CS 447 - Individual Assignment 1

A. Project Ideas

a. Idea #1 - Paper Waste

i. ***User Group:*** Students, faculty, or individuals who work in fields that require many documents to be printed but are looking for ways to preserve the environment.

ii. ***Problem Space:*** One of the main concerns in today's society is preserving the plant and the overuse of paper is one aspect of everyday life that doesn't contribute to saving the environment. Printing documents is a necessary job of many people's lives and it can be difficult to preserve paper especially when you need to reprint due to mistakes.

iii. ***Enthusiasm:*** I am excited to help this user group as I am a part of it along with my classmates, friends, professors or anyone who works in a corporate environment. Along with many others, I am passionate about finding compromises that help save the environment while still allowing me to use the technology around me such as printing.

iv. ***Impact:*** This project would improve the lives of everyone in the user group by allowing them to continue with their daily tasks while also making them feel better when doing it since they know they are minimizing their paper consumption. It is a good compromise as some people prefer to have physical copies rather than look at things online.

v. ***Project Feasibility:*** It would be feasible to find people who use printers frequently but also care about saving the environment as almost everyone

on our college campus could fit into one or both of those groups. I could recruit anyone using the printers at the library or in academic buildings. I could also recruit anyone who is a member of an environmental club on campus by finding their clubs and asking them to participate in the study as it is something that pertains to their passions.

b. Idea #2 - Lack of Inventory

i. ***User Group:*** Restaurant owners and management teams who struggle to keep inventory organized in terms of knowing when to reorder products and how much backstock to keep of certain products based on sales, etc.

ii. ***Problem Space:*** One of the main concerns of restaurant owners / management teams is maintaining organized documentation of what products are needed, how often restock needs to happen based on sales of products, when restock needs to happen in order to avoid running out of ingredients for certain dishes. This kind of information needs to be accurate in order to ensure the success of any restaurant.

iii. ***Enthusiasm:*** Several of my friend's families own restaurants in my hometown. My friend's parents work hard, long hours to keep up with the demands of owning a business and sometimes they have to give up spending time with their families in order to make a living.

iv. ***Impact:*** It can be very stressful and difficult to own and/or work at a restaurant especially if it is disorganized. Anything that could improve the functionality of a restaurant would improve its success and the lives of everyone involved with the restaurant. I would love to be able to design a

product to help these people have more time with their families and do other things without compromising their businesses.

v. ***Project Feasibility:*** This project would be feasible since there are many different restaurants in the Harrisonburg area. I would assume that the owner or someone on the management staff would be at the restaurant at some point during the week so getting plenty of individuals for the user group wouldn't be an issue. I can easily go into several restaurants downtown and around the university and ask for the owner / manager's email or phone number to acquire my user group.

c. **Idea #3 - Difficulty finding Entry-Level Positions**

i. ***User Group***: Students graduating from a university with a bachelor's degree who are looking for a job that requires little to no experience.

ii. ***Problem Space:*** It can be really difficult to find jobs that are looking for recent college graduates who have little to no experience in their field. Companies seem to be looking mostly for people who have at least 3-5 years of work experience but it is obviously difficult to get that experience while in college or without a college degree in a related area.

iii. ***Enthusiasm:*** This is a problem that my friends and I are all currently facing. We are in the process of trying to start our lives and transition into being more independent with our own jobs. It has been hard to find jobs that are looking for our current skill level and it has made the job application process slightly discouraging.

iv. ***Impact:*** Being able to look at jobs that are specific to one's interests and experience level could save students a lot of time. It can be hectic trying to apply for jobs while also being a full time student. It would minimize the stress of job applications if we could easily tell whether a job was entry-level without having to go through the process of applying just to find out that a company is looking for someone who's been in the field for several years already.

v. ***Project Feasibility:*** The user group includes myself, my friends and most senior students at JMU so it would be easy to access information and conduct research. I could recruit people by finding 400 level classes specializing in many different fields and using the senior students within those classes as my user group.

