

APD545-NDD

Assignment Number #02

Name: Radmehr Behzadfar

Code

Main.java

/******

Workshop #02

Course: APD545 - Winter

Last Name: BEHZADFAR

First Name: RADMEHR

ID: 148786221

Section:NDD

This assignment represents my own work in accordance with Seneca Academic Policy.

Signature: RadmehrBehzadfar

Date:2025-02-11

*****/

```
package application;
```

```
import javafx.application.Application;
```

```
import javafx.fxml.FXMLLoader;
```

```
import javafx.scene.Parent;
```

```
import javafx.scene.Scene;
```

```
import javafx.stage.Stage;
```

```
import java.net.URL;
```

```
public class Main extends Application {
```

```
    @Override
```

```
    public void start(Stage primaryStage) {
```

```
        try {
```

```
            URL fxmlLocation = getClass().getResource("layout.fxml");
```

```
            if (fxmlLocation == null) {
```

```
                throw new RuntimeException("Cannot find layout.fxml! Make sure it's inside the  
'application' package.");
```

```
            }
```

```
Parent root = FXMLLoader.load(fxmlLocation);
```

```
Scene scene = new Scene(root, 500, 450);
```

```
primaryStage.setTitle("Car Loan Payment Calculator");
```

```
primaryStage.setScene(scene);
```

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

```
} catch (Exception e) {
```

```
    e.printStackTrace();
```

```
}
```

```
}
```

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

```
    launch(args);
```

```
}
```

```
}
```

Controller.java

/******

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package application;

import javafx.fxml.FXML;

import javafx.scene.control.ComboBox;

import javafx.scene.control.TextField;

```
import javafx.scene.control.Slider;
```

```
import javafx.scene.control.Button;
```

```
import javafx.collections.FXCollections;
```

```
import javafx.collections.ObservableList;
```

```
public class Controller {
```

```
    @FXML private ComboBox<String> cmbFrequency;
```

```
    @FXML private TextField txtTypeOfVehicle;
```

```
    @FXML private TextField txtAgeOfVehicle;
```

```
    @FXML private TextField txtPrice;
```

```
    @FXML private TextField txtDownPayment;
```

```
    @FXML private TextField txtInterestRate;
```

```
    @FXML private Slider sldLoanPeriod;
```

```
    @FXML private TextField txtResult;
```

```
    @FXML private Button btnCalculate;
```

```
    @FXML private Button btnClear;
```

@FXML

```
public void initialize() {
```

```
    // Initialize ComboBox
```

```
    ObservableList<String> paymentOptions =  
FXCollections.observableArrayList("Monthly", "Bi-Weekly", "Weekly");
```

```
    cmbFrequency.setItems(paymentOptions);
```

```
    cmbFrequency.setValue("Monthly"); // Default selection
```

```
    // Implement ChangeListener for Slider
```

```
    sldLoanPeriod.valueProperty().addListener((observable, oldValue, newValue) -> {
```

```
        sldLoanPeriod.setValue(Math.round(newValue.doubleValue() / 12) * 12);
```

```
    });
```

```
    // Explicitly set Event Handlers for Buttons
```

```
    btnCalculate.setOnAction(event -> calculatePayment());
```

```
    btnClear.setOnAction(event -> clearFields());
```

```
}
```

@FXML

```
private void calculatePayment() {
```

```
    try {
```

```
        // Validate Inputs
```

```
        if (txtPrice.getText().isEmpty() || txtDownPayment.getText().isEmpty() ||
```

```
            txtInterestRate.getText().isEmpty()) {
```

```
            txtResult.setText("Please fill all fields!");
```

```
            return;
```

```
        }
```

```
        double price = Double.parseDouble(txtPrice.getText());
```

```
        double downPayment = Double.parseDouble(txtDownPayment.getText());
```

```
        double annualRate = Double.parseDouble(txtInterestRate.getText());
```

```
        int months = (int) sldLoanPeriod.getValue();
```

```
        String frequency = cmbFrequency.getValue();
```

```
        double principal = price - downPayment;
```

```
if (price <= 0 || downPayment < 0 || annualRate < 0) {
```

```
    txtResult.setText("Invalid values entered!");
```

```
    return;
```

```
}
```

```
double payment = 0.0;
```

```
switch (frequency) {
```

```
    case "Monthly":
```

```
        payment = calculateLoan(principal, annualRate / 12 / 100, months);
```

```
        break;
```

```
    case "Bi-Weekly":
```

```
        payment = calculateLoan(principal, annualRate / 26 / 100, months / 12 * 26);
```

```
        break;
```

```
    case "Weekly":
```

```
        payment = calculateLoan(principal, annualRate / 52 / 100, months / 12 * 52);
```

```
        break;
```



```
}

    txtResult.setText(String.format("$%.2f", payment));

} catch (NumberFormatException e) {

    txtResult.setText("Invalid input! Please enter numbers.");

}

}
```

