Module: (2019) 4COSC010C.3 Programming Principles II

Module Leader: Mr.Guhanathan Poravi

Summative Assessment - Coursework/Assignment 01

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UOW NO: W1790334

IIT NO: 20191193

Name: L.A.D.R. Gunawardana

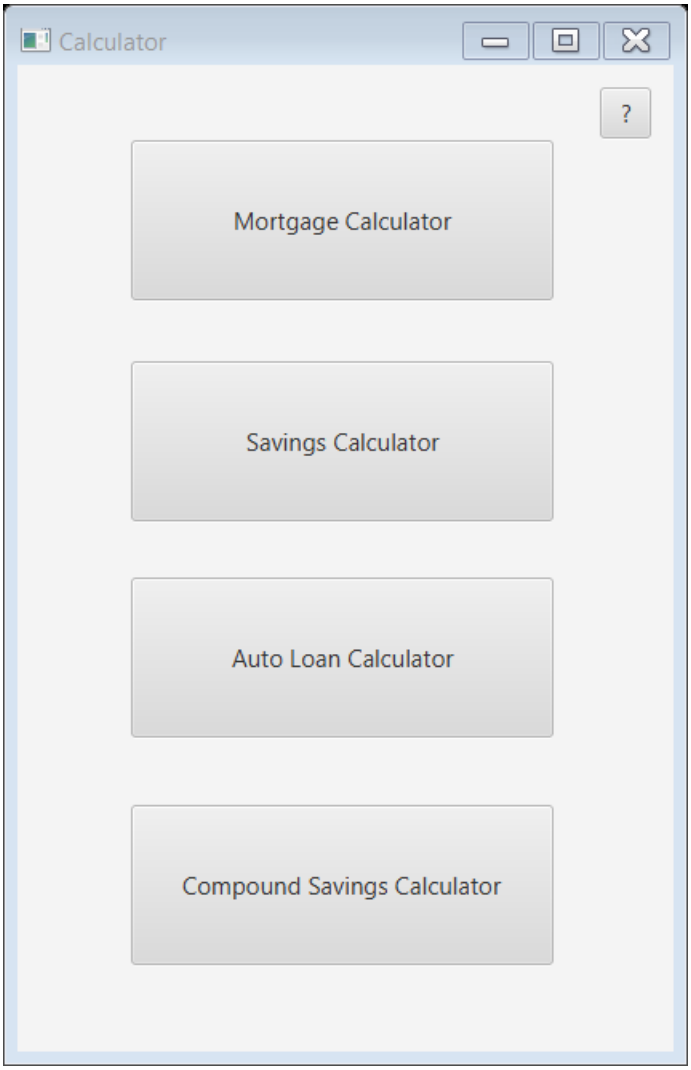
Content

Main.java

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


public class Main extends Application {

    public static Button button1;

    public static Button button2;

    public static Button button3;

    public static Button button4;

    public static Button helpBt;



    @Override
    public void start(Stage primaryStage) throws Exception {

        button1 = new Button();
        button1.setText("Mortgage Calculator");
        button1.setLayoutX(71);
        button1.setLayoutY(47);
        button1.setPrefHeight(100);
        button1.setPrefWidth(264);



        button2 = new Button();
        button2.setText("Savings Calculator");
        button2.setLayoutX(71);
        button2.setLayoutY(185);
        button2.setPrefHeight(100);
        button2.setPrefWidth(264);


        button3 = new Button();
        button3.setText("Auto Loan Calculator");
        button3.setLayoutX(71);
        button3.setLayoutY(320);
```

```
button3.setPrefHeight(100);
button3.setPrefWidth(264);


button4 = new Button();
button4.setText("Compound Savings Calculator");
button4.setLayoutX(71);
button4.setLayoutY(462);
button4.setPrefHeight(100);
button4.setPrefWidth(264);



helpBt = new Button();
helpBt.setText("?");
helpBt.setLayoutX(364);
helpBt.setLayoutY(14);
helpBt.setPrefHeight(32);
helpBt.setPrefWidth(32);


Pane Pane1 = new Pane();

Pane1.getChildren().add(button1);

Pane1.getChildren().add(button2);

Pane1.getChildren().add(button3);

Pane1.getChildren().add(button4);

Pane1.getChildren().add(helpBt);



Stage stage = new Stage();
stage.setTitle("Calculator");
stage.setScene(new Scene(Pane1, 410,616));
stage.show();

button1.setOnAction(new EventHandler<ActionEvent>() {
    @Override
    public void handle(ActionEvent event) {
        Mortgage.MortgageWindow();
    }
});


button2.setOnAction(new EventHandler<ActionEvent>() {
    @Override
    public void handle(ActionEvent event) {
        Savings.SavingsWindow();
    }
});


button3.setOnAction(new EventHandler<ActionEvent>() {
```

```
            @Override public void handle(ActionEvent event) {
                Loan.LoanWindow();
            }
        });



        button4.setOnAction(new EventHandler<ActionEvent>() {
            @Override
            public void handle(ActionEvent event) {
                Compound.CompoundWindow();
            }
        });


        helpBt.setOnAction(new EventHandler<ActionEvent>() {
            @Override
            public void handle(ActionEvent event) {
                Help.HelpWindow();
            }
        });









    }

}
```



-- Mortgage Calculator --

Mortgage.java

```
import javafx.event.ActionEvent;
import javafx.event.EventHandler;
import javafx.scene.Scene;
import javafx.scene.control.Alert;
import javafx.scene.control.Button;
import javafx.scene.control.Label;
```

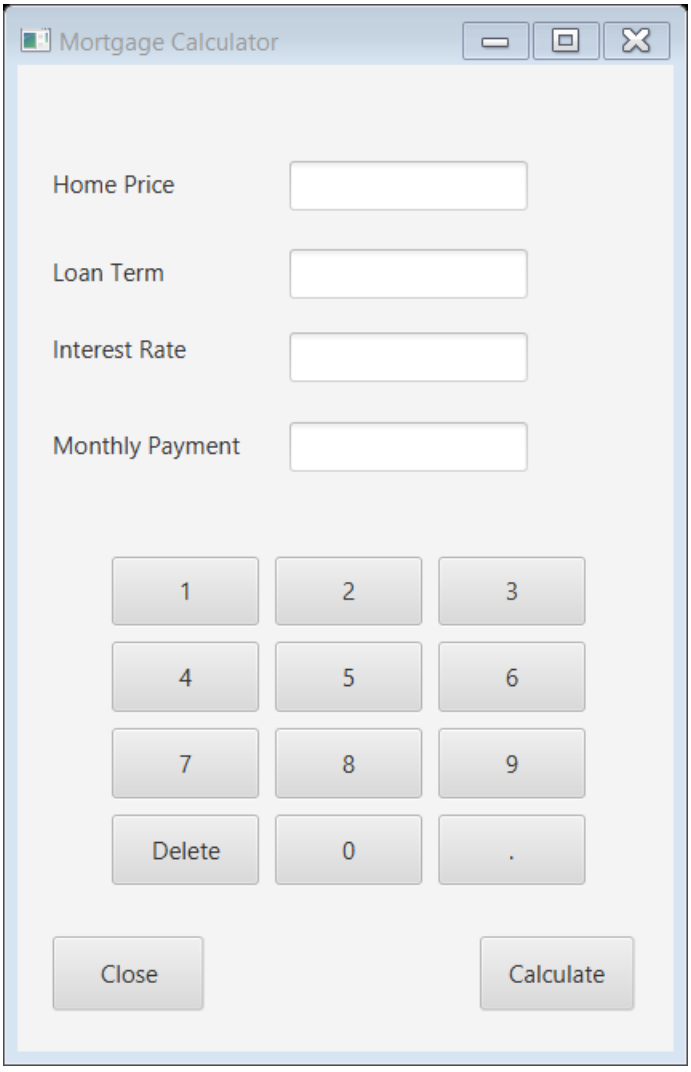
```
import javafx.scene.control.TextField;
import javafx.scene.layout.AnchorPane;
import javafx.scene.layout.GridPane;
import javafx.scene.layout.Pane;
import javafx.stage.Stage;

import java.text.DecimalFormat;

public class Mortgage {


    // inputs

    public static Label HomePrice;
    public static Label LoanTerm;
    public static Label InterestRate;
    public static Label MonthlyPayment;
    public static TextField HP;
    public static TextField LT;
    public static TextField IR;
    public static TextField MP;
    public static Button Close;
    public static Button Calculate;


