Web based business management system for Swiss Mineral Company

Candidate's name – S.Theivamainthan

Index number – 1102771

Client – Swiss Mineral

Name of the supervisor – Mr Kanesh Venugoban

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ABSTRACT

In the fast growing, competitive business world every individual is very busy with their business and other activities so could not rest even for a minute. They do not spend more time to purchase goods and services for their daily life purpose nowadays therefore the buyers would like to purchase goods and service through online business. To full fill that kind of consumers need and to make improvements on company's business activities, the Swiss Mineral company decided to improve the business trend through online. Because the company is keeping their company records in printed papers and they have found some inconveniences on the traditional paper system to maintain their business.

In this competitive world the company mostly occupied with their work. The company management faces many difficulties in manual works such as manage record day to day, receive phone calls regarding orders from customers, maintain area wise stock details, delivery details and managerial level details and handle their order inquiries, etc. As mentioned earlier they were facing many troubles with the older system when they wish to identify the fast selling products, when receiving many orders at a time to deliver and keeping employee records and in the payroll system as well.

So they introduced the Web based business management system to solve above problems. This system development with prototyping is used to develop methodology and design with object oriented concept. This web based management system was mostly been developed using some modern open sourced tools and software. Hypertext Pre-Processor (PHP) which is a powerful server side scripting language has been used for server side scripting along with the Apache web server and MySQL which is relational database management system. The management likes to save the time and decrease the work load by using this system. This system may help them to achieve their goal. This dissertation was talked about this system and illustrates all the work carried out during the each phase of the project. Each chapter consists of require a details in order to understand the project with help of appropriate figures, graphs and reports.

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CHAPTER 1 INTRODUCTION

1.1 INTRODUCTION

Jaffna district is situated in the Northern most part of Sri Lanka at a longitude of 79^0 45' - 80^0 20' and latitude of 9^0 30' – 9^0 50'. The district has a population of around 0.7 million. The extent of district is 1,025.6 sq.km (including inland water source). It is surrounded by the Indian Ocean on the Northern and Western side. The most of the peoples are using bottled drinking water in their daily life and using the gas for cooking and other activities. The Swiss Mineral company is one of the major leading water and gas supplying in Jaffna peninsula. They produced drinking water using water filtering techniques and bottled in different capacity. They supply their products and gas to shops, departments, organization and home delivery etc.

In this competitive world the company mostly occupied with paper work. The company management faces many difficulties in manual works such as manage record day to day, receive phone calls regarding orders from customers, area wise stock products details, delivery details and manager level details and handles the order inquiries. As mentioned earlier they facing many trouble with the older system when they wish to identify the fast selling products, when receiving many orders at a time to deliver and in the keeping employee records and in the payroll system as well. When done manually, the major drawback is space consuming. All the data keep in paper and stored in file based its take more space to keep. In paper work same data gets repeated and data duplication, it is very difficult to management to get accurate data and security problems to the data. The manual system will not be a helpful and it will take more time to write the details, reports etc. In the fast growing, competitive business world every individual is very busy with their business so could not rest even for minute. They do not spend more time to purchase goods and service for their business or personal purposes nowadays therefore the buyers would like to purchase goods and service through online business.

In nowadays we live together with Information Technology, this technology plays major role in our day to day activities. To full fill that kind of consumers need and to make improvements on company's business activities, the Swiss Mineral company decided to improve the business trend because of the company is keeping their company records in printed papers and they have found some inconveniences on the traditional paper system to maintain their daily business. So they would like to implement web based business management system to sell their product and services to the customers. This project provides effective and efficient system to the web based business management system for the company. This system help to minimize the workload, increase efficiency of work, identify the day to day sales, viewing product that are not sale in last few days and view the daily, monthly and annual reports.

1.2 OBJECTIVIES OF THE PROJECT

There are the objectives of the web based system.

The company wise can be able to:

- Increase the sales of household products.
- Receive orders through online.
- Manage taxes, fine for delay deliver for deliver person, etc.
- Manage salary for staff including with their promotions, allowance and deduction.
- Receive order alerts through mobile phone.
- View and printout of daily, monthly and annually cash flow others reports of the company in area wise.
- Receive minimum stock alert.
- Make discount to the customer.
- Identify the fast moving sales items and non-sales product items.
- Communicates within the system through message via email or SMS.
- Can get feedback from customers to analysis the company products and services in the customer point of view.

The customers can be:

- Make orders through online.
- Make payments through online. (Credit card, debit card or by cash.).
- View product details and specifications of the product.
- By using this system customer may save their time and money.

1.3 SCOPE

The main purpose of this project is, in the busy business world customer do not need to spend more time to buy goods and services therefore Swiss Mineral implement website to make orders quickly and faster; at the same time to provide efficient and effective web based management system to the company.

1.4 CRITICAL FUNCTION FOR PROJECT

When the customer makes orders at a time, it may get delay on the delivery of the product depends on the product's availability. Handle inquiries about an order, deliver and get payment from the delivery person by area wise. People who ever having the lack of knowledge of Information Technology field including using the internet, online payment. So they may face some problem when they used this web based management system.

1.5 REPORT ORGANIZATION

The rest of this project is organized as follows. Chapter 2 provides the analysis; this chapter describes the existing system, requirements and feasibility study for the proposed system and the process model used to develop the system. Chapter 3 provides a design including Use case diagram, ER diagram, Activity diagram and Class diagram. In chapter 4, the implementation of the project work. In chapter 5 describe evaluations of the project work. Finally, chapter 6 conclusions this work with a discussion of your findings towards future extensions. After the main chapter there is a Reference section where all the materials referred to write the dissertation are given. Furthermore in the appendices, System documentation, design documentation, user documentation management reports, test results, code listing and the client certificate are provided. Finally, a glossary of term and a general index are provided.

CHAPTER 2 ANALYSIS

2.1INTRODUCTION

System analysis is a very important phase of software development lifecycle. In this analysis chapter we will focus on the present situation of the Swiss Mineral company. It will focus that gathering techniques used to gather problems of current manual system of the company and achieve the project goal. Finally we will compare the existing system with the functional and non-functional requirement of the proposed system.

2.2 DRAWBACKS OF THE EXISTING MANUAL SYSTEM

The following major drawbacks have been identified in the existing manual management system.

