

Digital Food Protection Portal

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Information Technology**

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ABSTRACT

The drastic increase in the amount of Food Wastage has become a top global issue while there are millions of families with children starving, and suffer with malnourished or undernourishment [1]. This study presents “Digital Food Protection Portal” (DFPP) as a novel web based application which facilitates a platform for donating excess foods and harvest to all needy people or organizations in vast. This system will create a common collaboration portal for residents, farmers and restaurants/hotels who are willing to donate excess foods for needy people or organizations. In DFPP food donor, food receiver, administrator and primary users are connected together where food donor can be any organization, resident user who wants to donate food and create food donation request and food receiver can be any person or organization who seeking for food. A food donation request will be created on the portal without using user credentials and once the request is accepted, a notification is send to DFPP staffs who are responsible for distribute food from food donor to receiver. Moreover, System administrator will be facilitates to monitor the all kind of food transactions via portal in term to reduce food wastage and maintain the quality of foods which distribute among the food receivers.

DECLARATION

The thesis is my original work and has not been submitted previously for a degree 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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ABBREVIATIONS

DFPP	Digital Food Protection Portal
IT	Information Technology
IDE	Integrated Development Environment
UML	Unified Modelling Language
SSMS	SQL Server Management Studio
AWS	Amazon Web Server

Chapter 1

Introduction

1.1 Prolegomena

Food wastage is an universal challenge where rapid urbanization, expansion of retail chains, and changes in diets and lifestyles are usually identified as the key drivers for food waste generation [1]. Each and every day food wastage is getting higher and higher within homes, restaurants, hotels and as well as within farmers' states. Food wastage is not only a sign of hunger or pollution, but also of numerous economic problems. The high standard of living has resulted in the wastage of food because of quick changes in habits and lifestyle. This study presents "Digital Food Protection Portal", as a novel web application which facilitates a platform for donating excess foods and harvest to all needy people or organizations in vast. DFPP is shown to be an effective way of donating foods to organizations and all people who required while engaging as potential for keep away from the wastage of food and how it works for betterment of the community.

Software solutions have initiated new way of handling real world problems. Software presents cost effective, accurate, user friendly and reusable resolution for almost all applications. Among other software technologies programming databases, web and multimedia, have been the most widely used for development of application software. Nowadays numerous Software engineering tools are available for development of software applications. This thesis presents the project to initiate a web based software resolution for the domain of Food wastage protection systems in all over the world. In doing this chapter outlines background and motivation for the project problem in brief, assumptions, proposed solution, resource requirement and the overview of the structure of the rest of the thesis.

1.2 Problem in Brief

Food Wastage has become a top global issue while there are millions of families with children starving, where many people carelessly throwing food away[1]. The streets, garbage bins and landfills have evidence that food wastage getting rapidly grown day by day. There are large numbers in Sri Lanka without adequate foods; persons who are hungry, malnourished or undernourished. Each and every day food wastage is getting higher and higher within homes, restaurants, hotels and as well as with farmers' states. Foods are getting leftover within most residencies as the excess of people needs. Furthermore, farmers leftover their harvest every day without having ability to select best market for their productions. As per the government, the garbage quantity of food wastage become increasing without leaps and bounds where people are losing of engaging with good environmental condition while open garbage dumps, produce methane, greenhouse gases.

Moreover, lack of a platform to collaborate the all needy people and organizations impact highly cause of food wastage throughout the country (refer Figure1.1: Issues in Exist systems). People who are wishes to donate excess foods cannot be accomplishing instantly along with existing system conditions without step in to their doorsteps. In addition Farmers who are willing to sell their excess harvest in negotiable prices has becomes a dream along with market intermediates where leftover harvest turns in to a garbage plots. Since food wastage cases many economic problems people are expecting more customization solution which can overcome and minimize food wastage in existing environment.

