ASSIGNMENT PART 1

COSC2625 BUILDING IT SYSTEMS

3GROUP

STORE ITEM NAVIGATOR

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A) GROUP MEMBERS

1. **Steven Lim - s3785191**

My background revolves around programming and digital design/3D modelling.
I'm interested in programming and software development. I am good at 3D modelling and programming. My weak point is coming up with ideas that are unique, creative and innovative. I tend to listen to ideas more and expand on them rather than coming up with new ideas. I expect to be assisting in the development of the app as well as some design aspects.

2. **Aaron Soa - s3786067**

As a first year in the Bachelor of Information Technology, my background in IT comes from my interest in computers, I have had experience in programming and digital design. In IT my passion is in the security and network side of it. In the IT field, I am interested in the network and programming side of things. I believe I am good at programming. My weak points in this project needs are that I am not experienced in creating software for devices as our project is to create a software. I expect to be helping in creating the software and maybe to design it as well.

3. **Oliver Trumble - s3781099**

I am in my first year of Information Technology at RMIT, I have no other background in IT. I am interested in UCD and programming. I do not know how to build an app so I will need to learn to help the group build the prototype. My role would likely be helping make the app and helping to design the various pages of the app.

4. **Qianyu Teng - s3768118**

I have no good experience in IT, and I am a new student of IT field. I really enjoy designing PowerPoints and websites. My weak point about IT is code typing. I plan to give a help for powerpoint design and web development aspects.

5. **Moditha Sulakshana - s3756843**

I was always passionate about technology since my early days, and through various creations that we made, I was very interested to create a new technology or work towards developing existing technologies, hence I have chosen to pursue a career in IT.

I'm good at making Digital Content, videos and photos and I am currently doing this part-time; my strengths also include making websites, designs and I am partially good with coding which is also one of my interests. My weak points for this group will be, we have chosen a project that required a development of an app, I have never done anything of this sort and would require me to learn various new software's to do this project. I expect to contribute any design related work to my group and also act as a supporting role for the coding and the development of this application.

6. **George Milopteris - s3780800**

I've been interested in IT from a young age as I grew up playing video games. I've also always been intrigued by uncle's work as he owns his own company which manages networks and computers for offices. At this point in time I wouldn't say im especially good at one specific area of IT, however I am interested in learning more about programming and web development. My weak points in the context of the project needs would be in terms of creativity and designing the look of our application. The role I expect to perform throughout this project is somewhat of a supportive role in which I am able to complete whatever tasks my group asks me to complete.

7. **Aman Kumar - s3785534**

During my senior high school years I completed a Certificate III in Information, Digital Media and Technology, and I am currently enrolled in RMIT's Bachelor of IT program, my passion for IT started at a very young age, I was fascinated by computers, video games and nearly anything digital. My current skill set isn't adequate or comprehensive enough to be "good," as my knowledge only extends to what I have learnt during my first semester, however if I had to select a single area of strength it would be my foundation understanding of UCD and UX. In terms of interest, programming and software development catch my eye as worthwhile fields to explore. For our project needs, obviously my lack of experience in application development, and programming will be a hurdle in achieving a finished product. I expect to mostly participate in front end development, testing and validation of the application.

B) DESCRIPTION

Our group aims to develop and deliver an application that will aid users in locating items quickly and seamlessly within local supermarkets or stores by providing directions to where the item is in a isle. Currently our primary focus is to build a mobile application however, we have thoughts on expanding this solution to the Apple watch platform; for increased user friendliness and ease of use. This application would use GPS technology, where it would factor in the user's GPS location and the GPS location of an item inside a store to provide directions inside the store to easily find that item.

C) DEMONSTRABLE OUTCOMES

Project Motivation

Our motivation begins from our personal experiences where, when we are asked to shop for groceries, we'd spend a lot of time walking between the aisles in a supermarket trying to find particular products. This is where our solution aims to drastically cut down that time by more than half through showing users where exactly they would need to look for these items thus helping them have a pleasant shopping experience.

