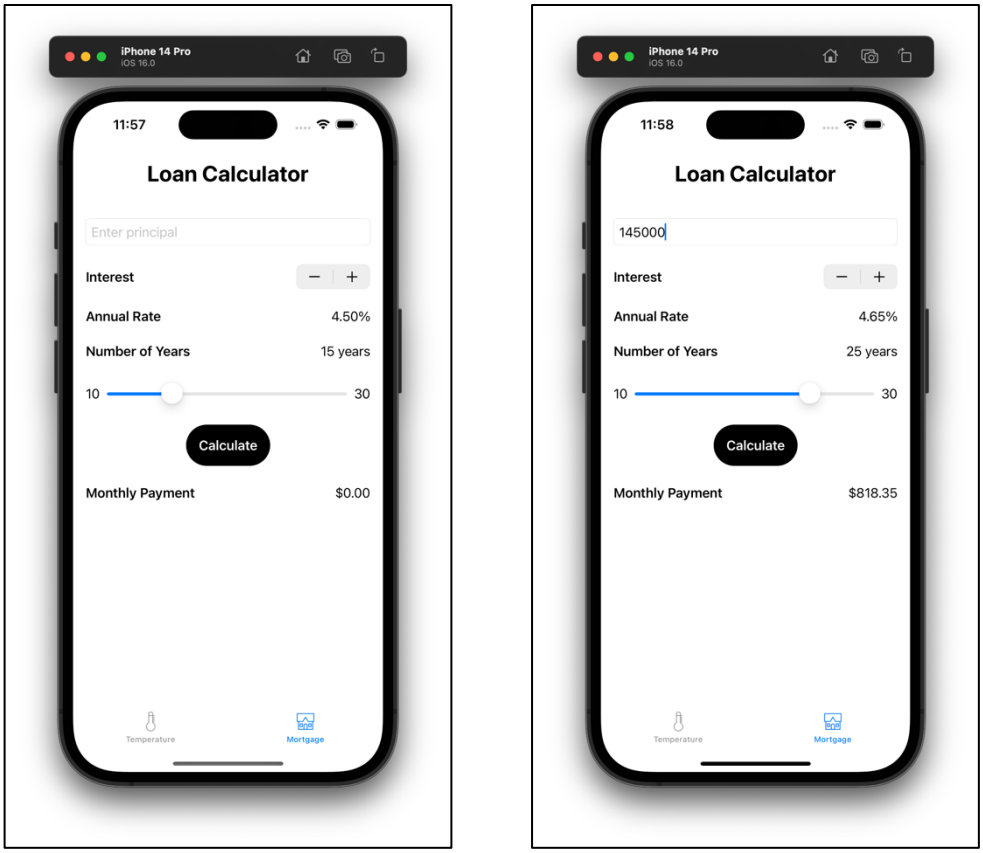
CSCI 321/521 Assignment 3

In this assignment you will write a tab bar application to perform a couple of functions.

Create a tabbed application with two tabs. One tab will function as a mortgage loan calculator. The other tab will be used to convert a temperature in degrees Fahrenheit temperature to degrees Celsius and vice versa.

Mortgage Loan Calculator Tab

This tab will have a TextField that lets the user enter a mortgage loan principal, a control that lets the user select an annual interest rate, and a control that lets the user select a lifetime for the mortgage in years. When the “Calculate” button is pressed, the monthly payment should be calculated and displayed.



It’s up to you to choose the controls used to enter the interest rate and loan lifetime. The example screenshots above use a Stepper for the interest rate and a Slider for the loan lifetime.

You may assume that the interest rate will range from 0.01% at the low end to 20.00% at the high end, in increments of 0.01%. Loan lifetime will range from 10 to 30 years, typically in increments of 5 years.

