Online Market And Shopping System
For
Theldeniya Public Marketplace

An Individual Project Submitted for Higher National Diploma in Information Technology

Advanced Technological Institute Gampaha.

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Declaration

This report is my original work and has not been submitted previously for a Higher National Diploma at this or any other university / Institute. To the best of my knowledge, it does not contain any material published or written by another person, except as acknowledged in the text.

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Abstract

Theldeniya Public Marketplace is a regular Marketplace which have 46 retail shops and considerable number of daily customers. With the busy lifestyle it is difficult to spare additional time for shopping groceries, vegetables, and other daily needs.

The proposed system was a web-based Online Marketplace System named ‘ShopDrop’ which provide online price checking and online ordering for customers. Apart from that ShopDrop System is equipped with features that makes it possible to handle marketplace related data easily for the administration board of the marketplace.

ShopDrop application is developed in PHP and powerful MYSQL database backend. To implement ShopDrop application, marketplace do not need expensive hardware and software, they just need an internet connection and a desktop. Our system works as a centralized database and application that customers and employees can easily access the system from anywhere based on the login credentials. ShopDrop is a platform independent system that virtually any user can access from anywhere through a standard internet accessible system.

Acknowledgement

First, I would like to express my special thanks of gratitude to Mrs. Nishani,Gunasekara, HOD of Department of IT, Sri Lanka Institute of Advanced Technological Education (SLIATE), Naiwala for giving us the necessary guidelines and opportunity to undertake this project.

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I once again convey my sincere gratitude to Mrs. Nishani Gunasekara who was also my project supervisor. Without her kind direction and proper guidance this project would not have been a little success. In every phase of the project her supervision and guidance helped this report to be completed perfectly.

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HTML - Hyper Text Markup Language
XML - Extensible Markup Language
XHTML - Extensible HyperText Markup Language
CSS - Cascade Style Sheet
PHP - Hypertext Pre-processor
SQL - Structured Query Language
RDBMS – Relational Database Management System
SVG - Scalable Vector Graphics
MathML - Mathematical Markup Language
HTTP - Hypertext Transfer Protocol
CGI - Common Gateway Interface

CHAPTER 01: INTRODUCTION

Agriculture in Sri Lanka has always been very important because these agricultural products are a major part of the daily diet of the people of Sri Lanka. The Sri Lanka government has been supporting the agriculture industry with a number of policies, trying to stabilize the output and seeking ways to ensure the sector is growing healthily and sustainably. Due to those supportive policies, the agriculture sector's performance has been improving steadily in recent years. Sri Lanka keeps its first rank in south Asia in terms of farming output, producing large quantities of rice, wheat, cotton, meat, poultry, eggs and fishery products.

In addition, as another strategy to create better agricultural productivity and encourage farmers, the government introduced common agricultural marketplaces to the society to sell agricultural products at reasonable prices to both consumers and farmers. There are several permanent marketplaces in Sri Lanka that are managed and controlled by the government or the private sector. Compared to the weekly fairs held in rural areas, these places have permanent buildings with rented vendors.

These types of marketplaces are very important for the middle-class and lower-class people in Sri Lanka. Since there are many sellers and many price ranges for the same product, people usually tend to spend considerable amount of time to buy these products. These markets have been a great help to the people of a developing country like Sri Lanka from the point of view of farmers and consumers.

1.1. Background and motivation

1.1.1. Business Process and Background

Theldeniya is located in Kandy district Sri Lanka. It is a busy city with many people and many residences. The main marketplace of Theldeniya city is in the middle of the city and it is open from Monday to Saturday. Theldeniya marketplace is managed by the Provincial Council of Theldeniya. There are many products in the marketplace including all the fresh seafoods, meats and vegetables. Usually almost 80% of people in Theldeniya use this marketplace for their daily needs. Also, the Theldeniya marketplace is famous in the area for good products and reasonable prices.

A marketplace can be identified as a place where there are multiple shops with many sellers and many products such as vegetables, fruits, seafoods, meats and etc. A marketplace has permanent or firm buildings and locations of their own. Generally, every marketplace is managed either by the government or another private company.

All shops in the building are rented for a specified period with legal agreements. The minimum rental period in a market shop is one month and there is no limit to the maximum period. Monthly rent is collected by the administrative office located in the market. It will then be sent to the Provincial

Council at the end of the month. The administrative office has the power to suspend the seller whenever the seller does not comply with the rules of the market. A suspended seller must pay a fine to remove that suspension. The details of all those suspensions and their reasons are noted and after a few suspensions, the office can permanently terminate any agreement with the seller.

The administrative office should collect the monthly bills of the market such as electricity bills, water bills, market maintenance bills and send them to the Provincial Council for payment. The salaries of all employees in the market are paid by the government.

Almost all actions related to sales and purchases are made by sellers and buyers only. The administrative office inquire about it only when there is a price mismatch between the vendors with the price range regulated by the government. But with this system the administration office can participate in the sale of products so that they can increase the number of customers in the public market.

1.1.2. Motivation

Generally, people in Sri Lanka are busy with their jobs or other important activities throughout the day. The time they can spend buying vegetables, fruits and other items is getting shorter with this busy life. So, people are starting to like supermarkets or other nearby grocery stores rather than spending time in a marketplace.

Also, the Covid-19 epidemic has forced many people to stay indoors for most of the day and to some extent prohibit people from gathering, which is a major problem for this market.

But with the shop drop system people can go to that marketplace and get a clear idea of the products and prices in the market. With the product ordering process, people do not need to spend much time shopping. With these new features this system will attract many customers. This method is already popular with some of the popular supermarkets in Sri Lanka. Therefore, it shows that after implementing this system could also be a good chance to increase the number of people who will go to the marketplace for reasonable prices.

1.2. The Project

1.2.1. Problems of the existing system

In the present system, it is necessary for the customer to go to the marketplace to select their needed products. And since there are many sellers in many locations inside the market the customer needs to look for some time to get the best product with a best price. That takes more time and effort of the customer. Also, with the COVID 19 situation it is not possible to spend time looking for products even if the customer has time.

When selecting a good product, the customer should consider the quality of the seller too. But in the present system the customer has no way of deciding how much of a good seller the person is.

In the current system the customers need to buy their required products by themselves. But that is difficult for people who could not spend time shopping. Also, the customers don't have a method to get any updates of the marketplace unless going to the marketplace. And there is no way for people to make a complaint about a seller or about the marketplace to the council.

There is a paper-based system to store marketplace details about sellers, seller rents, bill payments etc. But when it comes to decide for the management, they need to create some extra reports. And there is no method of getting notified or getting warned about unpaid bills or rents.

These are the identified problems in the marketplace according to the business area of the shop drop system is targeting. These problems would be alleviated with the Shop drop system.

1.2.2. Objectives of Shop drop web system

The aim of the project Shop Drop is to develop a web-based system for managing the marketplace to provide more features to the customers and to generate reports related to the marketplace for a better decision-making process.

- To build a responsive website to manage the Shop Drop system
- To make a customer website for customers to view the marketplace details.
- To Generate reports of the marketplace

1.2.3. Scope of the Project

The proposed system will help with various activities, as mentioned below. These activities will be implemented in the system.

The scope of the Shop drop system

• Activities related to registration, modify and login.

- The admin should be able to log into the system with the given login credentials.
- Admin should approve employee users for them to login to the system.

• Activities related to add and view Product list.

- The admin should be able to add, modify or remove product categories or subcategories.
- Admin and Employees should be able to add, modify or remove the product list according to sellers.
- Users should be able to view the product list details along with seller ratings

• Activities related to manage marketplace data.
  - The admin should be able to add, modify or remove sellers from the system
  - The admin should be able to add, modify or remove other employees of the marketplace from the system
  - Admin should be able to add, modify bill and payment details.
  - Admin should be able to get reminders, warnings about bill payments.
  - Admin should be able to get reminders, warnings about paid and unpaid rents by sellers.

• Activities related to manage customer orders.
  - The admin should be able to view the customer orders.
  - The admin should be able to get a generated bill with the order details and a checkout bill.
  - The admin should be able to update the orders table according to the order processing status.
  - Users should be able to place a scheduled order or on day order.
  - Users should get an email reminder about scheduled orders.
  - Users should get a reminder about order completion with the bill.

• Activities related to public Notices, ratings and complaints.
  - The admin should be able to send and view public notices.
  - The admin should be able to send warnings to customers when they missed an order.
  - The admin should be able to view customer complaints.
  - Users should be able to place a complaint.
  - Users should be able to view public notices.
  - Users should be able to add rating and reviews for sellers.

• Activities related to managing users of the Shop Drop
  - The admin should be able to view the users/customers of the system.
  - The admin should be able to view the warning level of the user/customer (user level is generated using the cancelled orders or ignored orders by the user).
  - The admin should be able to remove the users with 3 warnings.

Processes such as wastage management, maintenance handling, Product order delivery service are not covered in this system.

1.3. Structure of the report

Chapter 1 – Introduction
This chapter describes the motivation for the project, and aims, objectives and scope of the project.

Chapter 2 – Analysis
This chapter describes the existing software systems which is similar to the proposed system and feasibility study of this system.

Chapter 3 – Design
The architectural design of the proposed system is described in this chapter. This chapter includes use case diagram, class diagram, and activity diagrams. And also, this chapter includes output design in this system and database design in this system
.

Chapter 4 – Implementation
This chapter describes hardware and software environment, development tools and some source codes we used for the shop drop web system.

Chapter 5 – Evaluation
This chapter includes system testing.

Chapter 6 – Conclusion
This chapter includes the problems that this project will solve and the ease with which it will work in the marketplace.

1.4. Chapter summery

This chapter provides the analysis of the current business process. It starts with the use case diagram and then moves on to use case descriptions to provide the system analysis. Following that is the system requirement specifications and complete business system options to conclude the chapter.

CHAPTER 02: ANALYSIS

This chapter will provide a full description of the system and its users. Then it depicts the functional and non-functional requirements that have been collected using several methods like brainstorming, interview and e surveys. After determining the most important requirements, requirement analysis was adopted using several tools such as use case diagram, sequence diagram and activity diagram.

2.1 Fact Gathering

Of the many fact gathering techniques available for analysis, the following were primarily used,

- Research using other systems and internet
- Telephone interviews

Facts were primarily gathered by telephone interviews with the manager of the Theldeniya public market, Wholesale customer of the area and two retail customers. Additional knowledge needed to complete analysis, was discovered through studying the existing online market systems and browsing the internet.

2.2 Existing System of the Marketplace

In the current system of the marketplace, only consumers and sellers are involved in buying and selling products. It is also imperative that the consumers come to the market to buy the products they want.

The Office of Administration is officially responsible for market management. The office is also responsible for paying monthly bills in the market and collecting rent from sellers.

The problems with the current system are as follows:

- **Difficult to search records such as sellers' information, employee's information.**
  When there is no computerized system there is always a difficulty in searching of records if the records are large in number.

- **Decrease in the number of customers due to lack of time in daily life.**
  Nowadays people have less time to spend in a market to buy their daily necessities. Consumers are not going to the market as they used to because there are so many grocery stores everywhere.

- **There is no way for people to know the details of the marketplace without going to the market.**
  Information such as price list of products and what products are available in the market can only be found in the store and it is difficult for people to get a price comparison of the product.

Also, the market notice board is located in the front office. Therefore, there is no way for consumers to know any special announcements about the marketplace without going to the market.

- **Difficult to make analyse reports and takes time to make decisions.**
  Since there is only a paper-based documentation system it takes time to make decisions about the marketplace.

- **File lost and damage.**
  When computerized system is not implemented files are always lost because of human environment. Sometimes due to some human error there may be a loss of records. Also, when a computerized system is not their files are always lost due to some accidents like spilling of water by some member on file accidentally. Besides some natural disaster like floods or fires may also damage the files

As for the strengths of the current system,
When it comes to agricultural products, people usually like to physically look at that product before they buy it. Because it allows them to make sure they are buying the best product. Also, there is a team to check the quality and price of the products available in the market as compared to a small retail store so that anyone can get products with a good quality for a good price.

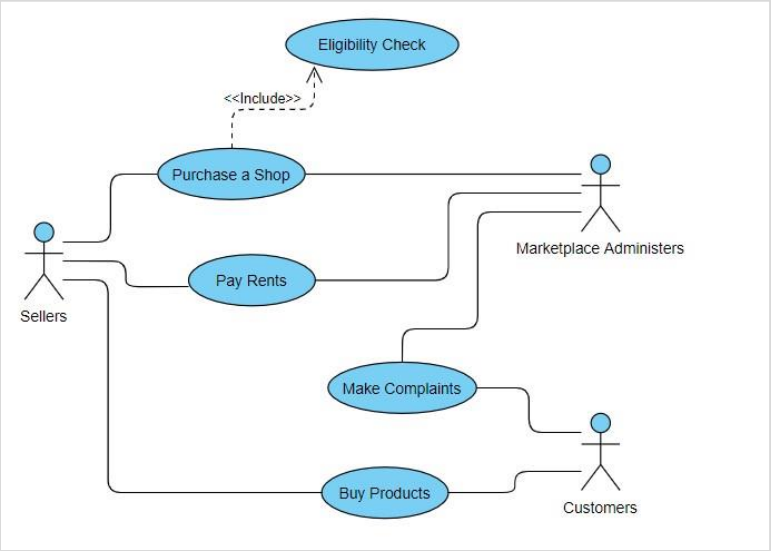


Diagram 1 - Use case of the Current system

2.2.1. Use case description of the system

The above-mentioned major use cases of the use case diagram are described below using use case descriptions.