Minimum Viable Features (MVF)

1. To create a database that the merchants can input GPS location data and prices and stocks.
    - To test this feature, we will create a sample .json file and link this to our application and do tests to see if our application can navigate and identify prices.

2. To vibrate the mobile phone while the user is close to the item
    - To test this feature, we will use the haptic feedback of the iPhone and vibrate the phone, as the user is close the set GPS location.

3. To be able to use GPS location to allow the user to find the closest store.
    - To test this feature, we will implement a map that shows the surroundings of the user and the available stores that are around them.

4. To have a sales page where the app displays all the items on sale in a specific store and its location
    - To test this feature, we will retrieve the items on sale for the items on sale page and try to display the items.

5. To include the stock of a product to show the user if the item is in stock, have low stock or out of stock.
    - To test this feature, we can add and remove items from the stock of our database to check if the stock of the items changes, if the store has the item in stock, low stock and when the store is out of stock.

Extended Viable Features (EVF)

1. To include precise GPS Location (i.e. 5m away, 10m away) that will enable the user to locate the item accurately.
    - To test this feature, we will try moving around while using the app's GPS location to see if the GPS can provide an exact location of where the user is standing.

2. To be able to find the lowest prices of an item among the available stores.
    - To test this feature, we will add various prices to a single product and see if the app is able to provide the user with the lowest price and its location.

3. To allow the software to connect to a smart wrist device and provide haptic feedback when the user approaches the item. The strength of the haptic feedback will increase as the user gets closer.
    - To test this feature, we will set a location where the user will need to arrive at and test whether the watch vibrates as the user get closer and closer to the set location.

4. The software will be able to connect to a smart watch and show an arrow that points to the direction of the product (like a car GPS telling the user to turn when the user needs to turn).
    - To test this feature, we will set a location and inside a building and attempt to get to the location using the directions from the smart watch.

D) PROJECT JUSTIFICATION

1. Workload

Our workload for this project can be split into two main tasks; Development of the application, and testing/validation of the application ensuring it functions as required. The development cycle would be comprised of firstly, constructing the program using the appropriate programming methods, techniques and languages. This provides us with a back-end foundation for the application. This foundation will likely be the core of the project and thus we will need to research, learn and consult various sources to deliver a robust application from a programming perspective. Due to our lack of experience, researching and learning will play an integral part of our delivery and should be considered a sizeable workload in and of itself. The second part of the development cycle will focus on front end development, engineering a UI that is user friendly, clean and aesthetically pleasing. While we plan to employ various user centred design patterns and principles, due to time constraints reviewing user feedback and making improvements may not be feasible however it is still a vital part of development and can't be conceded. It must be acknowledged that due to our lack of experience in the development work space we may have unintentionally omit or failed to identify certain tasks from the workload that may be unforeseen or nuanced. Finally, to validate our work we will run numerous tests to determine whether our solution has achieved its task. These tests will examine various aspects of the application, for instance whether it can guide an individual successfully to their desired product. These tests will be run with two goals in mind; efficiency and effectiveness. It will not be enough that it can simply guide the user, we aim to develop an application that does so in a seamless manner. These

tests will most likely be run intermittently throughout development as well as during the conclusion of the project.

2. Beyond Current Capabilities

Due to our ambivalence in regards to committing to a platform it is difficult to outline some of the exact expectations we have of the application, for example if developed for a smart watch it would be expected of us to use haptics and vibrations rather than displaying and communicating information visually, as we may do if we choose to develop for smartphones. However, one thing is for certain, every iteration of the application will aim to guide users to products in store. Another thing to note is that our delivery will be within a simulation utilizing emulation software, it simply isn't feasible for us to develop the application in a physical environment where we expect supermarkets and other stores to provide us with updated store data readily.

