Assignment #1
Mobile Device Development
Mortgage Calculator
Due Date: 9/23/2021@11:59pm

Description

For this assignment, you will implement a single-activity Android application using a handful of basic controls. The goal of the assignment is to become familiar with the use of Android Studio, basic UI elements, and the Android documentation.

View Layout

The view will have the following elements:

Amount Borrowed

This will be a EditText into which the user will enter the amount to be borrowed as a floating-point value (e.g., "1000.00").

Interest Rate

This will be a SeekBar ranging from 0.0 to 20.0, indicating the annual percentage rate of the interest. This value should start at 10.0.

Loan Term

This will be a RadioGroup with the choices 15, 20, and 30, representing the number of years of the loan.

Taxes and Insurance

This will be a CheckBox that allows the user to select whether taxes and insurance are to be included in the monthly payment.

Calculate

This will be a Button that, when pressed, will calculate the user's monthly payments based on the values entered.

Monthly Payment

This will be a TextView that displays the monthly payment.

Calculation

For interest rates other than 0%, the monthly payment can be calculated as:

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

where:

P = Principal (the amount borrowed)
J = Monthly interest in decimal form (annual interest rate / 1200) N = Number of months of the loan
T = Monthly taxes and insurance, if selected (0.1% of the amount borrowed) For interest rates of 0%, the monthly payment is simply:

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

Advice

- The Java and Android SDK documentation is your friend. You will need it to determine how to:
  - Create a String with the desired formatting
  - Write a value to a label
  - Read a value from a EditText o
    Convert an String to a float o
    Read a value from a slider
  - Determine which radio of a radio group is selected
  - Determine if a CheckBox is checked
- Speeding up the emulator
  - You can use the VM you created with the android image during your exercises.
  - Remember that you can just keep the emulator open in the background, instead of closing it and reopening it whenever you want to run your app.

Other Requirements

- The app shouldn't crash on user input errors, such as if no values are specified and the user clicks the Calculate button.

Submission

1. Push your project directory along with the source to remote bitbucket repository by the due date.
2. Invite and share your project repository the Grader (mohibkhanayubkhan.pathan@sjsu.edu) and Instructor (ramin.moazeni@sjsu.edu).
3. Submit a Readme.pdf to Canvas including your name, repository access link, instructions to run your program (if any), snapshot of your running application.
4. Your project directory will be graded according to the state your project directory was in at due time when fetched.