    // labels

    public static Label create_Lable(String promptText, double x, double y)
    {
        Label label = new Label(promptText);
        label.setLayoutX(x);
        label.setLayoutY(y);
        return label;
    }


    // text fields

    public static TextField create_Text_Field(String promptText, double x,
double y, double scaleX, double scaleY)
    {
        TextField textField = new TextField();
        textField.setLayoutX(x);
        textField.setLayoutY(y);
        textField.setPrefWidth(scaleX);
        textField.setPrefHeight(scaleY);
        return textField;
    }


    // buttons

    public static Button create_Button(String Text, double x, double y,
double scaleX, double scaleY)
    {
        Button button = new Button();
        button.setText(Text);
```

```
        button.setLayoutX(x);
        button.setLayoutY(y);
        button.setPrefWidth(scaleX);
        button.setPrefHeight(scaleY);
        return button;
    }


    // anchor pane

    public static AnchorPane create_Anchor_Pane(double x, double y){
        AnchorPane anchorPane = new AnchorPane();
        anchorPane.setLayoutX(x);
        anchorPane.setLayoutY(y);
        return anchorPane;
    }



////////////////////////////////////////////////////////////////////////////////



    public static void MortgageWindow() {

        // Assigning Labels

        HomePrice = create_Lable("Home Price", 22, 64);
        LoanTerm = create_Lable("Loan Term", 22, 119);
        InterestRate = create_Lable("Interest Rate", 22, 167);
        MonthlyPayment = create_Lable("Monthly Payment", 22, 227);


        // Assigning TextFields

        HP = create_Text_Field("rupees",170,60,148.8,25.6);
        LT = create_Text_Field("years",170,115,148.8,25.6);
        IR = create_Text_Field("%",170,167,148.8,25.6);
        MP = create_Text_Field("rupees",170,223,148.8,25.6);


        //Assigning Buttons

        Close = create_Button("Close",22,544,94.4,46.4);
        Calculate = create_Button("Calculate",289,544,96.4,46.4);



        // Adding Items to pane

        Pane Pane1 = new Pane();

        Pane1.getChildren().add(HomePrice);
        Pane1.getChildren().add(LoanTerm);
        Pane1.getChildren().add(InterestRate);
        Pane1.getChildren().add(MonthlyPayment);
```

```
        Pane1.getChildren().add(HP);
        Pane1.getChildren().add(LT);
        Pane1.getChildren().add(IR);
        Pane1.getChildren().add(MP);

        Pane1.getChildren().add(Close);
        Pane1.getChildren().add(Calculate);


        GridPane numPadPane = NumberPad.AddNumberPad(59,307,HP,LT,IR,MP);
        numPadPane.setPrefHeight(205);
        numPadPane.setPrefWidth(296);
        Pane1.getChildren().add(numPadPane);


        Stage mortgageStage = new Stage();
        mortgageStage.setTitle("Mortgage Calculator");
        mortgageStage.setScene(new Scene(Pane1, 410,616));
        mortgageStage.show();


////////////////////////////////////////////////////////////////////////////


        //Calculations


        // (H) HP - Home Price
        // (L) LT - Loan Term
        // (I) IR - Interest Rate
        // (M) MP - Monthly Payment


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

            @Override
            public void handle(ActionEvent event) {

                DecimalFormat decimalFormat = new DecimalFormat("#.##");

                if (MP.getText().equals("") && !HP.getText().equals("") &&
!LT.getText().equals("") && !IR.getText().equals("")) {
                    double H = Double.parseDouble(HP.getText());
                    double I = (Double.parseDouble(IR.getText())) / 12 / 100;
                    int L = 12 * (Integer.parseInt(LT.getText()));
                    double M = H * I * Math.pow(1 + I, L) / (Math.pow(1 + I,
L) - 1);
                    MP.setText(String.valueOf(decimalFormat.format(M)));
                }

                else if (HP.getText().equals("") && !LT.getText().equals("")
&& !IR.getText().equals("") && !MP.getText().equals("")) {
                    double M = Double.parseDouble(MP.getText());
                    double I = (Double.parseDouble(IR.getText())) / 12 / 100;
                    int L = 12 * (Integer.parseInt(LT.getText()));
                    double H = M * (Math.pow(1 + I, L) - 1) / (I * Math.pow(1
```

```
+ I, L));
                    HP.setText(String.valueOf(decimalFormat.format(H)));
                }


                else if (LT.getText().equals("") && !HP.getText().equals("")
&& !MP.getText().equals("") && !IR.getText().equals("")) {
                    double I = (Double.parseDouble(IR.getText())) / 12 / 100;
                    double M = Double.parseDouble(MP.getText());
                    double H = Double.parseDouble(HP.getText());
                    double L = (Math.log((M / (M - ((I / 12) * (H - M))))))) /
(12 * Math.log(1 + (I / 12)));
                    LT.setText(String.valueOf(decimalFormat.format(L)));
                }

                else if (IR.getText().equals("") && !HP.getText().equals("")
&& !LT.getText().equals("") && !MP.getText().equals("")) {
                    Alert alert = new Alert(Alert.AlertType.NONE);
                    alert.setAlertType(Alert.AlertType.INFORMATION);
                    alert.setContentText("Interest Rate Can't Be Empty.");
                    alert.showAndWait();
                }



            }
        });



        Close.setOnAction(new EventHandler<ActionEvent>() {
            @Override
            public void handle(ActionEvent event) {
               HP.setText("");
               LT.setText("");
               IR.setText("");
               MP.setText("");
               mortgageStage.close();
               Pane1.getChildren().clear();
               numPadPane.getChildren().clear();

