

# Smart Shopping App

## Project Report

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# 1 Introduction

This document contains all of the information that I had work throughout the project. The document contain information such as description on the finished project, does the submitted product match my specification and design, technical achievements, personal achievements and review of the project which can be...what went wrong and what went right.

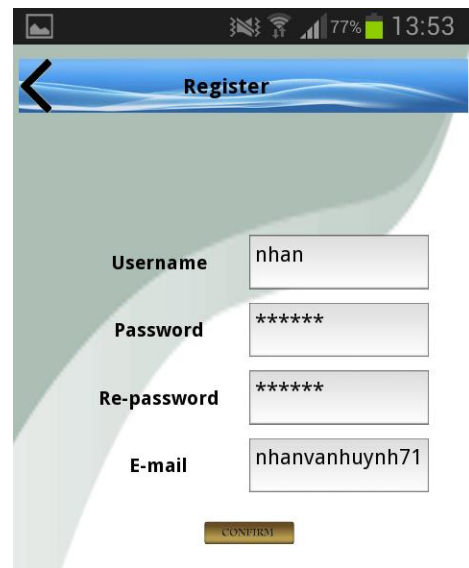
# 2 Project Submitted Description

The Smart Shopping App project is not 100% complete. The project is not finish but I'm sure most of the feature is complete roughly around 80%-90%. In the following you will see the entire features of the project and mostly of its working.

## 2.1 User Account

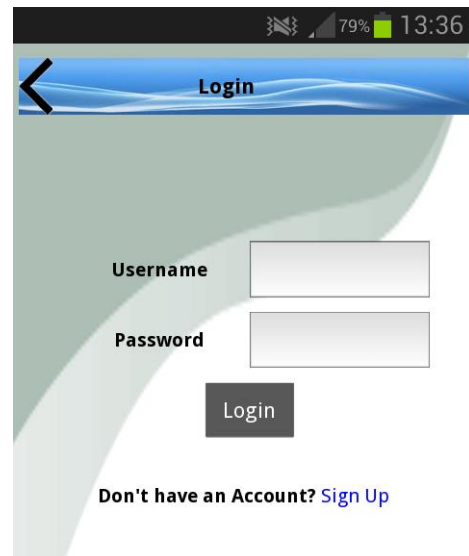
### 2.1.1 Register Account

This is where the user may register if he/she would like too. If the user want 100% accessing the application register is require. The user enters their username and password. The username must be unique an also an email address is require. Once the user click confirm button they will receive a pop up screen to let them know that they have successfully created an account or not.



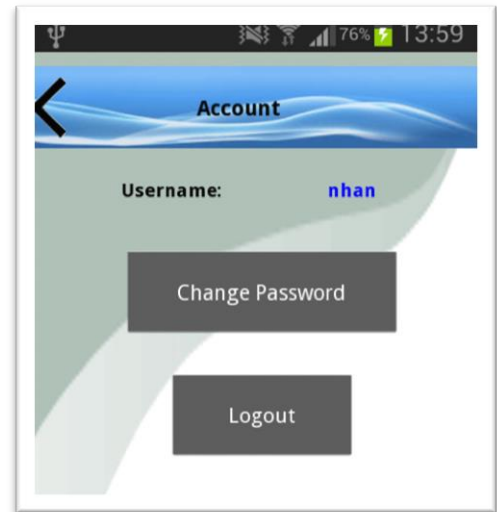
### 2.1.2 Login

The user may login if the account does exist from the database. The user need to enter a username and password that must exists within the cloud-server. The user then may hit the login button where the username is been confirm and if it does exist the user will be instantly login or else they will receive an pop up alert message. If the user doesn't have an account they can register by click on the Sign Up link.



### 2.1.3 Account

When the user has already login, when they try to login again, this page will be display to let the user name know that he/she has already login. The user may logout or change password if they want.