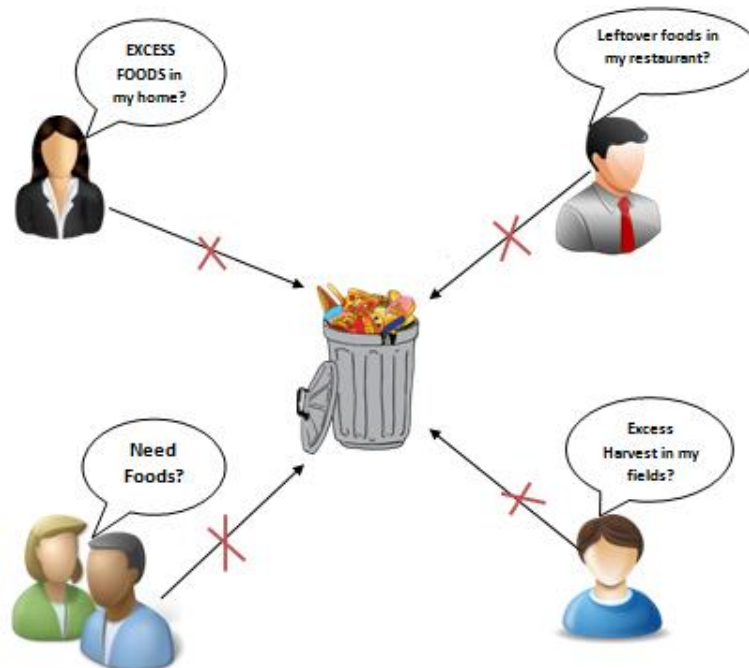


Figure1.1: Issues in Exist systems

1.3 Aim & Objectives

The aim of this study proposes designs and develops an efficient and effective customize Digital Food Protection portal which overcome the existing weaknesses of food protective systems which will diminish overall food wastage in Sri Lanka along with reduces the number of people in hunger. The whole purpose of this system is to meet mediator who would help the giver reach the getter and vice versa by reach through as many needy as possible. As an approach to design and develop Digital food protection portal following objectives have been formulated.

- Study the existing Food Wastage Management systems in Sri Lanka
- Compare and contrast weaknesses and strengths of the existing Food Wastage management systems
- Analyze and find the current technologies behind the current Food Waste Management systems
- Identify the new trends and requirements of Food Waste Management systems in order to cover all applicable areas in Food wastage in distribution, harvest, processed foods
- Identify the effective and efficient solutions to the weaknesses of the current systems on food wastage
- Analyze the customer perspective in Food Waste Management process and their preferences on food wastage management
- Prioritize the requirements such as payments, delivery services, donations, orders and identify efficient technologies to implement them in more effective manner
- Develop the web based application along with identified requirements and technologies

1.4 Assumption

Software has start better approach for overseeing real issues which gives financially save, accurate, easy to use and reasonable answer for practically all applications. Among other software advances, World Wide Web is one of the significant media utilized by individuals these days to get to data. Subsequently, electronic advancement frameworks have been the most generally use improvement of programming application to have huge number of clients. Thusly, to conquer the issues in the current food protection frameworks the new framework advancement attempt to actualize software arrangement with the database combination approach. Through this automated software improvement it has been conceivable to relieve issues in current frameworks and it will assist with diminishing the food wastage inside nation

1.5 Solution for Food Wastage Management

In recent years, mounting concern on the subject of environmental and economic costs, hunger and resource management connected with food waste have lifted community awareness on food loss. With the considerations of existing concerns “Digital Food Protection Portal” (DFPP); Web based application will be an efficient and effective solution to minimize the Food Wastage around in Srilanka (refer Figure 1.2: *Top Level View of Proposed Solution*).

DFPP will allow to professional users to register with our services through user registration module. This module will not be applicable to the Regular users who are in residencies (homes) that need to make requests on their excess food wastage. This user registration module will be used by the professionals who are make their revenue through food industries such as Restaurants, Hotels, Farmers and Organic food companies. Also this will allow to register for needy people such as elders homes, children homes/orphanage etc. to order the foods through the system.

DFPP will allow the administrator to login to this module and manage the requests and orders which coming through the system. Admin will manage to assign the excess food requests for needy people and for professionals through the system. The distribution of foods and other deliveries will be managed through this module to minimize the overlap of requests and orders. The requests which is less than the 1Kg or request is more than 5hrs in donor view will be move to wastage storage which will be sent for the organic compost production.

Delivery/distribution will be managed by DFPP administrator among the DFPP staff and registering the drivers as the FWMP staff for distribution services. Third party transport services (UBER, Pickme) can register through our system for distribute the foods for needy people which coming through the residencies (Homes) users.

Requests and orders which generate through the DFPP system will be manage by the system administrator based on user category. DFPP will allow the all the users to make requests through their own user profiles. Requests and Orders are managed through two levels such as Regular Users (Residencies) and Professionals. System will provide separate request facilities for residencies users to make their request on excess foods without their own user profiles. Professionals will allow making requests (for needy people) and orders (organic compost) with this module through their user profiles logins.

The regular users who are in their residencies will allow to make requests through this module. They should mentioned the quantity of the excess and type of the food which they going to donor. At the end of the request they can select the DFPP staff distribution service or our registered transport service third party vendor to deliver their donation for needy people (the location will decide by user).