The formula to compute the monthly payment is:

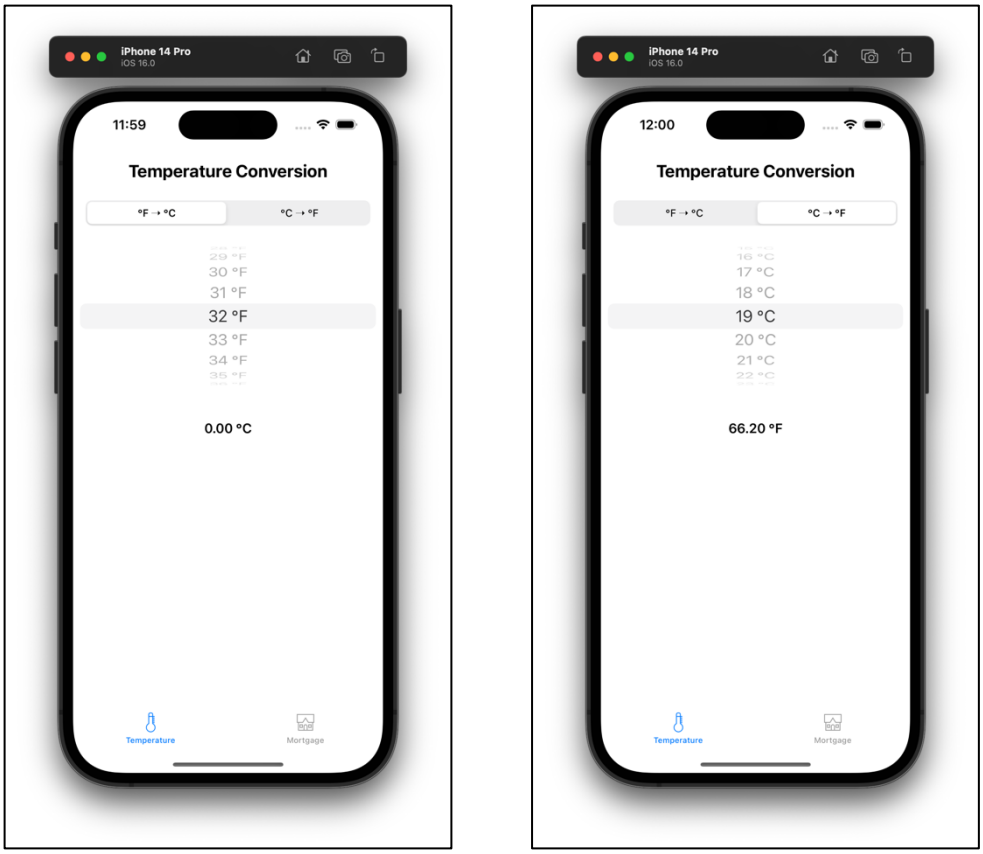
$$\text{Monthly Payment} = (P \times R \times (1.0 + R)^N) / ((1.0 + R)^N - 1.0)$$

where

- P = the principal (i.e., the initial loan amount entered by the user)
- R = the monthly interest rate = annual interest rate entered by the user / 100.0 / 12.0
- N = total number of monthly payments over the lifetime of the loan = loan lifetime in years x 12.0

Temperature Conversion Tab

This tab will have a segmented control style Picker that lets the user switch between conversion types (degrees Fahrenheit to degrees Celsius vs. degrees Celsius to degrees Fahrenheit), a wheel style Picker that lets the user select a temperature to convert, and a Text label that displays the converted temperature.



- The Picker should allow the user to select a temperature in degrees Fahrenheit between -129 and 134, and a temperature in degrees Celsius between -90 and 57. For any easy way to create an array containing such a range, see the Notes below.

Notes

- The Foundation framework has a `pow()` function that can raise a number to an exponent, similar to the one found in C++.

- Temperature conversion formulas can easily be found with a web search.

- A Swift string can contain special Unicode characters. These can be copied and pasted into the string or you can use the Unicode scalar value as part of a string literal:

Character	Name	Unicode Scalar
℉	Degree Fahrenheit	`"\u{2109}"`
℃	Degree Celsius	`"\u{2103}"`
→	Rightwards arrow with small equilateral arrowhead	`"\u{2B62}"`

- Here's one way to efficiently put a range of numbers into a two-dimensional Swift `Array`:

```
var temperatures = [Array(-129...134), Array(-90...57)]
```

  You can pick which of the two rows of the array to display in the Picker based on the selected segment of the conversion type segmented control Picker.

- When you've completed your assignment, compress the project folder and submit it on Blackboard. Make sure that any images or fonts that you've added to the app's bundle have been added as copies, not symbolic links.