            }
        });
```

```
    }
}
```


Mortgage Calculator
Home Price
Loan Term
Interest Rate
Monthly Payment
1
2
3
4
5
6
7
8
9
Delete
0
.
Close
Calculate

-- Savings Calculator --

Savings.java

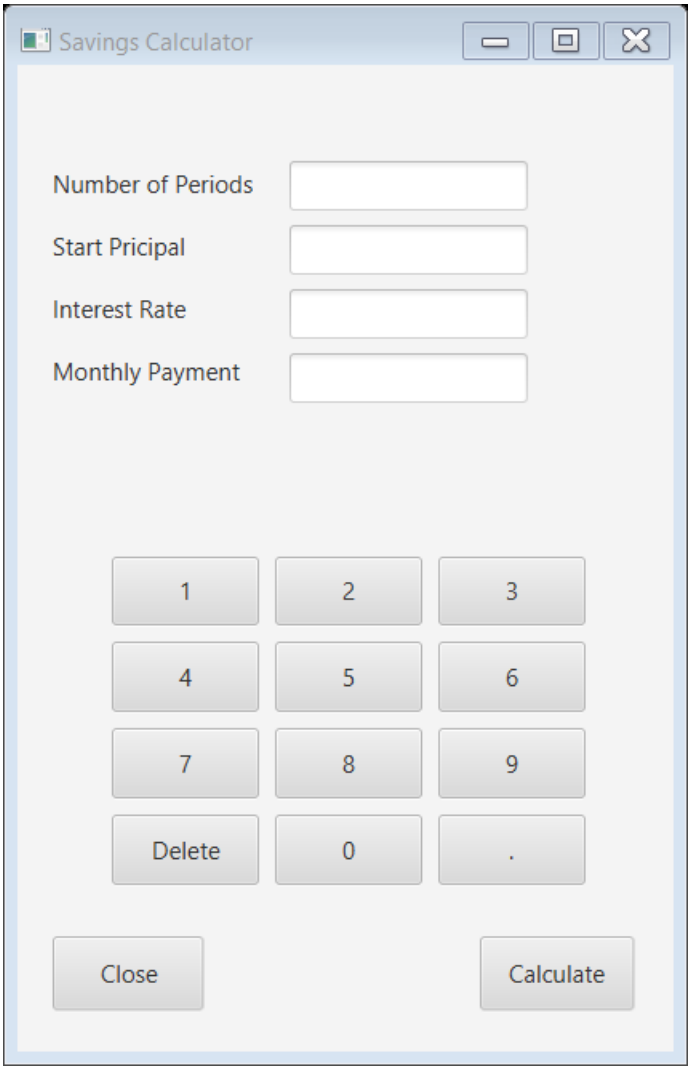
```
import javafx.event.ActionEvent;
import javafx.event.EventHandler;
import javafx.scene.Scene;
import javafx.scene.control.Button;
import javafx.scene.control.Label;
import javafx.scene.control.TextField;
import javafx.scene.layout.AnchorPane;
import javafx.scene.layout.GridPane;
import javafx.scene.layout.Pane;
import javafx.stage.Stage;

import java.text.DecimalFormat;

public class Savings {

    // inputs

    public static Label NumberOfPeriods;
    public static Label StartPrincipal;
    public static Label InterestRate;
    public static Label MonthlyPayment;
    public static Label FutureValue;
    public static TextField NOP;
    public static TextField SP;
    public static TextField IR;
    public static TextField MP;
    public static TextField FV;
    public static Button Close;
    public static Button Calculate;

    // labels

    public static Label create_Lable(String promptText, double x, double y)
    {
        Label label = new Label(promptText);
        label.setLayoutX(x);
        label.setLayoutY(y);
        return label;
    }


    // text fields

    public static TextField create_Text_Field(String promptText, double x,
double y, double scaleX, double scaleY)
```

```
    {
        TextField textField = new TextField();
        textField.setLayoutX(x);
        textField.setLayoutY(y);
        textField.setPrefWidth(scaleX);
        textField.setPrefHeight(scaleY);
        return textField;
    }


    // buttons

    public static Button create_Button(String Text, double x, double y,
double scaleX, double scaleY)
    {
        Button button = new Button();
        button.setText(Text);
        button.setLayoutX(x);
        button.setLayoutY(y);
        button.setPrefWidth(scaleX);
        button.setPrefHeight(scaleY);
        return button;
    }


    // anchor pane

    public static AnchorPane create_Anchor_Pane(double x, double y){
        AnchorPane anchorPane = new AnchorPane();
        anchorPane.setLayoutX(x);
        anchorPane.setLayoutY(y);
        return anchorPane;
    }



////////////////////////////////////////////////////////////////////////////
////////////////////////////////////////


    public static void SavingsWindow() {

        // Assigning Labels

        NumberOfPeriods = create_Lable("Number of Periods", 22, 64);
        StartPrincipal = create_Lable("Start Pricipal", 22, 103);
        InterestRate = create_Lable("Interest Rate", 22, 142);
        MonthlyPayment = create_Lable("Monthly Payment", 22, 181);
        FutureValue = create_Lable("Future Value",22,220);



        // Assigning TextFields

        NOP = create_Text_Field("years",170,60,148.8,25.6);
```

```
        SP = create_Text_Field("years",170,100,148.8,25.6);
        IR = create_Text_Field("%",170,140,148.8,25.6);
        MP = create_Text_Field("rupees",170,180,148.8,25.6);
        FV = create_Text_Field("rupees",170,220,148.8,25.6);



        //Assigning Buttons

        Close = create_Button("Close",22,544,94.4,46.4);
        Calculate = create_Button("Calculate",289,544,96.4,46.4);


        Pane Pane1 = new Pane();

        Pane1.getChildren().add(NumberOfPeriods);
        Pane1.getChildren().add(StartPrincipal);
        Pane1.getChildren().add(InterestRate);
        Pane1.getChildren().add(MonthlyPayment);


        Pane1.getChildren().add(NOP);
        Pane1.getChildren().add(SP);
        Pane1.getChildren().add(IR);
        Pane1.getChildren().add(MP);

        Pane1.getChildren().add(Close);
        Pane1.getChildren().add(Calculate);



        GridPane numPadPane3 = NumberPad.AddNumberPad(59,307,NOP,SP,IR,MP);
        numPadPane3.setPrefHeight(205);
        numPadPane3.setPrefWidth(296);
        Pane1.getChildren().add(numPadPane3);



        Stage savingsStage = new Stage();
        savingsStage.setTitle("Savings Calculator");
        savingsStage.setScene(new Scene(Pane1, 410,616));
        savingsStage.show();



////////////////////////////////////////////////////////////////////////////////
////////////////////////////////////////////////////////////////////////////////


        // Calculations

        // (N) NOP - Number of Periods
        // (S) SP - Start Principal
        // (I) IR - Interest Rate
        // (M) MP - Monthly Payment
```

```
        Calculate.setOnAction(new EventHandler<ActionEvent>() {

            @Override
            public void handle(ActionEvent event) {
                DecimalFormat decimalFormat = new DecimalFormat("#.##");

                if (FV.getText().equals("") && !SP.getText().equals("") &&
!IR.getText().equals("") && !NOP.getText().equals("")) { ;
                    double S = Double.parseDouble(SP.getText());
                    double I = Double.parseDouble(IR.getText());
                    double N = Double.parseDouble(NOP.getText());
                    double F = S * (Math.pow((1 + I / 100), N));
                    FV.setText(String.valueOf(decimalFormat.format(F)));

                }



                else if (SP.getText().equals("") && !FV.getText().equals("")
&& !IR.getText().equals("") && !NOP.getText().equals("")){
                    double I = Double.parseDouble(IR.getText());
                    double N = Double.parseDouble(NOP.getText());
                    double F = Double.parseDouble(FV.getText());
                    double S = F / (Math.pow((1 + I / 100), N));
                    SP.setText(String.valueOf(decimalFormat.format(S)));
                }



                else if (IR.getText().equals("") && !FV.getText().equals("")
&& !SP.getText().equals("") && !NOP.getText().equals("")) {
                    double S = Double.parseDouble(SP.getText());
                    double N = Double.parseDouble(NOP.getText());
                    double F = Double.parseDouble(FV.getText());
                    double I = 100 * ((Math.pow(F/S,1/N))-1);
                    IR.setText(String.valueOf(decimalFormat.format(I)));
                }



                else if (NOP.getText().equals("") && !FV.getText().equals("")
&& !SP.getText().equals("") && !IR.getText().equals("")) {
                    double S = Double.parseDouble(SP.getText());
                    double I = Double.parseDouble(IR.getText());
                    double F = Double.parseDouble(FV.getText());
                    double N = (Math.log(F) - Math.log(S)) / (Math.log(1 + I
/ 100));
                    NOP.setText(String.valueOf(decimalFormat.format(N)));
                }



            }
        });
```

```
        Close.setOnAction(new EventHandler<ActionEvent>() {
            @Override
            public void handle(ActionEvent event) {
                NOP.setText("");
                SP.setText("");
                IR.setText("");
                MP.setText("");
                savingsStage.close();
                Pane1.getChildren().clear();
                numPadPane3.getChildren().clear();
            }
        });









