IOP Conference Series:
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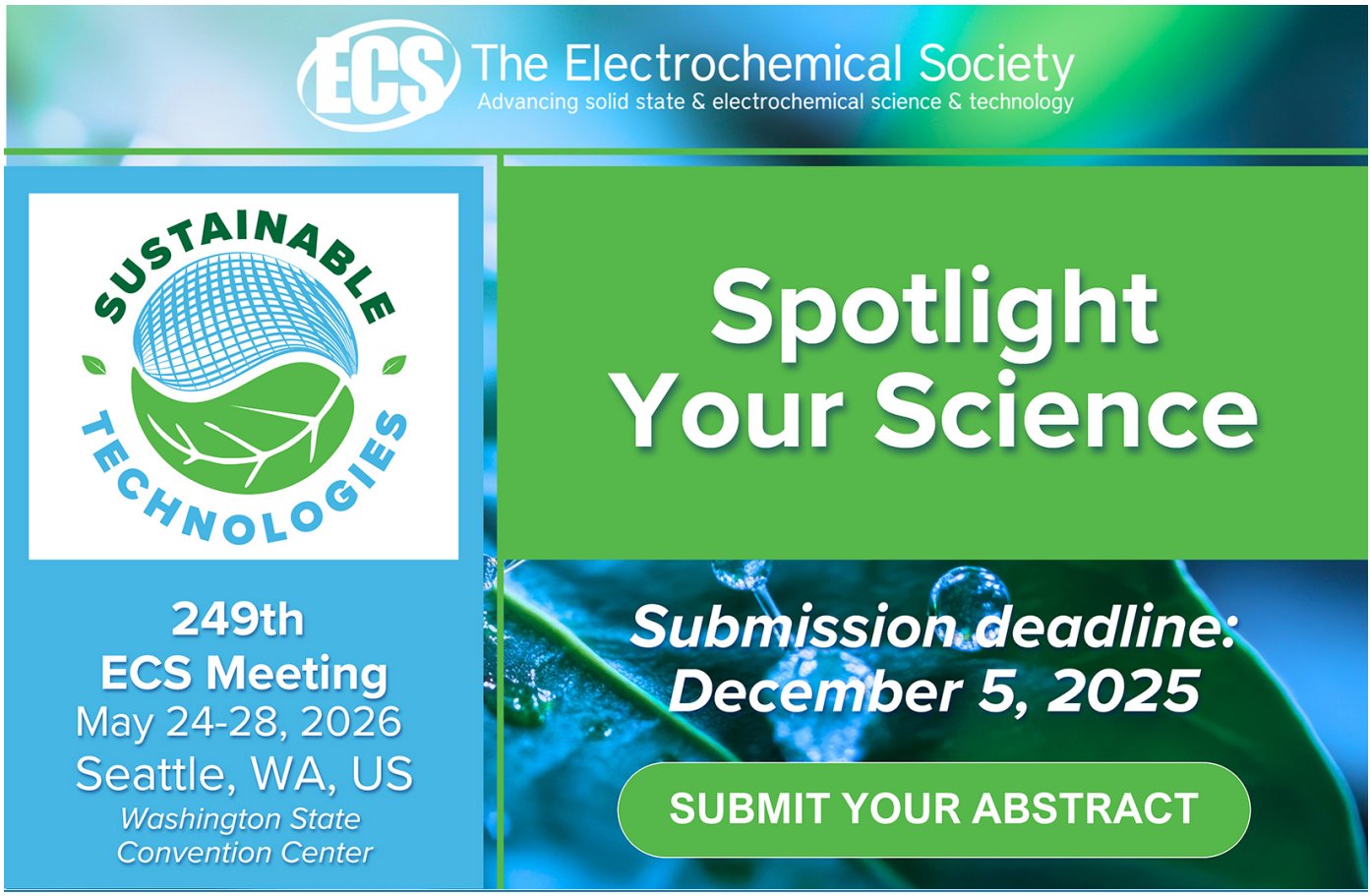
To cite this article: F N Zamani *et al* 2020 *IOP Conf. Ser.: Mater. Sci. Eng.* **767** 012002



