mnemonicParsing="false"
onAction="#dugmeKliknuto" prefHeight="122.0" prefWidth="121.0" style="-
fx-background-color: #0F0;" text="Dugme">
                <font>
                    <Font size="18.0" />
                </font>
            </Button>
            <Label id="lab" fx:id="lab" alignment="CENTER"
prefHeight="102.0" prefWidth="406.0"  text="Labela">
                <font>
                    <Font name="System Bold" size="18.0" />
                </font>
            </Label>
        </children>
      </VBox>
   </children>
</GridPane>
```

- Datoteka example.css

```
.root{      -fx-background: rgb(255,127,127); }
#lab {      -fx-background: rgb(255,255,127);      -fx-font-size: 40px; }
```

JavaFX project

- Datoteka Controller.java

```
package sample;

import javafx.event.ActionEvent;
import javafx.fxml.FXML;
import javafx.scene.control.Label;

//import javafx.fxml.Initializable;
//import java.net.URL;
//import java.util.ResourceBundle;

public class Controller { //implements Initializable{
    @FXML
    private Label lab;

    public void dugmeKliknuto(ActionEvent mouseEvent) {
        lab.setText("Radi");
    }

    //@Override
    //public void initialize(URL location, ResourceBundle resources) {
    //}
}
```