

Mini Project 1: Mortgage Calculator

Due: Feb. 19, 23:59 PDT

Overview

Build a mortgage calculator app according to the requirement. Fig. 1 includes screenshots that shows the functionalities. Your layout can be different, but need to be reasonable (easy to use, etc.).

Set the project name as “Project1YourName”, and your app name as “Mortgage Calculator by Your Name”. Feel free to use the code in exercise 1.

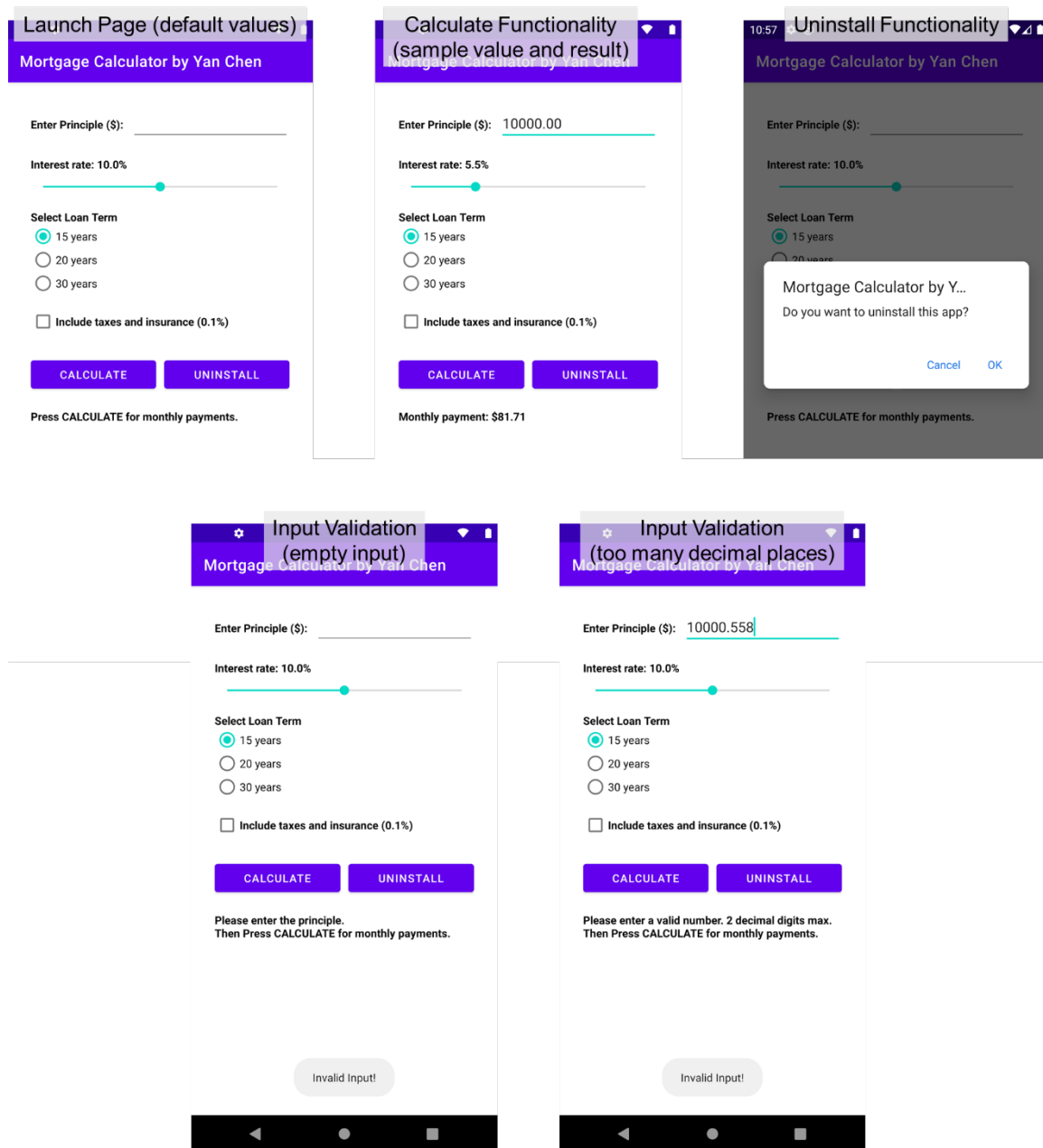


Fig. 1 Screenshots of the app

Layout

The app should only have one activity (one page) that has the following elements/views (each view type is linked to its official documentation). Feel free to add other view(s) if needed.