3. Risks

Risk: The first risk of our project is the aim to crowdsource maps of the stores as there is a high possibility that we will not get any maps or updated data given to us, this would not help us provide a proper layout for the application.
Example: An example of this would be if we contacted Bunnings for a map to their store and they refuse to provide us with one or respond entirely.
Mitigation: Our mitigation efforts for this risk would be to use a prototype map of a certain store sourced by us instead of getting a map from local stores and businesses. This would allow us to test the software, however we will not be able to test the implementation of the crowdsourced maps into our application.

Risk: Another risk of our project is the time restrictions set by the due date of this project. This impedes us from being able to fully develop certain features and therefore we may need to make them "future projects". The time restrictions also curb us from learning new things (in terms of coding), hence hindering our idea's potential.
Example: An example of this would be if we wanted to develop our idea onto an apple watch (which was a proposed idea), it would be too difficult as this means a majority of our group would have to learn a whole new language of code to a somewhat high degree to be able to program code for a gps etc. As with the amount of time we have been allocated for this project it wouldn't be feasible.
Mitigation: Our mitigation efforts for this risk is to have a well-structured and balanced timetable which we shall follow in order to not fall behind, additionally we will attempt to not take on too much/difficult work so we can then plan and execute our project in the time allocated.

Risk: Generally stores don't give out their method or formula on how they stock up each isle and where products are placed in the store as it differs from store to store, so we would need local stores and businesses to provide us with their data for us to make this application function correctly.
Example: Different supermarkets would have different product placements and stock locations, hence our application would need a sizeable database of all stores.
Mitigation: The only sensible way to fix this issue would be to crowdsource all this information from the companies, we'd like to help them by providing a proprietary app that would scan the barcode of a particular

product recording or updating it's GPS location, this would be designed in such a way so it could be done whilst an employee is restocking shelves with said products.

E) How

1. Resources & Tools

Laptops - everyone in the group will be using their laptops to communicate and put the work in to build the app, this will include the design and development stages. We are using laptops as they are the best resource available to us and super flexible for all types of work. The cost of these is nothing as we already own laptops and will not need to buy anything extra as the programs we are using are free.

Mobile Phones – Since our application is mainly iPhone based, we have several iPhones to test this outside the simulated software.

C# - this is the program we are going to use to develop our app. C# is a programming language that supports IOS app development well and that is why we have decided to use it. Because no-one in our group is familiar with this program it will definitely be a challenge to learn and use it.

2. Collaborative Workspaces

Google Drive for file sharing and collaborative work on the same file (such as this one), everyone in the group is familiar with Google Drives and we have all decided to bookmark our team drive to allow for easy access. Trello is used for our weekly meetings and GitHub to share our code.

3. Communication Expectations

We are using Facebook messenger as our primary communication source as it is best suited to all of us and we all know how to use it well. In terms of expected response times, we are assuming everyone in the group will read the messages we send as soon as they can and if they take longer than a day or so we will use our action plan for un-responding team members.

We also plan to meet face to face to discuss group matters, outside the tutorial classroom, to discuss and finalize the project.

Our action plan for team members that don't respond involves personally messaging them on Facebook as they might have our group chat muted, and if they fail to respond to those messages and are not turning up to our group meetings then we will seek assistance from our tutor, Trevor. Hopefully after we consult Trevor, we have resolved our issues by then.

4. Decision-making Processes

Decision Making Process

As a group we have to decided that our decision-making process is one of the most important things and therefore we want to have an efficient and effective process to ensure we can maximise our time spent working on the project.

"Kyriopoulos, K., Voulgaridou, D., & Voulgaridou, V. (2010). Too many cooks spoil the broth, or maybe not? Paper presented at PMI® Global Congress 2010—EMEA, Milan, Italy. Newtown Square, PA: Project Management Institute."

(In the article the authors have requested that we cite their work like this ^)

https://www.pmi.org/learning/library/project-group-decision-making-process-6797

As a group we have decided that we want to follow the decision-making process used in the article cited. We figured out that one of the most important things that our group will face is decision making so we want to make sure we can make our decisions promptly but also with good measure.

The last thing we want is to rush a decision or to put little effort into discussing the pros and cons and then having to face the consequences of that decision down the line.