Use case description for purchase a shop

Use case	Purchasing a shop
Actors	Municipal council, vendors
Description	Purchase a shop in the marketplace for a specific time period.
Pre-condition	The person who needs to buy a shop should have a clear history with no criminal records.
Normal flow	1. The seller should contact the municipal council and purchase a store according to their procedure. 2. The council sends legal documents to the market administrative office. 3. After checking the authority administrative office provides the relevant shop key to the seller.

Table 1 - use case description of purchasing a shop

2.3 System Requirements

2.3.1. Functional Requirements

In summery here are the functional requirements for the proposed system as identified according to the client's requirements.

- System should provide the ability to manage the product category list to the admin.
- Admin and employees should be able to view the product category list of the system.
- Admin and employees should be able to view the product list of each seller who has registered in the system.
- System should provide the ability to manage the product list of the sellers to the admin and employees.
- System should provide the ability to manage the daily orders of the customers to the admin.
- Admin should be able to view the future orders as well as the daily orders list of the system.
- System should provide the ability to generate and print bills for order processing and checkout to the admin.
- Admin should be able to publish notices and announcement that are related to the market.
- Admin should be able to view the future orders as well as the daily orders list of the system.
- System should provide warnings and notices about the bill payments, seller levels (calculated according to the number of complaints and missed rents of the seller), etc. to the admin.
- Admin should be able to view the customers/users details of the system.
- System should provide the ability to manage the seller's data of the public market to the admin.
- Admin should be able to suspend a seller from the system according to their level.
- System should provide the ability to manage the details about employees of the market to the admin.

- System should provide the ability to manage the details about the monthly bills of the market to the admin.
- System should generate graphical charts such as the total number of sellers of the market monthly and yearly, the total number of employees of the market monthly and yearly, the total number of sales and orders per month, the conditions of the sellers in the system, the monthly bill payments of the public market to the admin to view.
- Admin should be able to view complaints about the system, reviews for the sellers which are posted by customers/users of the system.
- Customers/users should be able to view the daily updated product list of the market.
- Customers/users should be able to make a product order from the list of the market.
- System should send email notifications and warnings to the customer/user about the scheduled order dates and order completion.
- Customers/users should be able to view the announcements and notices of the system.
- System should send a confirmation and thank you message to the customer/user after a successful order pickup.
- Customers/users should be able to post a complaint, review or a rating to the system or to a seller

2.3.2. Non-functional Requirements

The Following non-functional Requirements were also discovered.

- Any user can view the daily product list, but users should log in to the system in order to make an order.
- The system should be available to users anytime, anywhere, just need a PC and Internet Connection.
- The system should work in multiple web browsers like chrome, Mozilla, Opera.
- The User Interfaces should be simple and intuitive
- The system should be easy to use.
- The system should be reliable.

2.3.3. Other requirements

For a system to be used efficiently and accurately, all computer software needs to have certain hardware components and other software resources to be present on a computer. These prerequisites are known as (computer hardware and software specification) and are often used as a guideline as opposed to an absolute rule.

Hardware configuration for the implementation environment is as follows:

- Processor 2.4 GHZ processor speed
- High quality monitor
- RAM 2GB or more.

- Backup storage hard disk of about 2GB.
- Flash drive for file transfer.
- An enhanced keyboard.
- A power stabilizer
- A functional Printer

Software requirement:

- Chrome or any other web browser
- Singreesi text editor (Optional)

And a person with some technological knowledge to operate the system as admin and several employees to collect the orders of the customers.

2.4 Feasibility Study

2.4.1. Economic feasibility

Nowadays, the price of the smart phones has been very low, while the performance has made considerable progress. And the development of this system brings a valuable impact for the marketplace.

- First, the operation of this system can help the marketplace to have customers even in this COVID 19 situation.
- Second, the operation of this system can save a lot of time of customers.
- Third the operation of this system can save up the money of the customers and make some more money for the marketplace.
- Fourth, this system can get more customers for the marketplace.

Therefore, this system is economically feasible.

2.4.2. Technical feasibility

The development of this system using Microsoft SQL Server as the database of this system, it is a new kind of database which supports more users and is suitable for large and medium-sized data amount needs.

Atom web developing tool works equally as good with JavaScript, HTML5, PHP, C/C++ etc. It is a free JavaScript IDE and a great HTML5 IDE for your day-to-day use. And it is beneficial to extension and modification of the new system in the future.

To sum up, the design and development on the technology of this system and the condition of the hardware are satisfied, therefore, it is technically feasible.

2.4.3. Operation feasibility

This system is a small web-based marketplace system, which needs small number of resources. Normal desktop computer can meet the conditions both in hardware and software; therefore, this system is feasible in operation.

2.5 Project planning

2.5.1. Flow of general processes

Accessing the web system

The admin user is created when developing the shop drop system. Admin can login to the system using the given username and password.

There is no registration or log in to other users. Any person who has an interest over the system can access the system over internet easily.

Data inserting Process

Only admin have the permission to add data to the system.

The admin should update the seller's price list and product list every day. Sellers will reserve some of their products for online sale in the marketplace. Every morning, employees will collect data on product lists reserved for online sale by each of those vendors. After receiving that information, the administrator should update the product list

Admin can add vendor details and employee details to the system. A seller should buy a shop in the market from the Teldeniya Municipal Council. Once they have legal ownership for the rental period, he or she can open the shop. The admin should then enter their data into the database.

The monthly bills in the market are also handled by the administration office. These bills are also added to the system monthly.

Process with customer orders

Users of the system can place a product order on the same day or within two days. they can pick up their order at the front office of the marketplace.

The system will submit all orders and their details to the administrator on the relevant day. An administrator can print out the bills containing the order details for the order collection and assign the employers to collect them. Once employees have brought the relevant products, the exit bill can be generated and printed. The customer can then purchase their order.

The admin will update the order process so that the user can get a clear idea of the number of remaining orders, the number of processing orders, the number of completed orders, etc., and the user will receive an email when the order is completed.

The system creates a record of daily orders and the admin can download or print it.

Suspending a seller from the system

Users can complain about sellers or against the market. The number of complaints received by any seller creates a level for the seller. When the seller receives a maximum of 20 complaints their level is 3, when the number of complaints is 15, he belongs to level 2, when he receives 5 complaints, he is in level 1. Others have no level.

An administrator can suspend a seller who receives more than 20 complaints. Some queries will then be made, and an administrator can remove the seller from the system or terminate their suspension.

Publish Notices

Shop drop system provides notice board with all necessary notices to the customers.

There are two types of notices as warnings and announcements. Only admin can add these notices to the noticeboard.

2.5.2. System development methodology

Software Processes is a coherent set of activities for specifying, designing, implementing and testing software systems. A software process model is an abstract representation of a process that presents a description of a process from some perspective. There are many different software processes, [1] but all involve:

- Specification – defining what the system should do
- Design and implementation – defining the organization of the system and implementing the system
- Validation – checking that it does what the customer wants
- Evolution – changing the system in response to changing customer needs.

One of the basic notions of the software development process is SDLC models which stands for Software Development Life Cycle models. There are many development life cycle models that have been developed to achieve different required objectives. The models specify the various stages of the process and the order in which they are carried out.

In our proposed system, we apply RAD methodology to ensure that the time and cost are not wasted and make less errors while achieving the desired system

Rapid application development (RAD)

It is a software development methodology that uses minimal planning in favour of rapid prototyping. A prototype is a working model that is functionally equivalent to a component of the product. In the RAD model, the functional modules are developed in parallel as prototypes and are integrated to

make the complete product for faster product delivery. Since there is no detailed preplanning, it makes it easier to incorporate the changes within the development process. RAD projects follow iterative and incremental model and have small teams comprising of developers, domain experts, customer representatives and other IT resources working progressively on their component or prototype. The most important aspect for this model to be successful for this system is to make sure that the prototypes developed are reusable [2]

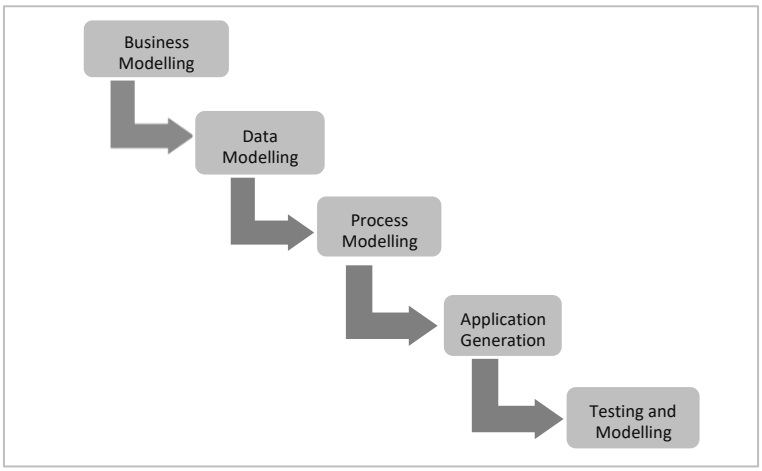


Figure 1 - System development modal

Business Modelling

Business modelling step in the RAD model takes information from the company gathered through many business-related sources. This info is then combined into a useful description of how the data can be used when it is processed, and what is making this specific information successful for the industry.

Data Modelling

During the Data Modelling stage, all the information gathered during the Business Modelling phase is analysed. Through the analysis, the information is grouped into different groups that can be useful to the company. The quality of each data group is carefully examined and given an accurate description. A relationship between these groups and their usefulness as defined in the Business Modelling step is also established during this phase of the RAD model.

Process Modelling

The Process Modelling phase is the step in the RAD model procedure where all the groups of information gathered during the Data Modelling step are converted into the required usable information. During the Process Modelling stage, changes and optimizations can be done, and the

sets of data can be further defined. Any descriptions for adding, removing, or changing the data objects are also created during this phase.

Application Generation

The Application Generation step is when all the information gathered is coded, and the system that is going to be used to create the prototype is built. The data models created are turned into actual prototypes that can be tested in the next step.

Testing and Turnover

The Testing and Turnover stage allows for reduced time in the overall testing of the prototypes created. Every model is tested separately to identify and adapt the components quickly to create the most effective product. Since most of the elements have already been examined previously, there should not be any major problems with your prototype.

2.6 Complete business system options

BSO 1 – A web-based online marketplace that satisfies all the essential requirements of the marketplace administrative office along with the facilities of online sales and delivery services.

BSO 2 – A web-based online marketplace that allows sellers to present their products list and sell them to online customers.

BSO 3 – A web-based online marketplace that satisfies all the essential requirements of the marketplace administrative office and facilitates online product orders for pick up.

2.6.1. BSO explanation

- BSO 1 – A web-based online marketplace that satisfies all the essential requirements of the marketplace administrative office along with the facilities of online product list, online product ordering and delivery services.

Functional description – This Business System Option will cover the basic areas of the business with facilitating online ordering and delivery service being the core aspects. This required additional delivery team to carry out the order delivery. Sending out a purchase order to customers will be facilitated by this BSO.

- BSO 2 – A web-based online marketplace that allows sellers to present their products list and sell them to online customers.

Functional description – In this Business System Option sellers can update their product list by themselves and customers can place orders. The product list will be more accurate and up to time with this BSO.

- BSO 3 – A web-based online marketplace that satisfies all the essential requirements of the marketplace administrative office and facilitates online product orders for pick up from the front office of the marketplace.

Functional description – This Business System Option will cover the basic areas of the business with many features such as analytical graphs and reports. It will facilitate the notification mail system for the order processing. All the orders will be picked up at the main office of the marketplace. There will be no more additional cost needed with this BSO.

2.6.2. Selected BSO with a sound justification

The BSO 3 is selected for this web-based online marketplace as it is able to satisfy the client needs most effectively. This BSO offers the facilitation of all the essential requirements of the client while addressing some of the nice to have features. This BSO is capable of carrying out the basic tasks of the business while providing features that would enhance the efficiency of the processes. At the same time, it stays in the moderate cost regions with higher benefits than the costs assigned to it.

2.7 Chapter summery

This chapter provides the analysis of the current business process. It starts with the use case diagram and then moves on to use case descriptions to provide the system analysis. Following that is the system requirement specifications and complete business system options to conclude the chapter.

CHAPTER 03: DESIGN

During this phase the detailed specification for the proposed software is created. The objects discovered during the analysis phase are refined, and the database is modelled. UML diagrams such as class diagrams, activity diagrams and sequence diagrams are used for this purpose. User interfaces are also designed.

3.1 Shop Drop Online System

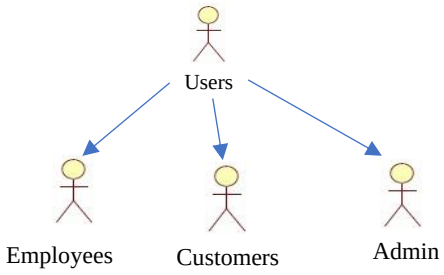


Figure 2 - User Generalization of the System

Figure 2 represents the generalization of the users of the Shop Drop system. As depicted by it, there are three types of users. From the point of view of the proposed system there are some core differences between the users.