@FXML

```
private void clearFields() {

    txtTypeOfVehicle.clear();

    txtAgeOfVehicle.clear();

    txtPrice.clear();

    txtDownPayment.clear();

    txtInterestRate.clear();

    sldLoanPeriod.setValue(12);

    cmbFrequency.setValue("Monthly");

}
```

```

        txtResult.clear();

    }

    private double calculateLoan(double principal, double rate, int numPayments) {

        if (rate == 0) return principal / numPayments;

        return principal * (rate * Math.pow(1 + rate, numPayments)) /

            (Math.pow(1 + rate, numPayments) - 1);

    }

}

```

Layout.fxml

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

```
<!--
```

```

/*****

```

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-->

<?import javafx.scene.control.*?>

<?import javafx.scene.layout.*?>

<**GridPane** xmlns:fx="http://javafx.com/fxml/1"

fx:controller="application.Controller"

alignment="center" hgap="10" vgap="10">

<!-- Labels and Input Fields -->

<**Label** text="Type of Vehicle:" GridPane.rowIndex="0" GridPane.columnIndex="0"/>

<**TextField** fx:id="txtTypeOfVehicle" GridPane.rowIndex="0" GridPane.columnIndex="1"/>

<Label text="Age of Vehicle:" GridPane.rowIndex="1" GridPane.columnIndex="0"/>

<TextField fx:id="txtAgeOfVehicle" GridPane.rowIndex="1" GridPane.columnIndex="1"/>

<Label text="Price of the Vehicle (\$):" GridPane.rowIndex="2"
GridPane.columnIndex="0"/>

<TextField fx:id="txtPrice" GridPane.rowIndex="2" GridPane.columnIndex="1"/>

<Label text="Down Payment (\$):" GridPane.rowIndex="3" GridPane.columnIndex="0"/>

<TextField fx:id="txtDownPayment" GridPane.rowIndex="3" GridPane.columnIndex="1"/>

<Label text="Interest Rate (%):" GridPane.rowIndex="4" GridPane.columnIndex="0"/>

<TextField fx:id="txtInterestRate" GridPane.rowIndex="4" GridPane.columnIndex="1"/>

<Label text="Loan Payment Period (Months):" GridPane.rowIndex="5"
GridPane.columnIndex="0"/>

<Slider fx:id="sldLoanPeriod" min="12" max="96" value="12"

majorTickUnit="12" showTickMarks="true" showTickLabels="true"

```
GridPane.rowIndex="5" GridPane.columnIndex="1"/>
```

```
<Label text="Loan Payment Frequency:" GridPane.rowIndex="6"  
GridPane.columnIndex="0"/>
```

```
<ComboBox fx:id="cmbFrequency" GridPane.rowIndex="6" GridPane.columnIndex="1"/>
```

```
<!-- Buttons -->
```

```
<Button fx:id="btnCalculate" text="Get Results" onAction="#calculatePayment"  
GridPane.rowIndex="7" GridPane.columnIndex="0"/>
```

```
<Button fx:id="btnClear" text="Clear" onAction="#clearFields" GridPane.rowIndex="7"  
GridPane.columnIndex="1"/>
```