d. Idea #4 - Food Waste when shopping for a single person

i. ***User Group:*** College students and other adults that live on their own and are buying food to feed one person.

ii. ***Problem Space:*** It can be difficult to find food staples such as chicken and bread that is sold in smaller portions for a single person. This definitely contributes to an increase in food waste since many foods go bad before they can be used.

iii. ***Enthusiasm:*** As a college student, this problem affects me and almost every other college kid who buys groceries for themselves. I hate to be wasteful with food but it can be difficult since the portions of some food staples are very large and I won’t eat them in a timely manner.

iv. ***Impact:*** By finding a solution to this problem, people will be able to help minimize food waste. This can help improve food security and resource conservation around the world which is one of the top issues in today's society.

v. ***Project Feasibility:*** There are an abundance of kids that buy groceries for only themselves at JMU. I can recruit kids from anywhere on campus to get a variety of input from different types of students as well as anyone else in the surrounding area who lives alone.

e. Idea #5 - Women in STEM

i. ***User Group:*** Women students who are STEM majors, younger girls who are interested in STEM majors, parents of young girls who may be interested in pursuing a STEM field and educators who wish to encourage girls to pursue their STEM interests.

ii. ***Problem Space:*** There is a lack of women pursuing STEM majors and working in STEM related fields. Women only make up 28% of employees in the STEM field and it can be difficult to encourage girls to pursue a field where there is minimal representation and frequent gender biases.

iii. ***Enthusiasm:*** My sister and I are both pursuing STEM majors in college and it can be hard at times to encourage younger girls we know to follow us. I wish that there were more resources for my sister and I as we were growing up to explore the possibilities of STEM programs. We were very fortunate to have parents that encouraged us to pursue math and science

degrees as our dad is an engineer but not every girl has someone to guide them.

iv. ***Impact:*** Women provide great insight into the STEM field and offer alternative perspectives to their male counterparts. Companies that are producing products that women will also use should consider the female point of view to relate to a larger audience. It is important to encourage more women to pursue STEM in order to introduce more diversity into the field which will improve it overall.

v. ***Project Feasibility:*** This project would be feasible as there are women students in STEM majors as well as women professors who teach a variety of STEM classes. I could also use students from local elementary, middle and high schools that are interested in the STEM field to obtain information about what would help them in finding their place in the field. I can recruit girls in my own computer science classes as well as from engineering class. I can also attend club meetings that are specific for Women in STEM and Computer Science specifically to create the user group needed to conduct this research.

B. Usability & UX Analysis

a. Product Analysis 1

i. ***Project idea:*** Idea #2 - Lack of Inventory

Many restaurants lack an organized and efficient way to manage inventory which is key to a successful restaurant.

ii. ***Product description:*** Upserve is a software management system distributed on a POS terminal that includes a feature that automatically tracks inventory of restaurants. Upserve syncs restaurant management tools such as payment processing, inventory tracking, and employee scheduling into one application that can be used on several different platforms. The user would be anyone who owns or manages a restaurant that struggles with maintaining accurate inventory. The product's goal is to help restaurants save time and money by automating the inventory process as well as providing data about what products are creating revenue and which are not. This product is designed for independently owned restaurants and could be used in any scenario where the owner or management team needs help organizing and keeping up with the many aspects that contribute to a successful restaurant.

iii. ***Usability analysis:***

1. *Visibility:* The application is mainly distributed on their POS terminal that is touch screen. There is a menu bar to allow for navigation through the application and it provides insight on sales, revenue, etc through graphs that are easy to read and understand, allowing owners to see visual representations alongside the numbers.
2. *Natural Mapping:* Since the POS terminal is a touch screen, the user can easily select what they want and see the results of their actions on the same device. Most people are familiar with this

technology and it is easy to learn since there is an obvious response to every movement.