- Admin and employees can add, remove, edit the product list while other users can't.
- Admin can add, remove, edit data related to the marketplace such as sellers, employees, monthly payments while other users can't.
- Employee users can also edit the seller's shop status and his duty status.
- Admin can generate reports and bills while other users can't.
- Other users and Admin can view the product list which are added to the system by Admin.
- Customers can place a product order according to their needs.
- Admin can view and modify the order list of customers.

Considering the requirements of the system Shop drop system will be used by many users in many different locations and will take many real time changes like public notices. Therefore, the shop drop system must be a web-based system. And the users can access to the system from anywhere using the login credentials.

3.2 Use case diagram of Shop drop system

Diagram 2 illustrates the use case diagram for the proposed system with the different type of users involving and the uses cases that they are carrying out within the system.

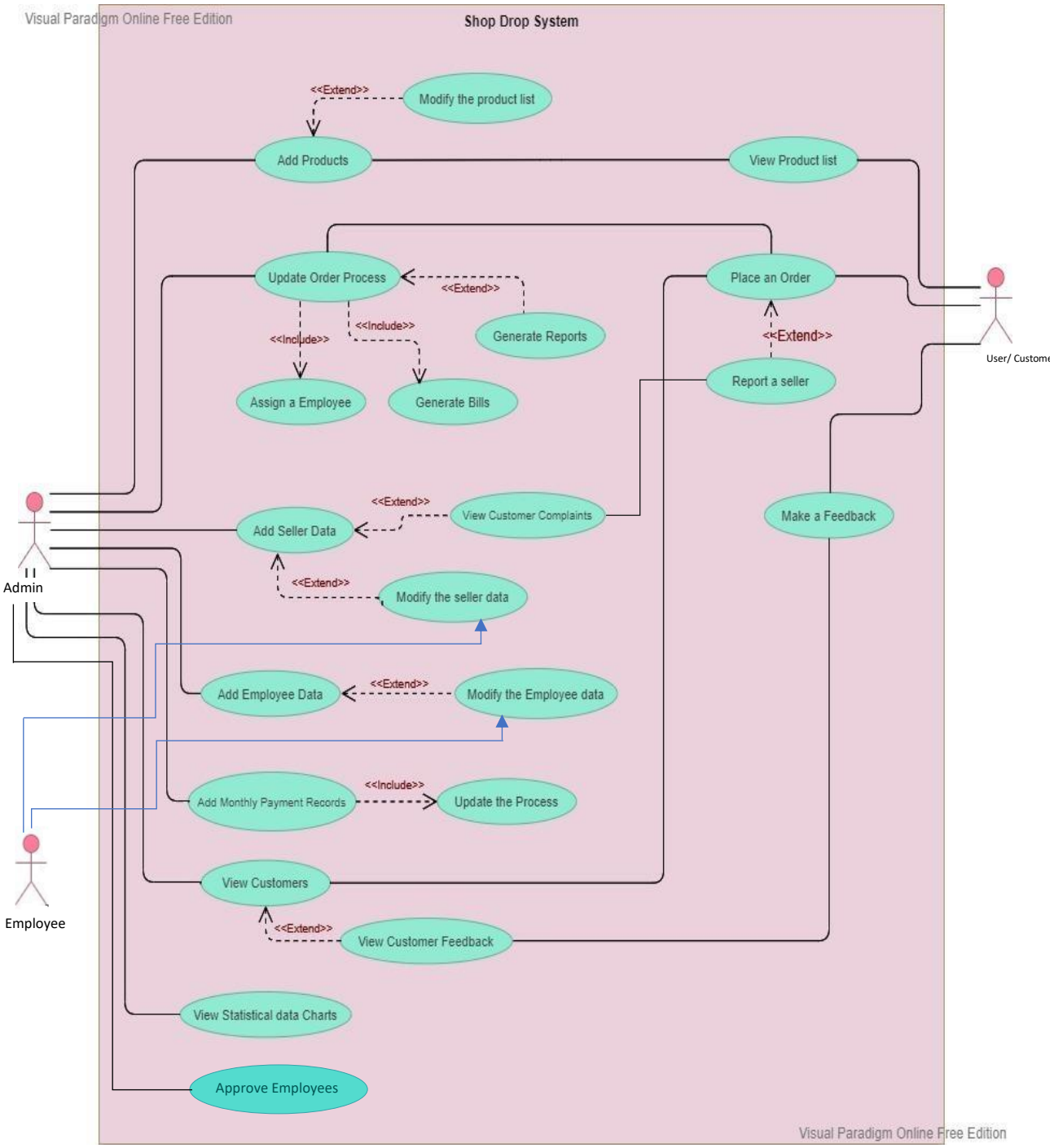


Diagram 2 - Use case diagram of the Shop Drop System

3.2.1. Use case description of the system

The above-mentioned major use cases of the use case diagram are described below using use case descriptions.

Use case description for add seller data to the system

Use case	Add a new seller detail to the system
Actors	Admin, municipal council, sellers

Description	The admin adding general details about a seller to the system
Pre-condition	The seller should contact the municipal council and purchase a store according to their procedure. The Council provides the new seller's necessary personal data to the Administrator
Normal flow	4. The council official will email the seller's details to the administrator 5. The seller opens the shop. 6. Admin add the details to the system.
Post-condition	Sellers details are updated

Table 2 - use case description for adding sellers

Use case description for updating the product list of the system

Use case	Maintain the product list
Actors	Admin, employees
Description	The admin or employee updating the product list of the online market daily
Pre-condition	The seller should be a member of the shop drop system who agree to sell products online. The shop should be open Seller should have products to sell online.
Normal flow	1. The employees collect the data about the product list from the sellers. 2. Admin or Employee updates the products list. (Price, quantity, availabilities, etc)
Alternative flow	1b. Admin or Employee update the shop status as close.
Post-condition	Products list is updated

Table 3 - use case description for maintaining products list

Use case description for processing customer orders

Use case	Process customer orders
Actors	Admin, employees, customers/users
Description	Admin preparing a customer order for pick up
Pre-condition	A customer should place an order.

Normal flow	1. The admin views the order list. 2. Admin prints a bill with order details. 3. Admin assign each employee with different orders. 4. Admin updates the process of the orders. (Notification emails are sent when the order is completed and delivered.) 5. Admin prints the checkout bill and complete the order
Alternative flow	Customer can cancel the order.
Post-condition	Update the daily product list report.

Table 4 - use case description for order processing

Use case description for suspending a seller

Use case	Suspend a seller
Actors	Admin, customers, sellers
Description	The admin suspends a seller due to a valid reason
Pre-condition	The seller should have more than 20 complaints from customers. Or The seller may have violated a policy or rule inside the marketplace
Normal flow	1. Admin views the complaint list of the seller. 2. Admin inquires about the complaints with the seller. 3. The suspension is over when both admin and seller completes the interrogation
Alternative flow	3b. the seller is permanently suspended.
Post-condition	Sellers's history data is updated

Table 5 - use case description for suspending a seller

3.3 Activity diagrams

Describe dynamic aspects of the system. It is basically a flow chart to represent the flow form one activity to another activity. The activity can be described as an operation of the system.