    }
}
```



-- Auto Loan Calculator --

Loan.java

```
import javafx.event.ActionEvent;
import javafx.event.EventHandler;
import javafx.scene.Scene;
import javafx.scene.control.Alert;
import javafx.scene.control.Button;
import javafx.scene.control.Label;
import javafx.scene.control.TextField;
```

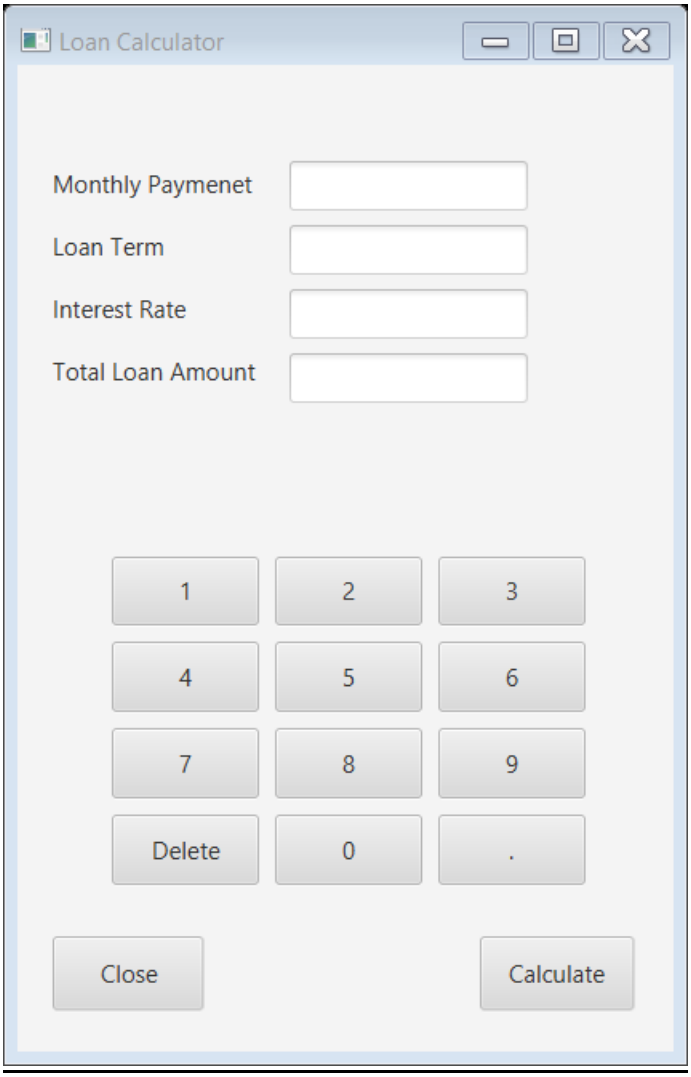
```
import javafx.scene.layout.AnchorPane;
import javafx.scene.layout.GridPane;
import javafx.scene.layout.Pane;
import javafx.stage.Stage;

import java.text.DecimalFormat;


public class Loan {

    // inputs

    public static Label MonthlyPayment;
    public static Label LoanTerm;
    public static Label InterestRate;
    public static Label TotalLoanAmount;
    public static TextField MP;
    public static TextField LT;
    public static TextField IR;
    public static TextField TLA;
    public static TextField TIV;

    public static Button Close;
    public static Button Calculate;
    ;


    // labels

    public static Label create_Lable(String promptText, double x, double y)
    {
        Label label = new Label(promptText);
        label.setLayoutX(x);
        label.setLayoutY(y);
        return label;
    }


    // text fields

    public static TextField create_Text_Field(String promptText, double x,
double y, double scaleX, double scaleY)
    {
        TextField textField = new TextField();
        textField.setLayoutX(x);
        textField.setLayoutY(y);
        textField.setPrefWidth(scaleX);
        textField.setPrefHeight(scaleY);
        return textField;
    }


    // buttons

    public static Button create_Button(String Text, double x, double y,
double scaleX, double scaleY)
    {
```

```
        Button button = new Button();
        button.setText(Text);
        button.setLayoutX(x);
        button.setLayoutY(y);
        button.setPrefWidth(scaleX);
        button.setPrefHeight(scaleY);
        return button;
    }


    // anchor pane

    public static AnchorPane create_Anchor_Pane(double x, double y){
        AnchorPane anchorPane = new AnchorPane();
        anchorPane.setLayoutX(x);
        anchorPane.setLayoutY(y);
        return anchorPane;
    }



////////////////////////////////////////////////////////////////////////////////



    public static void LoanWindow() {

        // Assigning Labels

        MonthlyPayment = create_Lable("Monthly Paymenet", 22, 64);
        LoanTerm = create_Lable("Loan Term", 22, 103);
        InterestRate = create_Lable("Interest Rate", 22, 142);
        TotalLoanAmount = create_Lable("Total Loan Amount", 22, 181);


        // Assigning TextFields

        MP = create_Text_Field("rupees",170,60,148.8,25.6);
        LT = create_Text_Field("years",170,100,148.8,25.6);
        IR = create_Text_Field("%",170,140,148.8,25.6);
        TLA = create_Text_Field("rupees",170,180,148.8,25.6);



        //Assigning Buttons

        Close = create_Button("Close",22,544,94.4,46.4);
        Calculate = create_Button("Calculate",289,544,96.4,46.4);


        Pane Pane1 = new Pane();

        Pane1.getChildren().add(MonthlyPayment);
        Pane1.getChildren().add(LoanTerm);
        Pane1.getChildren().add(InterestRate);
        Pane1.getChildren().add(TotalLoanAmount);
```

```
        Pane1.getChildren().add(MP);
        Pane1.getChildren().add(LT);
        Pane1.getChildren().add(IR);
        Pane1.getChildren().add(TLA);


        Pane1.getChildren().add(Close);
        Pane1.getChildren().add(Calculate);


        GridPane numPadPane1 = NumberPad.AddNumberPad(59,307,MP,LT,IR,TLA);
        numPadPane1.setPrefHeight(205);
        numPadPane1.setPrefWidth(296);
        Pane1.getChildren().add(numPadPane1);




        Stage loanStage = new Stage();
        loanStage.setTitle("Loan Calculator");
        loanStage.setScene(new Scene(Pane1, 410,616));
        loanStage.show();


////////////////////////////////////////////////////////////////////////////////


        // Calculations


        // (A) AP - Auto Price
        // (L) LT - Loan Term
        // (I) IR - Interest Rate
        // (D) DP - Down Payment
        // (T) TIV - Trade-in Value



        Calculate.setOnAction(new EventHandler<ActionEvent>() {
            @Override
            public void handle(ActionEvent event) {

                DecimalFormat decimalFormat = new DecimalFormat("#.##");


                if (MP.getText().equals("") && !TLA.getText().equals("") &&
!IR.getText().equals("") && !LT.getText().equals("")){
                    double P = Double.parseDouble(TLA.getText());
                    double I = (Double.parseDouble(IR.getText()))/12/100;
                    int T = 12 * (Integer.parseInt(LT.getText()));
                    double M = P * I * Math.pow(1 + I,T)/(Math.pow(1+I,T)-1);
                    MP.setText(String.valueOf(decimalFormat.format(M)));
                }
```