View Type	Usage	Details
EditText	Principle	A text box that takes user input for the principle as a floating-point value (e.g., "1000.00").
SeekBar	Interest Rate	The annual interest rate ranging from 0.0 (%) to 20.0 (%) increasing by 0.1. The default value should start at 10.0.
RadioGroup	Loan Term	Number of years of the loan with the choices (RadioButton) 15, 20, and 30. Set one of them to be checked by default.
CheckBox	Include Taxes	When checked, the taxes and insurance will be included. It should be unchecked by default.
Button	Calculate	When pressed, calculate the user's monthly payments based on the values entered. Formula is in the Appendix .
TextView	Result	Display the result (monthly payment, round to 2 decimal places) after the Calculate button is pressed.
Button	Uninstall App	A button that allows the user to click and uninstall the app. See the Appendix for details.

Functionality Requirements

Your project will be graded based on if your app meets all requirements.

Requirement	Points
App can run successfully	1
App has a working calculate functionality	1
Input validation (app should not crash on user input errors, e.g., empty input)	1
The result should be correct (see Appendix for some examples)	0.5
App has a working uninstall functionality	0.5
Meets all specifications (app name, default values, etc.)	0.5
Overall Polish (views align properly, easy-to-follow layout, etc.)	0.5
Total	5

Submission

- Push your project to a Bitbucket repository (name it “project1”) by the due date.
- Invite and share your Bitbucket repository the grader (edmond.lin@sjsu.edu) and the instructor (yan.chen01@sjsu.edu).
- Submit “[Mini Project 1 - Mortgage Calculator](#)” assignment on Canvas using the template provided (see description of the assignment).
- Only your last submission before deadline will be graded based on the criteria in [Functionality Requirement](#).
- (Optional) Post a [discussion](#) on Canvas to share any suggestions/tricks/hints, etc. for finishing this project. For example, how to configure a SeekBar/CheckBox, how to validate the user input to 2 decimal places, etc. Check other posts before posting to avoid any duplicates.

Appendix

Formula for Calculating Mortgage

When interest rate = 0%, the monthly payment M is:

$$M = \frac{P}{N} + T$$

For interest rates other than 0%, the monthly payment M is:

$$M = \frac{P * J}{1 - (1 + J)^{-N}} + T$$

Where:

- P = Principal (the amount borrowed that the user input in the text box)
- J = Monthly interest in decimal form (annual interest rate / 12)
- N = Number of months of the loan (number of years * 12)
- T = Monthly taxes and insurance = 0.1% * P (if selected)

Here are some sample values and corresponding results:

Principle (\$)	Number of Years	Annual Interest rate	Tax Included?	Result (\$)
10000.00	15	5.5%	No	81.71
20000.00	20	0%	No	83.33
10000.00	15	5.5%	Yes	91.71
20000.00	20	10.0%	Yes	213.00
10000.00	30	10.0%	Yes	97.76

Uninstall the App

First, you need to add delete package permission in the manifest file:

```
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="edu.sjsu.android.projectlyanchen">

    <uses-permission
        android:name="android.permission.REQUEST_DELETE_PACKAGES" />

    <application
        ...
    </application>
</manifest>
```

And then in the Java code, define and start an Intent:

```
Intent delete = new Intent(Intent.ACTION_DELETE,
    Uri.parse("package:" + getPackageName()));
startActivity(delete);
```