[**Department of Computer Science**](http://www.cs.umd.edu/)

[**CMSC132:**](http://cs.umd.edu/class/fall2017/cmsc132/) Fall 2017

**Project:** GUI/Inner Classes (Interest Table)

**Due Date:** Friday Oct 6, 8:00 pm

## Overview

For this assignment you will implement a GUI for an interest table calculator. A video of a calculator that illustrates the functionality you need to implement can be found at [Video](http://docs.google.com/applicationVideo/applicationVideo.htm). Notice that your GUI does not need to look like the video. Actually the one in the video was developed using swing while you need to use JavaFX. About this project:

* There are no public/release/secret tests associated with this project.
* There is no CVS distribution (more details below).
* To submit your project you need to upload a zip file directly to the submit server (No "Submit Project" option is available).

## Objectives

* Implement Java inner classes
* Practice lambda expressions
* Practice event-driven programming
* Learn some basic Java GUI development

## Grading

* (40%) GUI
  + (5%) display area
  + (5%) principal text field
  + (5%) rate text field
  + (5%) years slider
  + (5%) simple interest button
  + (5%) compound interest button
  + (5%) both interest button
  + (5%) labels (Principal:, Rate(Percentage):, Number of Years:)
* (5%) Correct computation of simple interest
* (5%) Correct computation of compound interest
* (5%) Correct computation of both interests
* (25%) Implementation of functionality associated with GUI
  + (5 pts) One inner class (non-anonymous) to handle some computation (e.g., button event)
  + (10 pts) One inner class (anonymous) to handle some computation (e.g., button event)
  + (10 pts) One lambda expressionn to handle some computation (e.g., button event)
* (10%) Project implemented using Model-View-Control paradigm
* (10%) Style

## Clarifications

## Code Distribution

For this project we are not providing any code. You need to create an Eclipse project named **InterestTable**. In that Eclipse project feel free to add any classes/packages you understand you need. To simplify the grading process make sure you have a class named **InterestTableGUI.java**. This class must have a main method that allow us to run your application.

## Specifications

You need to implement a GUI that displays interest tables ranging from 1 up to 25 years. The tables are generated by selecting the appropriate button and based on the principal, rate, and years values provided. One table displays simple interest, the second compound interest, and the third a combination of simple and compound interest. See the provided [Video](http://docs.google.com/applicationVideo/applicationVideo.htm) for table format information.

### Interest Formulas

The formula to compute simple interest amount is:

*simple interest amount = principal + (principal \* (rate/100) \* years)*

The formula to compute compound interest amount is:

*Compound Interest Amount = principal \* (1 + rate/100)Years*

Notice that you do not need to add the principal in this case.

### Displaying Currency

To display currency you can use the NumberFormat class (part of java.text) as follows:

String formattedValue = NumberFormat.getCurrencyInstance().format(value);

where value represents the numeric value to format.

## Requirements

* You may NOT use Swing; you must use JavaFX.
* Your GUI should resemble the GUI available in the video.
* Make sure you have a class named **InterestTableGUI.java**. This class must have a main method that allow us to execute your application.
* Keep the Model-View-Control model in mind when writing your code. Feel free to add any classes you understand you need. **The actual computation of interests should take place in a separate class(es).**
* No student tests are required for this project.
* Your project will be graded by running the main method associated with the InterestTableGUI.java class.
* You may not use any tools that generate the GUI code for you.

## Optional

If you would like to provide additional functionality to your GUI or provide a nice/cool alternative go head :); surprise us. Just make sure you develop it in a class other than InterestTableGUI.java; name it OptionalGUI.java.

## Submission

There is no "Submit Project" option for this project. You need to export your project (as a zip file) and upload it to the submit server. Information about exporting/importing Eclipse projects can be found at <http://www.cs.umd.edu/eclipse/other.html>.

## Academic Integrity

Please make sure you read the academic integrity section of the syllabus so you understand what is permissible in our programming assignments. We want to remind you that we check your work against other students' work and any case of academic dishonesty will be referred to the [Office of Student Conduct](http://www.jpo.umd.edu/).