



ONLINE MARKET PLACE FOR ORAGNIC FOODS USING BLOCKCHAIN

Project ID: 19_20-J 06

**Software Requirement Specifications (SRS) for the
component ‘Technique to find the Optimal Delivery Path’**

D.S.M Mallikarachchi (IT16235298)

BSc Special (Hons) - Information Technology

(Specialization in Information Technology)

Department of Information Technology

Sri Lanka Institute of Information Technology

Sri Lanka

August, 2019

DECLARATION

I hereby declare that the project work entitled “**ONLINE SUPERMARKET PLACE**”, submitted to the Sri Lanka Institute of Information Technology is a record of an original work done by me, under the guidance of our supervisor **Dr. Dharshana Kasthurirathna**. This project work is submitted in the partial fulfillment of the requirement for the award of the degree of Bachelor of Science (Special Honors) in Information Technology. The Results embodied in this report have not been submitted to any other University or Institution for the award of any degree or diploma. Information derived from the published or unpublished work of others has been acknowledged in the text and a list of references is given.

.....
D.S.M Mallikarachchi
(IT16235298)

Table of Contents

| | | |
|-------|--|----|
| 1 | Introduction..... | 4 |
| 1.1 | Purpose..... | 4 |
| 1.2 | Scope..... | 4 |
| 1.3 | Definitions, Acronyms, and Abbreviations..... | 5 |
| 1.4 | Overview | 5 |
| 2 | Overall Descriptions..... | 6 |
| 2.1 | Product perspective..... | 6 |
| 2.1.1 | System interfaces | 6 |
| 2.1.2 | User interfaces | 7 |
| 2.1.3 | Hardware interfaces | 9 |
| 2.1.4 | Software interfaces..... | 9 |
| 2.1.5 | Communication interfaces..... | 9 |
| 2.1.6 | Memory constraints | 9 |
| 2.1.7 | Operations | 9 |
| 2.2 | Product functions..... | 10 |
| | | 10 |
| 2.2.3 | Sequence diagram | 12 |
| 2.3 | User characteristics | 12 |
| 2.4 | Constraints..... | 12 |
| 2.5 | Assumptions and dependencies..... | 13 |
| 3 | Specific requirements | 14 |
| 3.1 | External interface requirements..... | 14 |
| 3.2 | Classes/Objects < For Software Dev. Oriented Projects> | 14 |
| 3.3 | Performance requirements..... | 15 |
| 3.4 | Design constraints..... | 15 |
| 3.5 | Software system attributes | 15 |
| 3.5.1 | Reliability | 15 |
| 3.5.2 | Availability | 15 |
| 3.5.3 | Security..... | 15 |
| 3.5.4 | Maintainability..... | 16 |
| 3.6 | Other requirements | 16 |
| 4 | References..... | 17 |

1 Introduction

1.1 Purpose

The purpose of this document is to present a detailed description of our software product, its parameters and goals. SRS (System Requirement Analysis) defines how the system will interact with system hardware, other programs and its users in a wide variety of real-world situations. The system capabilities and operations and the constraints under which it must be operated. Initially this document gives detailed descriptions about similar systems and research areas which have been studied previously, and discuss the problems, limitations and drawbacks identified in the existing systems. This document is intended for both customers and developers of the system and for better understanding the system architecture and functionalities are graphically represented.

1.2 Scope

In this section describes the overview of our system briefly. Customers are able to browse our web application and place their order according to their taste. And furthermore, customers are able to scan the QR code which is stick to the product and get the details of the product. And customers can comment in Sinhala and English both on products which they like to consume and System will detect which comments are legal or fake provided by users and fake comments will be capitalized. By using those legal comments, a review is provided. Finally, the system will show an optimal path to deliver the product which is selected by the customer.

