SOFE4640

Mobile Application Development

(Fall 2021 - Dr. A. Azim)

Assignment 1 - EMI Calculator

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Link to Git Repo: [Mobile Assignment 1]

Layout, Views, Intents

In android studio, the layout is the structure for the user interfaces and it consists of views. In the resource folder there is also a folder called layouts and it consists of all the layouts and views for each page. For my assignment, there is only 1 layout which is the mainActivity.xml.
In android studio, the view is also known as widgets. Widgets/views can consists of buttons, inputs, text displays, etc. The views/widgets in my assignment are the number inputs, a button, and text displays. The inputs are for the mortgage amount, the years to pay off the mortgage and the yearly interest rate. The button checks if all the inputs are provided and then performs the calculations. The display text holds the titles and the emi amount.
Intents are communication objects that are used for interacting with other app components such as text messages, browsers, moving to another activity, maps, etc. The main uses for intents are to start an activity, start a broadcast, or start a service. There are also 2 types of intents. An implicit intent and explicit intent. An explicit intent is used for communication or starting an activity (a page in android can be considered an activity) or file downloads. An implicit intent is used for communication or start an app components such as maps, texting, camera, etc. In my assignment, I did not use any intents as this assignment could be done in one activity/page and the assignment did not ask for one to be used. I do not believe that there are any services required to calculate the EMI, of course you could add them in but it is not necessary.

Assignment's UI

The ui consisted of 3 text inputs, a button, and text displays. The 3 inputs were for the mortgage value, the number of years to pay off the mortgage, and the yearly interest rate. Everything is constrained either to the parent or to the view above it. It is also constrained to display in the center of the device. This is good because constraints make use of the device's dimensions and are not hardcoded. The inputs also turn red and display a message if input is not given. The inputs are also set to take in numbers so words and characters such as !@#$$% cannot be entered.

Calculating the EMI

The calculation assumes that the interest rate is a fixed rate and the result is what is to be paid back monthly. Before calculating the EMI, the application checks if the proper inputs are provided otherwise it shows missing field errors to the user. The equation used to calculate the EMI isn't perfect to what the TD application is but it is accurate by ±2cents.
Here is the equation:

$$EMI = \frac{A * i * (i+1)^m}{(i+1)^m - 1}$$

Where A is the mortgage amount
i is the interest rate (%/100)

And m is the amount of months to pay back the mortgage in (# of years * 12)