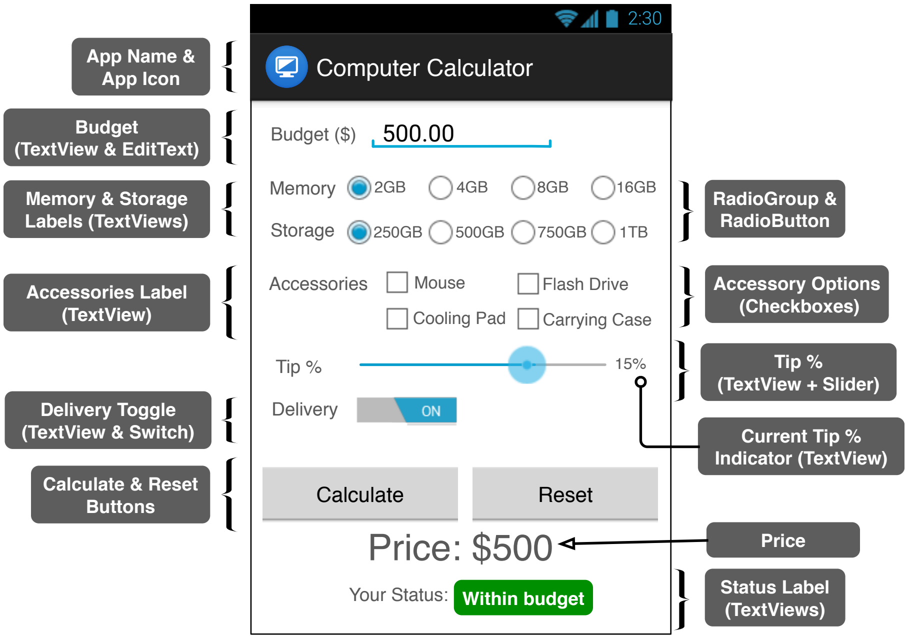
ITIS/ITCS 4180/5180 Mobile Application Development
Spring 2016
Homework 1
Date Posted: 01/25/2016 at 21:30
Due Date: 02/01/2016 at 23:55

**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. Only the group leader is supposed to submit the 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 loose points if your code is not efficient, does unnecessary processing or blocks the UI thread.
4. Please download the support files provided with this assignment and use them when implementing your project.
5. Export your Android project and create a zip file which includes all the project folder and any required libraries.
6. Submission details:
   a. All the group members should submit the same zip file.
   b. The file name is very important and should follow the following format: **Group#_HW01.zip**
   c. You should submit the assignment through Moodle: Submit the zip file.
7. **Failure to follow the above instructions will result in point deductions.**

# Homework 1 (100 Points)

In this assignment you will build your first Android application. You will get familiar with common Android components and how to interact with them. You will build a single activity Computer Price Calculator application.



2:30

Computer Calculator

Budget ($) 500.00

Memory ● 2GB ○ 4GB ○ 8GB ○ 16GB

Storage ● 250GB ○ 500GB ○ 750GB ○ 1TB

Accessories □ Mouse □ Flash Drive □ Cooling Pad □ Carrying Case

Tip % 15%

Delivery ON

Calculate Reset

Price: $500

Your Status: Within budget

App Name & App Icon
Budget (TextView & EditText)
Memory & Storage Labels (TextViews)
Accessories Label (TextView)
Delivery Toggle (TextView & Switch)
Calculate & Reset Buttons
RadioGroup & RadioButton
Accessory Options (Checkboxes)
Tip % (TextView + Slider)
Current Tip % Indicator (TextView)
Price
Status Label (TextViews)

**Figure 1, Application User Interface**

## Part 1 (30 Points): Building the Interface

The interface should be created to match the user interface (UI) presented in Figure 1. You will be using layout files, strings.xml, and drawable files to create the user interface. The layout XML file can be modified through the raw xml, or through the GUI tools provided within Android Studio. To build the UI, please follow the following tasks:

1. Your application should have an application launcher icon, please select your launcher icon to represent your app.
2. The string values used for the text labels, button labels and hints should be read from the strings.xml file and should not be hardwired in the layout file.
3. Use an EditText component for the user to enter his/her budget in dollars. When the application starts the dollar value EditText should be empty, and should display the hint message “Enter dollar amount” as indicated in Figure 1.
4. Use a RadioGroup containing RadioButtons to enable the user to pick from the Memory options for RAM of 2GB, 4GB, 8GB, or 16GB. When the application starts the 2GB choice should be selected.
5. Use another RadioGroup containing RadioButtons to enable the user to pick from the Storage options for HDD of 250GB, 500GB, 750GB, or 1TB. When the application starts the 250GB choice should be selected.
6. Use a number of Checkboxes to allow the user to choose up to 4 accessory options:

mouse, cooling pad, a flash drive, and carrying case.

7. Use a Switch widget to allow a user to the Delivery option. By default, it should be set to On, meaning it will be shipped (fixed price); toggling the Switch to Off indicates in-store pickup (no cost).
8. Use the SeekBar to enable the user to pick a custom tip percentage. The maximum tip percentage value should be set to 25%, and the slider should move in increments of 5%. When the application starts the percentage value should be set to 15%. On the right of the SeekBar use a TextView to display the current progress of the SeekBar, which represents the current tip percentage.
9. Create an Calculate button and a Reset button; note that the text for the buttons should be retrieved from the string.xml file.
10. Use a TextView to display the calculated price value. When the application starts the Price value should be set to “0.00.”
11. Use TextView components for creating the “Budget“, “Memory”, “Storage”, “Accessories”, “Delivery”, “Tip”, and “Price”, and “Your Status” labels.