3.3.1. Activity diagram for adding new products

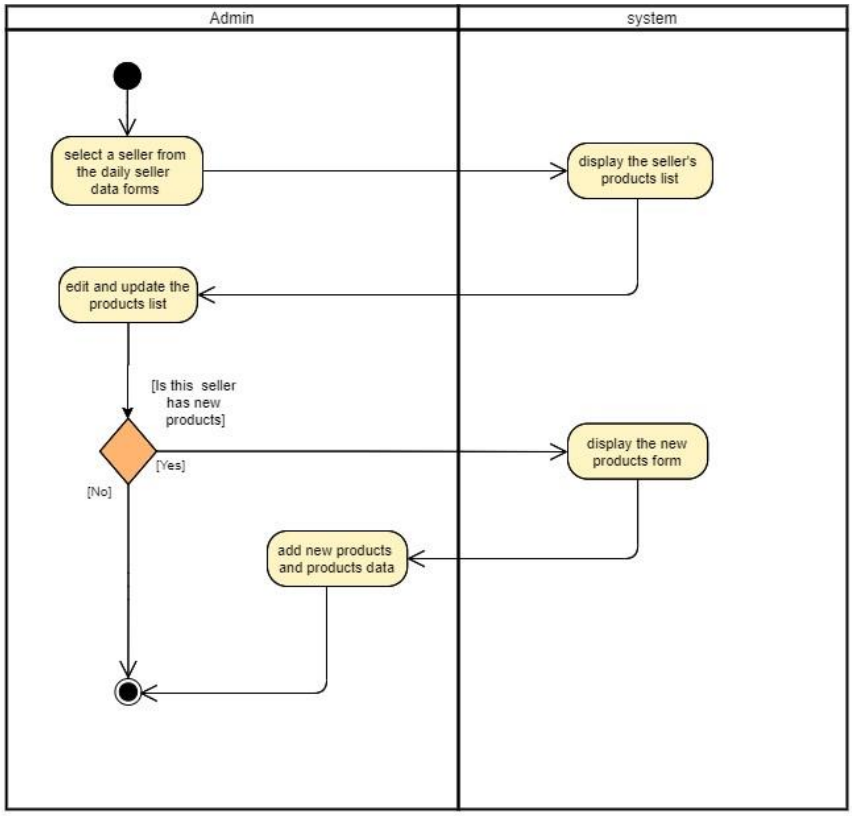


Diagram 3 - activity diagram for adding new products

3.3.2.Activity diagram for adding new product categories

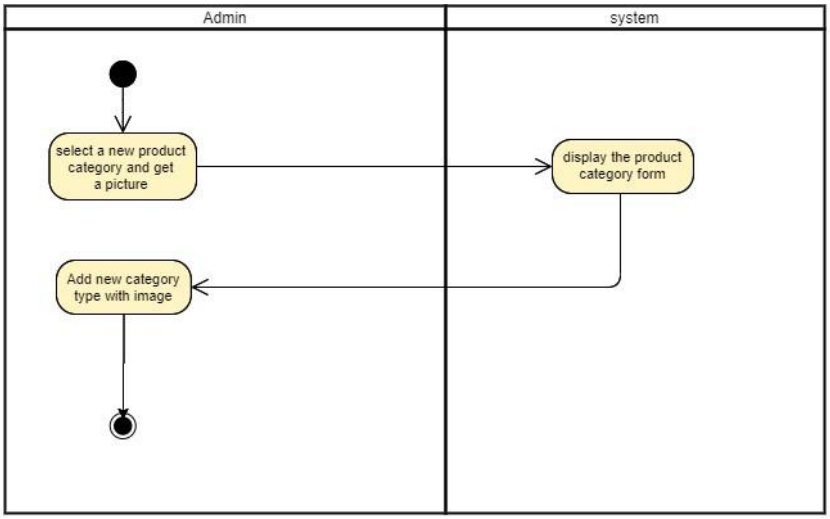


Diagram 4 - Activity diagram for adding new product categories

3.3.3. Activity diagram for processing orders

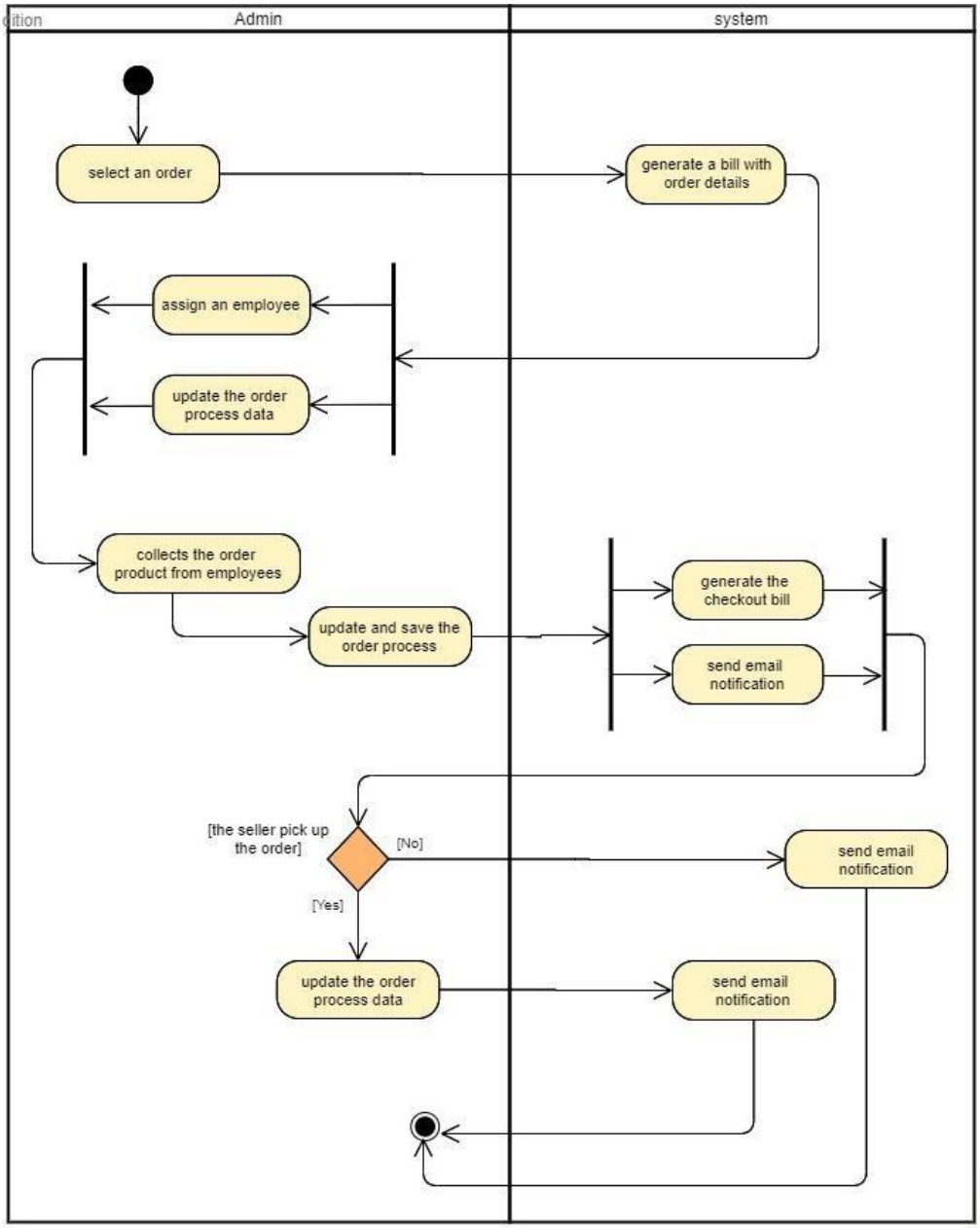


Diagram 5 - Activity diagram for processing orders

3.3.4.Activity diagram for add a new seller

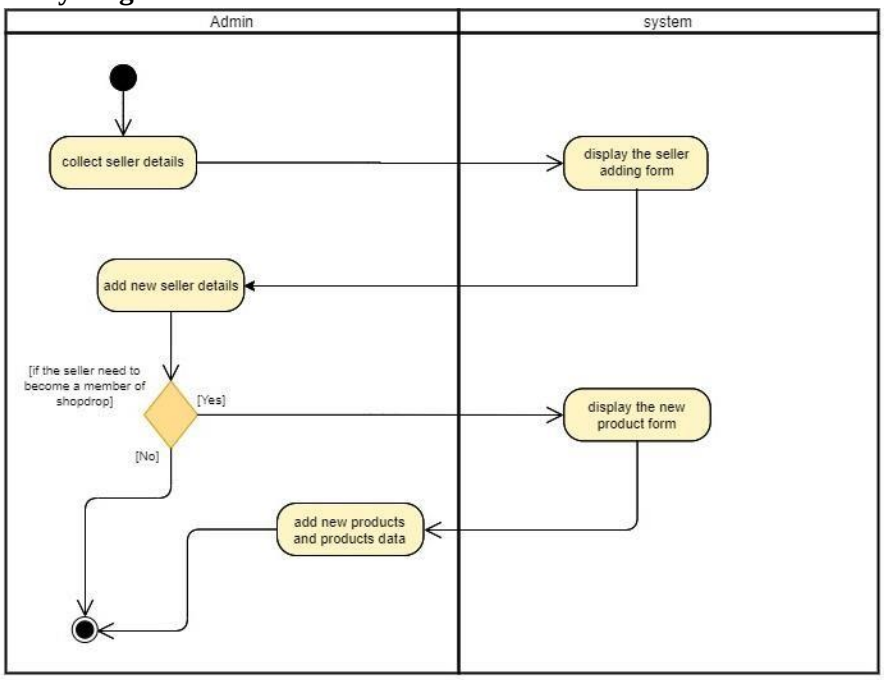


Diagram 6 - Activity diagram for adding a seller

3.3.5. Activity diagram for suspend a seller

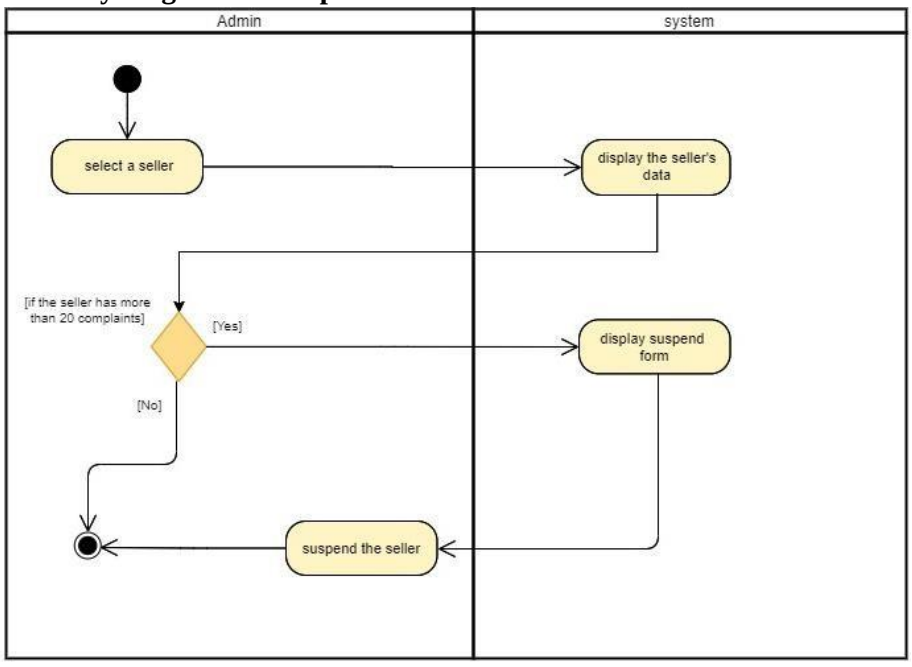


Diagram 7 - activity diagram for suspend a seller

3.3.6.Activity diagram for placing an order

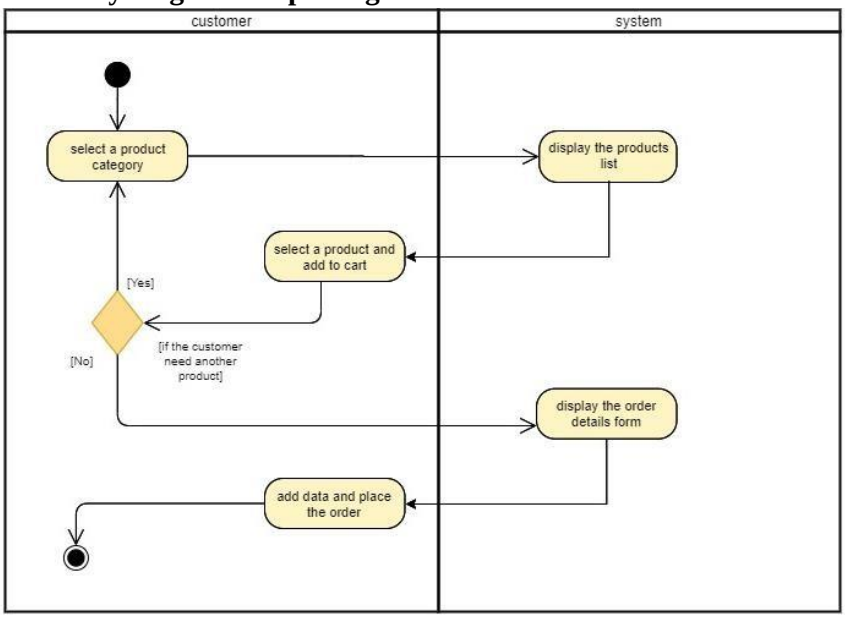


Diagram 8 - Activity diagram for placing an order

3.4 Class Diagram

To illustrate the relationships and source code dependencies among classes, class diagram was developed. In this context, the class defines the methods and variables in an object, which is a specific entity in a program or the unit of code representing that entity.

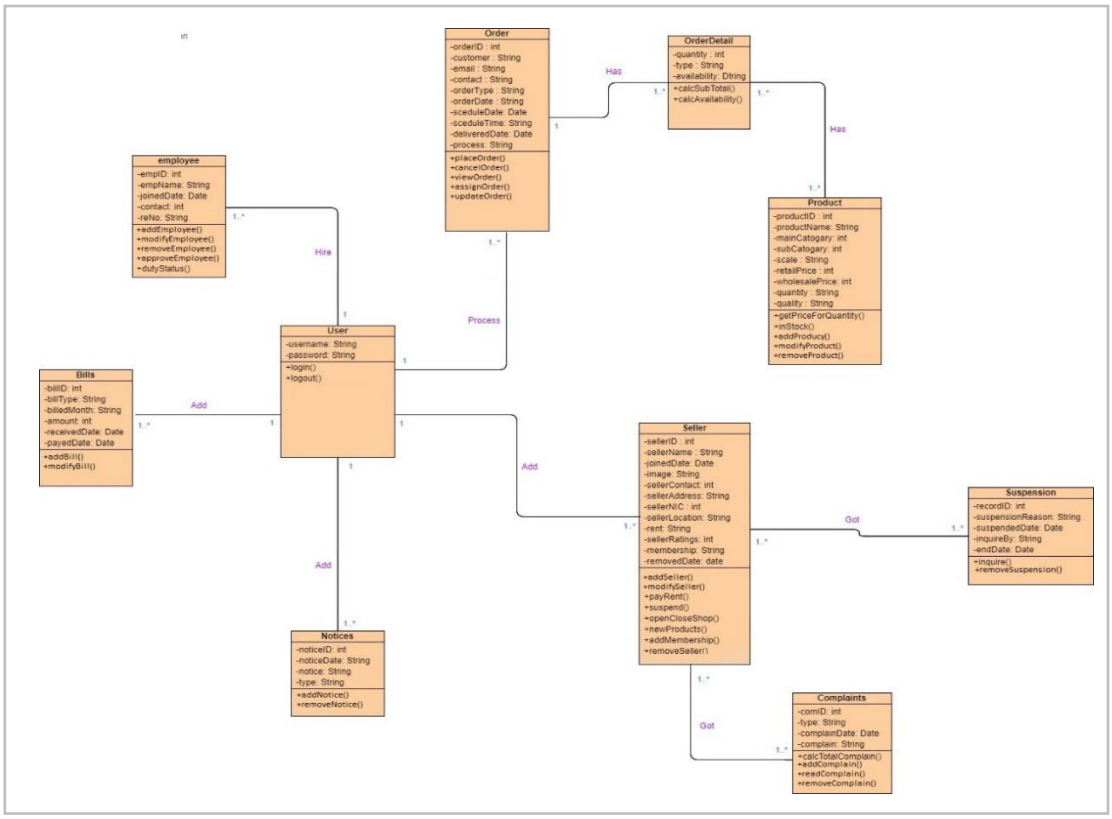


Diagram 9 - class diagram of the system

3.5 Database Design

Database is a file composed of records, each containing fields together with a set of operations it helps in organizing data in a logical order for references.

Database contains related data which are organized together in a group of object, table, and file. It can be in form of node. In this project a relational database concept will be used in this appraisal, related data will be store or organize in different table.

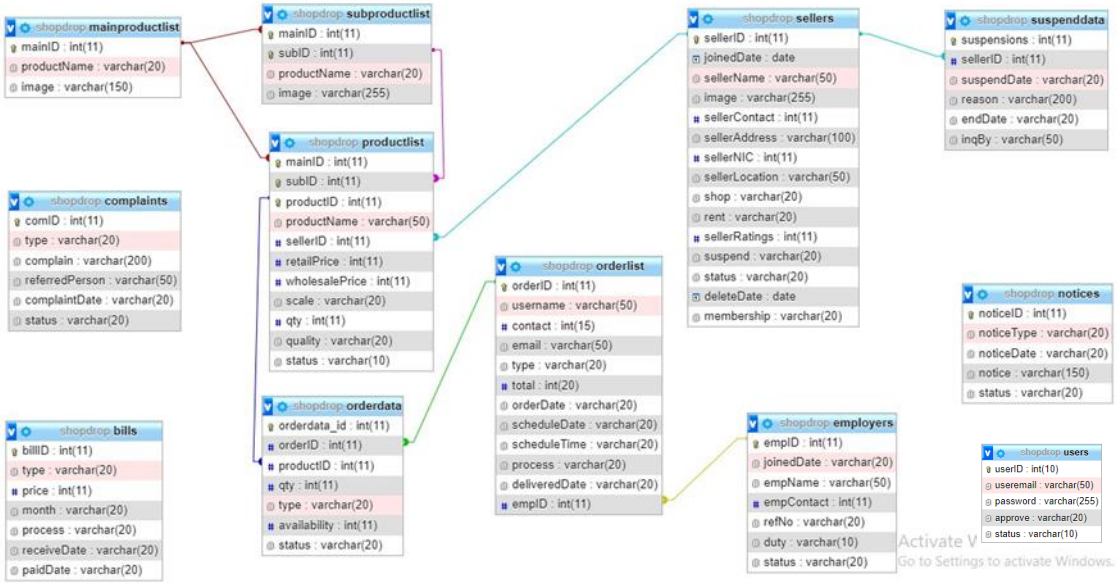


Diagram 10 - ER diagram of the system

3.6 User Interfaces

Since the proposed system is used primarily by the admin and customers the user interface should be user-friendly and attractive so that a person of basic to intermediate computer skills will also be able to interact with the proposed system with the least amount of training. Some of the properties a user interface must have to achieve this are as follows:

- Consistent – icons, controls, should be consistent across screens
- Simple – making complex tasks feel simple and easy to accomplish
- Provide Feedback – Error messages, confirmation messages
- Be descriptive – words used in controls must be descriptive of the task it performs.
- Easy navigation - navigation between screens must be done in a meaningful manner
- Visibility – Controls required for a task should be clearly shown to the user.

Admin Dashboard

After entering the correct username and password the admin will be redirected to the admin dashboard.