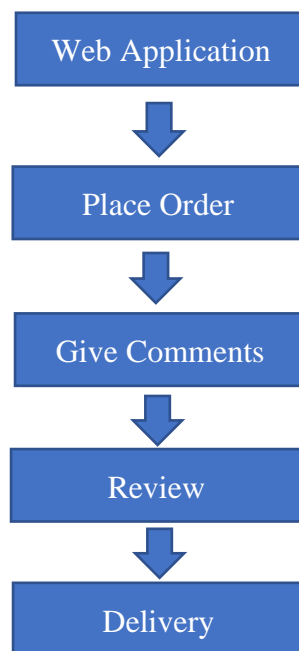


Figure 1.0 : Function Work Flow

1.3 Definitions, Acronyms, and Abbreviations

| | |
|-----|------------------------------------|
| DB | Database |
| SRS | Software Requirement Specification |
| GUI | Graphical User Interface |
| ML | Machine Learning |
| GIS | Geographical Information System |
| GPS | Global Positioning System |

Table1.3 Definitions, Acronyms, Abbreviation

1.4 Overview

In the below section will discuss the overview of the “Optimum Path Analyzer” project and how to developing its workflow.

In 1st section of the overview part, describing the overall project and the most essential points that are mentioned for better understand for the importance of these kind of system. We mention the pros that can gain from our system and the cons of traditional learning methods also.

In 2nd section of the overview part, it explains the functionalities of the SRS document which belongs the requirements of product perspective, software interfaces, hardware interfaces, system interfaces, user interfaces, communication interfaces, memory interfaces and operations. In product perspective contains the comparison between the existing system’s features and the proposed system’s features. It also describes the drawbacks of the existing systems and good points of the proposed system. In software interfaces we describing the software that we need to install for development of our project. In hardware interfaces, we describing what are the hardware devices that we required for the development of the web application. In user interfaces show the graphical view of the proposed system.

In 3rd section describes the technical view of the software, hardware and interfaces and also the non-functional requirements.

2 Overall Descriptions

Nowadays, urban traffic congestion is a complicated problem. Continuous changes of traffic congestion with respect to the time lead to change time travel times of transportation network. So, determining the optimal path in a time-dependent transportation network is a challenging task. The system consists of a web application and mobile application to be used by the person who deliver product.

2.1 Product perspective

There are some existing systems which are finding the optimal path. But those are different that our proposed system. Some of existing systems provide the optimum path but it doesn't consider the real time traffic and it won't give an another optimize path to deliver the product. And some of system has get third party vendor software to find the optimum path in this case the company which is used that software has to pay lot of money in vain, in order to overcome this issue, we are planning to develop our software without using any third-party vendor application.

This research considers the communal home meal delivery problem. The issue can be setup as a multiple transporting salesman problem with time windows. And it is closed to the well-studied vehicle routing problem with time windows. This system uses third party vendor application called SPIDER we have decided to develop our product not using third party application.

This management system mainly focuses on the to manage pickup and delivery operations more efficiently. Geographical information system (GIS), global positioning system (GPS), and wireless communication technologies are applied to the system which consists of three subsystems, pick-up and delivery sequence planning system, pick-up and delivery monitoring system, and PDA execution system. And it doesn't have real-time traffic monitoring system that is the major issue of this system, and we are integrate the real-time traffic monitoring system to this system.

2.1.1 System interfaces

In our proposed system we have planned to develop web application. This web application contains the Blockchain, Sentiment Analysis and Ontology parts. In order to give our delivery service to our customer we have to implement mobile application as well. Further we intend to develop android application and IOS application.

2.1.2 User interfaces

After completing the place order customer should enter the place in which this order delivers and after giving that place the delivery person has to decide the route he should follow. To do that he can use our system. This process will execute after click the buy now button and it will directly move to the google map and display the optimum way.