IOP Conf. Series: Materials Science and Engineering **767** (2020) 012002 doi:10.1088/1757-899X/767/1/012002

Personal Shopper – Mobile Phone Applications

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Abstract. This project is focused on the development of personal shopper mobile phone application. The purpose of this system is to help part-timer and full-timer personal shoppers gather in one platform and also for the customer to hire a personal shopper to buys their items. This project will implement a rating system, give reward to the customer, accept customer requests, view customer requested details and contact the customer through Whatsapp application. This application is very flexible for the customer and personal shopper where the customer can become a personal shopper and vice versa. This entire project is developed according to software engineering methodology with the waterfall model. The tool used to create this project is Android Studio with Java, PHP, XAMPP Server, and MySQL database.

1. Introduction

Nowadays, two-thirds of the world's 7.6 billion inhabitants now have a mobile phone [1] which is approximate to 5.16 billion users. Based on 2015 statistics, there are currently 50 billion Android apps were downloaded [2]. Both statistics show that mobile applications are globally accepted worldwide. The mobile application is mostly developed using the Android operating system. This is because the Android operating system is compatible with almost all mobile devices compared to the iPhone operating system.

In Malaysia, there is an increasing number of people who are becoming personal shoppers, either on a full-time or part-time basis supported by readily social media platforms and higher demand of local consumers [3-4]. The concern is how to gather these people in one platform and help customers to run errands). This project proposed a mobile application using the Android operating system to gather all of these people who want to become personal shoppers and customer who wants to find a personal shopper to run errands. The system will use an Android Studio as a software platform.

2. Personal shopper mobile phone application design and development

A methodology is a system of procedures may be derived to understand the different situation or solving different problems within the scope of the discipline. The methodology is a set of practices to achieve research goals. In this project, the waterfall model has been chosen. This is due to the waterfall model requires planning for the long-term which requires complete clarity in requirements, quality control activities like testing are performed towards the end of the project, this model is more process oriented and this model is used only when the requirements are very well known, clear and fixed. In the waterfall model, there are 5 stages which are Requirement, Design, Implementation, Verification, and

Maintenance. All these stages are carried out in system development. The requirement phase involved the understanding of the system design and its function. This phase can be interpreted as the literature review phase. All the literature review is based on the feature needed in order to design a personal shopper application and the technique needed to construct the system. After this phase complete, the process will run to the next process [5-6].

The design phase happens after the first phase is completed. During this phase, after research on the first phase, the software architecture is designed based on the requirement and feature. The database design also being done during this stage. Interfaces for a personal shopper mobile application are designed during this stage. The implementation phase happens after the design phase completed. This is the phase where visions and plans become a reality which means the action is needed in order to complete this project. The coding is done in this phase to prepare for the next phase. The verification phase involved system testing and system deployment. The coding is integrated and tested to ensure if it works as expected. Testing and correction are done repeatedly until it meets the system requirement. Once it is tested, the system is deployed in the respective environment. A sanity checks on the environment is performed after the system is deployed to ensure the application does not break. The maintenance phase occurs after the verification phase. This phase involves making the modification to the system and improves system performance. This phase occurs due to errors discovered after the system has publicly published.

The application framework is presented in this section. The proposed can be divided into four parts, which is Android Application, APIs, Web Server, and Database Server [7]. Figure 1 shows the basic working system of the frameworks. For this personal shopper application, API level 21 is being used. Reason for using API level 21 is because they are a certain function of this application cannot be used for API level 20 and below. Based on the data below, cumulative distribution for API level 21 is 85%, which means this API level 21 cannot cover 100% android phone user. It cannot be helped since API level 20 and below cannot support a certain part of this personal shopper application. Based on the data, API level 21 is being used for Android version 5.0 in 2014 (“Android - History,” n.d.), that means they are a possibility that, less android user is using API level 20 and below since its already 2018 and the new API already been released which is API level 28. For this application, XAMPP server is used to run a web server.

