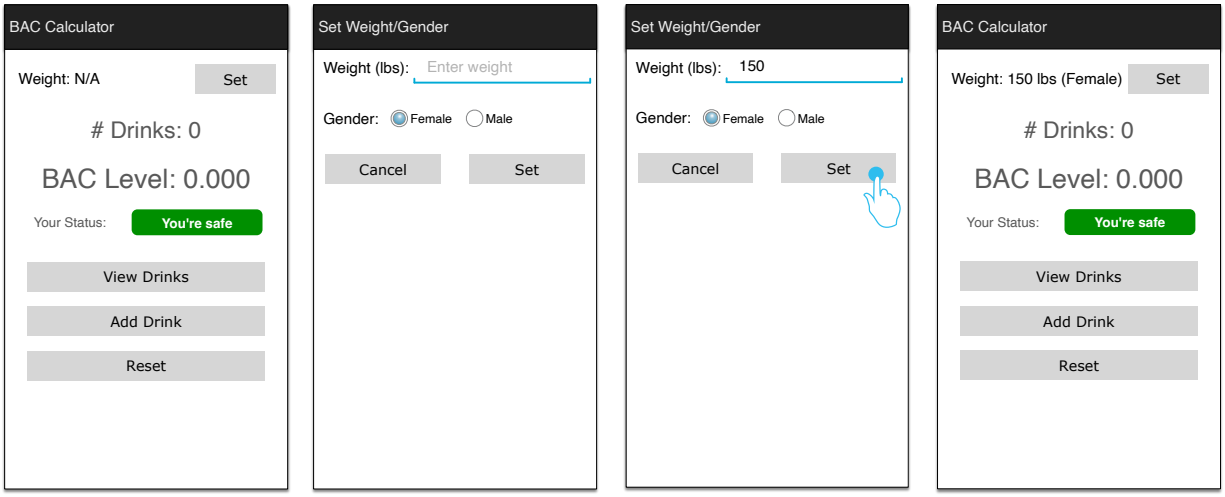
Mobile Application Development
Homework 4

Basic Instructions:

1. In every file submitted you MUST place the following comments:
    a. Assignment #.
    b. File Name.
    c. Full name of the student.
2. Each group is required to submit the assignment on Canvas.
3. Submission details:
    a. Zip all the project folder to be submitted on canvas.
    b. The file name is very important and should follow the following format: **Group#_HW#.zip**
    c. You should submit the assignment through Canvas: Submit the zip file.
4. **Failure to follow the above instructions will result in point deductions.**

Homework 04 (100 points)

In this assignment you will get familiar with Managing RecyclerViews, Fragments, and data passing between activity and fragments. You will build a multiple activity Blood Alcohol Content (BAC) Level Calculator application.



(a) BAC Calculator Fragment (b) Set Profile Fragment (c) Set Profile Fragment (d) BAC Calculator Fragment

Figure 1, Application Screen Shots

This app is composed of one activity (Main Activity) and multiple fragments namely the BAC Calculator, Set Profile, Add Drink and View Drinks. The app requirements are as follows:

1. You are provided with a skeleton application that includes the Activity and Fragment classes to be used in this project. Use the provided project.
2. Create a Drink class. An ArrayList of Drink objects should be stored in the Main Activity to maintain the list of user added drinks.
3. All communication between fragments should be performed through the Main Activity.
4. When the Main Activity starts it should load the "BAC Calculator" Fragment as the initial fragment.

Part 1 (0 Points): BAC Calculator Fragment

This fragment shows the user's weight, gender, the number of drinks, BAC level and your status as shown in Fig 1(a). The activity requirements are as follows:

1. If the Weight and Gender are not set then see Fig 1(a):
   a. The weight should be displayed as N/A. The # Drinks, BAC Level and Your Status should match Fig 1(a).
   b. View Drinks and Add Drink buttons should be disabled.
2. Clicking the "Set" button should communicate with the Main Activity to:
   a. Replace the current fragment with the Set Profile Fragment see Fig 1(b).
   b. Push the current fragment on the back stack.
   c. Upon returning from the Set Profile fragment:
      i. The weight and gender should be retrieved from the Main Activity, and should be displayed as shown in Fig 1(d).

ii. Clear the drinks list, clear the BAC and UI as shown in Fig 1(d).
iii. Enable the View Drinks and Add Drink buttons.