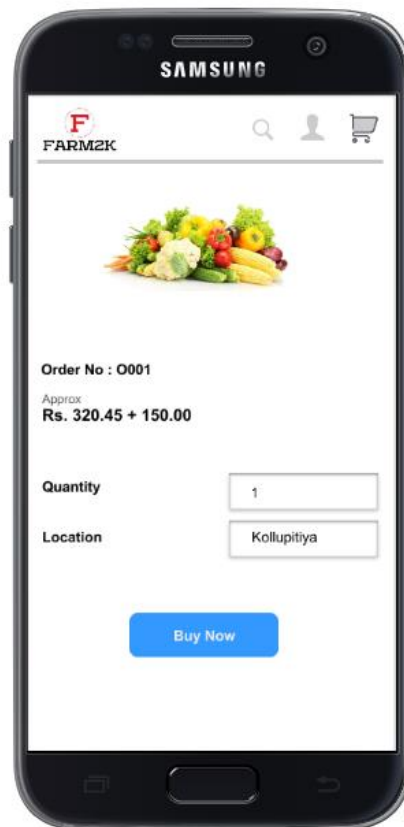


Figure 2: Buy Now Page

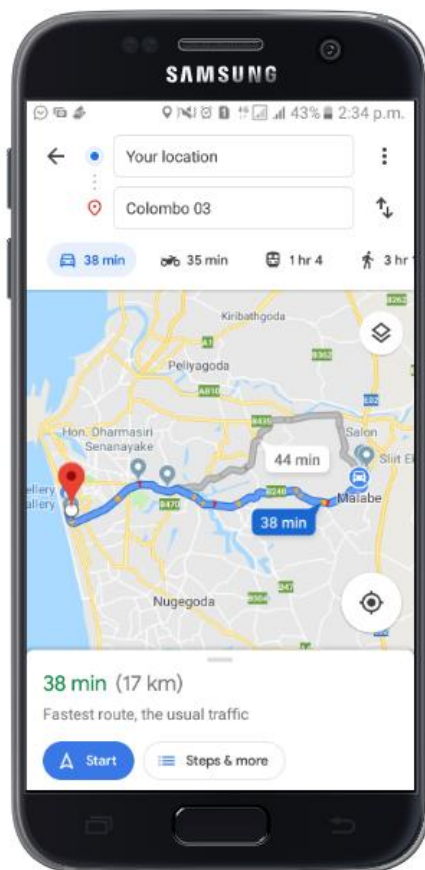


Figure 3.1 : Show Best Route

2.1.3 Hardware interfaces

In order to use our system efficiently, we need some hardware devices.

PC – We should have a Laptop or Desktop Computer without internet connection. Because, our system is a website. So, we need to better connection of internet facility.

Mobile Phone – To see the optimum path from the application.

2.1.4 Software interfaces

We need to install software that need to develop front-end and back-end. To implement the front-end of the application we use React and visual studio code as an IDE. And back-end will develop using Java Spring boot IDE will be IntelliJ idea.

2.1.5 Communication interfaces

This is a web application. We have designed a web site which is used to communicate with React and Java as frontend and backend. Have high speed internet facility is most required.

2.1.6 Memory constraints

This system will require at least 200MB RAM. And also, we have to have 100 MB of external storage.

2.1.7 Operations

Find the optimal route will be calculated by using some constrains and it will go through an algorithm. After that it shows an optimal route through the google maps.