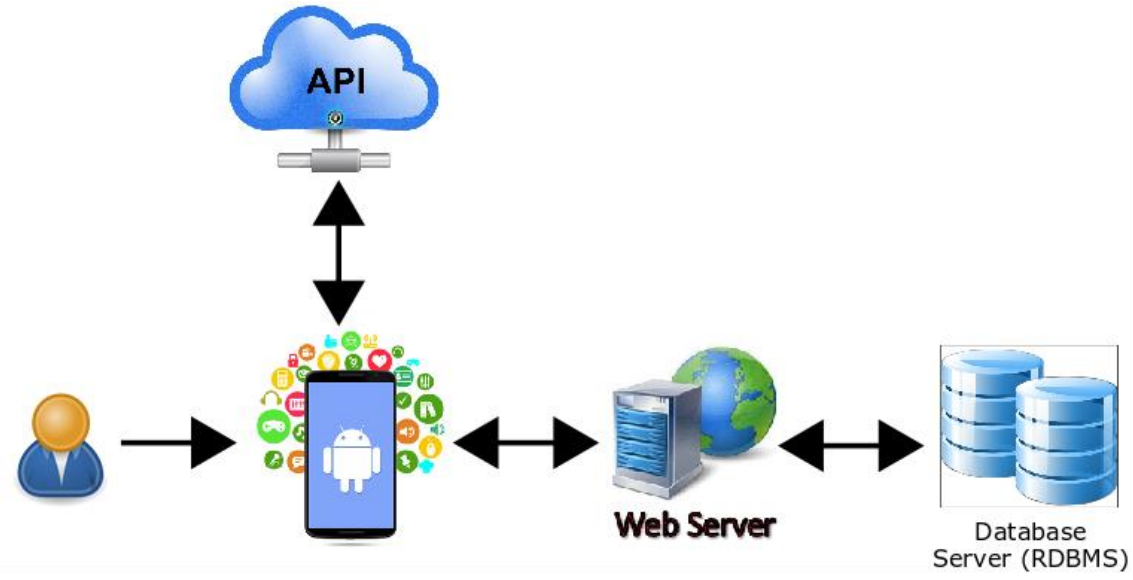


Figure 1. Personal Shopper Application System Architecture

The web server will collect the requested PHP page from its document root which is “htdocs” folder in XAMPP. MySQL is chosen as the database to store the data as it offers a graphical user interface (GUI) for users to create, design and browses database schemas. It is easier to use as it only requires basic knowledge of SQL to operate. Requirements analysis is the process of determining user expectations for a product. It can be divided into two, which is functional requirement and non-functional requirement.

A use case diagram is a graphic illustration of the cooperation among the components of a system. A use case is a methodology used in system analysis to distinguish, clear up and sort out the system requirements as shown in figure 2. In this project, there is only one role available in the use case diagrams which is the user. User can act as a customer and as a personal shopper. User must register before logging into this application. After the user has logged in successfully, the user can access the main application. Customer can place an order for groceries, shopping, food and part-timer. Customer can view their orders after the personal shopper accepts their orders. Customer can delete the jobs placed, rate the personal shopper in-charges of those jobs and press the finished button after the job is done. A personal shopper can accept jobs that the customer has placed. A personal shopper can view their accepted jobs and use the Whatsapp application that links from this application to contact the customer. Users can view their profile and edit their profile picture, phone number and name. Based on Entity Relationship Diagram, this project shows that one user can request many orders for groceries, shopping, food and part-time. It also showed that one user can accept many orders for groceries, shopping, food and part-time.