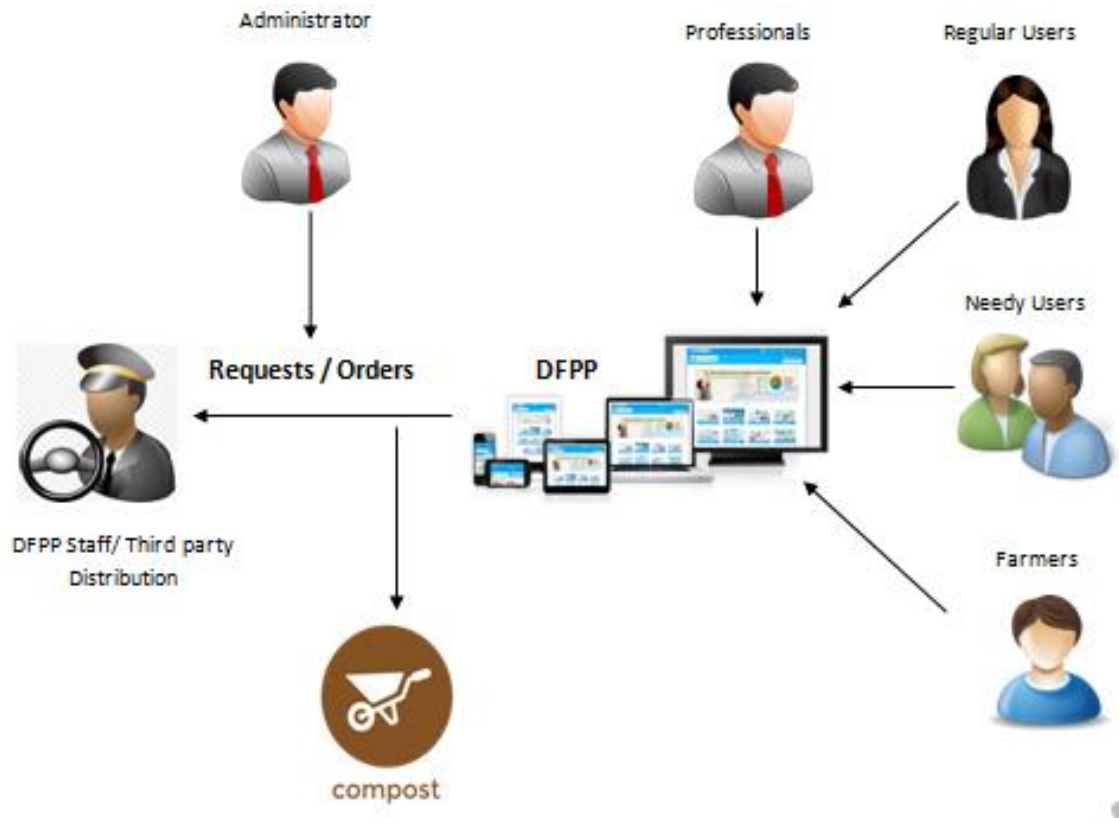


Figure 1.2: Top Level View of Proposed Solution

Farmers will allow making request through this module for their excess harvest with relevant quantity and prices. These requests can be viewed through DFPP by users and they will allow to make an order through the system for mentioned prices. Distribution for the above orders will be manage through the delivery module with administrator intervention where user can chose whether they choose to buy their order from farmers places or not. Other professionals such as restaurants, hotels, food industry companies can make their requests for distribution to needy people along with quantity or make orders for the harvest (Ex: Tomato, Potato etc.) from farmers for their food productions.

DFPP will facilitate compost productions along with quantity and prices. The users who need the compost productions can make their order through the system. They are facilitated to viewed or access through any user (especially farmers) to make their order with relevant quantities. Farmers can bargain the prices of organic compost with their contribution of harvest for the users. The leftover foods which coming through the users request to DFPP will be recorded separately as “pending for compost production” and mange with the intervention of administrator.

Users are facilitating to perform payments for the place orders and distributions through the system. Users can use their credit/debit cards for the relevant payments for DFPP. User need to place their order number or product number (organic compost) with relevant paid amount. User will be facilitate with major two types of payments methods such as Payment gateway or other online payment methods where user allow to select either one of method as they desired.

Finally, Users will get an E-receipt through this module for their payments. All the payments will be viewed for the administrator through the administration module.

DFPP tracking module will facilitate the customer to track their order and direct their order with desired destinations which will make satisfaction between giver and taker. System will be able to capture the nearest needy people to donate if they are no reservation or else customer will allow to assign their donation as they desired organization. DFPP will provide the distribution services along with small fee charges. DFPP will make all users newly experience on mitigating food wastage in their residences, restaurants, hotels and farm states where fulfil the hunger of needy people throughout the country.