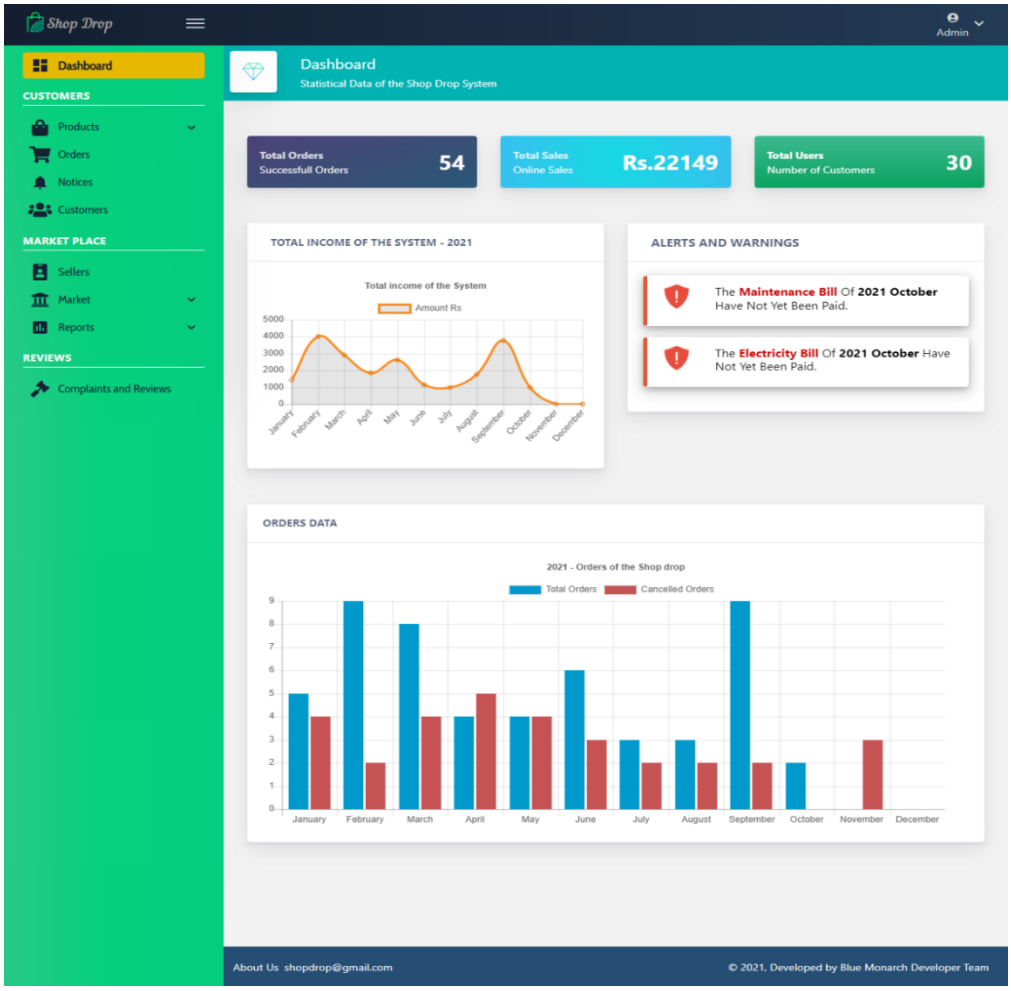


Figure 3 - Preview of admin dashboard

Data inserting forms

These forms have many features and validations to ensure that the user enters correct information to the system

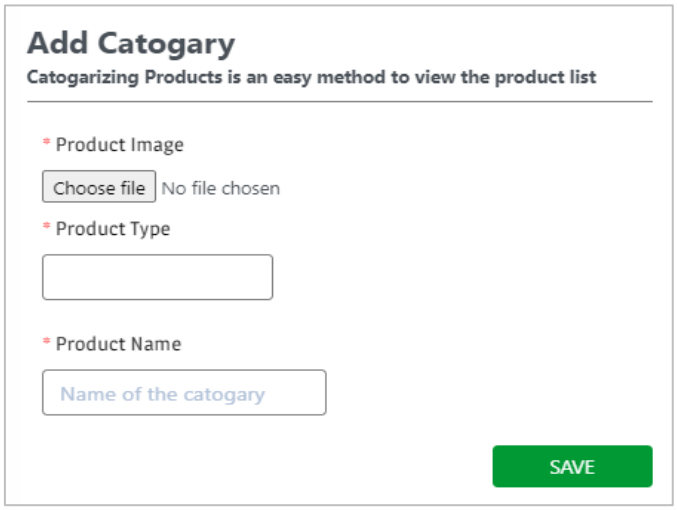


Figure 4 - Preview of adding a new product category form

Action Confirmation

Whenever admin trying to perform a specific action like deleting a record or removing a data, a confirmation box is shown to confirm the action.

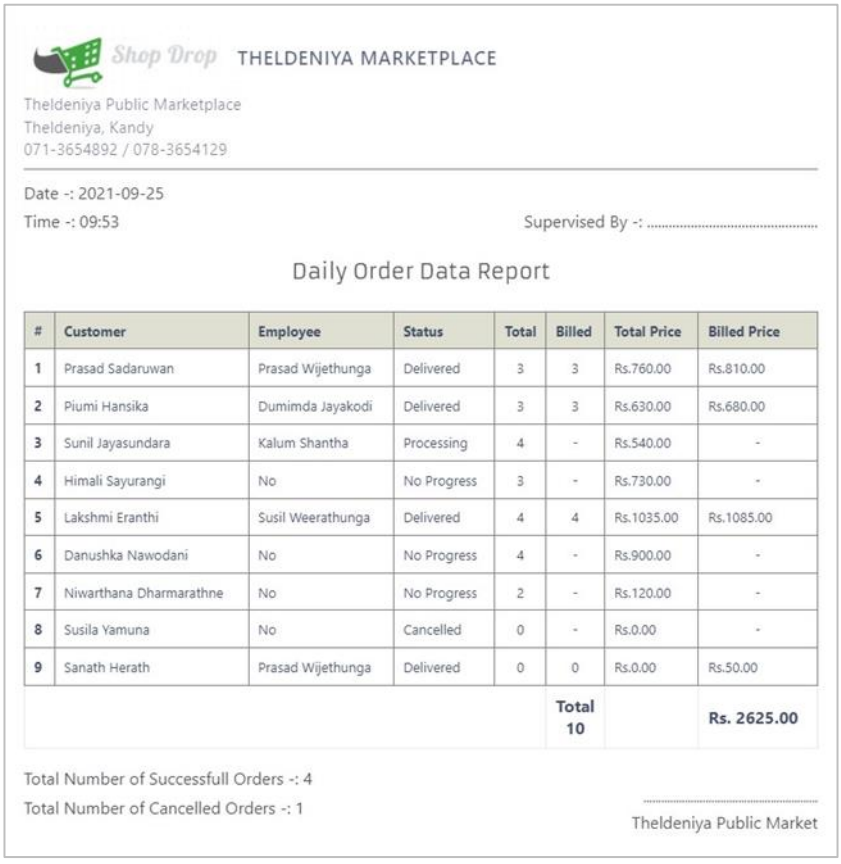
After the action is completed a message will appear to state weather the action is successful or not.

Figure 5 - Preview of Confirmation message

Figure 6 - Preview of Action message

Daily order Report

The system is generating a daily order report for data analysing purposes.



Shop Drop THELDENIYA MARKETPLACE

Theldeniya Public Marketplace
Theldeniya, Kandy
071-3654892 / 078-3654129

Date -: 2021-09-25
Time -: 09:53

Supervised By -: .....

Daily Order Data Report

#	Customer	Employee	Status	Total	Billed	Total Price	Billed Price
1	Prasad Sadaruwan	Prasad Wijethunga	Delivered	3	3	Rs.760.00	Rs.810.00
2	Piumi Hansika	Dumimda Jayakodi	Delivered	3	3	Rs.630.00	Rs.680.00
3	Sunil Jayasundara	Kalum Shantha	Processing	4	-	Rs.540.00	-
4	Himali Sayurangi	No	No Progress	3	-	Rs.730.00	-
5	Lakshmi Eranthi	Susil Weerathunga	Delivered	4	4	Rs.1035.00	Rs.1085.00
6	Danushka Nawodani	No	No Progress	4	-	Rs.900.00	-
7	Niwarthana Dharmarathne	No	No Progress	2	-	Rs.120.00	-
8	Susila Yamuna	No	Cancelled	0	-	Rs.0.00	-
9	Sanath Herath	Prasad Wijethunga	Delivered	0	0	Rs.0.00	Rs.50.00
					Total 10		Rs. 2625.00

Total Number of Successfull Orders -: 4
Total Number of Cancelled Orders -: 1

.....
Theldeniya Public Market

Figure 7 - Preview of the daily order report

Customer website main page

The Homepage of shop drop website for the customer users

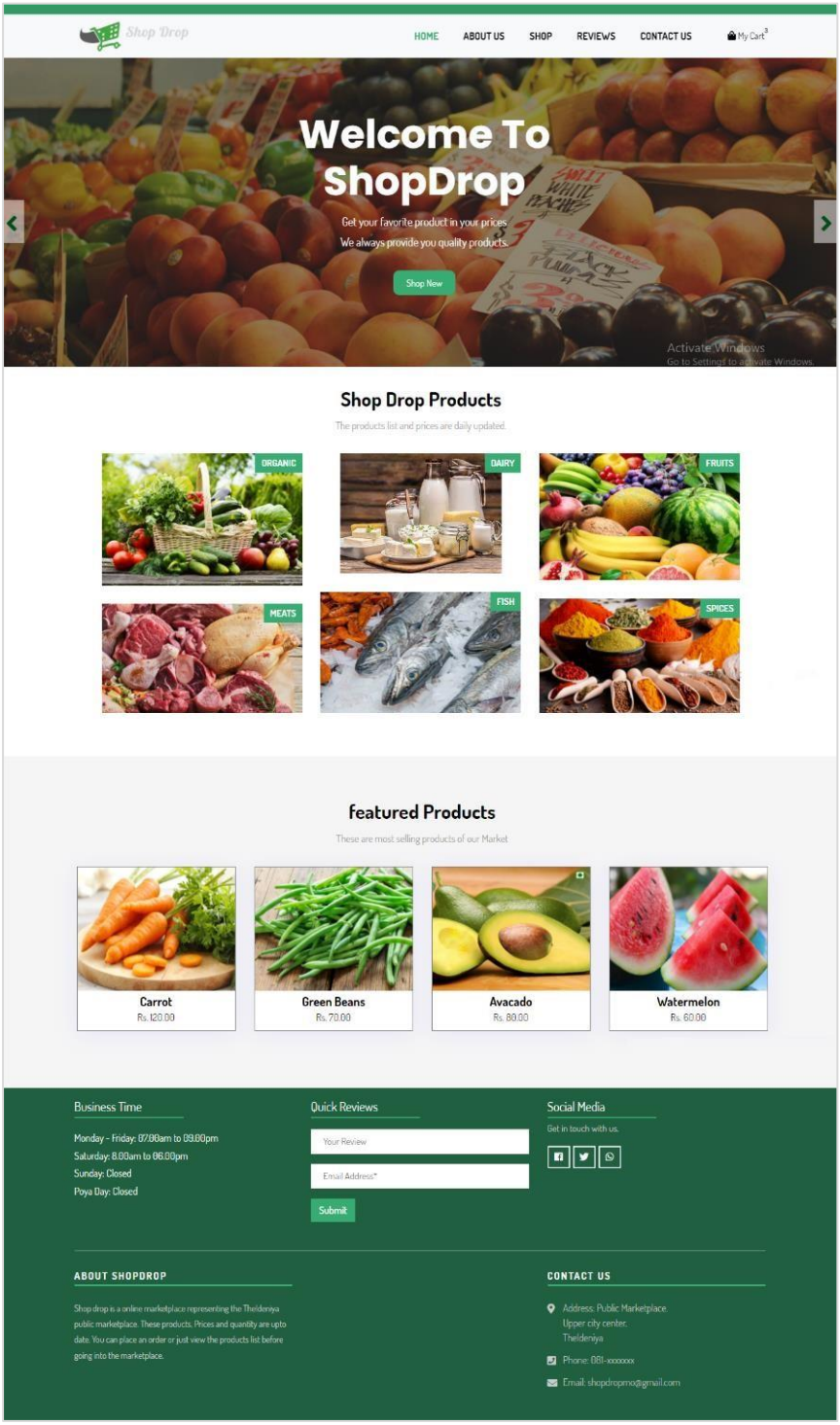


Figure 8 - Preview of the homepage of Shopdrop system

Marketplace Products

Customers can view the products list from this page

Figure 9 - Preview of the product list with sellers

3.7 Chapter summery

This chapter explains the design of the proposed system. Use case diagram, use case descriptions, activity diagrams, class diagrams and database models are used for the system design. The chapter is consisted with the design of data capturing interfaces.

CHAPTER 04: IMPLEMENTATION

This chapter is a description of the activities that were carried out during the development of the Shop Drop System and their results. During this phase the results of the design phase were taken, and the system was built accordingly. Code modules, interfaces and database tables were created and successfully integrated.

4.1 Hardware and software Specifications

For a system to be used efficiently and accurately, all computer software needs some certain hardware components and other software resources to be present on a computer. These prerequisites are known as (computer hardware and software specification) and are often used as a guideline as opposed to an absolute rule.