3. Clicking the “View Drinks” button should:
   a. If there are no drinks in the drinks list then display a toast indicating that the user has no drinks.
   b. If there are drinks in the drinks list, then communicate with the Main Activity to:
      i. Replace the current fragment with the View Drinks Fragment
      ii. Push the current fragment on the back stack.
   c. Upon returning from the View Drinks Fragment:
      i. The # Drinks, BAC Level and Your Status should be updated based on the received list of drinks from the Main Activity.
      ii. If the computed BAC is lower 0.25 then enable the “Add Drink" button else disable the “Add Drink" button.
4. Clicking the “Add Drink” button should communicate with the Main Activity to:
   a. Replace the current fragment with the Add Drink Fragment
   b. Push the current fragment on the back stack.
   c. Upon returning from the Add Drink Fragment
      i. The # Drinks, BAC Level and Your Status should be updated based on the received list of drinks from the Main Activity.
      ii. If the computed BAC level reaches 0.25 or higher, the “Add Drink" button should be disabled and display a Toast that says “No more drinks for you.”
5. Clicking the “Reset” button should:
   a. Should communicate with the Main Activity to clear all the added drinks history and the store Profile. (Hint: Clear the ArrayList of drinks).
   b. Reset the UI to the state shown in Fig 1(a)
   c. Disable the View Drinks and Add Drink buttons.
6. Calculate the new BAC value based on the BAC calculation equation listed below.
7. Update the “Your Status” to the correct text and color based on the following:
   a. $0 \leq BAC \leq 0.08$: Green “You’re safe.”
   b. $0.08 < BAC \leq 0.2$: Orange “Be careful.”
   c. $0.2 < BAC$: Red “Over the limit!”
   d. Whenever the BAC level reaches 0.25 or higher, the “Add Drink" button should be disabled and display a Toast that says “No more drinks for you.”

Part 2 (0 Points): Set Profile Fragment (Setting Weight and Gender)

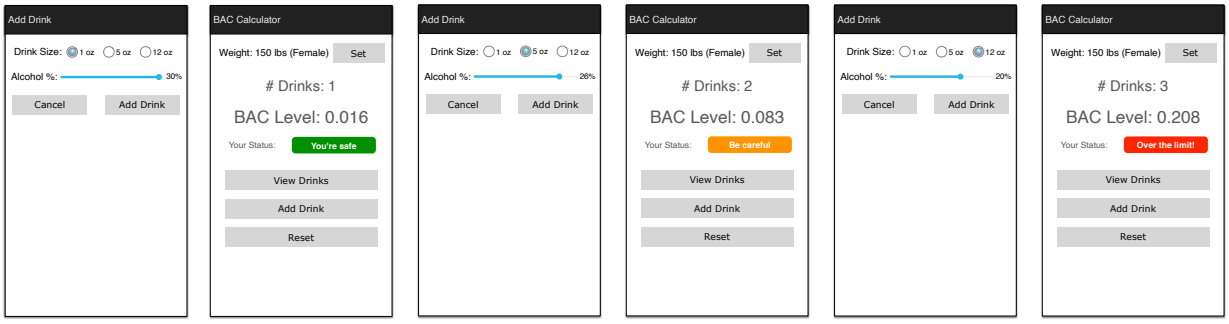
This fragment enables the user to setup their weight and gender which is required for BAC calculation, see Figure 1(b). Requirements are listed below:

1. Create a Profile class that should be used to store the user’s weight and gender.
2. Use an EditText component for the user to enter their weight in pounds, limit the entries to only positive numbers and should display the hint message “Enter Weight.
3. Clicking the “Set” button should check that the weight is entered and the gender is selected, if not display a Toast message. If all the entries are entered correctly, then:
   a. Create a Profile object
   b. Send the created Profile object as a result to the Main Activity.
      i. Store the Profile object in the Main Activity.
      ii. Retrieve the BAC Calculator Fragment from the back stack using tag, and

send it the received Profile object.

iii. Pop the back stack.