An Entity Relationship (ER) Diagram is a kind of flowchart that outlines how' entities,' such as individuals, objects, or concepts, are interrelated within a system [8]. ER diagrams are often used to design or troubleshoot relational databases in the fields of software engineering, education, business data systems and research. Also known as ERDs or ER models, they use a characterized set of images such as diamonds, ovals, rectangles and connecting lines to illustrate the interconnections of entities, relationships and their attributes. Based on ERD shown in figure 3, this project shows that one user can request many orders for groceries, shopping, food and part-time. It also showed that one user can accept many orders for groceries, shopping, food and part-time.

3. Personal shopper mobile phone application result

The project outcome is based on the accomplishment of building an application that can help customer to find personal shopper. Figure 4 (a) is the first interface that the user will see after the first launch of the "UShopper" application. Existing users can insert their email and password to open the account in this panel. If your email and password match the email and password stored in the database, the user will be sent to another panel once the login is successful, while a new user will need to click the register button to create a new account. When the register button is clicked on the login panel, the user will be directed to a new panel which is a register panel where the user is required to insert their details as shown in Figure 4(b). The details to be filled in are the name, telephone number, e-mail, password and country. If the user successfully signs into the application, the homepage panel will be displayed as shown in figure 4(c). If the user clicked on the order menu in the application menu list, this panel will be shown to the user. There are several menus in the menu of orders, including food, grocery, shopping and part-time menus.