Hardware configuration for the implementation environment is as follows:

- Processor 2.4 GHZ processor speed
- High quality monitor
- RAM 2GB or more. (Recommended 4GB)
- Backup storage hard disk of about 2GB.
- Flash drive for file transfer.
- An enhanced keyboard.
- A power stabilizer

Software configuration for the implementation environment is as follows:

- Windows or above OS
- Any Sort of Reliable Anti-Virus Software
- Chrome or any other web browser

4.2 Development Tools

4.2.1 XAMPP Server

XAMPP is a cross-platform web server that is free and open-source. XAMPP is a short form for Cross-Platform, Apache, MySQL, PHP, and Perl. XAMPP is a popular cross-platform web server that allows programmers to write and test their code on a local webserver. It was created by Apache Friends, and the public can revise or modify its native source code. It includes MariaDB, Apache HTTP Server, and interpreters for PHP and Perl, among other computer languages. Because of XAMPP's simplicity of deployment, a developer can quickly and easily install a WAMP or LAMP stack on an operating system, with the added benefit that common add-in apps like WordPress and Joomla can also be loaded. [1]

XAMPP is an abbreviation where,

- X stand for Cross-Platform

- A stand for Apache
- M stand for MYSQL
- Ps stand for PHP and Perl

respectively. It is an open-source package of web solutions that includes Apache distribution for many servers and command-line executables along with modules such as Apache server, MariaDB, PHP, and Perl.

XAMPP helps a local host or server to test its website and clients via computers and laptops before releasing it to the main server. It is a platform that furnishes a suitable environment to test and verify the working of projects based on Apache, Perl, MySQL database, and PHP through the system of the host itself. Among these technologies, Perl is a programming language used for web development, PHP is a backend scripting language, and MariaDB is the most vividly used database developed by MySQL. The detailed description of these components is given below [2]

4.2.2 Atom Editor

Atom is a free and open-source text and source code editor for macOS, Linux, and Microsoft Windows with support for plug-ins written in JS, and embedded Git Control, developed by GitHub. Atom is a desktop application built using web technologies. Most of the extending packages have free software licenses and are community-built and maintained. Atom is based on Electron, a framework that enables cross-platform desktop applications using Chromium and Node.js. Atom is written in Coffee Script and Less, but much of it has been converted to JavaScript.

Atom was released from beta, as version 1.0, on 25 June 2015. Its developers call it a "hackable text editor for the 21st Century". It is fully customizable in HTML, CSS, and JavaScript [3]

4.2.3 Git Hub

GitHub, Inc. is a provider of Internet hosting for software development and version control using Git. It offers the distributed version control and source code management (SCM) functionality of Git, plus its own features. It provides access control and several collaboration features such as bug tracking, feature requests, task management, continuous integration and wikis for every project. Headquartered in California, it has been a subsidiary of Microsoft since 2018.

It is commonly used to host open-source projects. As of November 2021, GitHub reports having over 73 million developers and more than 200 million repositories (including at least 28 million public repositories). It is the largest source code host as of November 2021. [4]

4.2.4 MySQL Database:

MySQL is a relational database management system (RDBMS) developed by Oracle that is based on structured query language (SQL).

A database is a structured collection of data. It may be anything from a simple shopping list to a picture gallery or a place to hold the vast amounts of information in a corporate network. A relational database is a digital store collecting data and organizing it according to the relational model. In this model, tables consist of rows and columns, and relationships between data elements all follow a strict logical structure. An RDBMS is simply the set of software tools used to implement, manage, and query such a database.

MySQL is integral to many of the most popular software stacks for building and maintaining everything from customer-facing web applications to powerful, data-driven B2B services. Its open-source nature, stability, and rich feature set, paired with ongoing development and support from Oracle, have meant that internet-critical organizations such as Facebook, Flickr, Twitter, Wikipedia, and YouTube all employ MySQL backends. [9]

4.3 Programming Languages

HTML:

The Hyper Text Markup Language, or HTML is the standard markup language for documents designed to be displayed in a web browser. It can be assisted by technologies such as Cascading Style Sheets (CSS) and scripting languages such as JavaScript.

Web browsers receive HTML documents from a web server or from local storage and render the documents into multimedia web pages. HTML describes the structure of a web page semantically and originally included cues for the appearance of the document. [5]

CSS

Cascading Style Sheets is a stylesheet language used to describe the presentation of a document written in HTML or XML (including XML dialects such as SVG, MathML or XHTML). CSS describes how elements should be rendered on screen, on paper, in speech, or on other media.

CSS is among the core languages of the open web and is standardized across Web browsers according to W3C specifications. Previously, development of various parts of CSS specification was done synchronously, which allowed versioning of the latest recommendations. You might have heard about CSS1, CSS2.1, CSS3. However, CSS4 has never become an official version. [6]

CSS is designed to make style sheets for the web. It is independent of HTML and can be used with any XML-based markup language. Now let’s try to break the acronym:

- Cascading: Falling of Styles

- Style: Adding designs/Styling our HTML tags
- Sheets: Writing our style in different documents

JAVASCRIPT:

JavaScript is a dynamic computer programming language. It is lightweight and most used as a part of web pages, whose implementations allow client-side script to interact with the user and make dynamic pages. It is an interpreted programming language with object-oriented capabilities.

JavaScript was first known as Live Script, but Netscape changed its name to JavaScript, possibly because of the excitement being generated by Java. JavaScript made its first appearance in Netscape 2.0 in 1995 with the name Live Script. The general-purpose core of the language has been embedded in Netscape, Internet Explorer, and other web browsers. [7]

- JavaScript is a lightweight, interpreted programming language.
- Designed for creating network-centric applications.
- Complementary to and integrated with Java.
- Complementary to and integrated with HTML.
- Open and cross-platform

PHP:

PHP is a general-purpose scripting language geared towards web development. It was originally created by Danish-Canadian programmer Rasmus Lerdorf in 1994. The PHP reference implementation is now produced by The PHP Group. PHP originally stood for Personal Home Page, but it now stands for the recursive initialism PHP: Hypertext Pre-processor.

PHP code is usually processed on a web server by a PHP interpreter implemented as a module, a daemon or as a Common Gateway Interface (CGI) executable. On a web server, the result of the interpreted and executed PHP code – which may be any type of data, such as generated HTML or binary image data – would form the whole or part of an HTTP response. Various web template systems, web content management systems, and web frameworks exist which can be employed to orchestrate or facilitate the generation of that response. Additionally, PHP can be used for many programming tasks outside the web context, such as standalone graphical applications and robotic drone control. PHP code can also be directly executed from the command line.

The standard PHP interpreter, powered by the Zend Engine, is free software released under the PHP License. PHP has been widely ported and can be deployed on most web servers on a variety of operating systems and platforms. [8]

4.4 Third party Components and Libraries

Chart.js

Chart.js is a community maintained open-source library (it's available on GitHub) that helps you easily visualize data using JavaScript. It's like Chartist and Google Charts. It supports 8 different chart types (including bars, lines, & pies), and they're all responsive. In other words, you set up your chart once, and Chart.js will do the heavy lifting for you and make sure that it's always legible (for example by removing some uncritical details if the chart gets smaller). [10]

Bootstrap

If you're doing anything web related, chances are you've heard about Bootstrap. Bootstrap is a powerful toolkit - a collection of HTML, CSS, and JavaScript tools for creating and building web pages and web applications. It is a free and open-source project, hosted on GitHub, and originally created by (and for) Twitter. If by now you still don't know what Bootstrap is, or you just want to get a better overview of what it is and what it does best, you've come to the right place [11]

PhpMailer

PHPMailer is a code library to send (transport) emails safely and easily via PHP code from a web server (MUA to the MSA server). Sending emails directly by PHP code requires a high-level familiarity to SMTP protocol standards (RFC 821, 2821, 5321) and related issues (such as Carriage return) and vulnerabilities about Email injection for spamming. From 2001 PHPMailer is one of the popular solutions for these matters on PHP [12]

4.5 Code features

4.5.1 User input validations

There are several forms inside the Shop Drop system that needs user inputs, and those inputs are captured and sent to the database. To make sure the correct input was given, validation was done on the frontend and backend both.

The following code snippets show the validations of the text fields such as emails, contact numbers, reference ids etc.

```
<div class="row">
  <div class="col-md-5">
    <div class="form-group first">
      <label for="EID" style="font-size:16px"><span style="color:red">*</span> Employee ID</label>
      <input name="eid" type="text" class="form-control one"  id="EID" required pattern="[Tel/Agc/0-9]{13}" maxlength="13" min="13"   placeholder="ex-: Tel/Agc/xxxxx">
    </div>
  </div>
```

Figure 10 - validation codes for reference ID

```
  <div class="col-md-6">
    <div class="form-group first">
      <label for="mail" style="font-size:16px;"><span style="color:red">*</span> Email Address</label>
      <input name="email" type="email" class="form-control one"  id="mail"  required pattern="[a-z0-9._%+-]+@[a-z0-9.-]+\.[a-z]{2,4}$" >
    </div>
  </div>
</div>
```

Figure 11 - validation codes for email

```
<div class="col-md-5">
  <div class="form-group first">
    <label for="contact" style="font-size:16px"><span style="color:red">*</span> Contact</label>
    <input name="contact" type="text" class="form-control one"  id="contact" required maxlength="10" min="10" pattern="[0-9]{10}" >
  </div>
</div>
</div>
```

Figure 12 - validation codes for contact field

The following code snippet shows the validation used to stop the user from entering the same data for different sellers

```
function seller_exist($colname,$value){
  $sql = "SELECT $colname FROM sellers WHERE $colname = '$value'";
  $result = query($sql);

    if(row_count($result) == 1){
      return true;
    }
    else {
      return false;
    }
}

function building_exist($location){
  $sql = "SELECT sellerLocation FROM sellers WHERE sellerLocation = '$location' AND status='On' ";
  $result = query($sql);

    if(row_count($result) == 1){
      return true;
    }
    else {
      return false;
    }
}
```

Figure 13 - backend validation codes for adding sellers

4.5.2 The data display for users

As shown in the design chapter admin user and employee users can view different types of data according to the user type. Several functions are added to make sure the data is displaying in a clear and perfect way.

The following code snippet used to disable or enable the features according to the user type

```
<li>
    <a href="adminOrders_Today.php" style="color:#152033;font-family: 'Cabin Condensed';font-size:16px" <?php if($_SESSION['username'] == 'Employee'){echo 'class="disabled"';} ?>>
        <i class="metismenu-icon fa fa-shopping-cart" style="font-weight:bold;"></i>
        Orders
    </a>
</li>
```

Figure 14 - codes to disable access to employee user

4.5.3 Shopping Cart and Checkout

The customer website has a shopping cart to manage the product list. Users can add product to the cart, remove products and change the quantity of the products from that easily.

The following code snippet used to implement the cart system.

```
function displayCart() {
  var cartArray = shoppingCart.listCart();
  var output = "";
  for(var i in cartArray) {
    output += "<li>"
      + "<a href='#' class='photo'><img src='../../img/Uploads/subCat/" + cartArray[i].image + "' class='cart-thumb' /></a>"
      + "<h6 style='display:inline'><a href='#' >" + cartArray[i].id + "</a></h6>"
      + "<button class='delete-item btn btn-danger mbxy' data-name=" + cartArray[i].name + ">x</button>"
      + "<p >" + cartArray[i].count + "x - <span class='price'>Rs." + cartArray[i].price + ".00</span></p>"
      +  "</li>";
    }

  $('.show-cart').html(output);
  $('.total-cart').html(shoppingCart.totalCart());
  $('.total-count').html(shoppingCart.totalCount());
}

// Delete item button top

$('.show-cart').on("click", ".delete-item", function(event) {
  var name = $(this).data('name');
  shoppingCart.removeItemFromCartAll(name);
  displayCart();
});


// -1
$('.show-cart').on("click", ".minus-item", function(event) {
  var name = $(this).data('name');
  shoppingCart.removeItemFromCart(name);
  displayCart();
});

// +1
$('.show-cart').on("click", ".plus-item", function(event) {
  var name = $(this).data('name');
  shoppingCart.addItemToCart(name);
  displayCart();
});

// Item count input
$('.show-cart').on("change", ".item-count", function(event) {
   var name = $(this).data('name');
   var count = Number($(this).val());
  shoppingCart.setCountForItem(name, count);
  displayCart();
});


displayCart();
```