- Confidential data is recorded in a log book.
- Critical calculations are done manually.
- Hand written contract documents (orders list, bill, payment vouchers, etc.).
- Inflexibility of finding details of order item.
- No proper customer history and documentation.
- Complex monitoring of business progress.
- Time wasting paper work.
- High labor cost.
- No easy payment methods (online payment, ez cash, shopping cards, etc.) for customer.
- Poor communication methods with the customers in business.
- No backups for the confidential data.

2.3 FEASIBILITY STUDY FOR THE PROPOSED SYSTEM

Feasibility study is a very process in order to find out the strengths, weaknesses, opportunities and threats of a proposed system to full fill the main business requirements. A detailed feasibility study was carried out regarding this system as following facts.

2.3.1 LEGAL FEASIBILITY

Since the proposed systems is a customer order the products through online system and deliver that order products to customers by Swiss Mineral company, it has been analyzed to ensure that the system is in accordance to the sales and customer act of Sri Lanka.

2.3.2 OPERATIONAL FEASIBILITY

The proposed system functions were analyzed to see whether they accomplish the business requirements.

2.3.3 MARKET FEASIBILITY

The proposed system will operate in Swiss Minerals situated in Jaffna district where there is a huge demand for their product business. The system is capable of facing the market demand.

2.3.4 FINANCIAL FEASIBILITY

The system is fully web based with very low hardware, maintenance and IT costs.

2.4 GATHERING TECHNIQUES

In the software development, analysis part is very important to collect correct and accurate requirements for this system and analysis the requirements and identify the solution. Some information gathering techniques use for collect the requirements are available such as, interviews, observation, questionnaires, site visit and etc. but in this study used the interviews, observation and site visit to find requirements.

A questionnaire is mostly used to collect information from large number of people for same questions, this approach not necessary to this system. An interview is a formal face to face meeting with two or more peoples. It is primary technique for information gathering during the system analysis, we met the client (Swiss Mineral company) to interview with them and asking about the manual system of their company. From this technique user involvement is high and they easily interact with the system and we collect the clear business objectives.

Direct observe of work performance is an excellent means gathering data. It is useful if the user is not able to clearly explain what they do or their requirements can see ideas for improving process from their work. From site visit, we directly got to work place and observe their work and ask questions about their work and discus the problems of their system and gather information. From these techniques we clearly identify the requirements, problems of the current manual system and etc.

2.5 REQUIREMENT ANALYSIS FOR MANUAL SYSTEM

As mentioned earlier, from information gathering techniques we analysis their process, inquires the order and deliver, maintained the data, manager level details and etc. The management has responsible to customer for order product. Their entire product was store in their stock department. When they receive order from customer via phone calls or personally they inquiry about the order and send the information to stock department they deliver the product to customer by vehicle. Cash payments, order details, customer details, stock details and etc. recorded in paper and stored in file based system.

In their manual system they have manager level department, stock department and deliver department. All the records stored in papers by manual. There is data duplication, not sure about correct data, there is no alert for minimum stock alert, no accurate data for give discount to regular customer and they did not identify sales and non-sales product, staff details, attendance details, salary details and etc. If they do not have accurate information it is very difficult to make promotion or increase salary for staff. From evaluate their current manual system they spent waste of time to their work.

2.6 REQUIREMENTS GATHERING

Requirements gathering or requirements eliciting is the process of addressing the needs and conditions of the new system.

2.6.1 FUNCTIONAL REQUIREMENTS

Functional requirements capture the intended behavior of the system. This behavior may be expressed as services, task or functions the system is required to perform. In product development, it is useful to distinguish between the baseline functionality necessary for

any system to compete in that product domain and features that differentiate the system from competitors.

Requirements of the Swiss Mineral company:

- Entering and storing the details of customers and orders.
- Obtaining detailed report view and printouts of day's transactions.
- Obtaining periodical transaction report view and printouts.
- Sending promotional information to the customers via SMS, E-mail.
- Updating the online customer profile.
- Advertising business promotional details.
- Blacklisting customers.
- Manage stock.
- Make penalty fee to deliver boy and in-charge for delay delivery.
- Alert news.
- Calculate salary.
- Get users feedback.
- Make friendly Graphical User Interface (GUI).

Requirements for customer:

- Customers can search the products.
- Customers make order products through online.
- Customer make payment through online payment/ez cash/shopping card.
- Finding their order status.
- Make complains.
- Receiving promotional information from the company via SMS, E-mail.
- Update the profile.
- Give feedback.

2.6.2 NON-FUNCTIONAL REQUIREMENTS

Non-functional requirements in system engineering and requirements engineering, a non-functional requirement is a requirement that specifies criteria that can be used to judge the operation of a system, rather than specific behaviors.

- Accuracy and consistency, these are very important non-functional requirements that should be considered when storing the details of customers and company calculating values.
- Security, there should be superior security mechanisms since the system stores very confidential information such as details of user profile, password of the customers and company account.
- Usability, usability should be very much important in this project when developing the online user profile to the customers.
- Reliability, this is a non-functional requirement of the system users. There should be trustworthiness between the users and the system.
- Reusability and maintainability, in a case where the system needs any changes in the future, it should not be a tricky task. Proper documentation and using standard methods when developing the system will ensure this non-functional requirement.
- Authorized person only login into our system.
- Increase the sales and marketing.
- Reduce the labor cost and time.
- Easy to access the system.

2.6.3 RESOURCE REQUIREMENTS

Hardware requirements:

- Pentium 4 computer or more.
- Printer.

Software requirements:

- Windows operating system.
- Wampserver (PHP 5.4.12, MySQL 5.6.12, Apache 2.4.4)
- Adobe Dreamweaver CS5.5
- Adobe Photoshop css5
- CSS
- JavaScript
- Microsoft Word
- MySQL Workbench 6.0.8 CE
- Microsoft Project 2013
- Microsoft Visio professional 2013

2.7 LITERATURE REVIEW

This section summarizes various techniques that have been employed closely related with our web based system. This system has some literature reviews that are on sale and services. They sales goods and services through online when we make some order. They are dealing with product to sale such as, “eBay”, “amazon” and etc.

The “amazon” give facilitate online shopping for electronics, apparel, computers, books, DVD and more. They have facilitated search products and compare price, quality and etc. with other similar product. From their system we can make order through online with online payment. Like this “eBay” also facilitate online shopping for electronics, cars, fashion, collectibles, coupons and more. From both when we ordered the products they deliver the product to delivery address.