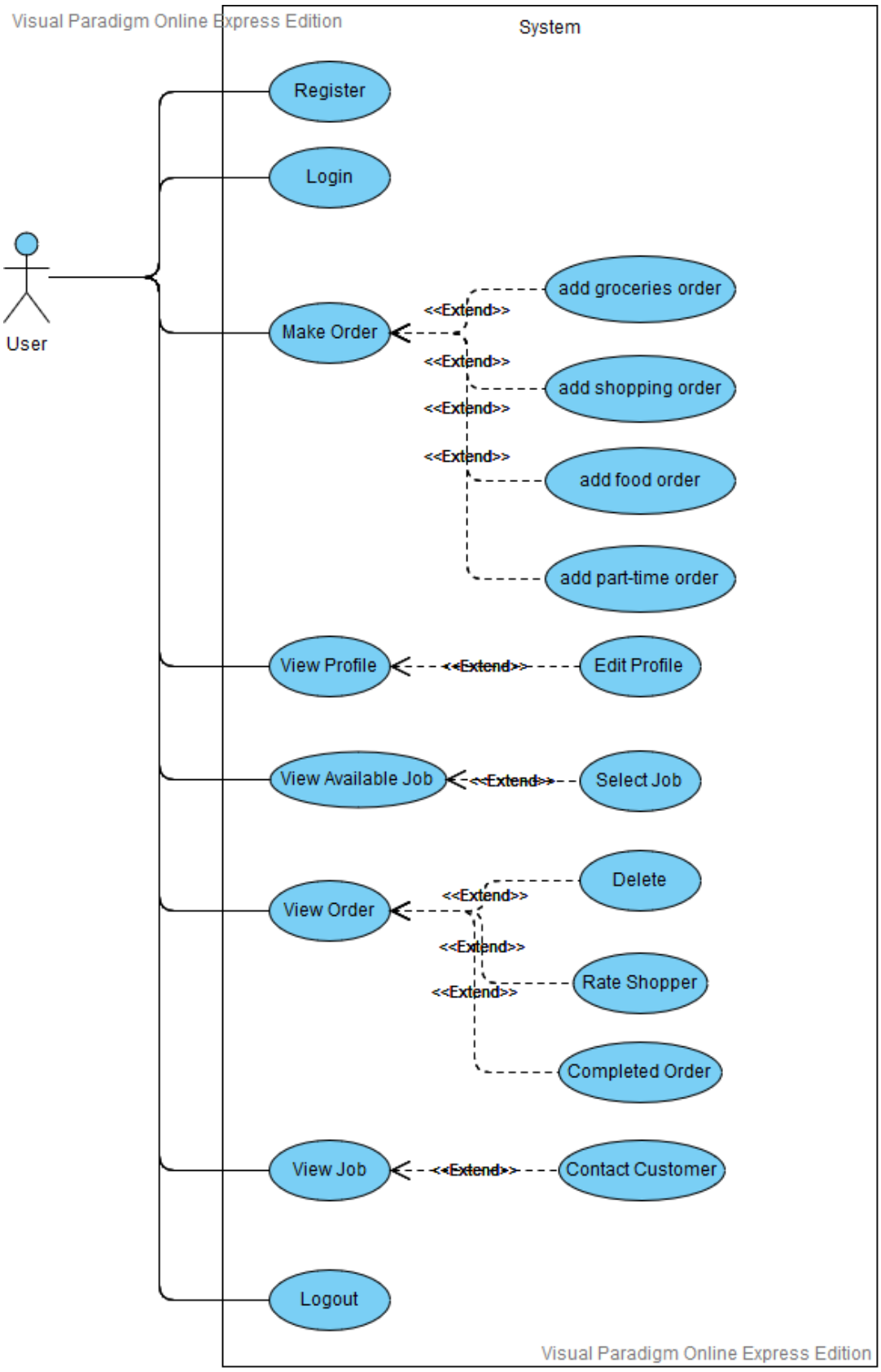


Figure 2. System Use Case Diagram

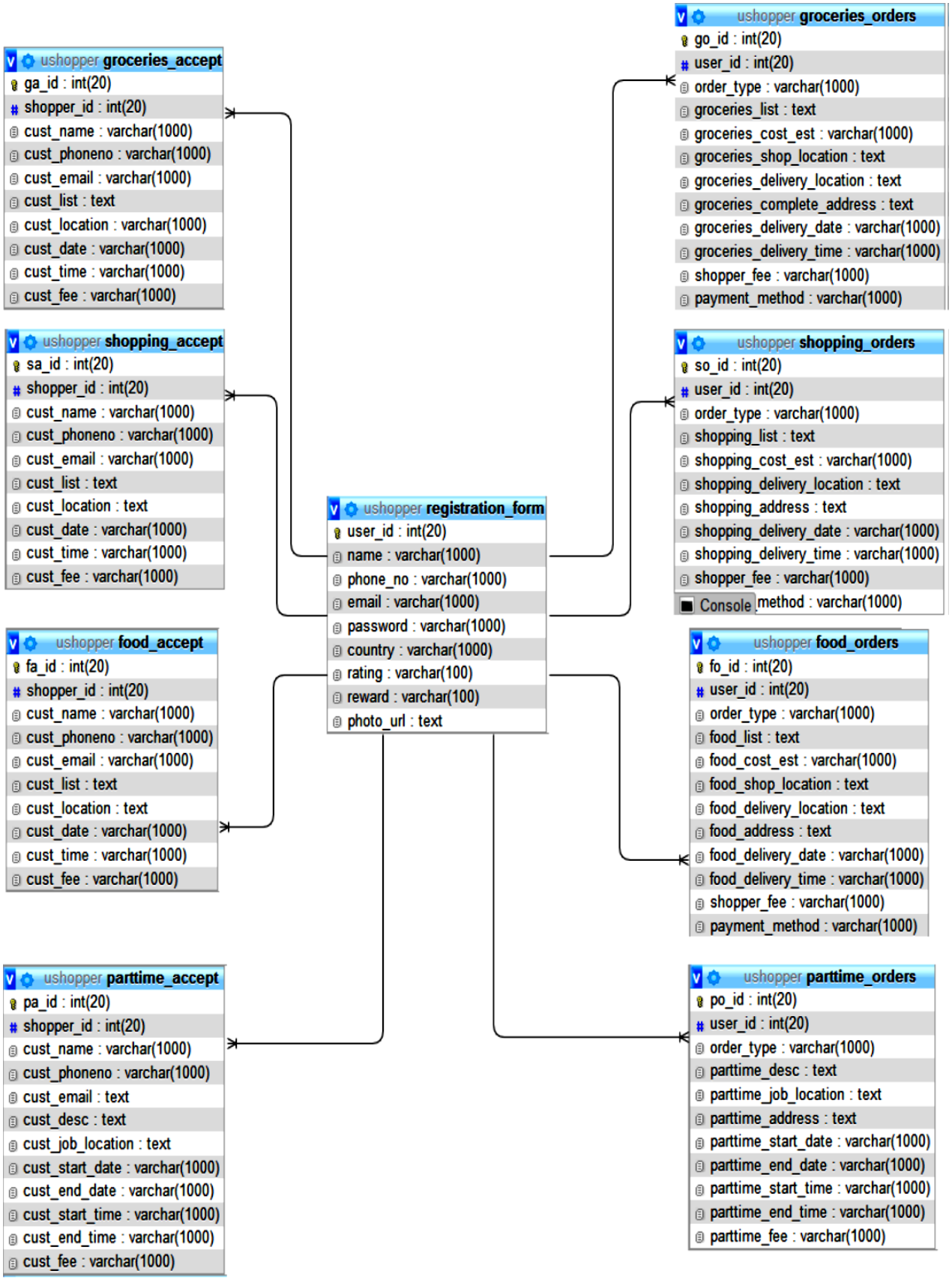