### 2.1.4 Change Password

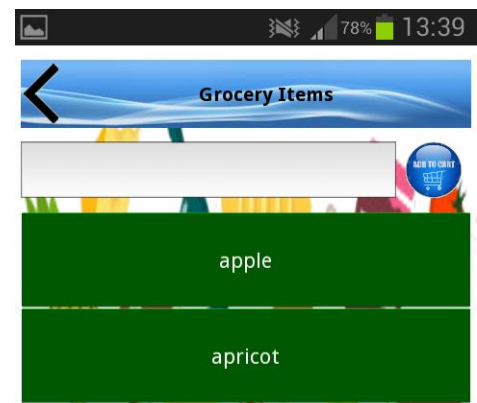
This screen allows the user to change their password. The user must login in order for them to change their password. The user enters their new password and re-types it again. When the user click confirm they will receive a message to let them know that they need to confirm their email or fail to change their password.



## 2.2 Item

### 2.2.1 Add Item

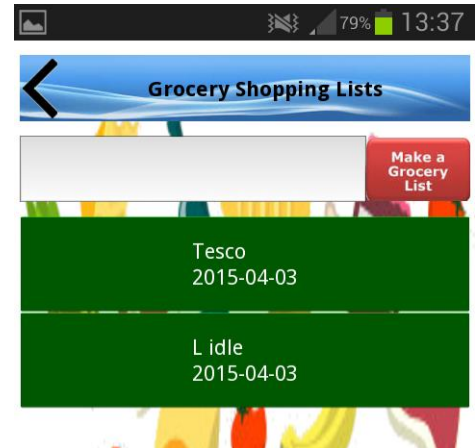
The user needs to add an item in order to create a shopping list. The user enter the grocery item and hit the add button. If the value is unique it will be adding into the grocery list. If the value has already existed they will get a pop up message telling them that it already exists.



## 2.3 Shopping List

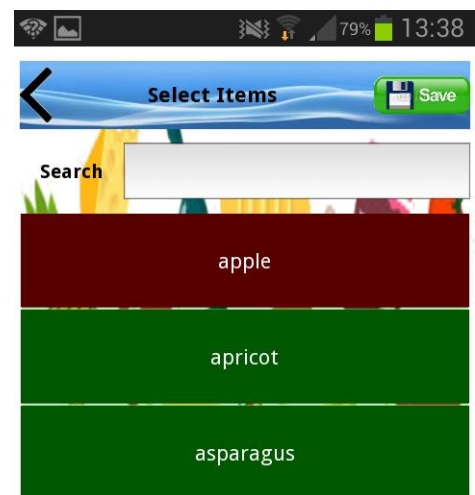
### 2.3.1 Add Shopping List

In this screen the user can create a shopping grocery list. The user enters a name for the shopping list. The user then hit the 'Make a Grocery List', the will be generate and the user may select the list to add in grocery item and then start shopping.



### 2.3.2 Select Item

This screen is where the user may select the entire grocery item. The grocery item is coming from the add item screen where the user input his entire grocery item. The user may select any grocery that she/he wants. When the users select a grocery, he/she may input more detail such as quantity or price if they want. The user can input a grocery item in the textbox to find the grocery item without scrolling it down and find it.



### 2.3.3 Start Shopping

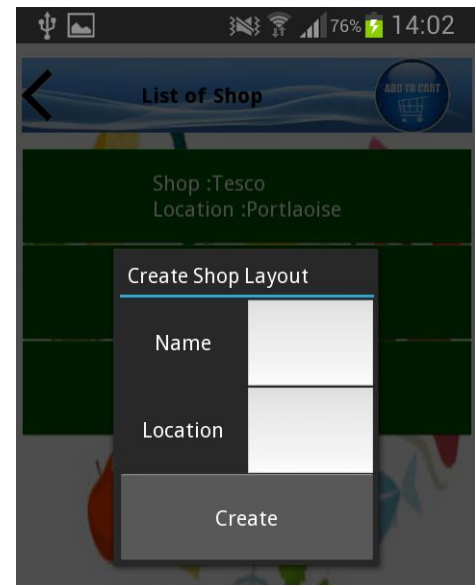
The user may start shopping when the user finishes selecting the entire necessary grocery item. The screen will display the entire selected item in more detail. The user can select value to indicate that she had already bought the item.