4. Clicking the “Cancel” button should:
   a. Communicate with the Main Activity which should pop the back stack.



(a) Add Drink Fragment (b) BAC Calc Fragment (c) Add Drink Fragment (d) BAC Calc Fragment (e) Add Drink Fragment (f) BAC Calc Fragment

Figure 2, Application Screen Shots

Part 3 (0 Points): Add Drink Fragment

The Add Drink Fragment allows the user to add a new drink as shown in Fig 2(a). The requirements are as follows:

1. The Drink Size Radio Group allows the user to pick the drink size 1, 5 and 12oz.
2. A SeekBar is used to select Alcohol %. Set the maximum alcohol percentage to 30%.
   a. On the right of the SeekBar use a TextView to display the current progress of the SeekBar, which should update as the user moves the SeekBar.
3. Clicking the “Add Drink” button :
   a. Create a Drink object using the selected drink size and alcohol level.
   b. Send the created Drink object to the Main Activity:
      i. Add the new drink to the drinks list stored in the Main Activity.
      ii. Retrieve the BAC Calculator Fragment from the back stack using tag, and send it the updated drinks list.
      iii. Pop the back stack.
4. Clicking the “Cancel” button should:
   a. Communicate with the Main Activity which should pop the back stack.
5. Figure 2, shows the process of adding a drink and how it updates the BAC Calculator Fragment after recomputing the BAC values.

Part 4 (100 Points): View Drinks Fragment

This fragment allows the user to view and delete the added drinks as shown in Fig 3. The requirements are as follows:

1. This fragment should receive the list of drinks from the Main Activity, and should display the list of drinks as shown in Figure 3.
   a. Use a RecyclerView to implement the drinks list.
   b. Each row item should display the drink image, alcohol %age, drink size, added on date, and a trash icon as shown in Figure 3.
2. Clicking the “trash can” image should:

a. Delete the corresponding drink from the list of drinks.
b. Send the drink to be deleted to the Main Activity to be deleted from the list of drinks stored in the Main Activity.
c. Refresh the displayed drinks list to show the current list of drinks.

3. At the top of the screen display the sort by options as shown in Figure 3:
   a. The options provided are sort by alcohol or sort by date added in ascending or descending order.
   b. Clicking on sort by alcohol % by ascending (descending) order should sort and refresh the displayed list to display the list of drink sorted in ascending (depending) order by the alcohol %.
   c. Clicking on sort by date added by ascending (descending) order should sort and refresh the displayed list to display the list of drink sorted in ascending (depending) order by the date added.
4. Clicking the “close” button should communicate with the Main Activity to:
   a. Retrieve the BAC Calculator Fragment from the back stack using tag, and send it the updated drinks list.
   b. Pop the back stack.

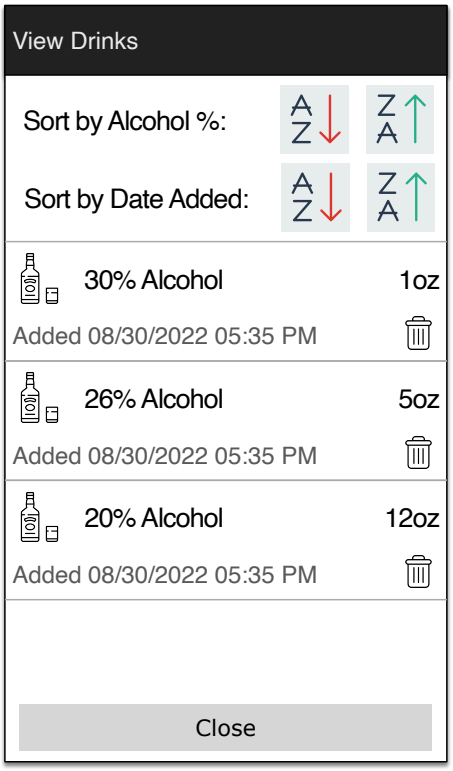


Figure 3, View Drinks Fragment

Calculating BAC:

- The Blood Alcohol Content (BAC) is calculated based on their user's weight, gender and alcohol consumption. We are not including time in this calculation.
- The simplified version of the "Widmark BAC Formula:" **% BAC = (A x 5.14 / (W x r))**

Variable	Description
A	Total liquid ounces of alcohol consumed. It is dependent of the volume and the alcohol concentration of the drinks consumed.
W	Weight of the person in pounds.
r	Constant that depends on the user's gender - 0.73 for Men - 0.66 for Women

Table 1: BAC variable description

Example Scenario:
Eve consumed 12oz Beer (5%), 5oz Wine Glass (12%), and 1.5oz Spirit (40%). She weighs 150 lbs. In order to calculate the variable A we need to perform the following:

r = 0.66 (Women)
W = 150 lbs
A = 12*5/100 + 5*12/100 + 1.5*40/100 = 1.8
BAC = 1.8 * 5.14 / (150 * 0.66) = 0.093