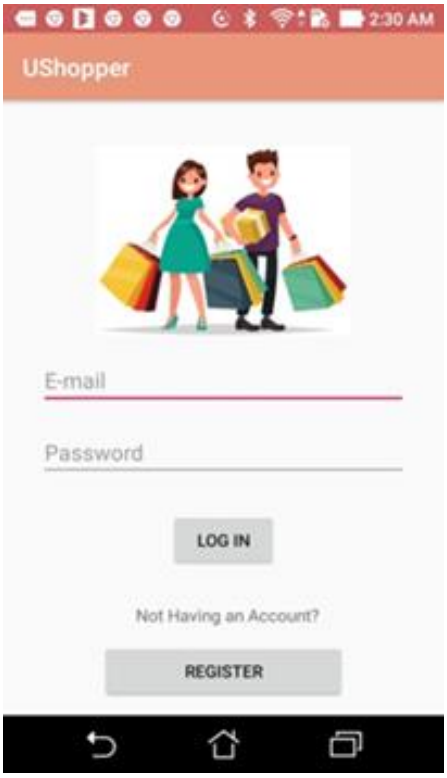
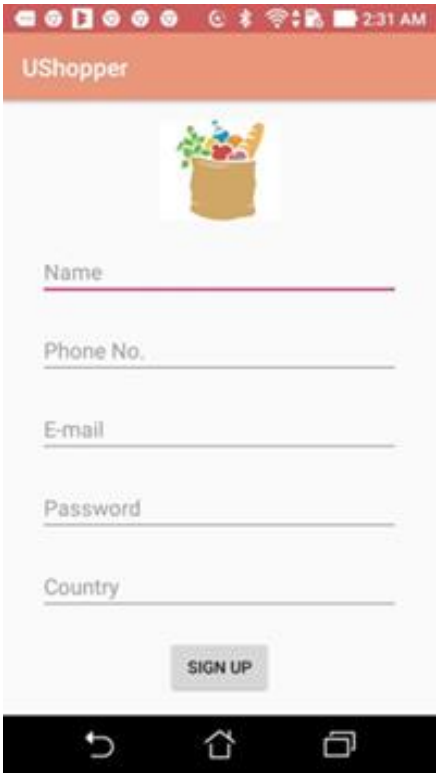


Figure 3. Entity Relationship Diagram (ERD)