Like such like system not available in developing country like Sri Lanka. We planned to develop system like those system. We also facilitate online order from customers through this system.

CHAPTER 3 DESIGN OF SOLUTION

3.1 INTRODUCTION

System design is the process of defining the architecture, components, modules, interfaces and data for a system to satisfy specified requirements. In this design chapter, describe different approach models and methodologies that can be used to developed system.

3.2 DIFFERENT MODELS AND METHODOLOGIES

When automating an Information System, it is needed to be developed in a methodical way to make it more robust and also to deliver a validated system to the client. A validated system is one that has no errors and also which satisfies the requirements of the client. A system development methodology is a very formal and precise system development process that defines a set of activities, methods, best practices, deliverables and automated tools for system developers and project managers, to use to develop and maintain an information system.

There should be much approach such as waterfall model, incremental model, rapid application development, prototype model and etc. The waterfall model is suitable for projects which have clear and stable requirements. It has the possibility of cascading effects one stage to another stage in leaner cycle development process that best suited for where the requirements clearly defined.

Incremental model, whole system is divided into separate sub-system and these sub-systems implemented separately. In this approach each sub-system is developed separately and development liner approach. This system used for large and complex system. The rapid application development one of the incremental method, it based on technique that speedup the system development with high user involvement. The prototyping model is better understanding on how to develop the system. It helps to clarify the requirements that are stable or unstable requirements. It has two types, one is throw-away prototype it is suitable for vague and stable requirements and another type is evolutionary prototyping that suitable for vague and unstable requirements. We used the evolutionary prototyping model to development our system.

3.3 PROCESS DESIGN

The design gives the solution for requirements analysis, based on this design we develop our system. This design was divided into three stages:

- Database design
- Application architecture design
- Interface design

3.3.1 DATABASE DESIGN

Database design is done through data modeling. The database designing is done to specify the structure of the object of the system. To avoid the data redundancies the every table of the database were normalized to third normal form.

In normalization there is several level of normal form but we mostly used first three normal form. First normal form (1NF), eliminate duplicative columns from the same table and create separable tables for each group and identify the unique column or set of columns it is called as primary key for that table. Second normal form (2NF), if any non-key attributes are functionally depended on just a part of the key was remove and create separate table and connect both table with foreign key. Thus 2NF can only be violated only when a key is composite key. Third normal form (3NF), remove columns that are not depend upon the primary key.

After third normal form most of the table mostly avoid the data redundancy if any additional other normal form will be used. I drew the Entity Diagram by MySQL Workbench 6.0.8 CE. Our system ER diagram shown following Figure 3.1 ER Diagram:

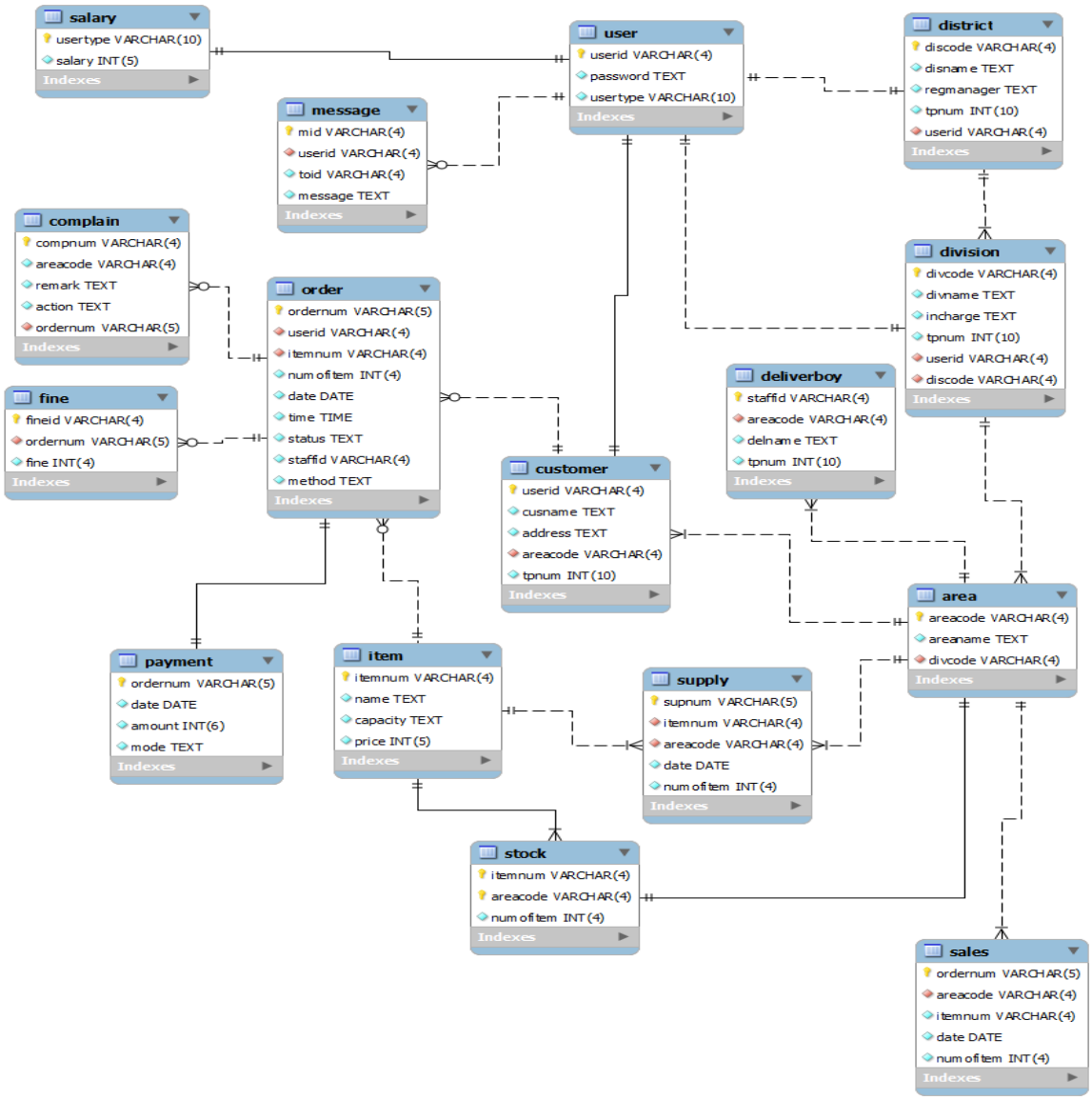

Figure 3.1 ER Diagram

3.3.2 APPLICATION ARCHITECTURE DESIGN

This design describes the functionality and task of the system are connected into sub system. In this design we draw activity, class, sequence and use-case diagram. I used the Microsoft Visio Professional 2013 to draw those diagrams.