2.2 Product functions

2.2.1 Use case diagram

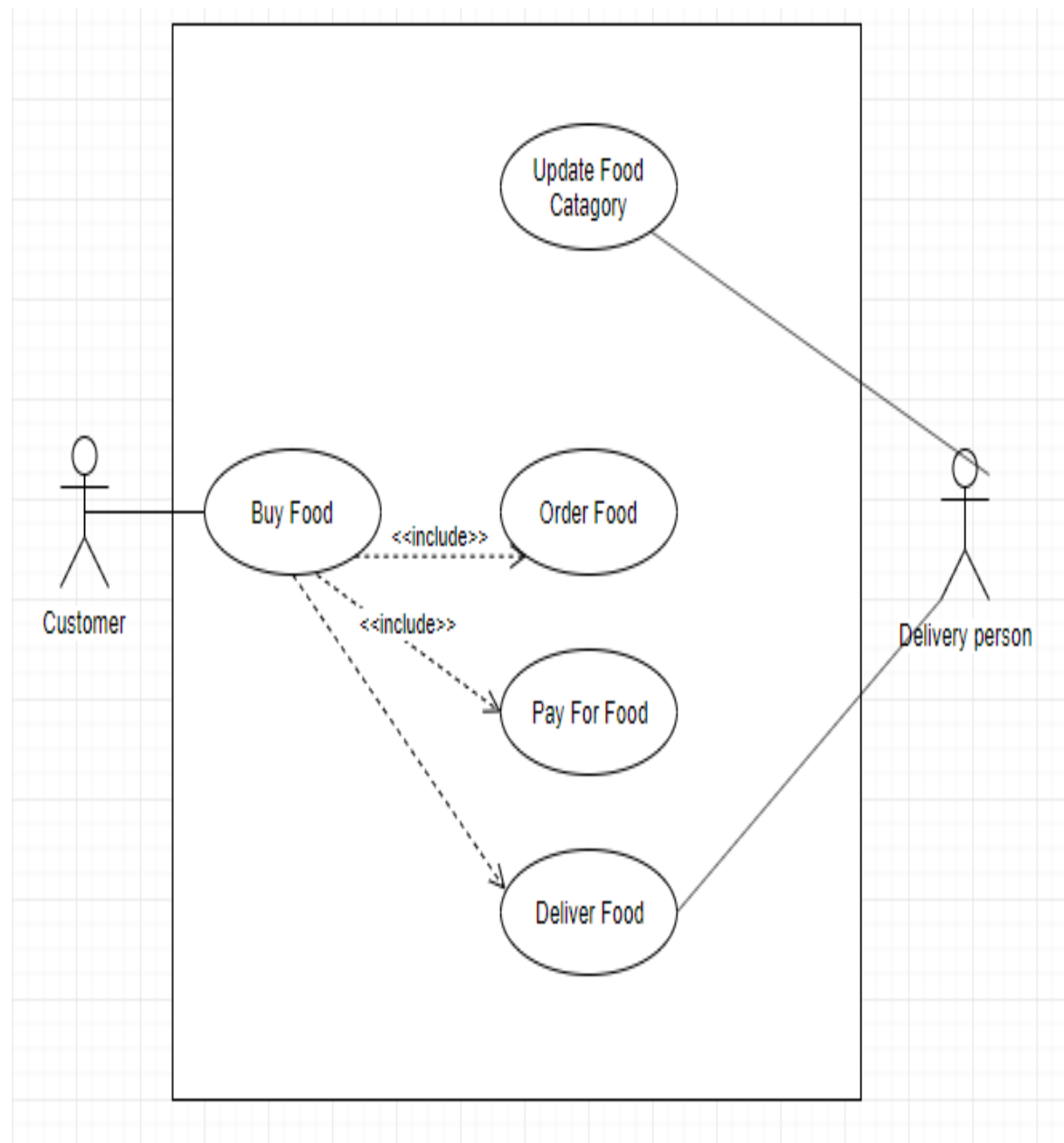


Figure 4.0 : Use Case Diagram

2.2.2 Use case scenario

| | |
|-----------------------|--|
| Use case ID | UC_001 |
| Use case | Show Optimum Route |
| Pre-condition | User should Buy the Food |
| Primary actor | System |
| Main success scenario | <ol style="list-style-type: none">1. User should place an order.2. Customer has to pay the product with providing the delivery place.3. It will directly connect to the google map and show the optimum route. |