**Part 2 (70 Points): Event Handlers and App Behavior (MainActivity)**

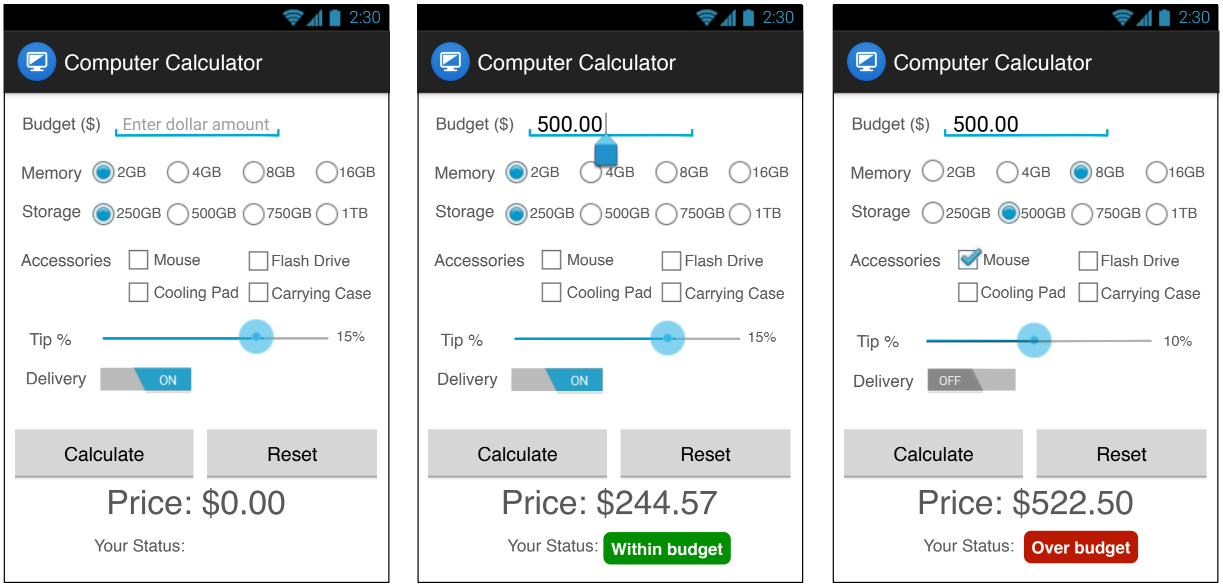
In this part you will build the required logic for the Computer Price Calculator app. The requirements are as follows:

12. The custom computer price cannot be calculated without a budget value. The EditText component should be setup to limit the dollar value to only positive numbers. If a user does not enter in a dollar value, or it is negative, and they try to calculate price, use the setError() method to display an error message informing the user to “Enter a dollar amount.”
13. If the user presses the Calculate button, you should calculate the current computer build cost, using the following formula:

$$\mathbf{Cost = [(10M + .75S + 20A) * (1 + T/100)] + 5.95D}$$

M = selected memory size (in GB)
S = selected storage size (in GB)
A = number of selected accessories
T = tip percentage (e.g. 25)
D = shipping option (Delivery = 1, Pickup = 0)

14. Once the price is calculated for the current computer build, it should be displayed in the Price value TextView.
15. When the Price value is less than the budget value, set the Status TextView to “Within budget” and the background color to Green, see Figure 2(b). When the Price value is more than the budget value, set the text to “Over budget” and background color to Red, see Figure 2(c).
16. If the user presses the Reset button, this should clear the Budget EditText, reset all the selected options to default, clear the Price value TextView, and clear the background color of the Price EditText field, see Figure 2(a).



Computer Calculator

Budget ($) Enter dollar amount

Memory ● 2GB ○ 4GB ○ 8GB ○ 16GB

Storage ● 250GB ○ 500GB ○ 750GB ○ 1TB

Accessories □ Mouse □ Flash Drive □ Cooling Pad □ Carrying Case

Tip % 15%

Delivery ON

Price: $0.00

Your Status:

Computer Calculator

Budget ($) 500.00

Memory ● 2GB ○ 4GB ○ 8GB ○ 16GB

Storage ● 250GB ○ 500GB ○ 750GB ○ 1TB

Accessories □ Mouse □ Flash Drive □ Cooling Pad □ Carrying Case

Tip % 15%

Delivery ON

Price: $244.57

Your Status: Within budget

Computer Calculator

Budget ($) 500.00

Memory ○ 2GB ○ 4GB ● 8GB ○ 16GB

Storage ○ 250GB ● 500GB ○ 750GB ○ 1TB

Accessories ☑ Mouse □ Flash Drive □ Cooling Pad □ Carrying Case

Tip % 10%

Delivery OFF

Price: $522.50

Your Status: Over budget

(a) When application starts, or Reset button is pressed

(b) Price calculated after a budget value is added (under budget)

(c) Price calculated after custom settings selected (over budget)

**Figure 2, Application Screen Shots**