BOSTON UNIVERSITY

CS 501 Mobile Application Development
Fall 2023
Assignment 1 – Getting setup and your first apps

Due: Night of lecture 2 – week of 9/10/2023, before class.

Do not email homework, please submit on Blackboard. You should also take screenshots or recording of your assignment and submit. Post the code on GitHub and submit the link and the videos in a zip file.

Assignments:

1) Read:
   a) "Learning Android", "The Necessary Tools, and Chapter 1 in Android Programming
   b) Getting started with Kotlin: https://kotlinlang.org/docs/home.html
   c) Kotlin language specification: https://kotlinlang.org/spec/introduction.html
   d) Android Kotlin: https://developer.android.com/kotlin

2) Setup and install Android Studio on your computer. Send a screenshot of the installed IDE on your machine. Please be sure to install the latest version, Giraffe. You can download Android Studio from https://developer.android.com/studio. Since every system is configured differently you may need to do some research to get it to work on your machine. Submit a screen shot from your system with a virtual device up (see #3 below)

3) Setup a virtual device and/or connect your physical device. Once again, depending on your system/hardware this will differ. Please do the necessary research to achieve this. Videos on YouTube abound on how to do this as well. Submit a screenshot with the virtual device running.
   a) Here are some examples on setting up a virtual device: https://www.youtube.com/results?search_query=android+studio+setup+a+virtual+device.
   b) Here are some examples on connecting a physical device and setting it up for debugging: https://www.youtube.com/results?search_query=android+studio+connect+a+physical+device

4) Take the Hello World app we went over in class and modify to:
   a) Change from "Hello World" to "Hi, my name is XXX." and define your name in a variable called 'myName'.
   b) Set the background color to cyan.
   c) Build and run it and upload the project to GitHub. Take a screenshot and submit on Blackboard.

5) Answer the following:
   a) List the various sensor and devices on typical mobile phones.
   b) List five of your favorite apps. Briefly describe what they do and what makes them so great.
   c) Identify an App you use often, but you wish were better, (eg., - Uber, Lyft, Venmo, Indeed, etc.) Identify the pros and cons of each, and what features are great, but could be improved, what features are missing. For the latter two items, describe with some detail how you would implement these features and what technology might be used to implement these missing features. Be ready to present to the class.

6) **App design challenges (work in teams).** For each of the scenarios below, design an app that might be helpful. Consider all the resources and tools available to you (or that you might implement or get from a 3rd party) on a typical Android cellular phone. Eg., voice recorder, call blocker, databases, crowdsourcing, caller ID, SMS, Camera, gyroscope, GPS, etc. Storyboard your idea on a separate sheet of paper, that is describe the application and sketch what the app might look like.

   You will work in teams of 2 – 3 (no more!) on this, be prepared to present your designs to the class next week. Please be sure to have only 1 person submit this section per team and list who is on the team.

   a) **Emergency response app**. Every year at BU incoming freshman are overwhelmed by the city and occasionally get themselves into dangerous situations. What are some of your ideas for an App that would enable someone to know where it is safe to go and, if in trouble, quickly and easily notify others.
      i) Consider the different sensors on an Android Handset.
      ii) Also consider the possibility of crowdsourcing real-time and archived data
   b) **Contractor for you.** This is an app that connects professional contractors with individuals who need work done on their home. If someone were to pay you to design this app, what are some of the things you would need to consider? What would some of the requirements be in terms of device hardware/software/back-end storage, etc?
   c) **Don't fleece me dude.** Quite a few users of credit cards do not regularly check their statements. Or, when they do, they check them long after making a charge. Unscrupulous vendors might take advantage of this laxness. Let's focus on one specific area, tipping at restaurants.

      Design an app that would enable a restaurant patron to validate that the tip they left is the same as the tip that was charged. For example, when you go to a restaurant, a hold is placed on your credit card and a tip is added after you leave. What if an unscrupulous waiter charged you a different amount, then you had written in? How could you automatically be notified that this occurred?

      Write an app description (be detailed). An example UI is below, please create your own.

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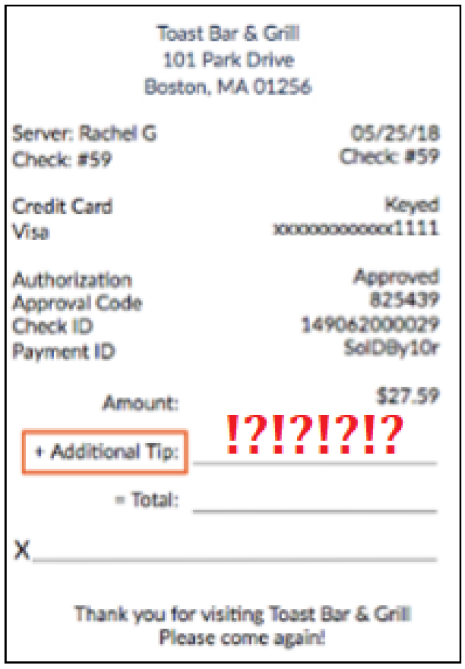

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Server: Rachel G
Check: #59

05/25/18
Check: #59

Credit Card
Visa

Keyed
xxxxxxxxxxxx1111

Authorization
Approval Code
Check ID
Payment ID

Approved
825439
149062000029
SolDBy10r

Amount: $27.59

+ Additional Tip: !?!?!?!?

= Total: _____

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Thank you for visiting Toast Bar & Grill
Please come again!