Table 1.0 : Use Case Scenario - Show Output

2.2.3 Activity diagram

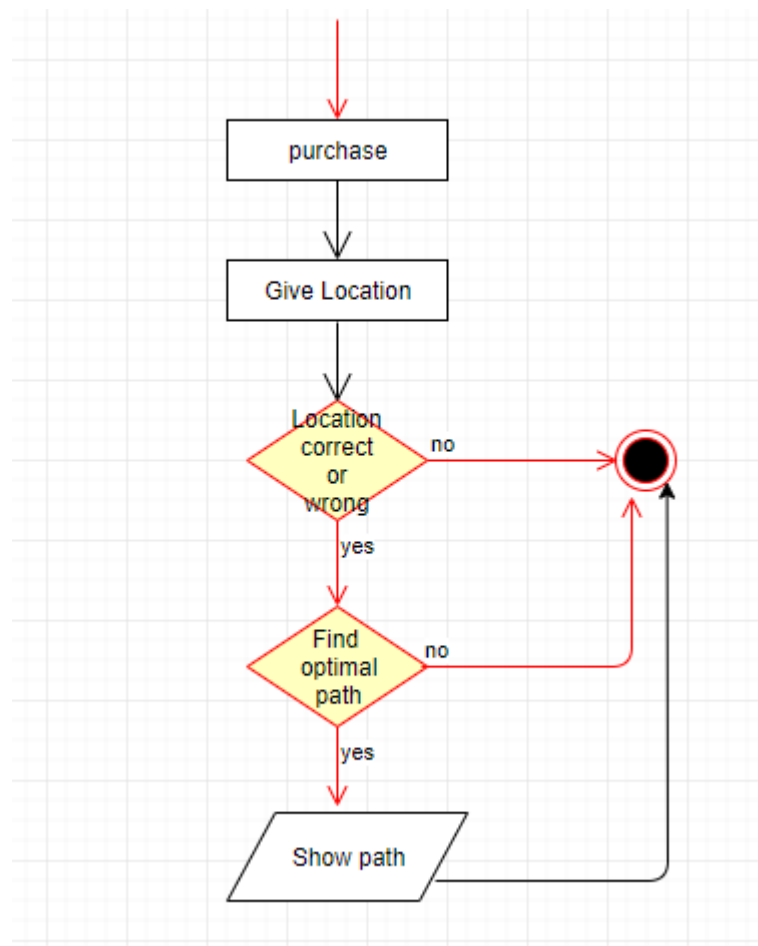


Figure 5.0: Activity Diagram

2.2.3 Sequence diagram

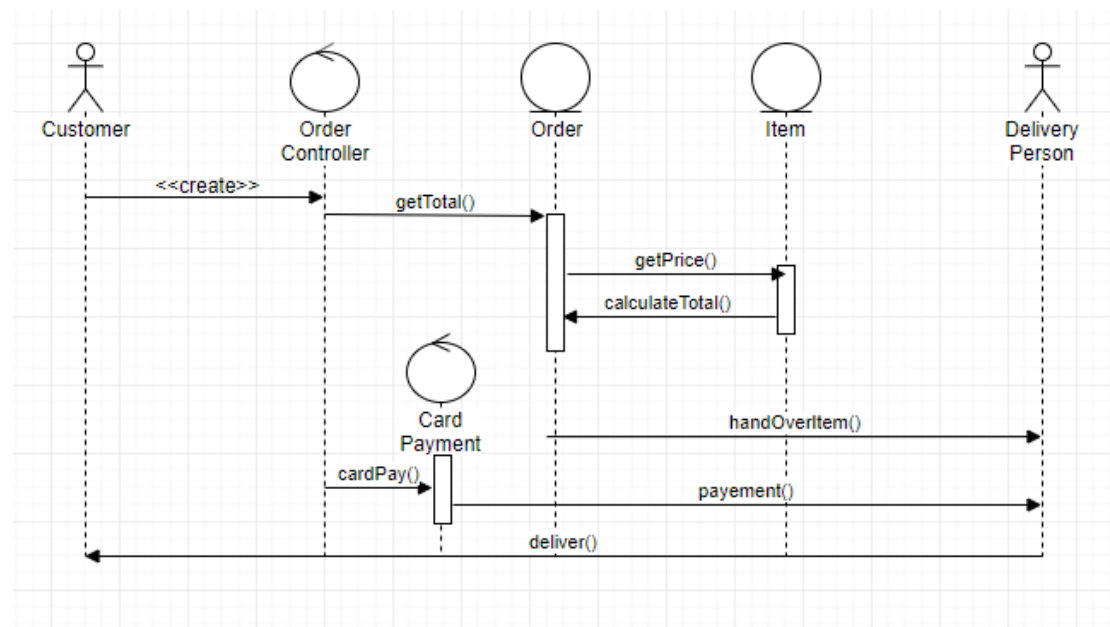


Figure 6.0: Sequence diagram

2.3 User characteristics

Users who has experienced with google maps. It is enough to know use this function.

2.4 Constraints

- Users have spelling mistakes when input location.
- The internet connection can be lost in some areas.
- If user didn't update the software.
- The app will run on android devices that run Android version 6.0 or above.

2.5 Assumptions and dependencies

2.5.1 Assumptions

- Assuming all the users have basic knowledge to use a mobile application.
- Assuming the memory of the mobile devices are sufficient to running the application.
- Assuming given location is correct one.