2:30 AM
UShopper
E-mail
Password
LOG IN
Not Having an Account?
REGISTER

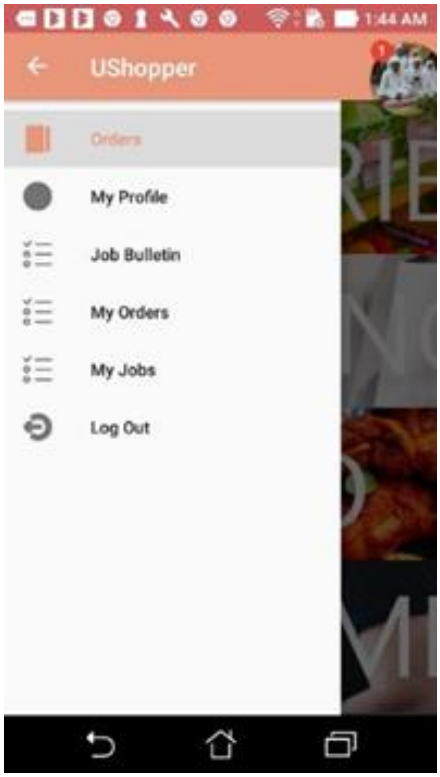
(a)


2:31 AM
UShopper
Name
Phone No.
E-mail
Password
Country
SIGN UP

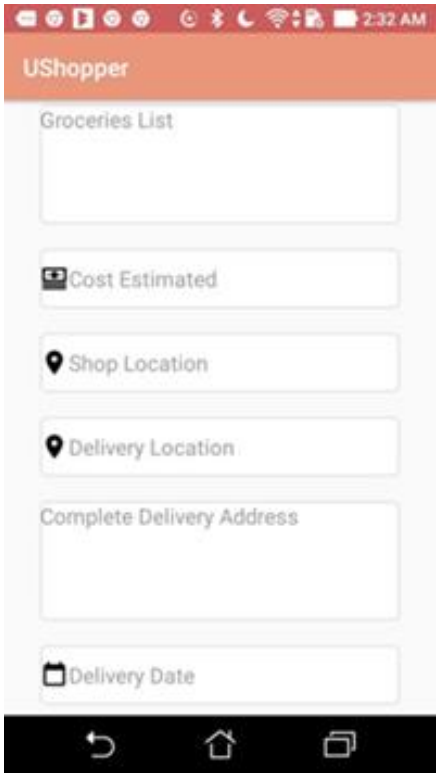
(b)


2:32 AM
UShopper

(c)


1:44 AM
UShopper
Orders
My Profile
Job Bulletin
My Orders
My Jobs
Log Out

(d)



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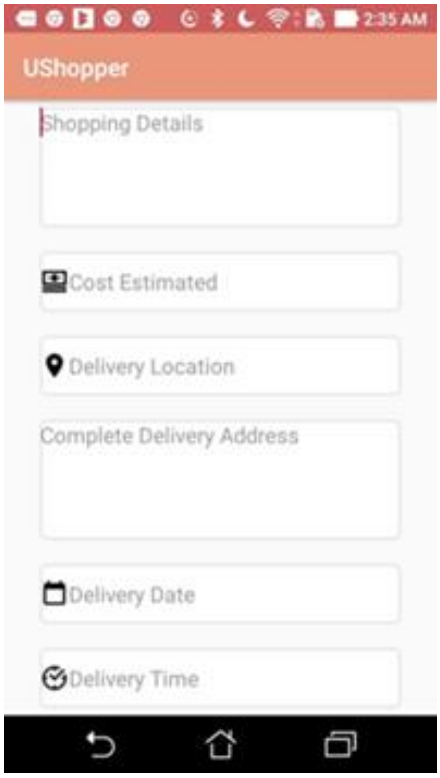