Figure 15 - codes for Shopping Cart

The following code snippet used to place the order with relevant data

```
function checkout(){
  if($_SERVER['REQUEST_METHOD'] == "POST"){
    if (isset($_POST['placeorder'])) {

        $fname = $_POST['fname'];
        $contact = $_POST['contact'];
        $email = $_POST['email'];
        $time = $_POST['time'];
        $total = $_POST['total'];
        $orderDate = date("Y-m-d");
        $date = "";
        $type= "";


      if (isset($_POST['schDate']) && $_POST['schDate'] == "Today") {
          $date = $orderDate;
          $type="On time";
        }else{
          $datetime = new DateTime('tomorrow');
          $date = $datetime->format('Y-m-d');
          $type="Scheduled";
        }

        if (addtoorderlist($fname,$contact,$email,$type,$total,$orderDate,$date,$time)) {
            $sql2 = "SELECT * FROM orderlist WHERE username='$fname' AND email='$email' AND contact='$contact' ORDER BY orderID DESC";
            $result2 = query($sql2);
            $row1 = fetch_array($result2);
            $idorder = $row1['orderID'];

            $stringbig = '';

          foreach ($_POST['prdID'] as $id => $productid) {
            $prdID    = $_POST['prdID'][$id];
            $price   = $_POST['price'][$id];
            $qty      = $_POST['qty'][$id];

            $ttp = $price * $qty;

            $sql = "INSERT INTO orderdata(orderID,productID,qty,price)";
            $sql.= " VALUES('$idorder','$prdID','$qty','$price')";
            $result = query($sql);

            $sql3 = "SELECT * FROM productlist WHERE productID='$prdID'";
            $result3 = query($sql3);
            $row3 = fetch_array($result3);

            $newqty = $row3['qty'] - $qty;

            $query = query("UPDATE productlist SET qty='$newqty' WHERE productID='$prdID'");

            $sql4 = "SELECT * FROM productlist WHERE productID='$prdID'";
            $result4 = query($sql4);
            $row4 = fetch_array($result4);

            $stringbig .= "<tr>";
            $stringbig .= "<td>".$row4['productName']."</td>";
            $stringbig .= "<td style='text-align:center;'>".$qty."</td>";
            $stringbig .= "<td style='text-align:right'>".$ttp.".00</td>";
            $stringbig .= "</tr>";

          }
```

Figure 16 - codes for placing the order

4.5.4 Sending notification mails

As identified in the analysis chapter the customer must have notification/updates about their order. Several notifications are added to make sure the customer is always updated about the process of their order.

```php
$orderid = $_POST['orderid'];
$email = $_POST['email'];
$order_id = sprintf('%05d', $orderid);
$mail = new PHPMailer;

$mail->isSMTP();                    // Set mailer to use SMTP
$mail->Host = 'smtp.gmail.com';     // Specify main and backup SMTP servers
$mail->SMTPAuth = true;             // Enable SMTP authentication
$mail->Username = 'shopdropm@gmail.com';   // SMTP username
$mail->Password = '24116548kp';   // SMTP password
$mail->SMTPSecure = 'ssl';          // Enable TLS encryption, `ssl` also accepted
$mail->Port = 465;                  // TCP port to connect to

// Sender info
$mail->setFrom('info@shopdrop.com', 'Shop Drop');

// Add a recipient
$mail->addAddress(''.$email.'');

//$mail->addCC('cc@example.com');
//$mail->addBCC('bcc@example.com');

// Set email format to HTML
$mail->isHTML(true);

// Mail subject
$mail->Subject = 'Completion of Order No , '.$order_id.' ';

// Mail body content

$bodyContent ='<h2>Dear Valued Customer..!!</h2>';
$bodyContent .= '<p style="font-size:15px;">Your Order is all processed. You can pickup the order at the <b>front Office of Marketplace</b> in Theldeniya.</p>' ;

$mail->Body    = $bodyContent;
$mail ->send();
```

Figure 17 - codes used to send a notification email.

4.6 Chapter Summery

In this chapter, the development aspects of the system have been elaborated under the areas of technologies, constraints, third party support etc. The factors such as availability, cost, performance, functionality, etc. have been considered in order to decide the technologies described above.

CHAPTER 05: EVALUATION AND TESTING

Software testing is done to find and correct any faults that the built system may have. This is a vital part of the software development life cycle where the entire system is tested to make sure it accomplishes its goals.

Testing is usually performed for the purposes of,

- Improving quality
- For verification and validation

Validation refers to testing whether the system satisfies the requirements while verification refers to whether the system implements the specified functions properly.

5.1 Test Approach

Black box testing

Black Box testing methods refers to where the focus is given for the inputs and outputs of data without giving any consideration to the internal mechanisms. It is entirely based on software requirements and specifications. To further elaborate, known inputs are entered into the system while expecting a known outcome. Yet the process of transforming the known input into a known output is unknown which is referred to as the Blackbox.

5.2 Testing Environment

The testing environment consists of MS-Windows 10 Pro as the operating system and Google Chrome, Microsoft Edge as web browsers.

Tester Name -: W.K Rashini Nishadika Wickramaarchchi

Test date -: 2021-11-21

Signature of the Tester -: ……..

5.3 Test cases

5.3.1 Functionality Testing

All functions in the application, database connection, forms used to enter data for submission, editing, getting or deleting information from users were tested. Developers performed the test of the website. Some functionality requirements were tested during the test.

Register and Login of Employee users

No	Test Case	Expected Output	Actual Output	Status
01	Not filling all required felids	Registration will not be allowed	Registration was not allowed	Pass
02	All required fields are filled with valid inputs	Registration will made and a success message will be displayed	Registration was made and success message was displayed	Pass
03	When member is already registered	Will allow login if entered the correct password	Allowed login if entered the correct password	Pass
04	All required fields are filled with invalid inputs	Registration will not be allowed, and error message will be displayed	Registration was not allowed, and error message was displayed	Pass
05	When the user is registered but not approved by the admin	Registration will not be allowed, and not approved message will be displayed	Registration wad not allowed, and not approved message was displayed	Pass

Table 6 - Register users testing

Add Data to the system

No	Test Case	Expected Output	Actual Output	Status
01	Not filling all required felids	Submission will not be allowed	Submission was not allowed	Pass
02	All required fields are filled with valid data types	Submission will made and success message will be displayed	Submission was made and success message is displayed	Pass
03	All required fields are filled with invalid data types	Submission will not be allowed, and warning messages will be displayed	Submission was not allowed and an warning messages was displayed	Pass
05	When entering wrong inputs such as existing data	Submission will not be allowed, and error message will be displayed	Submission was not allowed, and error message was displayed	Pass

Table 7 - Add data to the system Testing

Order Placing Process

No	Test Case	Expected Output	Actual Output	Status
01	Select no products and place the order	Submission/Order placing will not be allowed	Submission/Order placing was not allowed	Pass
02	Not Filling all required fields.	Submission will not be allowed	Submission was not allowed	Pass
03	All required fields are filled with valid data types	Submission will made and success message will be displayed	Submission was made and success message is displayed	Pass

04	All required fields are filled with invalid data types	Submission will not be allowed	Submission was not allowed	Pass

Table 8 - order processing system testing

5.3.2 Security Testing

Security testing is performed to test the vulnerability of the system. Commonly focused on SQL injections

Data inserting

No	Test Case	Expected Output	Actual Output	Status
01	Adding special characters which are used in injections in the login process	Registration is not allowed	Registration is not allowed	Pass
02	Adding special characters which are used in injections in the data input felids	Submission is not allowed, and error messages will be displayed	Submission is not allowed, and error messages will be displayed	Pass
03	Adding a non-image file to the file upload input	Submission is not allowed, and warning messages will be displayed	Submission is not allowed, and warning messages will be displayed	Pass
04	When password or username is incorrect	Registration is not allowed, and error message is displayed	Registration is not allowed, and error message is displayed	Pass

Table 9: data inserting security Testing of the system

5.4 Test report

The testing was done for all the use cases to ensure the system was function properly as a whole. With this it was able to make sure that,

- There were not any syntax errors occurred in the coding process,
- All the external libraries imported are supported and working properly,
- The database connections are stable at all points,
- Frontend applications are outputting all the necessary elements for a considered point,
- Reports are generating properly,
- Etc.

Testing of each function along with the development was crucial as the integration of activities depends on successful execution at each stage. Testing as done till any errors were completely fixed. However, with the updates happened along the way, initially developed functions were needed to be recoded slightly and retested with the intention of maintaining the integration. Concept testing, Unit Testing, Integrated testing, Functional testing were also incorporated to the testing procedures. Apart from that, UI testing was also used to improve the usability and visual appeal of the overall system.

5.5 Chapter Summery

In this chapter, the test types are elaborated, followed when implementing the testing procedure and test cases of the system. Apart from that, the test strategies used, test plan and the report of the overall test phase are mentioned

CHAPTER 06: CONCLUSION

Along the various stages of this project, whatever work was done, was checked along with the clients to make sure that all the necessary requirements have been addressed during those phases. This constant checking with the requirements made sure that the developed system met the goals and objectives that were devised at the beginning of the project.

By reviewing the functional and non-functional requirements that were discovered during the analysis phase and checking back with the functionalities implemented in the developed system, it can be said that all the requirements of the user have been satisfied.

The simple and intuitive user interface that was designed and developed, was easy to learn and use proved to be satisfactory for the user.

6.1 Degree of objectives met

All the essential functional and non-functional requirements identified by the system requirement specification are satisfied by the developed system. Apart from that few nice to have features are fed into the proposed system. Few more functionalities have been added for better utilization of the system that were not identified in the initial design. The components like Order Processing are given a focus. In addition, employee management, seller data management, and monthly payments management are facilitated by the proposed system meeting the objectives that was set initially.

6.2 Usability, accessibility, reliability, and friendliness

The graphical user interfaces provide an ease of doing a task. Users can easily navigate through the system. The learnability, memorability, efficiency, and satisfaction come together to provide a better usability for the user.

The accessibility is kept at an adequate level to allow all types of users to interact with the system with minimum confusions. Users can perceive, understand, and contribute to the system with ease.

The system reliability is ensured by the restriction of access. Only the authorized parties can enter to the system. Furthermore, the admin user has the ability to decide which employee should use the system. This allows accessing certain components of the system to specific users increasing the reliability of the system.

The graphical user interfaces enable the user friendliness keeping the system within a minimalist design. Icons, fonts, colors, and objects come together to guide users easily allowing them to carry out their tasks in an efficient and effective manner.

6.3 Limitations and drawbacks

The system does not allow the online payment or order delivery facility for the customers. That is a main limitation of this system. Apart from that, being unable to provide access for customers becomes a drawback due to resource constraints. These limitations and drawbacks can be solved by the future modifications

6.4 Future modifications, improvements, and extensions possible

Some ideas and features can be considered as a future work for this project. These features can be summarized in the following points:

- While the current system only has two user types (admin, employee) this system should be developed to have a customer user registration too.
- Adding an online payment method instead of paying the at the marketplace counter.

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APPENDIX A : USER INTERFACES