```
                else if (TLA.getText().equals("") && !MP.getText().equals("")
&& !IR.getText().equals("") && !LT.getText().equals("")){
                    double I = (Double.parseDouble(IR.getText()))/12/100;
                    int T = 12 * (Integer.parseInt(LT.getText()));
                    double M = Double.parseDouble(MP.getText());
                    double P = M * (Math.pow(1+I,T)-1)/ (I *
Math.pow(1+I,T));
                    TLA.setText(String.valueOf(decimalFormat.format(P)));
                }

                else if (LT.getText().equals("") && !MP.getText().equals("")
&& !TLA.getText().equals("") && !IR.getText().equals("")) {
                    double I = (Double.parseDouble(IR.getText()))/12/100;
                    double M = Double.parseDouble(MP.getText());
                    double P = Double.parseDouble(TLA.getText());
                    double T = (Math.log((M/(M-((I/12)*(P-
M))))))/(12*Math.log(1+(I/12)));
                    LT.setText(String.valueOf(decimalFormat.format(T)));
                }

                else if (IR.getText().equals("") && !MP.getText().equals("")
&& !TLA.getText().equals("") && !LT.getText().equals("")){
                    Alert alert = new Alert(Alert.AlertType.NONE);
                    alert.setAlertType(Alert.AlertType.INFORMATION);
                    alert.setContentText("Interest Rate Can't Be Empty.");
                    alert.showAndWait();
                }



                else {
                    Alert alert = new Alert(Alert.AlertType.NONE);
                    alert.setAlertType(Alert.AlertType.WARNING);
                    alert.setContentText("Input mandatory data and check the
element you want is empty");
                    alert.showAndWait();
                }









            }
        });




        Close.setOnAction(new EventHandler<ActionEvent>() {
            @Override
            public void handle(ActionEvent event) {
                MP.setText("");
```

```
                LT.setText("");
                IR.setText("");
                TLA.setText("");
                loanStage.close();
                Pane1.getChildren().clear();
                numPadPane1.getChildren().clear();
            }
        });









    }
}
```



-- Compound Savings Calculator --

Compound.java

```
import javafx.event.ActionEvent;
import javafx.event.EventHandler;
import javafx.scene.Scene;
import javafx.scene.control.Alert;
```

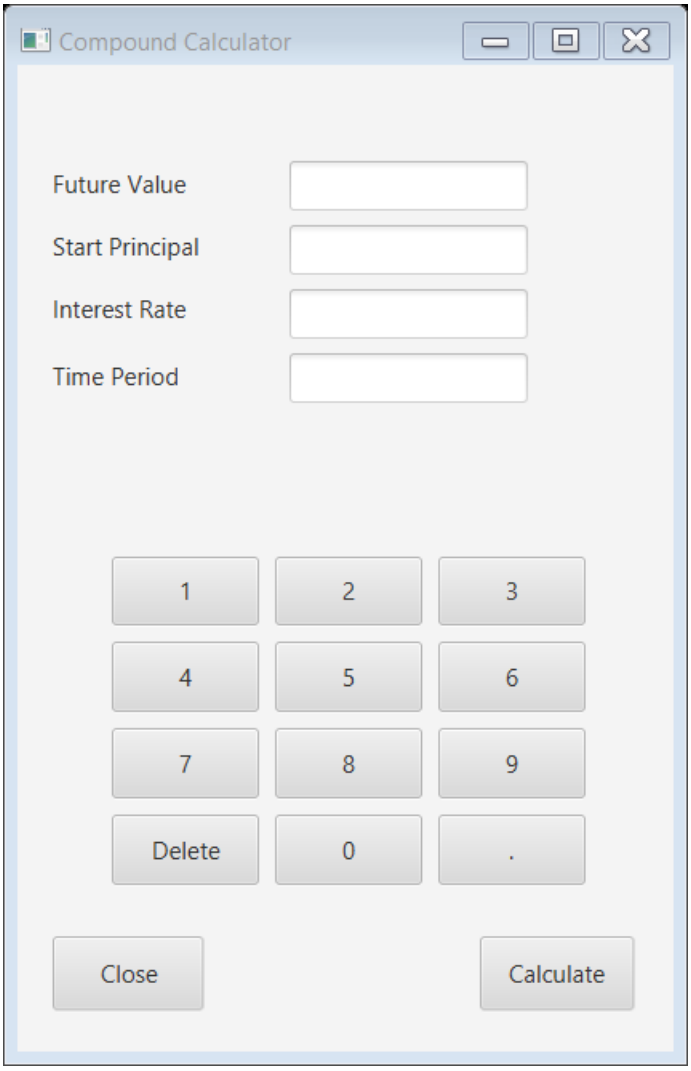
```
import javafx.scene.control.Button;
import javafx.scene.control.Label;
import javafx.scene.control.TextField;
import javafx.scene.layout.AnchorPane;
import javafx.scene.layout.GridPane;
import javafx.scene.layout.Pane;
import javafx.stage.Stage;

import java.text.DecimalFormat;


public class Compound {

    // inputs

    public static Label FutureValue;
    public static Label StartPricipal;
    public static Label InterestRate;
    public static Label TimePeriod;
    public static TextField FV;
    public static TextField SP;
    public static TextField IR;
    public static TextField TP;

    public static Button Close;
    public static Button Calculate;



    // labels

    public static Label create_Lable(String promptText, double x, double y)
    {
        Label label = new Label(promptText);
        label.setLayoutX(x);
        label.setLayoutY(y);
        return label;
    }


    // text fields

    public static TextField create_Text_Field(String promptText, double x,
double y, double scaleX, double scaleY)
    {
        TextField textField = new TextField();
        textField.setLayoutX(x);
        textField.setLayoutY(y);
        textField.setPrefWidth(scaleX);
        textField.setPrefHeight(scaleY);
        return textField;
    }


    // buttons

    public static Button create_Button(String Text, double x, double y,
```

```
double scaleX, double scaleY)
    {
        Button button = new Button();
        button.setText(Text);
        button.setLayoutX(x);
        button.setLayoutY(y);
        button.setPrefWidth(scaleX);
        button.setPrefHeight(scaleY);
        return button;
    }


    // anchor pane

    public static AnchorPane create_Anchor_Pane(double x, double y){
        AnchorPane anchorPane = new AnchorPane();
        anchorPane.setLayoutX(x);
        anchorPane.setLayoutY(y);
        return anchorPane;
    }



////////////////////////////////////////////////////////////////////////////////
////////////////////////////////////////



    public static void CompoundWindow() {

        // Assigning Labels

        FutureValue = create_Lable("Future Value", 22, 64);
        StartPricipal = create_Lable("Start Principal", 22, 103);
        InterestRate = create_Lable("Interest Rate", 22, 142);
        TimePeriod = create_Lable("Time Period",22,184);


        // Assigning TextFields

        FV = create_Text_Field("rupees",170,60,148.8,25.6);
        SP = create_Text_Field("years",170,100,148.8,25.6);
        IR = create_Text_Field("%",170,140,148.8,25.6);
        TP = create_Text_Field("rupees",170,180,148.8,25.6);



        //Assigning Buttons

        Close = create_Button("Close",22,544,94.4,46.4);
        Calculate = create_Button("Calculate",289,544,96.4,46.4);



        Pane Pane1 = new Pane();
```

```
        Pane1.getChildren().add(FutureValue);
        Pane1.getChildren().add(StartPricipal);
        Pane1.getChildren().add(InterestRate);
        Pane1.getChildren().add(TimePeriod);

        Pane1.getChildren().add(FV);
        Pane1.getChildren().add(SP);
        Pane1.getChildren().add(IR);
        Pane1.getChildren().add(TP);

        Pane1.getChildren().add(Close);
        Pane1.getChildren().add(Calculate);

        GridPane numPadPane2 = NumberPad.AddNumberPad(59,307,FV, SP,IR,TP);
        numPadPane2.setPrefHeight(205);
        numPadPane2.setPrefWidth(296);
        Pane1.getChildren().add(numPadPane2);



        Stage compoundStage = new Stage();
        compoundStage.setTitle("Compound Calculator");
        compoundStage.setScene(new Scene(Pane1, 410,616));
        compoundStage.show();


////////////////////////////////////////////////////////////////////////////
////////////////////////////////////////////////


        // Calculations


        // (F) FV - Future Value
        // (S) SP - Start Principal
        // (I) IR - Interest Rate
        // (T) TP - Time Period