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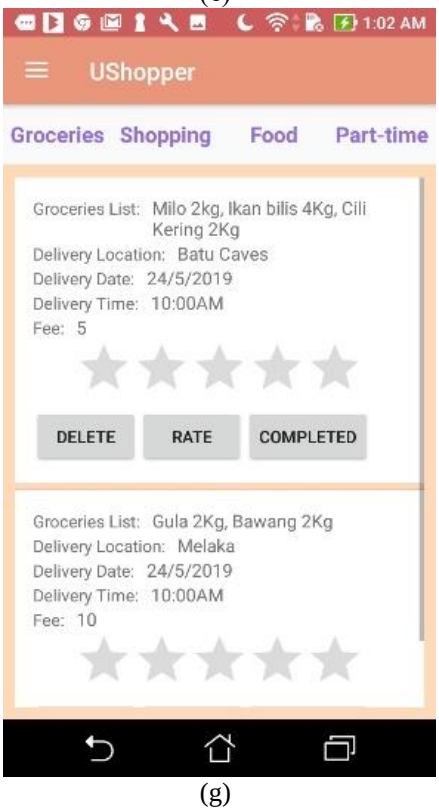
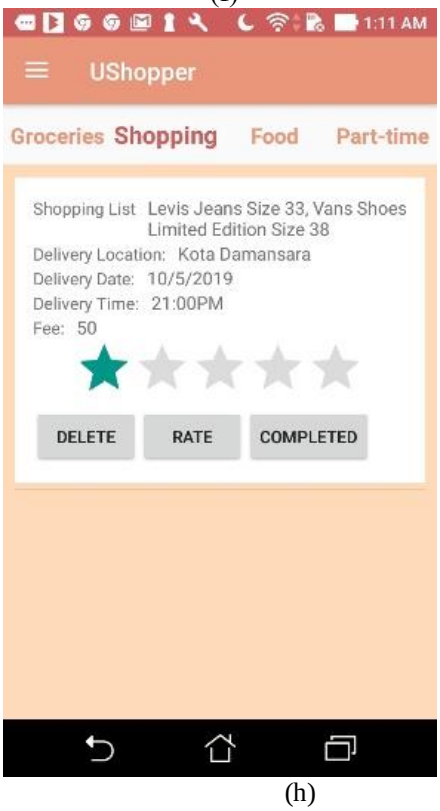


(g)



(h)

Figure 4. (a) Login Interface, (b) Register Interface, (c) Homepage Interface, (d) Application Menu Interface, (e) Order Menu Interface, (f) Shopping Order interface, (g) My Order Menu Interface, (h) Lists of Current Requested Groceries Order Interface

4. Conclusion

The aim of this project is to build a mobile application for customer convenient as well as for a personal shopper using Android Studio. Fortunately, this aim is achieved but there is a biggest issue in this system which is security. In this modern technology era, security issue has always been the biggest issue in a mobile phone application. Thus, we should look in depth to study the security policy if a system is involved with privacy information, such as user phone number, name and address. The system developed should have a security team, make sure to consult the security team whenever there is a change to plan on the app or a major revision, so they know what to do if something unexpected happens. However, nothing is perfect. This system has a lot of improvements that needs to be made as it is only equipped with basic features for customer to request order, rate the personal shopper, delete current order and completed the current order and personal shopper to accept the order and contact the customer through Whatsapp application. Thus, future research of this system should be focused on customer and personal shopper interaction in this application and customer can choose groceries based on hypermarket catalogues and food item based on popular orders. Besides that, current system does not implement online payment system for customer to paid personal shopper using credit card, online banking or PayPal. In future, the capability of this system over internet should be upgraded with machine learning where the system can detect the frequent items order by customer. Also, it is better if this system is able to hire security team in the future to ensure that user privacy information can be protected. In conclusion, there are some modifications and improvements can be added to a better result from the overall development of the project which are this system can be develop using machine learning to increase level of practically and accuracy, hire security team after system releasing to the market, so security team can protect user privacy information, create a messaging system to enable customers and personal shopper to communicate directly in the application rather than using Whatsapp, link application to the hypermarket catalogue so that users can select items based on the hypermarket catalogue, create a popular food suggestion system in the application, so users can choose food order based on popular order and implement online payment system, allowing users to pay personal shopper using credit card, online banking, and PayPal instead of just using cash on delivery payments.

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