The article cited explains in a detailed way how to effectively make decisions as a team to maximise output within the group, we have chosen to use this process as we think it will help us achieve the best outputs for the group.

The process involves defining a problem, then generating solutions to solve the problem, the most important part of our decision-making process is the last step in which we evaluate how effective our solution was, so we can see what went right and what went wrong.

Dispute Resolution Process

Although our group will aim to have as little conflict as possible, there is still a chance that problems may arise, and we need to ensure we have processes that will have minimal negative impact on the group.

The first step in our plan is to actually acknowledge that a problem has risen up and then communicate with each other so that everyone is on the same page and knows what is going on.

The second step involves everyone in the group giving their opinion on the conflict and what they think the pros and cons of a certain thing are, this allows us all to have a clear understanding of the needs and wants of each group member and how we can best meet the requirements of everyone's point of view.

The last step involves the team coming to an agreement on the conflict so that everyone is satisfied with the result. The last thing we want is for someone to feel as if their opinion wasn't heard and that they did not have an impact on the resolution process.

We will also evaluate how our dispute resolution process to see what went well and what didn't so that next time we can adapt to make it more efficient and effective for the group.

F) PROJECT TIMETABLE

Title	Planned Start	Planned Due	Lead by
Week 3 - 4			
[Group project template] For project plan and base direction of design.	[07/08/2019]	[20/10/2019]	[All members]
[Group meeting and discuss] For project organization and solve the problems we are facing at the moment.	[12/08/2019] 12:30 P.M	[12/08/2019] 13:00 P.M	[Steven Lim]
[Finished writing the project for A1] Finished all the requirements of the document for A1	[14/08/2019]	[18/08/2019]	[All Members]
Week 5			
[Find the relevant tools and software] The tools we use for design project and the tools we use to connect with each other, and out initial starting code and software	[19/08/2019]	[22/09/2019]	[Oliver Trumble]
[Research on iPhone software Development] Find what software is and API's are needed to make this application and distribute work to each member	[19/08/2019]	[23/09/2019]	[Moditha Sulakshana]
[Group meeting and discuss] For project organization and solve the problems we are facing at the moment.	[24/08/2019] 12:30 P.M	[2408/2019] 13:00P.M	[Steven Lim]
Week 6			
[Start coding towards the project] Start designing for the software, where we write code to make some of the software to work	[25/08/2019]	[30/08/2019]	[All Members]
[Look for application designs and UI] To come up with a solution for the UI and how to present to this application	[25/08/2019]	[30/08/2019]	[Moditha Sulakshana]
Week 7			
[Finalize coding the Navigation API] Make sure that all the code for the navigation of the application is done	[02/09/2019]	[15/09/2019]	[All members]
[Check Code] Check all the code we type are work.	[02/09/2019]	[15/09/2019]	[Qianyu Teng]

Week 8			
[Start working towards our second sets of MVF's] Start writing code for the other relevant MVF's or at least try making a working model for them.	[15/09/2019]	[25/09/2019]	[All Members]
Week 9			
[Start to see if there is time for the EVF's] Go through our EVF's and see if there is time to work on any of the EVF's	[20/09/2019]	[25/09/2019]	[Aman Kumar]
Week 10 - 11			
[Finalize the simulated software and test] To try and finalize our basic features of the software and provide a working simulation	[23/09/2019]	[29/09/2019]	[All Members]
[Report] Totally analyze our project, show all the details during the process and give feedback of teamwork.	[23/09/2019]	[29/09/2019]	[All Members]
Week 12 -13			
[Work on the video presentation] Start working towards the final submissions and the video presentations.	[10/10/2019]	[14/10/2019]	[Oliver Trumble] [Moditha Sulakshana] [George Milopteris]
[Presentation] Prepare PPT slides and introduce our project.	[06/10/2019]	[20/10/2019]	[All Members]
Week 1 - 13			
[Project Timetable] Organize the timetable during the project design to make sure we could finish each part on time.	[14/08/2019]	[20/10/2019]	[Qianyu Teng]