Project 1 - Calculator
CSCE 4623 – Mobile Programming – Fall 2023
Due Date – Friday, September 15th, 11:59 PM CT

Task: You have been tasked with developing a calculator application for the Android mobile phone system. This calculator is to behave as a basic calculator similar to the default application found on most mobile phones. This application must have its business logic written in Kotlin, and use a multitier architecture

Figure 1: Google Nexus 6 Emulator showing a completed calculator application

Expected Operation: The calculator will be expected to perform addition, subtraction, multiplication, and division operations. The calculator should support floating point and negative numbers. The calculator should be able to use a clear button to reset the configuration back to the beginning. A backspace button should be implemented to clear only the furthest number (or decimal point) to the right of the screen. The application will be tested on the Google Pixel 3 emulator. If that does not work, I will attempt operation on a Pixel

3 phone.

Graduate Section: You must additionally handle rotation of the device. On rotation, the device should save any state information, and present a horizontal view that looks nice and handles all the behaviors described above. Handling this behavior will count as 10 points towards the project grade, to be averaged in with the rubric below. i.e. Your grade is out of 110, rather than 100.
Rubric: The project will be graded according to the following rubric:

Category	Description	Percentage
Pass Given Tests	There are a set of ten example tests in this document which you must implement. Each test is worth 5% of the grade for this project.	50%
Pass Hidden Tests	I will run a set of five hidden tests on your application to test operation. Four will be straightforward, one will attempt to trip you up. Each is worth 4% of the project grade.	20%
User Experience	How your application looks and feels to the user is important. The image in Figure 1 uses borderless buttons and a constrained layout. Consider how you want to implement the UX to appeal to your user.	10%
Coding Comments & Style	Android uses XML and Java as its primary languages. Use the appropriate coding styles (e.g. lowerCamelCase for variables and methods). Comment functions with a description about their behavior, any parameters, any return values, and any shared variables which it manipulates.	10%
Report	A simple, one- or two-page report. The report should have the project name (e.g. Calculator), a picture of the application, a short description of what you did, and the outcomes (e.g. Did it pass all example tests, if not, why not, your UX design methodology, etc...).	10%

Table 1: Grading Rubric

Tests: The following tests will be run, and the expected output is shown:

1. 9 + 4 = 13
2. 8 - 3 = 5
3. 2 * 8 = 16
4. 25 / 5 = 5

5. -3.5 + 4 = 0.5
6. 25 - 27.2 = -2.2
7. 66666 * 99999 = 6.666533e9
8. 2 / 10000000 = 2e-7
9. 24 + 31 + 7 + 8.5 = 70.5
10. 34 + (Clear) 14 + 44(backspace) = 18 (Should compute 14 + 4)

Submission: You should zip your project directory and submit it through blackboard.