CS 501 Mobile Application Development

Spring 2023

Assignment 1 – Getting setup and your first apps

**Due:** Night of lecture 2, 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. Portions of this assignment must be done and submitted individually, other parts are to be done as a group.

**Assignments:**

1. **(Individually)** Read all of chapters 1, 2, 3, and 4 before the next class.
2. **(Individually)** 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, Electric Eel. 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 #2 below)
3. **(Individually)** 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.

Here are some examples on setting up a virtual device: <https://www.youtube.com/results?search_query=android+studio+setup+a+virtual+device>.

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>

1. **(Group)** Take the Hello World app we went over in class, build and run it, and upload the project to GitHub. Take a screenshot and submit on Blackboard.
2. **(Group)** Using the GeoQuiz example from class as a starting point, customize the toast by using a Snackbar instead of a Toast. While using a Toast is a convenient way to display UI, we recommend using a Snackbar in your applications because they are more configurable in both their appearance and behavior. Refer to the developer documentation at developer.android.com/​reference/​com/​google/​android/​material/​snackbar/​Snackbar for more details. (Hint: Look at the make and show functions.) Submit a video recording of this app running.
3. **(Group)** As a group, complete the Worksheet below and submit to Blackboard.

CS 501 Mobile Application Development

Spring 2023

Worksheet 1

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Team name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Team members: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

The purpose of this worksheet is to initiate some collaboration that will get you thinking creatively about the functions and features of your mobile device. Please try to get to know the people you are collaborating with. They may become your team members for the final project.

Assignment is due via Blackboard by next class. Do not email homework. Please submit via Blackboard.

Please write your answers clearly or type them.

1. List the various sensor and devices on typical mobile phones.

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1. List five of your favorite apps. Briefly describe what they do and what makes them so great.

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1. Identify an App you use often, but you wish were better, (eg., - Uber, Lyft, Venmo, Indeed, FishBrain, 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.

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1. **App design challenges.** For each of the scenarios below, design an app that might be helpful. Consider all of 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 on this, be prepared to present your designs to the class next week.

* 1. **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.
* Consider the different sensors on an Android Handset.
* Also consider the possibility of crowdsourcing real-time and archived data

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* 1. **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?

**Users of the app should be able to record videos and photos of contractors to show them what work has to be done properly and how much it costs.**

**Users should be able to examine different contractor information through the application.**

**Users of the app will be able to assess the performance of contractors.**

**Users of the app will be able to browse the quotations and reviews of several contractors before making their choice.**

**Users will be able to set up appointments with contractors using the app and get reminders.**

**The software would allow consumers and contractors to interact to discuss specifics.**

**Users will be able to use the app's secure payment system to pay for services.**

**The app will give contractors the ability to schedule appointments, see future jobs, and get alerts when new work requests come in.**

**-To implement the application, we need to consider the following:**

**A reliable backend database for storing user and contractor information, job requests, quotes and appointments.**

**A secure payment system for processing in-app payments.**

**A way to verify a contractor's qualifications and credentials before using the app.**

**A way to collect and display contractor reviews and ratings.**

**-The app requires the use of the device's GPS to allow users to find contractors in their area and to let contractors know where their clients are.**

**Push notification system notifies users and contractors of new job requests and appointments.**

**In terms of device hardware/software, the application requires at least:**

**Android 4.1 or later**

**GPS-enabled devices**

**A photographic device with a camera**

**A device with an internet connection to access backend storage and payment systems.**

* 1. **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?

App description (be detailed):

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Storyboard: Don't Fleece Me Dude

*Sketch the GUI Screen(s), describing purpose of each component. Use additional pages if needed.*