        Calculate.setOnAction(new EventHandler<ActionEvent>() {
            @Override
            public void handle(ActionEvent event) {


                DecimalFormat decimalFormat = new DecimalFormat("#.##");


                if (FV.getText().equals("") && !SP.getText().equals("") &&
!IR.getText().equals("") && !TP.getText().equals("")) { ;
                    double S = Double.parseDouble(SP.getText());
                    double I = Double.parseDouble(IR.getText());
                    double T = Double.parseDouble(TP.getText());
                    double F = S * (Math.pow((1 + I / 100), T));
                    FV.setText(String.valueOf(decimalFormat.format(F)));
                }
```

```
                else if (SP.getText().equals("") && !FV.getText().equals("")
&& !IR.getText().equals("") && !TP.getText().equals("")){
                    double I = Double.parseDouble(IR.getText());
                    double T = Double.parseDouble(TP.getText());
                    double F = Double.parseDouble(FV.getText());
                    double S = F / (Math.pow((1 + I / 100), T));
                    SP.setText(String.valueOf(decimalFormat.format(S)));
                }

                else if (IR.getText().equals("") && !FV.getText().equals("")
&& !SP.getText().equals("") && !TP.getText().equals("")) {
                    double S = Double.parseDouble(SP.getText());
                    double T = Double.parseDouble(TP.getText());
                    double F = Double.parseDouble(FV.getText());
                    double I = 100 * ((Math.pow(F/S,1/T))-1);
                    IR.setText(String.valueOf(decimalFormat.format(I)));
                }

                else if (TP.getText().equals("") && !FV.getText().equals("")
&& !SP.getText().equals("") && !IR.getText().equals("")) {
                    double S = Double.parseDouble(SP.getText());
                    double I = Double.parseDouble(IR.getText());
                    double F = Double.parseDouble(FV.getText());
                    double T = (Math.log(F)-Math.log(S))/(Math.log(1+I/100));
                    TP.setText(String.valueOf(decimalFormat.format(T)));
                }



                else{
                    Alert alert = new Alert(Alert.AlertType.NONE);
                    alert.setAlertType(Alert.AlertType.WARNING);
                    alert.setContentText("Input mandatory data and check the
element you want is empty");
                    alert.showAndWait();
                }




            }
        });

        Close.setOnAction(new EventHandler<ActionEvent>() {
            @Override
            public void handle(ActionEvent event) {
                FV.setText("");
                SP.setText("");
                IR.setText("");
                TP.setText("");
                compoundStage.close();
                Pane1.getChildren().clear();
                numPadPane2.getChildren().clear();
            }
        })
```

```
        }
}
```



-- Number Pad --

NumberPad.java

```
import javafx.event.ActionEvent;
import javafx.event.EventHandler;
import javafx.scene.control.Button;
import javafx.scene.control.TextField;
import javafx.scene.image.Image;
import javafx.scene.input.MouseEvent;
import javafx.scene.layout.GridPane;

import javax.swing.text.html.ImageView;

public class NumberPad {

    public static GridPane NumberPane = new GridPane();

    public static Button bt1 = addButton("1");
    public static Button bt2 = addButton("2");
    public static Button bt3 = addButton("3");
    public static Button bt4 = addButton("4");
    public static Button bt5 = addButton("5");
    public static Button bt6 = addButton("6");
    public static Button bt7 = addButton("7");
    public static Button bt8 = addButton("8");
    public static Button bt9 = addButton("9");
    public static Button bt0 = addButton("0");

    public static Button btDecimalPoint = addButton(".");
    public static Button btDelete = addButton("Delete");


    static boolean SelectText1 = false;
    static boolean SelectText2 = false;
    static boolean SelectText3 = false;
    static boolean SelectText4 = false;
    static boolean SelectText5 = false;

    private static void NumberPaneItems(double x, double y) {


        NumberPane.addColumn(0, bt1, bt4, bt7, btDelete);
        NumberPane.addColumn(1, bt2, bt5, bt8, bt0);
        NumberPane.addColumn(2, bt3, bt6, bt9, btDecimalPoint);
        NumberPane.setPrefWidth(186);
        NumberPane.setPrefHeight(207);
        NumberPane.setLayoutX(x);
        NumberPane.setLayoutY(y);
        NumberPane.setVgap(10.0);
        NumberPane.setHgap(10.0);
    }

    public static Button addButton(String text){
        Button button = new Button();
        button.setText(text);
```

```
        button.setPrefWidth(94);
        button.setPrefHeight(46);
        return button;
    }


    // Number pad for calculators which have 4 textfields.


    public static GridPane AddNumberPad(double x, double y, TextField
field_1, TextField field_2, TextField field_3, TextField field_4) {

        NumberPaneItems(x, y);

        field_1.setOnMouseClicked(new EventHandler<MouseEvent>() {
            @Override
            public void handle(MouseEvent event) {
                SelectText1 = true;
                SelectText2 = false;
                SelectText3 = false;
                SelectText4 = false;
                SelectText5 = false;

            }
        });

        field_2.setOnMouseClicked(new EventHandler<MouseEvent>() {
            @Override
            public void handle(MouseEvent event) {
                SelectText1 = false;
                SelectText2 = true;
                SelectText3 = false;
                SelectText4 = false;
                SelectText5 = false;
            }
        });

        field_3.setOnMouseClicked(new EventHandler<MouseEvent>() {
            @Override
            public void handle(MouseEvent event) {
                SelectText1 = false;
                SelectText2 = false;
                SelectText3 = true;
                SelectText4 = false;
                SelectText5 = false;
            }
        });

        field_4.setOnMouseClicked(new EventHandler<MouseEvent>() {
            @Override
            public void handle(MouseEvent event) {
                SelectText1 = false;
                SelectText2 = false;
                SelectText3 = false;
                SelectText4 = true;
                SelectText5 = false;
```

```
    }
});

bt1.setOnAction(new EventHandler<ActionEvent>() {
    @Override
    public void handle(ActionEvent event) {
        if (SelectText1) {

            field_1.setText(field_1.getText() + "1");

        } else if (SelectText2) {

            field_2.setText(field_2.getText() + "1");

        } else if (SelectText3) {

            field_3.setText(field_3.getText() + "1");

        } else if (SelectText4) {

            field_4.setText(field_4.getText() + "1");

        }
    }
});

bt2.setOnAction(new EventHandler<ActionEvent>() {
    @Override
    public void handle(ActionEvent event) {
        if (SelectText1) {

            field_1.setText(field_1.getText() + "2");

        } else if (SelectText2) {

            field_2.setText(field_2.getText() + "2");

        } else if (SelectText3) {

            field_3.setText(field_3.getText() + "2");

        } else if (SelectText4) {

            field_4.setText(field_4.getText() + "2");

        }
    }
});

bt3.setOnAction(new EventHandler<ActionEvent>() {
    @Override
    public void handle(ActionEvent event) {
        if (SelectText1) {

            field_1.setText(field_1.getText() + "3");

        } else if (SelectText2) {
```

```
                field_2.setText(field_2.getText() + "3");

            } else if (SelectText3) {

                field_3.setText(field_3.getText() + "3");

            } else if (SelectText4) {

                field_4.setText(field_4.getText() + "3");

            }
        }
    });

    bt4.setOnAction(new EventHandler<ActionEvent>() {
        @Override
        public void handle(ActionEvent event) {
            if (SelectText1) {

                field_1.setText(field_1.getText() + "4");

            } else if (SelectText2) {

                field_2.setText(field_2.getText() + "4");

            } else if (SelectText3) {

                field_3.setText(field_3.getText() + "4");

            } else if (SelectText4) {

                field_4.setText(field_4.getText() + "4");