## 2.4 Shopping Layout

### 2.4.1 Add Shop Layout

Here is the last screen where the user creates a shop layout. The purpose of the shop layout is to display the location of the grocery item. The user must login and must have a permission in order to use the create shop layout screen or else they can only view and select. The user click the create button and they will receive a pop screen that require the name and location of the shop layout. The users then click create, when they create the screen they will be going to the select grocery item where they select the grocery item and input the aisle location of the item.



## 3 Description of Conformance to Specification & Design

The submitted project was not 100% match my specification and design document. The document had already been update to the latest. During my project I had design my project feature and layout, but the design change as I progress through the iterative. The changes are requiring in order to completing my project within the deadline. According to Iterative planning, it was good but as the project goes, I analyst the project time and deadline, I notice that they will consume more time and I will not be finishing my project. I had features in the shop layout that I found it quite difficult and time consuming, I had decide to drop it and design another way which will be much easier and less time consuming. However the project feature and design match my specification and design roughly between 75%-85%. The project had also changed because of new technology that had been use in the project. The new technology took a lot of my time trying to learn it and so therefore I decide to get the feature working and ignore the fancy bit. The Shopping list screen use listAdapter which the only data that can go in there is a String property, Therefore I cannot add in another object in the ListAdapter to make the design the same as my design/specification document. The reason for modification in this project is for to complete the project within the deadline and to produce the main feature working and suit the language technology used.

## 4 Description of Learning

### 4.1 Technical

Thank to this project I had learn so many new material, there are also many materials that I wanted to learn since first year, and now I finally understand and know how to do them. The experience that I gain from this project was amazing, this project is probably best project experience that I ever had. In this project I had learn a many new material such python, Kivy, KV language, WebApp2, SQLite3 and cloud-Database(Google App Engine). The main language technology is Python. I used an android framework called Kivy that allow me to create .apk file by using python-for-android or buildozer that come along with Kivy. Kivy has also contained a language call KV Language which allows me to design GUI layout. On the client side I used SQLite3 to store the offline database. On the Server side I used Google app engine to store the online database, the GAE used WebApp2 to retrieve and sending the data. The datastore that I had used are called NDB on GAE to store the database. I had also understood a bit of PhoneGap, GenyMotion and ADT.

### 4.2 Personal

My planning skill has improvement thanks to the document that did. I notice this because I had look back on my previous documentation in 3 year and compare it with my new documentation, there is so much improvement, and the new document is more understandable than the old document and it also tidier. I know what my objective is and what I need when I look at my document.

My communication has slightly improved since I always talk to my supervisor to get information about the project. We talk about what would happen if some people might mess around with the application by changing the Shop Layout, we talk about what the best way to attack the entire problem that may occur. I also ask my friend what is the best solution just in case he got a better idea.

I had always research on everything before I start the project. When I learn about software or need to do a feature, I went on google and try and find the best information and will my application have such a technology for a feature.

I had a few presentations before throughout my year in college. All my presentation was terrible since then. This year my presentation was no terrible like other year because I can feel that I have much more confident than before, although I did a lot of mistake and get nervous, but after the presentation is over I get my head around rather than having full of stress and affect my project and other work.

I can see that I'm starting to adapt to a new language much faster. During my main project I have to do other project which I mess up the system in Linux and I can't test or generate a .apk file. That took me a whole week to get it working. Then redo the software and reinstall everything, it took me one day to get it working again rather than one week.

## 5 Review of Project

### 5.1 What Went Right

Before the project begin, I had design the layout of my project. The first iterative went very smoothly. The first iterative have no pressure on me, almost everything was going according to plan. I had did some research on the technology and platform, I choose an android platform, I did some testing on languages, I tested the languages on android device, I choose Kivy as a framework for android. I did everything as I have planned in the first Iterative, although the time of part is not accurate as I planned but I manager to get the entire feature before the first iterative end.

I was worry about creating the apk file and test in my android device. Kivy have a feature call Buildozer which allow me to generate an apk file from Python into Android and run on the device. When I download Buildozer there are many problems, in order to get Buildozer working you need more than 4 software download to get it working. It took over 10 min for Buildozer to run and generate whatever it need to create the apk, but in the end I was manager to create apk and tested it on my android working.