Figure 18 - Admin and employee Login page

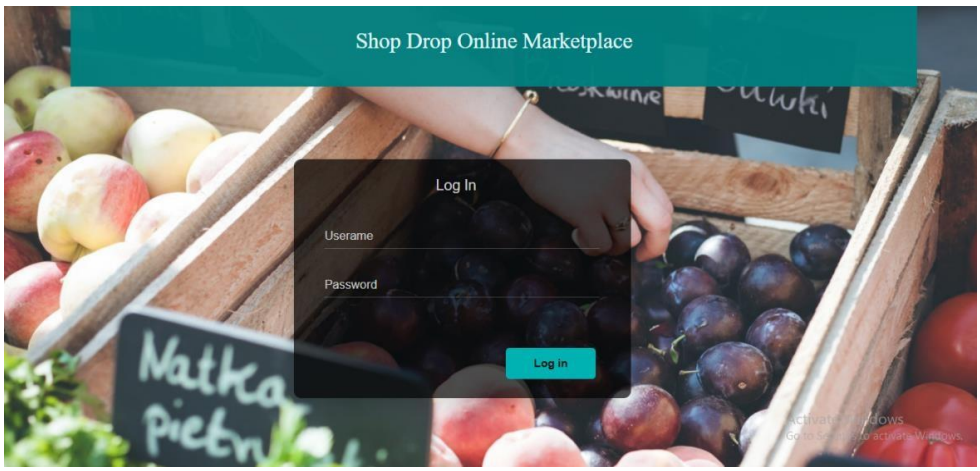


Figure 19 - Data form to add a seller

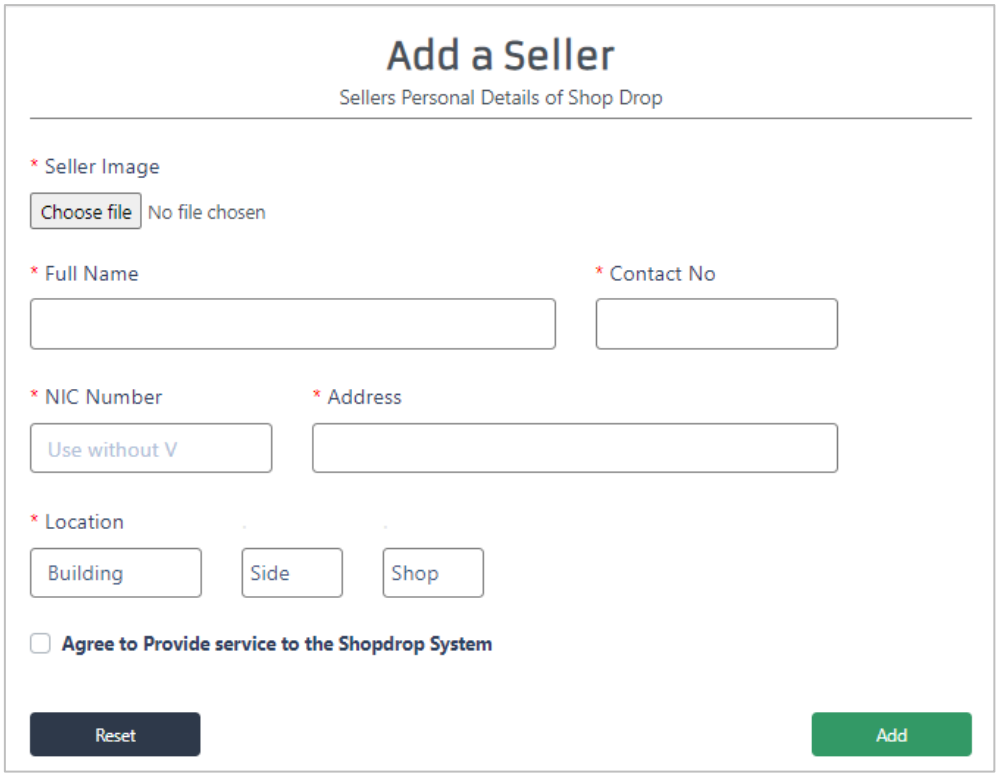


Figure 20 - Preview of the Notice board

Figure 21 - Preview of the warnings and alert board

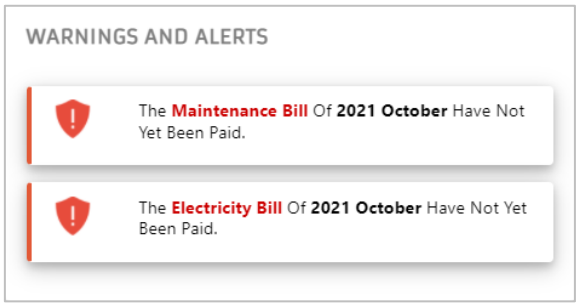
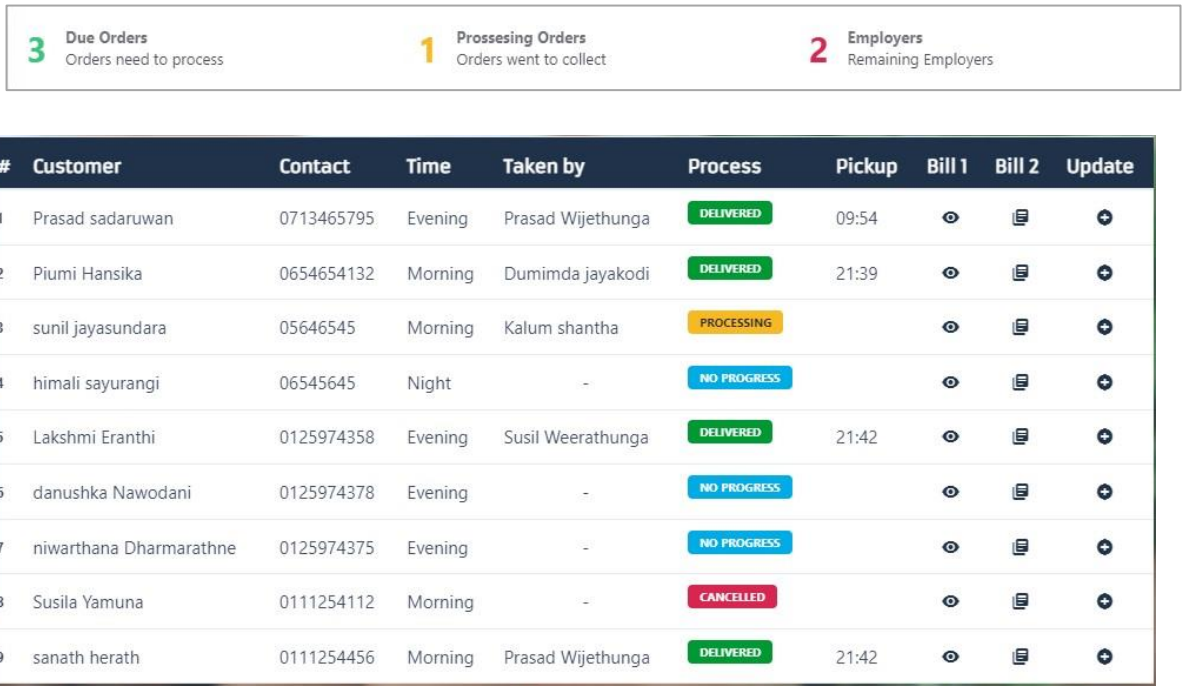


Figure 22 - Preview of product list updating form

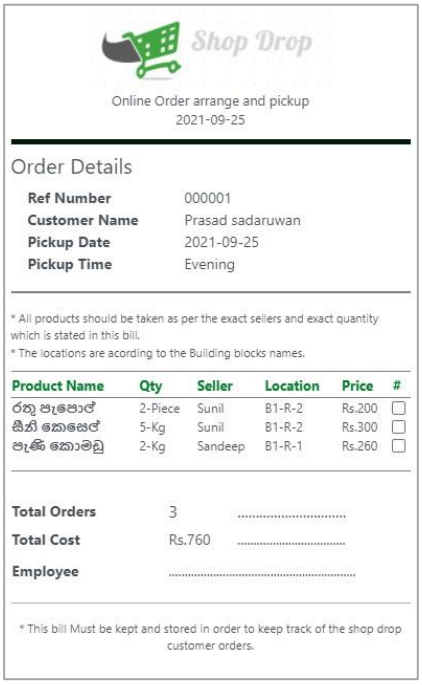
Figure 23 - Preview of Order details



3	Due Orders Orders need to process	1	Prossesing Orders Orders went to collect	2	Employers Remaining Employers

#	Customer	Contact	Time	Taken by	Process	Pickup	Bill 1	Bill 2	Update
1	Prasad sadaruwan	0713465795	Evening	Prasad Wijethunga	DELIVERED	09:54			
2	Piumi Hansika	0654654132	Morning	Dumimda jayakodi	DELIVERED	21:39			
3	sunil jayasundara	05646545	Morning	Kalum shantha	PROCESSING				
4	himali sayurangi	06545645	Night	-	NO PROGRESS				
5	Lakshmi Eranthi	0125974358	Evening	Susil Weerathunga	DELIVERED	21:42			
6	danushka Nawodani	0125974378	Evening	-	NO PROGRESS				
7	niwarthana Dharmarathne	0125974375	Evening	-	NO PROGRESS				
8	Susila Yamuna	0111254112	Morning	-	CANCELLED				
9	sanath herath	0111254456	Morning	Prasad Wijethunga	DELIVERED	21:42			

Figure 24 – Preview of Order Bills for processing and checkout



Shop Drop

Online Order arrange and pickup
2021-09-25

Order Details

Ref Number	000001
Customer Name	Prasad sadaruwan
Pickup Date	2021-09-25
Pickup Time	Evening

* All products should be taken as per the exact sellers and exact quantity which is stated in this bill.
* The locations are acording to the Building blocks names.

Product Name	Qty	Seller	Location	Price	#
රතු පැපොල්	2-Piece	Sunil	B1-R-2	Rs.200	☐
සීනි කෙසෙල්	5-Kg	Sunil	B1-R-2	Rs.300	☐
පැණි කොමඩු	2-Kg	Sandeep	B1-R-1	Rs.260	☐

Total Orders	3	.....
Total Cost	Rs.760	.....
Employee		.....

* This bill Must be kept and stored in order to keep track of the shop drop customer orders.

Shop Drop

Theldeniya Public Marketplace
Theldeniya, Kandy
071-3654892 / 078-3654129

Bill No : 00000001 **Date :** 2021-09-25
Time : 09:53

Product Name	Qty	Price	Amount
රතු පැපොල්	2 Piece	100	200
සීනි කෙසෙල්	5 Kg	60	300
පැණි කොමඩු	2 Kg	130	260

Cost :	Rs.760.00
Service Charge :	Rs. 50.00
TOTAL :	Rs.810.00
Unit : 1	No of Items : 3

Thank You For Shopping From SHOP DROP
* All purchases are non refundable and no exchange
Software by BlueMonarch Dev Team
Theldeniya Public Market

Figure 25 - Preview of Statistical charts of the system and marketplace

Figure 26 - Preview of Customer website shopping cart

Figure 27 - Preview of Ratings and Contact Us Page

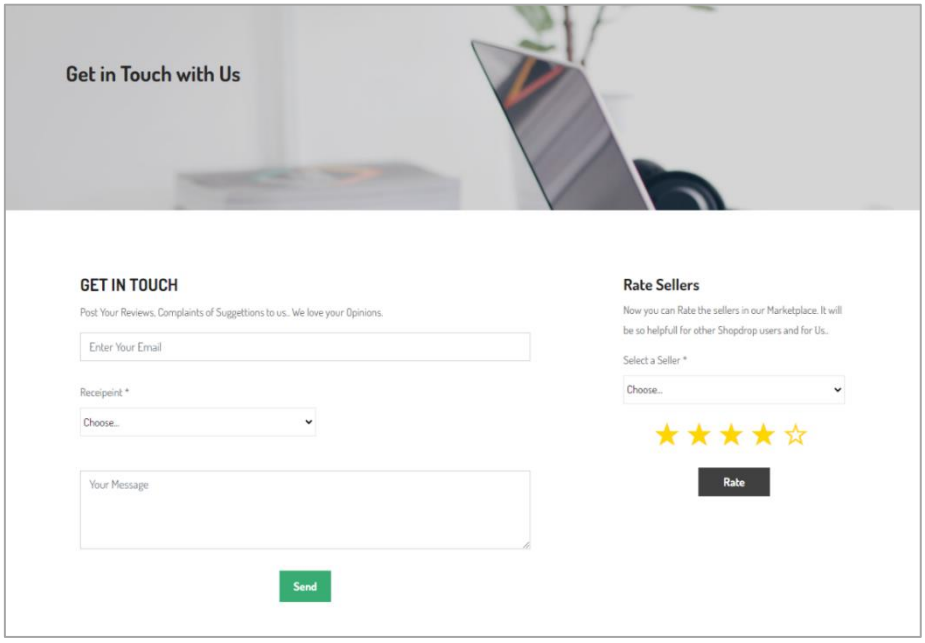
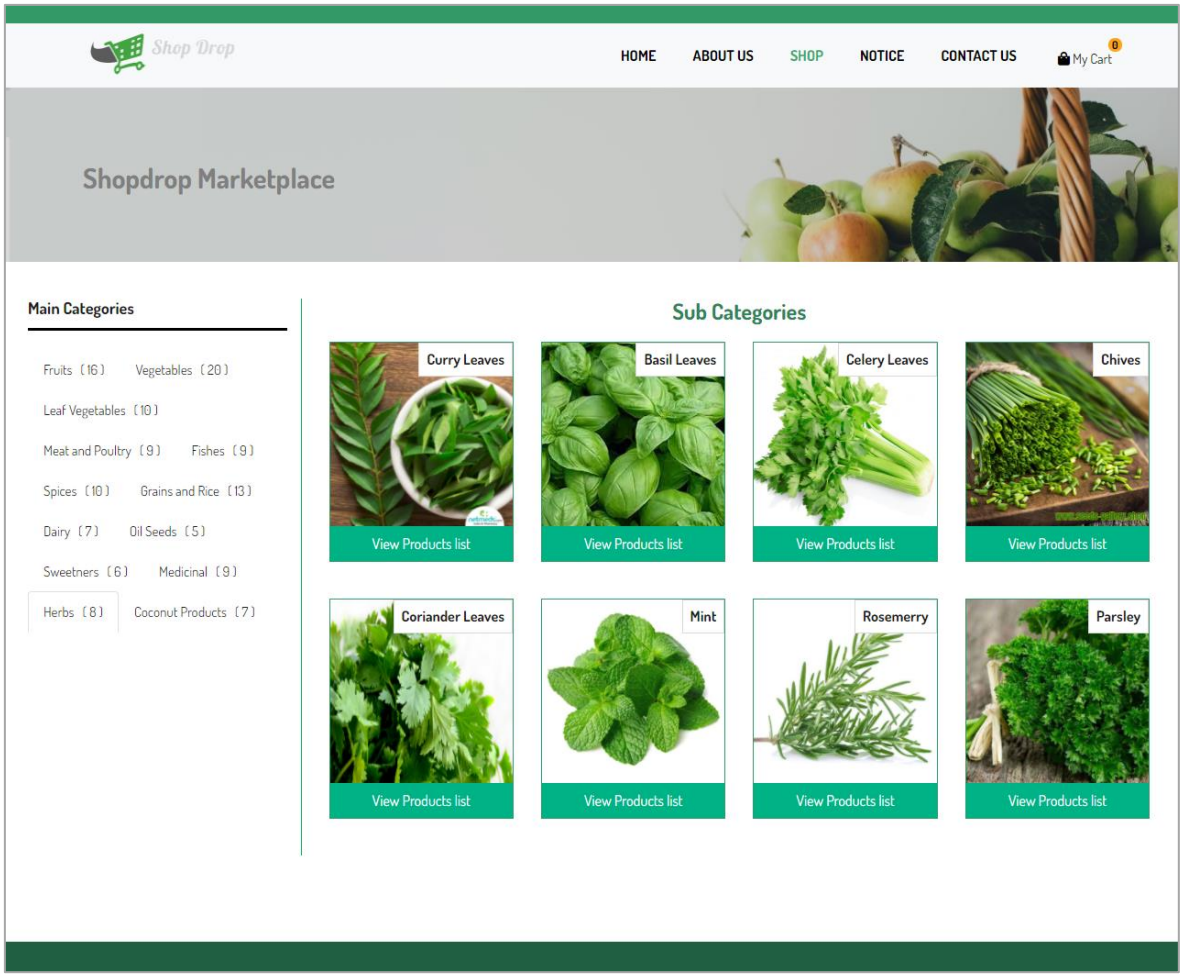


Figure 28 - Preview of the Product list of the system



End