            }
        }
    });

    bt5.setOnAction(new EventHandler<ActionEvent>() {
        @Override
        public void handle(ActionEvent event) {
            if (SelectText1) {

                field_1.setText(field_1.getText() + "5");

            } else if (SelectText2) {

                field_2.setText(field_2.getText() + "5");

            } else if (SelectText3) {

                field_3.setText(field_3.getText() + "5");

            } else if (SelectText4) {

                field_4.setText(field_4.getText() + "5");
```

```
            }
        }
    });

    bt6.setOnAction(new EventHandler<ActionEvent>() {
        @Override
        public void handle(ActionEvent event) {
            if (SelectText1) {

                field_1.setText(field_1.getText() + "6");

            } else if (SelectText2) {

                field_2.setText(field_2.getText() + "6");

            } else if (SelectText3) {

                field_3.setText(field_3.getText() + "6");

            } else if (SelectText4) {

                field_4.setText(field_4.getText() + "6");

            }
        }
    });

    bt7.setOnAction(new EventHandler<ActionEvent>() {
        @Override
        public void handle(ActionEvent event) {
            if (SelectText1) {

                field_1.setText(field_1.getText() + "7");

            } else if (SelectText2) {

                field_2.setText(field_2.getText() + "7");

            } else if (SelectText3) {

                field_3.setText(field_3.getText() + "7");

            } else if (SelectText4) {

                field_4.setText(field_4.getText() + "7");

            }
        }
    });

    bt8.setOnAction(new EventHandler<ActionEvent>() {
        @Override
        public void handle(ActionEvent event) {
            if (SelectText1) {

                field_1.setText(field_1.getText() + "8");
```

```
            } else if (SelectText2) {

                field_2.setText(field_2.getText() + "8");

            } else if (SelectText3) {

                field_3.setText(field_3.getText() + "8");

            } else if (SelectText4) {

                field_4.setText(field_4.getText() + "8");

            }
        }
    });

    bt9.setOnAction(new EventHandler<ActionEvent>() {
        @Override
        public void handle(ActionEvent event) {
            if (SelectText1) {

                field_1.setText(field_1.getText() + "9");

            } else if (SelectText2) {

                field_2.setText(field_2.getText() + "9");

            } else if (SelectText3) {

                field_3.setText(field_3.getText() + "9");

            } else if (SelectText4) {

                field_4.setText(field_4.getText() + "9");

            }
        }
    });

    bt0.setOnAction(new EventHandler<ActionEvent>() {
        @Override
        public void handle(ActionEvent event) {
            if (SelectText1) {

                field_1.setText(field_1.getText() + "0");

            } else if (SelectText2) {

                field_2.setText(field_2.getText() + "0");

            } else if (SelectText3) {

                field_3.setText(field_3.getText() + "0");

            } else if (SelectText4) {

                field_4.setText(field_4.getText() + "0");
```

```
                }
            }
        });

        btDecimalPoint.setOnAction(new EventHandler<ActionEvent>() {
            @Override
            public void handle(ActionEvent event) {
                if (SelectText1) {

                    field_1.setText(field_1.getText()+".");

                } else if (SelectText2) {

                    field_2.setText(field_2.getText()+".");

                } else if (SelectText3) {

                    field_3.setText(field_3.getText()+".");

                } else if (SelectText4) {

                    field_4.setText(field_4.getText()+".");

                }
            }
        });

        btDelete.setOnAction(new EventHandler<ActionEvent>() {
            @Override
            public void handle(ActionEvent event) {
                if (SelectText1) {

                    String text = field_1.getText();

                    if (text.length() > 0) {
                        field_1.setText(text.substring(0, text.length() -
1));
                    }

                } else if (SelectText2) {

                    String text = field_2.getText();

                    if (text.length() > 0) {
                        field_2.setText(text.substring(0, text.length() -
1));
                    }

                } else if (SelectText3) {
                    String text = field_3.getText();

                    if (text.length() > 0) {
                        field_3.setText(text.substring(0, text.length() -
1));
                    }
```

```
                } else if (SelectText4) {
                    String text = field_4.getText();

                    if (text.length() > 0) {
                        field_4.setText(text.substring(0, text.length() -
1));
                    }

                }
            }
        });

        return NumberPane;

    }


    // Number pad for calculators which have 5 textfields.

    public static GridPane AddNumberPad(double x, double y, TextField
field_1, TextField field_2, TextField field_3, TextField field_4, TextField
field_5) {

        NumberPaneItems(x, y);

        field_1.setOnMouseClicked(new EventHandler<MouseEvent>() {
            @Override
            public void handle(MouseEvent event) {
                SelectText1 = true;
                SelectText2 = false;
                SelectText3 = false;
                SelectText4 = false;
                SelectText5 = false;

            }
        });

        field_2.setOnMouseClicked(new EventHandler<MouseEvent>() {
            @Override
            public void handle(MouseEvent event) {
                SelectText1 = false;
                SelectText2 = true;
                SelectText3 = false;
                SelectText4 = false;
                SelectText5 = false;
            }
        });

        field_3.setOnMouseClicked(new EventHandler<MouseEvent>() {
            @Override
            public void handle(MouseEvent event) {
                SelectText1 = false;
                SelectText2 = false;
                SelectText3 = true;
                SelectText4 = false;
                SelectText5 = false;
            }
```

```
});

field_4.setOnMouseClicked(new EventHandler<MouseEvent>() {
    @Override
    public void handle(MouseEvent event) {
        SelectText1 = false;
        SelectText2 = false;
        SelectText3 = false;
        SelectText4 = true;
        SelectText5 = false;
    }
});

field_5.setOnMouseClicked(new EventHandler<MouseEvent>() {
    @Override
    public void handle(MouseEvent event) {
        SelectText1 = false;
        SelectText2 = false;
        SelectText3 = false;
        SelectText4 = false;
        SelectText5 = true;
    }
});

bt1.setOnAction(new EventHandler<ActionEvent>() {
    @Override
    public void handle(ActionEvent event) {
        if (SelectText1) {

            field_1.setText(field_1.getText() + "1");

        } else if (SelectText2) {

            field_2.setText(field_2.getText() + "1");

        } else if (SelectText3) {

            field_3.setText(field_3.getText() + "1");

        } else if (SelectText4) {

            field_4.setText(field_4.getText() + "1");

        } else if (SelectText5) {

            field_5.setText(field_5.getText() + "1");

        }
    }
});

bt2.setOnAction(new EventHandler<ActionEvent>() {
    @Override
    public void handle(ActionEvent event) {
        if (SelectText1) {

            field_1.setText(field_1.getText() + "2");
```

```
            } else if (SelectText2) {

                field_2.setText(field_2.getText() + "2");

            } else if (SelectText3) {

                field_3.setText(field_3.getText() + "2");

            } else if (SelectText4) {

                field_4.setText(field_4.getText() + "2");

            } else if (SelectText5) {

                field_5.setText(field_5.getText() + "2");

            }
        }
    });

    bt3.setOnAction(new EventHandler<ActionEvent>() {
        @Override
        public void handle(ActionEvent event) {
            if (SelectText1) {

                field_1.setText(field_1.getText() + "3");

            } else if (SelectText2) {

                field_2.setText(field_2.getText() + "3");

            } else if (SelectText3) {

                field_3.setText(field_3.getText() + "3");

            } else if (SelectText4) {

                field_4.setText(field_4.getText() + "3");

            } else if (SelectText5) {

                field_5.setText(field_5.getText() + "3");

            }
        }
    });

    bt4.setOnAction(new EventHandler<ActionEvent>() {
        @Override
        public void handle(ActionEvent event) {
            if (SelectText1) {

                field_1.setText(field_1.getText() + "4");