I had chosen Google App Engine as my datastore. I was afraid that my application will not be able to communicate with GAE. I download GAE and tested data communication in my local server. The GAE have two type of database that I could use DB or NDB. I had chosen NDB and learn tutorial online and play around with it for a while, in the end I manage to get my local communicate with application on android device. I upload the GAE code on the Server side and did a few changes and tested with my application and they work out perfectly.

### 5.2 What Went Wrong

During the project there was a lot of time consuming due to my untidy code. Every time I went back to continue my project I have to review my codes to understand what is going on. There were comments and many unnecessary codes that are in it. I have to do this every time I have another project or exam coming on. The time lost is huge if I were adding all of it up.

The Kivy technology buildozer would only work for Linux and it is still an alpha. I run my application on my Virtual machine and it's doesn't have communication to my USB port in my laptop so therefore I cannot directly deploy it to my android device to the test. When I get error I cannot find out what is the error. The best way for me to find the error is install my apk file into my emulator in the eclipse and check the log cat.



### 5.3 Require?

My project is almost complete, there are very little of feature that are require to do. The Shop layout is one of it, I had communicated the application and GAE database and I manage to create the shop layout on the database. I still have create a screen where the trust user/admin to select the grocery item for the shop layout and set the location of the grocery. If this is complete I can connect this with the start shopping screen where they match the grocery item and display the location/aisles of the grocery item, because of the deadline I was unable to fully complete the shop layout.

One more thing that I still have to do is to fix up my entire GUI for my application. I have most of the GUI done but due to the deadline I rush through designing it. I have not yet fix my layout for any pop up screen in the application.

### 5.4 Restart Project?

If I were to start the project again I will definitely keep my code much cleaner so I can review the code and continue my project wherever there are intervene during my project. I try to keep them tidy by putting each screen and classes in different folder but the codes is still messy because of the struggling of new language.

### 5.5 Advice

At the start of the project I had choose a new language that I don't know about. When you are new to a language you will struggle a lot at the very start. The language will be very difficult to understand and you will find many problems. When you are learning the language you will add a lot of different function and feature to test them out. The codes you are putting in the project are untidy and very messy, you will start to put a lot of random comments everywhere and you will be doing a lot of testing. This will cause you to test many thing until it work, but you will mostly forgot to tidy them up or you want to leave them and tidy it up later on, this is a big problem when you get later into the project. When you leave your project for a couple of days and then suddenly come back into it. You will find many codes that you have written are very hard to understand and you will probably forget what it does. This will take a lot of time depend on how big is your project and how messy is your code. This happen very regularly because in 4<sup>th</sup> you will have many other projects and you will be switching from main project to other project and back to main project. Each and every time you switch you will have to review your code and project, this will take so much time of your time if you add all of them up. I believe that the best way is always keep your code tidy even if you're using a new language.

When trying to create .apk everyone will get error that is similar to *sub process exit with 1*. If you google this error you will receive a lot of people who have the same issue which everyone referring to update android SDK by typing *android update* in Linux. This will not work because the actually command for this is *buildozer android update*, they want you to update the android SDK in the buildozer but everyone though it the java in the Linux that they are referring to update.

## 5.6 Technology Choice?

I do believe I had choosing the right technology for the android. The start of the Kivy, create apk, connecting to the database is mostly the difficult bits. I had tested everything on those and it all working perfectly. I had tested all my feature that I had done on my android device and it seem like there is no problem, all of the most important feature that are require are all working, even if I don't have the shop layout done but I had already tested the one to many on the database and it was working. The problem with the technology is that it still new and it lack of information when researching because Kivy is not very popular. Another problem with Kivy is that the Buildozer is working fine when creating the apk file but only for Linux, if you use python for android it very difficult and it will cause you a lot of problem. I wasn't managing to get python-for-android working therefore I used Buildozer instead.

## 6 Acknowledgements

I would like to thank to my supervisor Paul Barry for been there for me whenever I need. He has supported me all the way when I'm struggling throughout my project and provide me with good information. He always replies to my email whenever I need very fast. He had explain to me about my project very clearly and understandable.

I would also like to say thank you to my classmate for supporting me and provide information when I asked for an advice, they also keep me calm and help me reduce my stress during my presentation whenever I'm down.