CS 501 Mobile Application Development

**Worksheet 1: Brainstorming Android Apps.**

**Date:** 9/13/2022

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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 and print them.

Although we are working with Android, the concepts apply for any device.

1. **List the various sensors and devices on typical Mobile Phones.**

Accelerometer – checks direction/orientation of device

Biometric Sensors – fingerprint, facial recognition for security

GPS - location

Gyroscope Sensor – angles and direction

Magnetometer – strength and direction of magnetic field, helps with positioning (compass)

Pedometer Sensor - records steps

Ambient Light Sensor – surrounding lights/ controls brightness of device

Proximity Sensor – when sensing an object close by, device screen turns off

1. **List 5 of your favorite Apps. Briefly describe what they do and what makes them so great.**

UberEATS – Order food, groceries online; delivery or pickup options

Google Drive – free cloud storage, can share your files

Zoom – video conference, convenient for communication

Discord – communication/chatting

Google Chrome - browser

1. **With your team, generate 3 ideas for apps. Briefly describe what they would do if they existed. You will share these with the class.**

Go Home Monitor – routes to home: bus from google maps, cars from uber/lyft, bluebike, walk

Android Shortcuts – create personal automation

Pet Garden – list all the available/upcoming pets from all categories (dog, cat, bird, etc), allows adopters and sellers to directly communicate, sellers can list their pet information, includes the locations close to you, can post missing pet notices, record personal pet information (weight, health, etc)

**Could you do it better?:**

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.

eBay:

**Pros:**

easy management, deliver packages, return packages at no cost, USPS

allows buyer and seller to bargain/make offers/ communicate

**Cons:**

Redundant listing recommendation, Notifications are not organized according to diff categories

**Improve: via Android UI design**

Notifications: have different tabs (like gmail) for messages; ex from sellers, eBay, general notifs

Remove offers deals from Inbox and just include it with notifications

Improve the direct messaging interface, make it like a chat app

**Missing:**

Missing product listing from sellers in the saved sellers tab; the products tab lists the products but not seller information, so combine the two information by showing the products that are newly added to the store/seller. Utilizing big data recommendation in this page so that the buyers would be able to review the newly added items which may be their preferred offers.

Diagram

Description automatically generated

**App Design Challenge(s):**

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.

**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

Dangerous Situations:

Lost: Use GPS, locate service stations e.g. police stations, school offices, contain emergency contact

Alone at night: Use GPS, show locations of Scarlet Safe Walks nearby, share location info with police during emergencies

Robbery, Assault: Emergency SOS feature- if this is triggered, will automatically contact emergency contacts

Car crash/accidents: use accelerometer and gyroscope, biometrics, if you don’t respond in a timed manner, device will automatically contact emergency

Wild animal encounter: GPS, crowdsourcing - people can upload/update info about wild animal sightings

Fall/Collapsed/Critical Health Issues: biometrics, if device senses anything unusual about User’s vital signs, will contact emergency (911, ambulance, family)

Severe Weather: collects data from weather.com and sends reminder to user about any weather warnings, where the weather warning is centered around, and the times

Fire: BU/Boston fire department, lets User know location of the fire, SmartHomes, Smart Thermometer sends data to your device and if it finds abnormal temp increase, will notify User, and if User is in the same location (using GPS) as the home, will send an alarm (in case User is asleep)

Shooting Event: collects information from police department and crowdsourcing to make note of shooting events near current location

**2. Contractor for You:**

“Contractor For You” is an App connecting Professional Contractors with individuals interested in having work done on their home.

**If someone were to pay you to design this App, what are some things you would need to consider? What would some of the requirements be in terms of device hardware/software/back end storage/etc?**

Professional Contractors and Homeowners would have their own UIs and be able to do different things on the app. Consider Privacy (personal address)

Some requirements: The software should be easy to use and contains all necessary information.

When you register an account, must upload files to certify identity/home ownership/Contractor certification

Frontend: Basic communication interface, Contractor Listing interface, as a homeowner list jobs, payment management, order management, feedback/ratings, upload photos

Backend: store information about Contractors, Homeowners, Jobs

Like eBay, use big data to show related services/ recommended services for homeowners, and related/recommended job listings for Professional Contractors

App should be usable across multiple OSs, minimal space (~500 – 800 mb)

Use electron.js to build cross-platform app

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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 (detailed)**:

Assuming the tip and amounts are charged on the same day and the restaurant names are stated/the same online as on the receipt.

Take picture of your receipt, then use OCR to extract the tip amount and compare it to your charge from bank/credit card using store name. The app will compare amount of money spent with the same restaurant name. Currency: USD

1. Compare date charged
2. Compare price amounts of food (excl tip)
3. Compare last 4 digits of credit card

Check if the tip amount is paid/charged within 24 hrs.

When registering an account, give permission to access text messages, which the app will read. The message for tip spent is sent separately from the amount spent before tip. If the amount of tip is different, notify User.

User can add multiple credit cards



Storyboard: Don't Fleece Me Dude



*Sketch the GUI Screen(s), describing*

*purpose*

*of*

*each component. Use additional pages*

*if*

*need*

*ed.*



Storyboard: Don't Fleece Me Dude



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Storyboard: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



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