

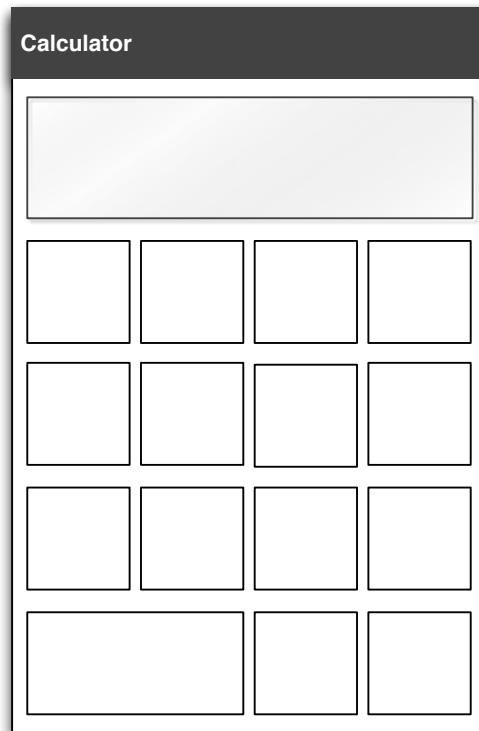
ITIS/ITCS 4180/5180 Mobile Application Development  
Homework 1

**Basic Instructions:**

1. In every file submitted you **MUST** place the following comments:
  - a. Assignment #.
  - b. File Name.
  - c. Full name of all students in your group.
2. Each group should submit only one assignment on behalf of all the other group members.
3. Your assignment will be graded for functional requirements and efficiency of your submitted solution. You will lose points if your code is not efficient, does unnecessary processing or blocks the UI thread.
4. Export your Android project and create a zip file which includes all the project folder and any required libraries.
5. Submission details:
  - a. Compress the contents of your project folder. The file name is very important and should follow the following format: **HW1.zip**
  - b. Only one group member is required to submit on behalf of the whole group.
  - c. You should submit the assignment through Canvas: Submit the zip file.
- 6. Failure to follow the above instructions will result in point deductions.**

## **Homework assignment 01**

This is the first homework assignment. In this assignment, we will be developing a Calculator App. Figure 1 shows the bare-bone structure of the Calculator app. Please follow the instructions to develop the app.



**Figure 1:** Basic Structure of the Calculator

### **Part 1 (Display the Digits and Results):**

1. This is a very basic calculator, and thus it can do only one operation at a time.
2. The display should be implemented using a TextView, with appropriate User Interface Design (borders).
3. When you put any number, it should display that. After you put any operation, it should not change the text in the TextView. Next, if you put another number, it should change the text to display that number. Each time you click on a digit, the display should change accordingly.
4. You should save the last result in memory after the completion of each operation.
5. Finally, if you put the “=” key, it should display the result.
6. There should be a “AC” key that resets the saved results and puts a “0” to the TextView.

### **Part 2 (Graphical User Interface):**

1. There is no fixed design provided for the calculator. Figure 1 shows a model of how you can design the UI.
2. There should be one “AC” key, 10 digits (0 - 9), 4 operation keys (+, -, x, and /), one dot key (“.”) and one “=” key.
  1. “+” key represents the add operation.

2. “-” key represent the subtract operation.
3. “x” key represents the multiply operation.
4. “/” key represents the divide operation.
5. “AC” resets the saved result to “0”.

**3. Some examples:**

1. Calculating  $30 \times 4$  :
  - a. Press 3, display 3.
  - b. Press 0, display 30.
  - c. Press x, display 30.
  - d. Press 4, display 4.
  - e. Press =, display 120.
2. Calculating  $(30 \times 4) / 6 + 10$  :
  - a. Press 3, display 3.
  - b. Press 0, display 30.
  - c. Press x, display 30.
  - d. Press 4, display 4.
  - e. Press =, display 120. 120 is saved.
  - f. Press /, display 120.
  - g. Press 6, display 6.
  - h. Press =, display 20. 20 is saved.
  - i. Press +, display 20.
  - j. Press 1, display 1.
  - k. Press 0, display 10.
  - l. Press =, display 30.
4. We do not expect you to implement the stack to calculate complex equation like the second example. Therefore, you can divide the equation, and use “=” to calculate the results part-by-part. Follow the steps in the second example to get an idea.
5. However, you can still implement stack. In that case, steps 2e, and 2h will be discarded.
6. Your calculator should be able to take double inputs.
7. Your calculator should display at most 14 characters in the TextView. So, you must take care of the precision points of the result. You can exclude “.” (dot) from the count of 14 characters.

Good Luck!