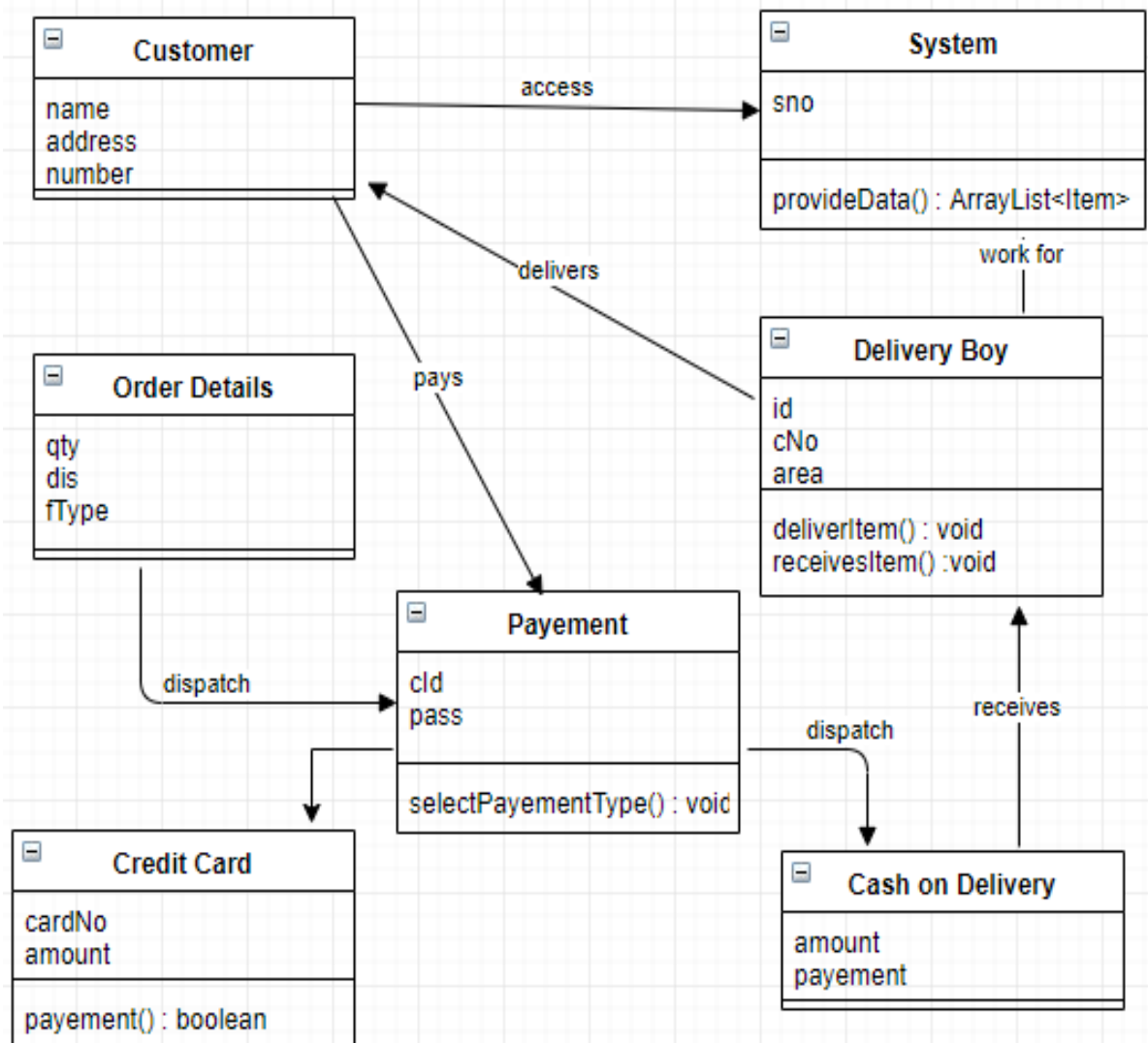
2.5.2 Dependencies

- Output will depend on the keywords that user inputs.
- The system has to have better internet connection.

3 Specific requirements

3.1 External interface requirements

3.2 Classes/Objects < For Software Dev. Oriented Projects>



3.3 Performance requirements

Initiate when a user clicks the any button the system will be provided the result within 2 – 3 seconds. Processing speed may change according to the Net connection speed of the mobile phone, processing speed of the mobile device and the Ram of the mobile device.

- Computer/tablet with at least 1.0GHz processing power with 1 core and 50MB of RAM. Approximate Internal memory space of 100MB is recommended for the application and cache.
- Internet access with more than 512kbps Internet bandwidth.
- Resolution 720x1280 pixels (Optional)

3.4 Design constraints

Design has to be compatible with existing centralized Internet.

3.5 Software system attributes

3.5.1 Reliability

Reliability is the quality of being trustworthy or of performing consistently well of the application. Basically, that is how much a user can depend on the application. The propose application is developing to provide a reliable and efficient service to the users. All the latest configurations and technology is used to provide the service accurate and, in less time.

3.5.2 Availability

Actually, any user who wishes to try the application will be satisfied without any failure. The propose application work on android operating system.

3.5.3 Security

The costumers can get all the details about the item without any configurations. All they have to do is download the application by agreeing to the policies. There will be authentication and authorization techniques use by the application to prevent unauthorized access. Authentication will be done using Login Password and there will be access privilege application for the authenticated users.

3.5.4 Maintainability

Maintainability is defined as the probability of performing a successful repair action within a given time. In other words, maintainability measures the ease and speed with which a system can be restored to operational status after a failure occurs. Application code will be well commented and documented for any further development.

3.6 Other requirements

3.6.1 Modifiability

This component should be modified or update without affecting other components of the system.

3.6.2 Accessibility

User interfaces of our market Place is user-friendly and easily accessible by any user of the system.

4 References

- [1] O. Bräysy, P. Nakari, W. Dullaert and P. Neittaanmäki, "An optimization approach for communal home meal delivery service: A case study", *Journal of Computational and Applied Mathematics*, vol. 232, no. 1, pp. 46-53, 2009.
 - [2] H. Jung, K. Lee and W. Chun, "Integration of GIS, GPS, and optimization technologies for the effective control of parcel delivery service", *Computers & Industrial Engineering*, vol. 51, no. 1, pp. 154-162, 2006.
-