Use-case diagram:

It is simply represent the user's interaction with the system, summarized the relationship between use-cases, actors (users) and systems. Our system use-case diagram shown following Figure 3.2 Use-case Diagram:

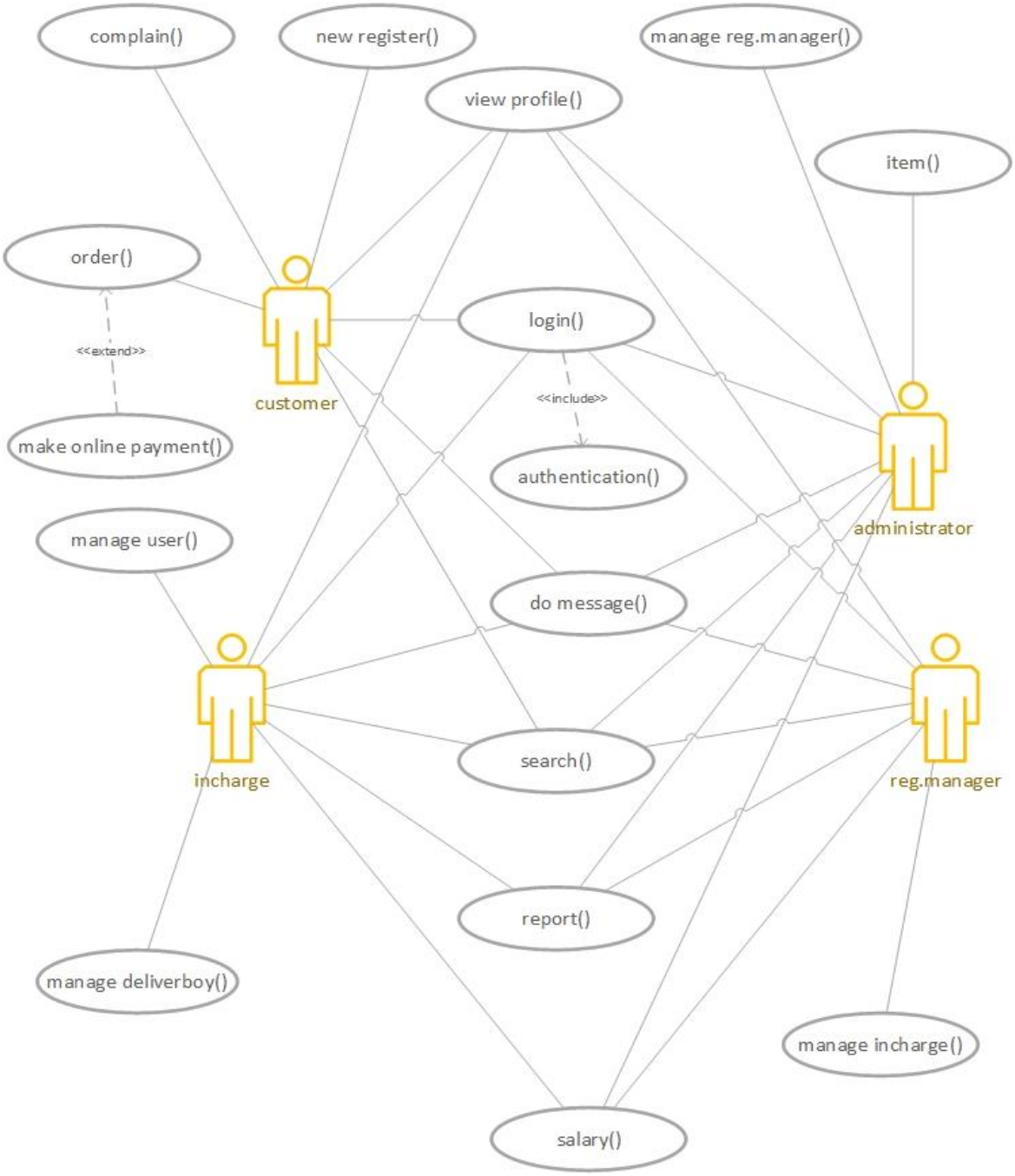

Figure 3.2 Use-case Diagram

Class diagram:

In object oriented design, class diagram view the structure of a system by system's class and illustrate relationship between classes. Our system class diagram shown following Figure 3.3 Class Diagram:

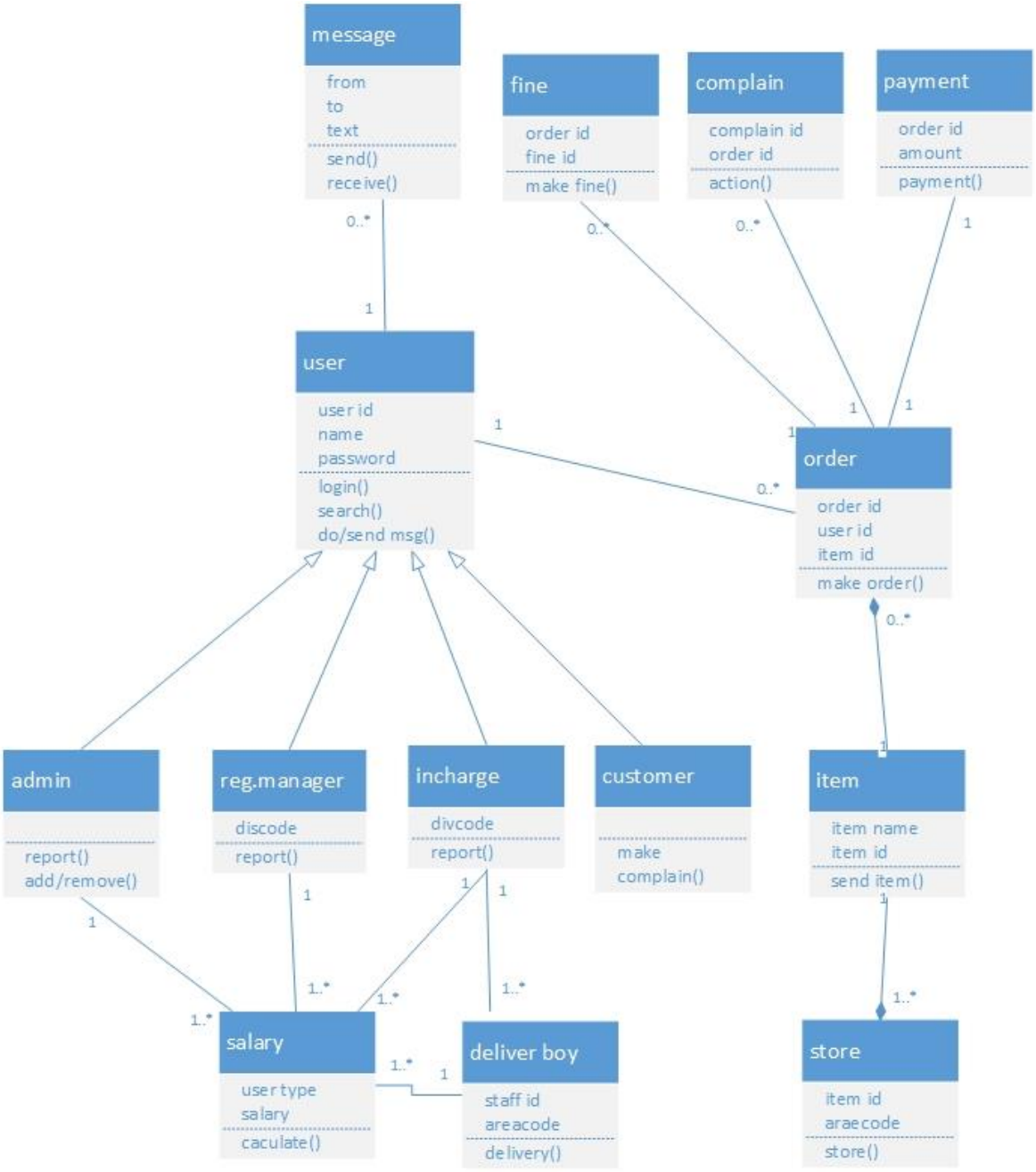

Figure 3.3 Class Diagram

Activity diagram:

This diagram represents the graphical view of workflows of stepwise activities in the system. We drew activity diagram for login, new user, order and report. Activity diagram for login is shown on following Figure 3.4 Activity Diagram for Login:

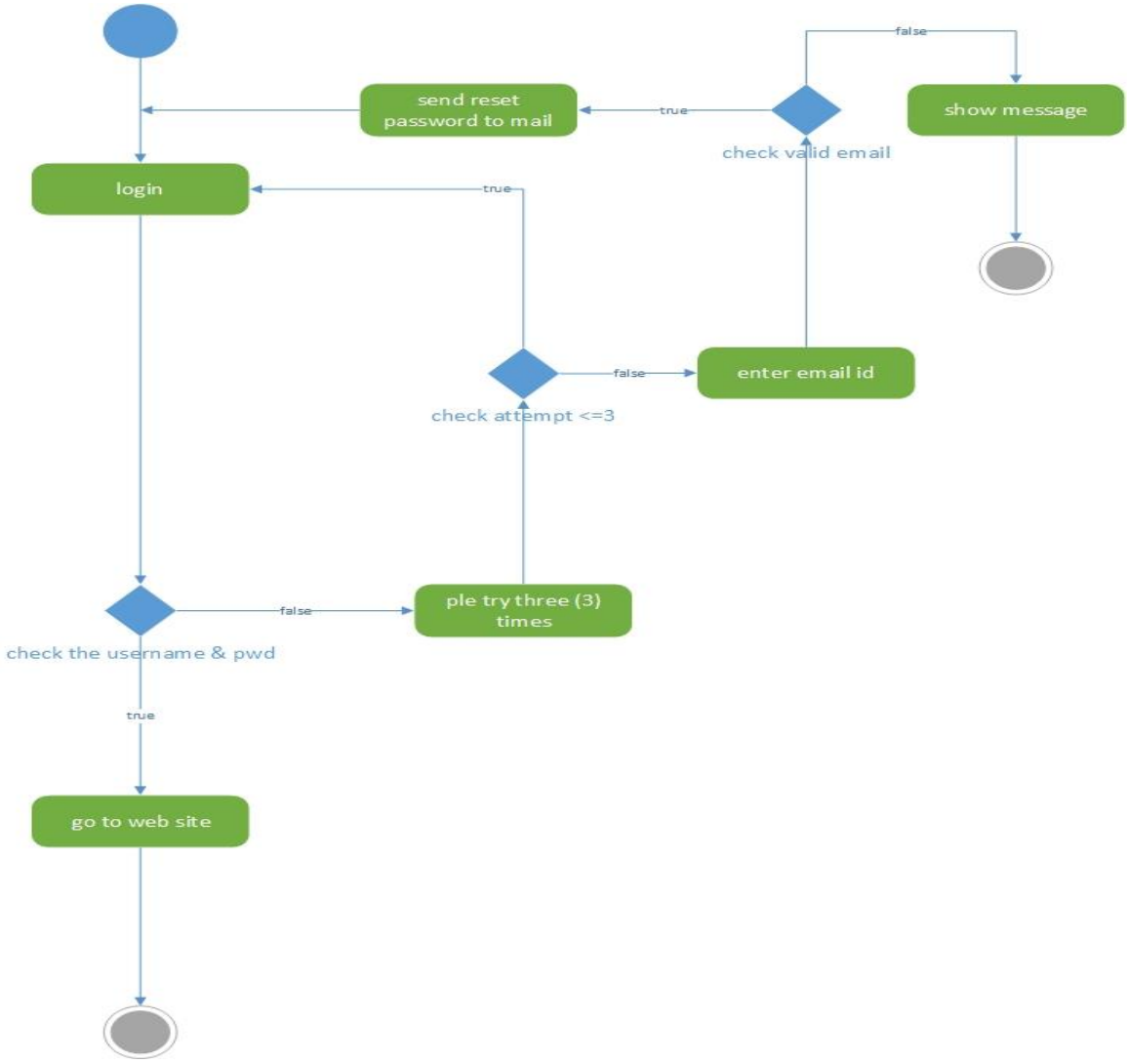

Figure 3.4 Activity Diagram for Login

Activity diagram for new user registration is shown on following Figure 3.5 Activity Diagram for New-user:

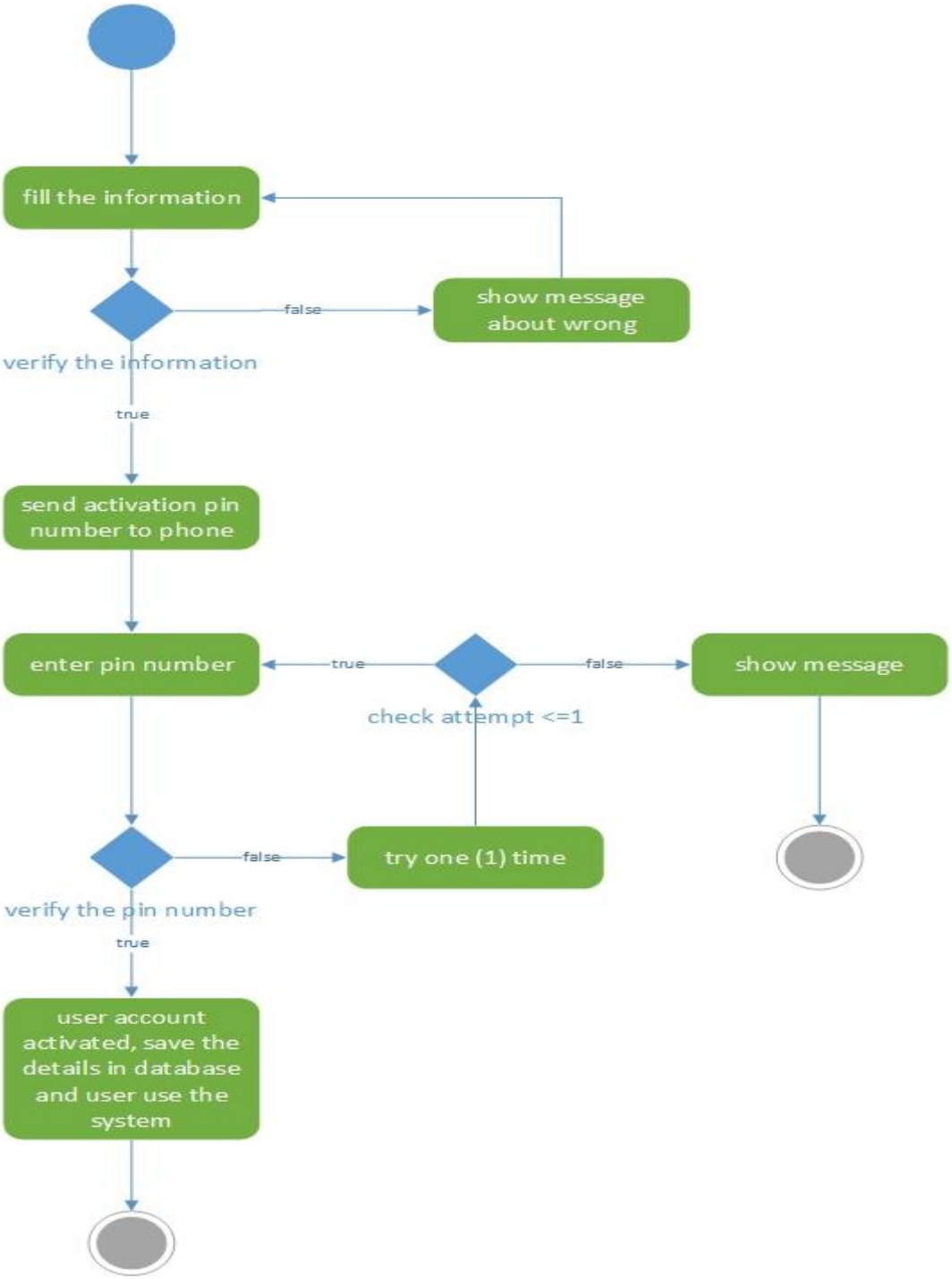

Figure 3.5 Activity Diagram for New-user

Activity diagram for order is shown on following Figure 3.6 Activity Diagram for Order:

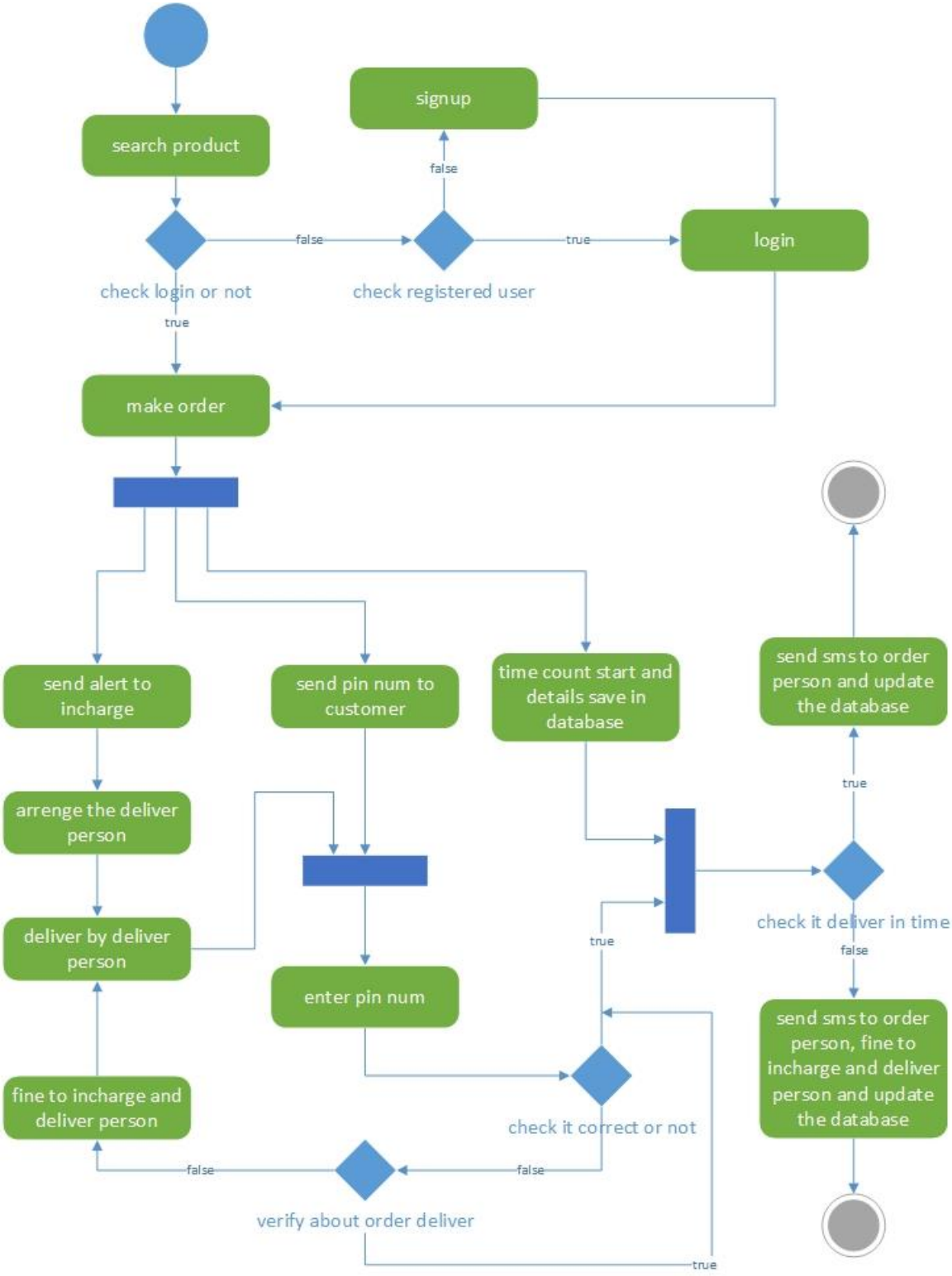

Figure 3.6 Activity Diagram for Order

Activity diagram for print or save report shown on following Figure 3.7 Activity Diagram for Report:

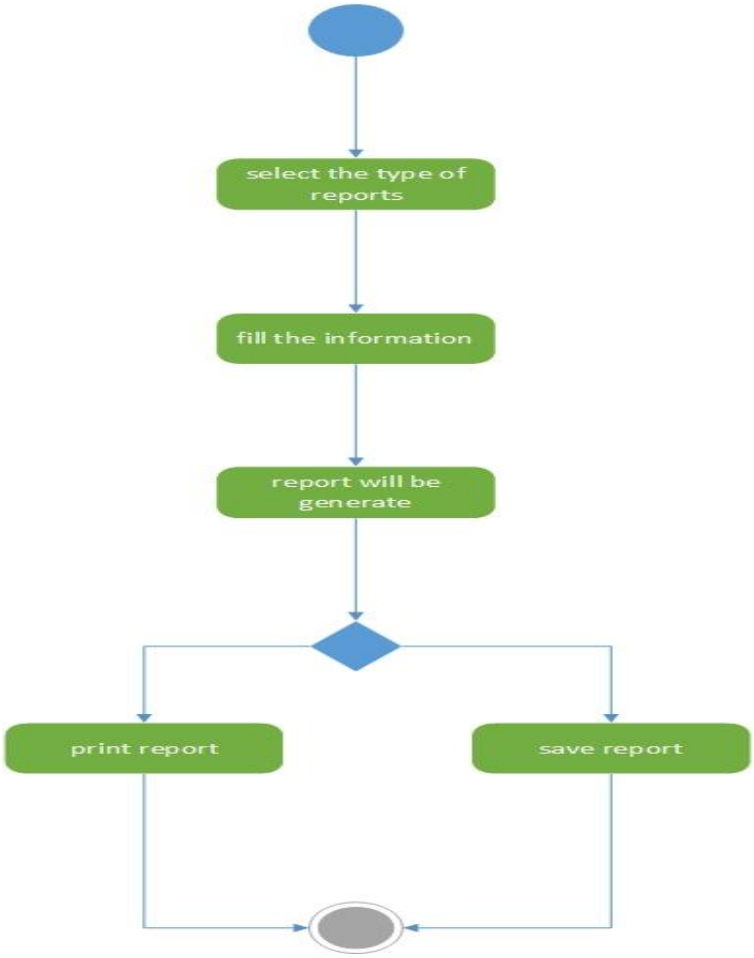

Figure 3.7 Activity Diagram for Report

Sequence diagram:

This diagram represents how objects interact in given situation or activity. I drew sequence diagram for login and order. Sequence diagram for login is shown on Figure 3.8 Sequence Diagram for Login:

