

**San José State University**  
**Computer Science Department**  
**CS151, Object Oriented Design and Programming, 01, Spring 2022**

**Homework #7**

## Objective:

This homework's objective is to review and understand the units on GUI programming and how to get it done in Java.

## Details:

### Exercise 1:

Remember the calculator example I presented during my lectures? It was implemented using Java AWT libraries. Implement the same calculator application but now using Java Swing libraries. Please make sure it has all the basic functionality that the calculator in the demo had. In other words, your application is not just expected to have the GUI but also the functionality within those GUI components.

Please make sure that at least 1 set of buttons in your calculator uses images. By the "set" I mean functional sets/groups: digit buttons or operator buttons. Make sure that either the digit buttons or the operator buttons or both have images on them.

Implement a menu for your application. The menu should contain menu items for the following operations: add, subtract, divide, multiply, clear. Make sure your menu items work and perform the desired operation when clicked.

Save your program into a file named **Calculator.java**.

### Extra Credit Exercise 2:

Implement an application that displays a screen partitioned into a 2x2 grid. There need to be some type of visual separators for the grid cells (e.g. border around each cell, lines separating them, etc.). Each cell of the grid should display a single shape. The following shapes should be present in the grid: sphere, cylinder, box, polygon. It is up to you what visual parameters to set to these shapes (size, color, etc.). Add user-intuitive controls (e.g. buttons or menu items, etc.) to your screen to animate each of the shapes. The specifics of the UI design are up to you. The user should be able select which cell of the grid to animate and select the animation type:

RotateTransition, ScaleTransition, SequentialTransition. Additionally, implement FadeTransition for polygon shape. This transition will not work for 3-D shapes. Save your program to a file named **Animation.java**.

## Submission:

Compress all the homework files into a single compressed file named “Assignment7”, with the appropriate file extension. The following files are expected to be in this compressed file: Calculator.java. Optionally, your directory will contain Animation.java file and any other files you completed for this assignment, if any.

Make sure to submit by 11:59pm on the due date listed in Canvas. Submit your solution via Canvas.

If you have any questions, message me or the grader or both:

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## Grading:

Your code must compile and execute successfully in order to get full credit for this assignment. I will compile and execute the files.

- Program with no compile errors
- Program executes
- Program outputs what is required by the exercise

A total of 10 points are possible for the required part of this homework. Additional 10 points of extra credit are possible to earn by completing exercise 2.