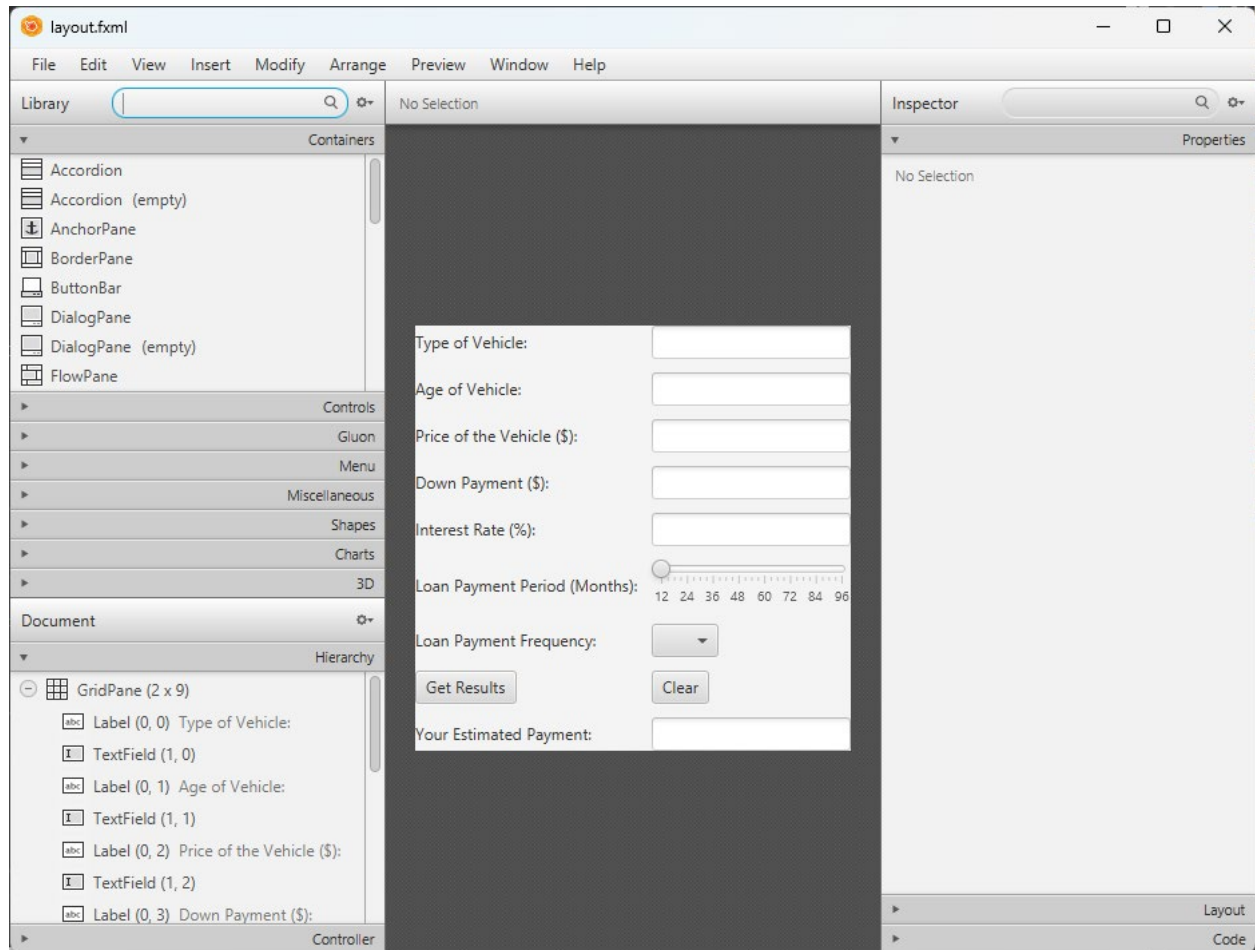
```
<!-- Result Label -->
```

```
<Label text="Your Estimated Payment:" GridPane.rowIndex="8"  
GridPane.columnIndex="0"/>
```

```
<TextField fx:id="txtResult" editable="false" GridPane.rowIndex="8"  
GridPane.columnIndex="1"/>
```

```
</GridPane>
```

Screen Shots





Car Loan Payment Calculator



Type of Vehicle:

Volkswagen Tiguan

Age of Vehicle:

10

Price of the Vehicle (\$):

12000

Down Payment (\$):

1000

Interest Rate (%):

9.99

Loan Payment Period (Months):

12 24 36 48 60 72 84 96

Loan Payment Frequency:

Monthly

Get Results

Clear

Your Estimated Payment:

\$278.94