            } else if (SelectText2) {
```

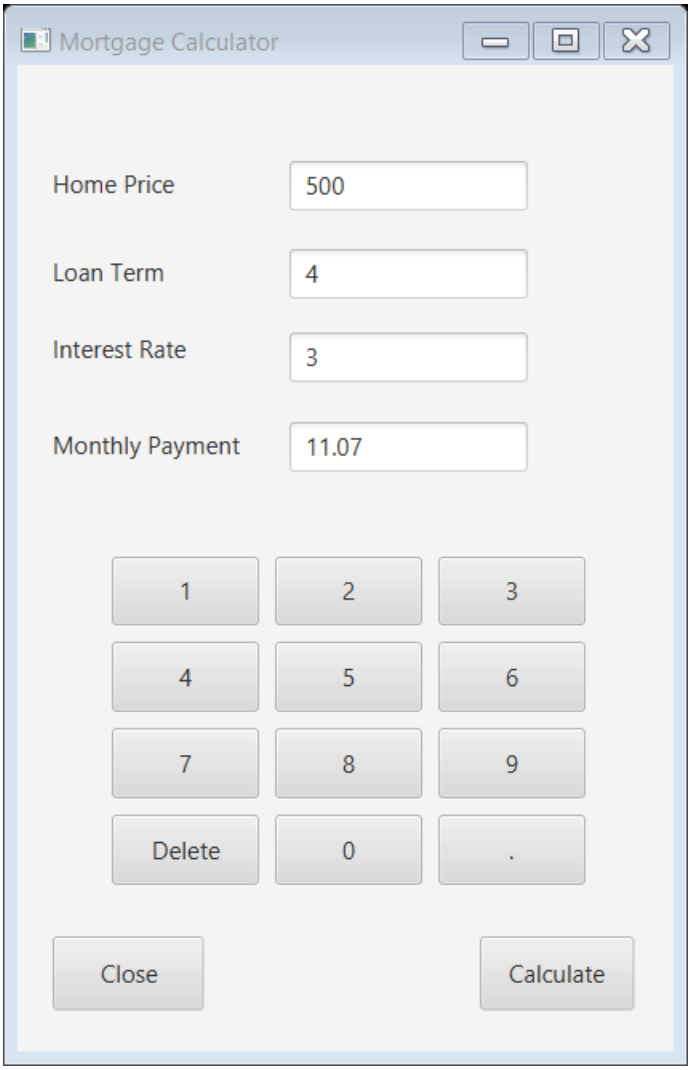
```
                field_2.setText(field_2.getText() + "4");

            } else if (SelectText3) {

                field_3.setText(field_3.getText() + "4");

            } else if (SelectText4) {

                field_4.setText(field_4.getText() + "4");

            } else if (SelectText5) {

                field_5.setText(field_5.getText() + "4");

            }
        }
    });

    bt5.setOnAction(new EventHandler<ActionEvent>() {
        @Override
        public void handle(ActionEvent event) {
            if (SelectText1) {

                field_1.setText(field_1.getText() + "5");

            } else if (SelectText2) {

                field_2.setText(field_2.getText() + "5");

            } else if (SelectText3) {

                field_3.setText(field_3.getText() + "5");

            } else if (SelectText4) {

                field_4.setText(field_4.getText() + "5");

            } else if (SelectText5) {

                field_5.setText(field_5.getText() + "5");

            }
        }
    });

    bt6.setOnAction(new EventHandler<ActionEvent>() {
        @Override
        public void handle(ActionEvent event) {
            if (SelectText1) {

                field_1.setText(field_1.getText() + "6");

            } else if (SelectText2) {

                field_2.setText(field_2.getText() + "6");

            } else if (SelectText3) {
```

```
                field_3.setText(field_3.getText() + "6");

            } else if (SelectText4) {

                field_4.setText(field_4.getText() + "6");

            } else if (SelectText5) {

                field_5.setText(field_5.getText() + "6");

            }
        }
    });

    bt7.setOnAction(new EventHandler<ActionEvent>() {
        @Override
        public void handle(ActionEvent event) {
            if (SelectText1) {

                field_1.setText(field_1.getText() + "7");

            } else if (SelectText2) {

                field_2.setText(field_2.getText() + "7");

            } else if (SelectText3) {

                field_3.setText(field_3.getText() + "7");

            } else if (SelectText4) {

                field_4.setText(field_4.getText() + "7");

            } else if (SelectText5) {

                field_5.setText(field_5.getText() + "7");

            }
        }
    });

    bt8.setOnAction(new EventHandler<ActionEvent>() {
        @Override
        public void handle(ActionEvent event) {
            if (SelectText1) {

                field_1.setText(field_1.getText() + "8");

            } else if (SelectText2) {

                field_2.setText(field_2.getText() + "8");

            } else if (SelectText3) {

                field_3.setText(field_3.getText() + "8");
```

```
            } else if (SelectText4) {

                field_4.setText(field_4.getText() + "8");

            } else if (SelectText5) {

                field_5.setText(field_5.getText() + "8");

            }
        }
    });

    bt9.setOnAction(new EventHandler<ActionEvent>() {
        @Override
        public void handle(ActionEvent event) {
            if (SelectText1) {

                field_1.setText(field_1.getText() + "9");

            } else if (SelectText2) {

                field_2.setText(field_2.getText() + "9");

            } else if (SelectText3) {

                field_3.setText(field_3.getText() + "9");

            } else if (SelectText4) {

                field_4.setText(field_4.getText() + "9");

            } else if (SelectText5) {

                field_5.setText(field_5.getText() + "9");

            }
        }
    });

    bt0.setOnAction(new EventHandler<ActionEvent>() {
        @Override
        public void handle(ActionEvent event) {
            if (SelectText1) {

                field_1.setText(field_1.getText() + "0");

            } else if (SelectText2) {

                field_2.setText(field_2.getText() + "0");

            } else if (SelectText3) {

                field_3.setText(field_3.getText() + "0");

            } else if (SelectText4) {

                field_4.setText(field_4.getText() + "0");
```

```
                } else if (SelectText5) {

                    field_5.setText(field_5.getText() + "0");

                }
            }
        });

        btDecimalPoint.setOnAction(new EventHandler<ActionEvent>() {
            @Override
            public void handle(ActionEvent event) {
                if (SelectText1) {

                    field_1.setText(field_1.getText()+".");

                } else if (SelectText2) {

                    field_2.setText(field_2.getText()+".");

                } else if (SelectText3) {

                    field_3.setText(field_3.getText()+".");

                } else if (SelectText4) {

                    field_4.setText(field_4.getText()+".");

                } else if (SelectText5) {

                    field_5.setText(field_5.getText()+".");

                }
            }
        });

        btDelete.setOnAction(new EventHandler<ActionEvent>() {
            @Override
            public void handle(ActionEvent event) {
                if (SelectText1) {

                    String text = field_1.getText();

                    if (text.length() > 0) {
                        field_1.setText(text.substring(0, text.length() -
1));
                    }

                } else if (SelectText2) {

                    String text = field_2.getText();

                    if (text.length() > 0) {
                        field_2.setText(text.substring(0, text.length() -
1));
                    }
```

```
                } else if (SelectText3) {
                    String text = field_3.getText();

                    if (text.length() > 0) {
                        field_3.setText(text.substring(0, text.length() -
1));
                    }

                } else if (SelectText4) {
                    String text = field_4.getText();

                    if (text.length() > 0) {
                        field_4.setText(text.substring(0, text.length() -
1));
                    }

                } else if (SelectText5) {

                    String text = field_5.getText();

                    if (text.length() > 0) {
                        field_5.setText(text.substring(0, text.length() -
1));

                    }
                }
            }
        });

        return NumberPane;
    }
}
```



Help.java

```
import javafx.scene.control.Label;

public class Help {

    public static void HelpWindow(){
        Label Label1 = new Label("Moratge");
```

```
        }
}
```

****