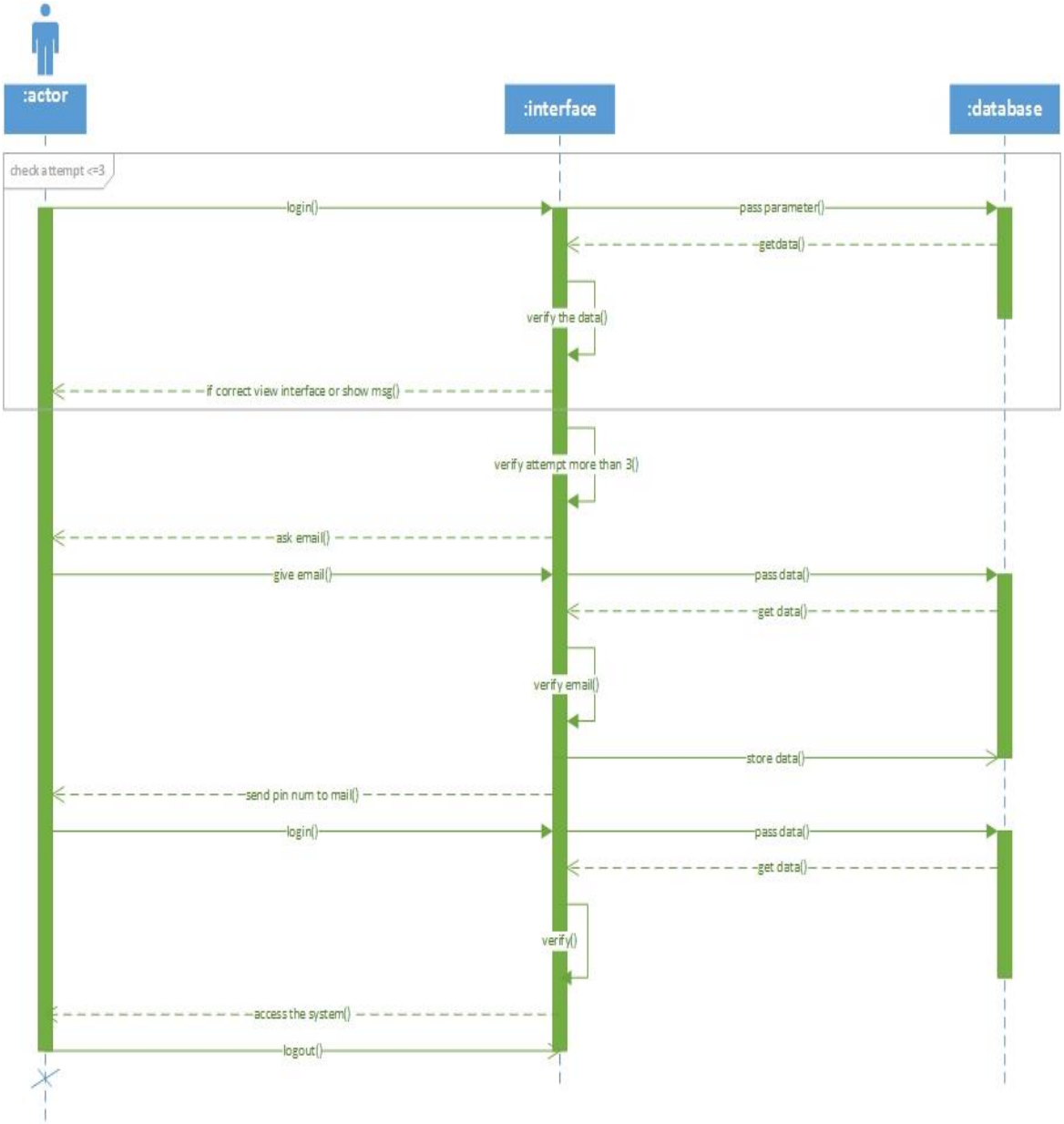

Figure 3.8 Sequence Diagram for Login

Sequence diagram for order is shown on Figure 3.9 Sequence Diagram for Order:

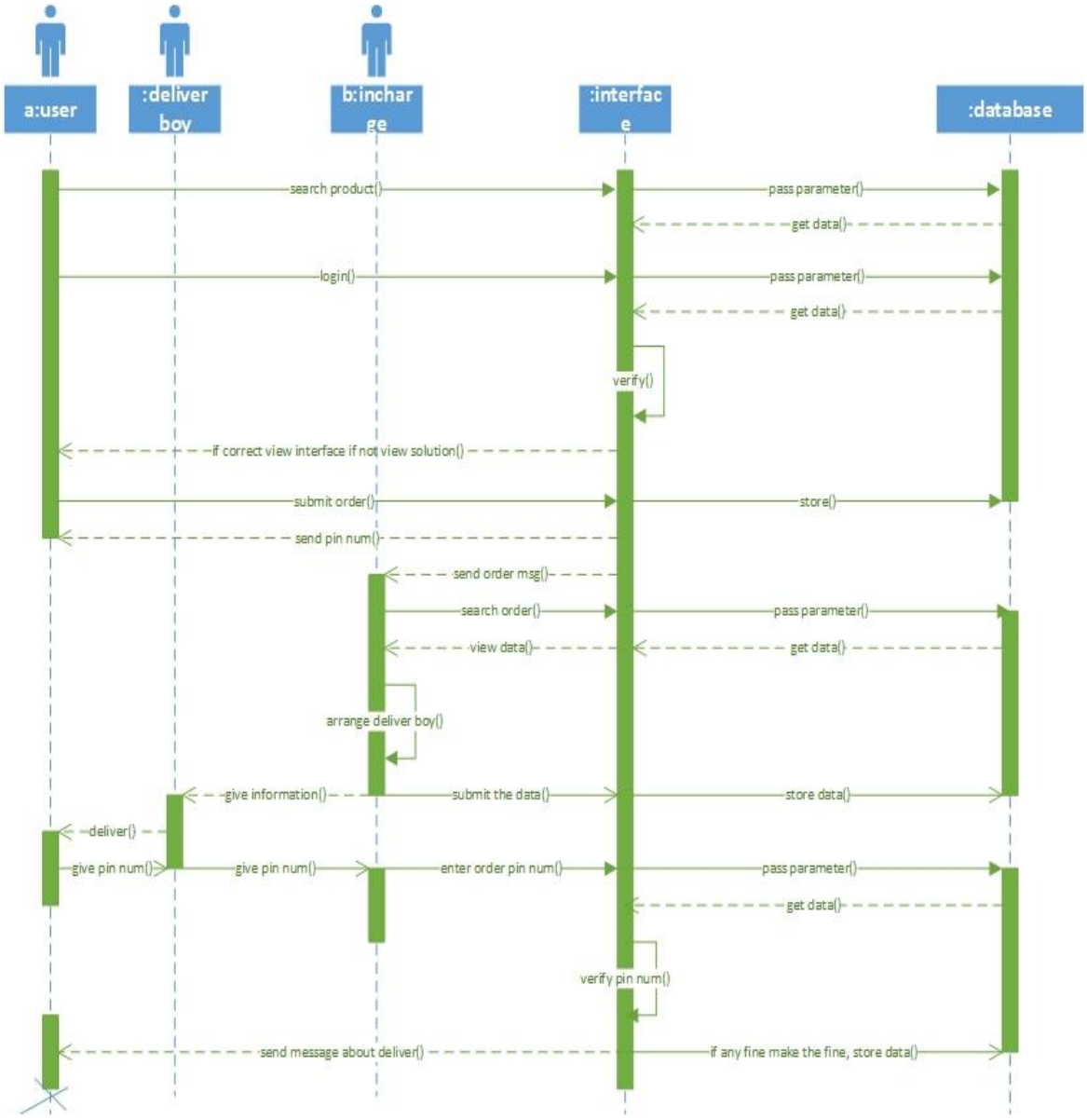

Figure 3.9 Sequence Diagram for Order

REERENCE

https://en.wikipedia.org/wiki/Software_development

https://en.wikipedia.org/wiki/Waterfall_model

https://en.wikipedia.org/wiki/Software_prototyping

https://en.wikipedia.org/wiki/Incremental_build_model

https://en.wikipedia.org/wiki/Rapid_application_development

https://en.wikipedia.org/wiki/Software_development_process