3. *Constraints:* The application only offers features that have been programmed to serve as inventory tools. The user can't use alternative tools that have not been included.
4. *Error Recovery:* There is the ability to double check any of the data that the system has collected and make changes if needed to make sure the information is accurate. The application also provides a "Help" tab that allows users to connect with an expert whenever they have questions or concerns.
5. *Standardization:* This product can be used on either a POS terminal which is provided with the software already installed or can be used on a mobile device for on-the-go monitoring. All the features are consistent across each platform. The only difference would be the layout of the application depending on the device it's being used on.

iv. ***UX analysis:***

1. *Sensual:* The senses "touch" and "sight" are triggered by this application since it requires pressure and movement from the user on the screen to do things. Once something has been selected, the user can see the screen change as a result of their action.
2. *Emotional:* The device seems easy to use and can foster a sense of control for whomever is using it. Everything needed to

successfully manage the inventory of a restaurant is in one place and organized to maximize efficiency. This could provide a restaurant owner / management staff with some peace of mind.

3. *Social:* This device would allow for owners and managers to connect with their staff while they are not at the restaurant. Rather than discussing inventory over the phone, each party can see the numbers and have more informed conversations about inventory through this application. This would also allow the owner to make decisions from anywhere without having to physically be in the restaurant just to do inventory.
4. *Contextual:* This device is designed to be used in a restaurant environment by the people running the restaurant. It can be used whenever necessary as many restaurants work with their inventory at different times during the day or multiple times a day.

b. Product Analysis 2

i. ***Project idea:*** Idea #4 - Food Waste when shopping for a Single Person

A lot of food products are sold in large quantities meant to serve 4 or 5 people rather than one person. It can be difficult to avoid wasting food when buying for a single person.

ii. ***Product description:*** Fridgely is a mobile application that tracks food expiration dates to help users maximize their food and create meals with the food currently on hand to minimize waste. It works by allowing you to scan the barcodes of each item you purchase and keep a log of all the

items currently within your refrigerator. It will notify you when food gets within a certain range of its expiration date and will offer meal ideas that use ingredients you already have. The product's goal is to minimize food waste and provide new meal ideas and would be used by anyone who struggles to limit food waste especially though overbuying which can be hard for those who are feeding only themselves. This application can be used in personal kitchens and would be used when the user wants to see what they have in the fridge rather than buying more food or going out to eat.

iii. ***Usability analysis:***

1. *Visibility:* This is a mobile application that can be used on touch screen devices. It is distributed through the App Store. There is a navigation bar at the bottom and submenus within each category to easily navigate through the application and find each component.
2. *Natural Mapping:* The application is meant to be used on touch screen devices and therefore is easy to select where you want to navigate and quickly see the response.
3. *Constraints:* The application only allows the user to choose between the features offered which limits the errors they can make.
4. *Error Recovery:* There is the ability to add and delete products from your virtual fridge to match the current products in your real refrigerator. This allows for the application to recalculate

expiration dates as well regenerate meal ideas with the new product lists without problems.

5. *Standardization:* It is currently only on the App Store so the product isn't extremely versatile to other platforms. However, I believe across devices that have access to the App Store, the features are mostly consistent besides the layout which depends on the screen size of the given device.

iv. ***UX analysis:***

1. *Sensual:* Since this is a mobile application, it triggers the user to use visual and tactile senses. This makes the application easy for most people to use since the action triggers a visual response and allows people to quickly learn what each feature does.
2. *Emotional:* The application allows people to feel organized and gives them a role in helping minimize food waste. This can also help motivate others around them to use these techniques since it is easy to implement into our daily lives.
3. *Social:* This application would be used by one or several people who live in the same household. It would allow for multiple people to be able to track what is in the fridge, what needs to be bought and what needs to be used. This application does influence the users social context since it allows the user to connect with other people that they may share groceries with to avoid overbuying the same items.

4. *Contextual:* This application would be mainly used in your home or in the grocery store by the person shopping for groceries and making meals. The user could use the application for different things depending on where they were. If the user was in the grocery store, they might check what they already have in the fridge to know what to buy or look at recipes to get ingredients to supplement what they have to make a meal. If the user was at home, they would use the application to see what foods would be expiring soon and look at meals using those products.