1.6 Resource Requirements

“Digital Food Protection Portal (DFPP)” will be designed and develop as a responsive web based solution to the consumer who will be able to use solution in any kind of device which is on their hand. This will be able to motivate the users to use DFPP with their favourite digital device. DFPP will be allowed to use anywhere anytime who have internet connectivity within their devices. Solution will provide ease of use through the consumer existing devices without any restriction on operating systems.

- The application package would develop as it is compatible with any computer/tablet/ Mobile phone which execute on Windows platform such as Windows XP and Windows 7 etc.
- The application package would consist of two main interface types (Client interface and Administrative) which will be developing on C# language along with .NET framework.
- The database will be implemented with use of SQL server.
- The Web server will be used as Amazon web server

1.7 Overview

In perspective to the study this is an effort to present the view of the entire project. Therefore these information correlated to the project is explained with five separate chapters. It consist of mentioned chapters namely

- Introduction: Brief introduction on problem and solution on study
- Background: Analysis and review on similar systems
- Methodology: Design of implemented solution
- Evaluation: Critical evaluation on developed system
- Conclusion: Summary of the results

1.8 Summary

This chapter represents the overall view of the study including the existing issues in food waste management systems and the applicability of IT as a solution to enhance existing systems. Furthermore the objectives, assumptions and resource requirements are discussed. As a whole the high level view of the study is represented though this chapter.

Chapter 2

Background

2.1 Introduction

The drastic increase in the amount of food wastage has become a universal issue while there are millions of families with children starved and suffer with malnourished and undernourishment. Food waste refers to the decrease in the quantity or quality of food resulting from decisions and actions by retailers, food service providers and consumers. Foods are wasted in many ways like recent manufacture that deviates from what's thought-about optimum, for instance in terms of form, size and colour, is commonly far away from the availability chain throughout sorting operations, Foods that are near to, at or on the far side the most effective before date are usually discarded by retailers and customers and huge quantities of wholesome edible food are usually unused or left over and discarded from domestic kitchens and consumption establishments. Moreover, the increasing of food garbage dumps has impacted on loosing of engaging with good environmental condition. It will results, biodiversity loss, blue water footprint, economic consequences and climate changes.

The study requirements are gathered from research papers and internet sources since there is no actual customer involved. Hence the food wastage has become a global issue its required to manage food wastage within residencies, restaurants and fields etc. The research papers and internet sources shows that people need a way to manage their food wastage in an effective manner. Most of existing systems doesn't provide a way to reduce their food wastage through a distribution. With the Srilankan context people are willing to do charity services for people who are suffer from poor. So its gain the advantage such a system/portal to make more effective among the people and it will effectively manage the food wastage at their residences.

2.2 Impact of IT

With the uprising of IT all the processes are become automated by the human. The human is the person who have busy schedule with their life style. They always try to manage their time and make all the day today activities in a second with more manageable manner. As far as you know the streets, garbage bins and landfills have sufficient evidence to establish that Marriages, canteens, restaurants, social and family get together and functions eject much food. Among those activities food wastage has become sign of hunger or pollution, although many economic problems. In contrast, with the time most of them are restrict to make food waste management by themselves along with charity service. So there IT can help to make the food waste management process automated. Moreover, this paper presents some case studies from food enterprises which are experience in using IT. The countries within which these projects were enforced are at varied stages of economic development and embody one industrialised country.

2.3 Success Stories

With use of new technology advancement most of the day to day processes in the world have computerized their all most all the functions. There are so many successful stories of food waste management systems. And also the important thing is most of them are significantly contribute to the country economy. Researchers like Allen Han, Brian Lee and Andreas Rieger, Johannes Huber and Alexander peters have provided the systems Helping hands ,Food donation portal and Forecasting simulation model respectively but some problems are still available in the current food waste management environment. Food waste management is more challengeable and demand research topic appears in recent years. There are similar works which aimed at inspiring the assembly food waste management successfully.

2.3.1 Helping hands

The "Helping Hands" [2], actualized in 2016, another android-based application that presents a stage for donating old materials such as clothes and leftover foods to every single needy individual and organization. This android application facilitates individuals to give nourishments and required materials for needy individuals at their own without interface on suppliers. The downside of this application was that there is no dashboard open that is, toward the month's end the framework doesn't get all the records that what amount is given or received by the recipient. Likewise this arrangement will be just usable with the android application clients where regular online clients won't have the option to get benefit of the application.

2.3.2 Predicting donations of forecasting simulation model

The study "Food donations using a forecasting-simulation model" [3], presented in 2016, produces a system to surmised gifts for non-benefit hunger relieve associations. These associations are committed to recuperate hunger far and wide and rely principally upon the altruism of benefactors to accomplish their objectives. However, the amount and event of gifts they get vary altogether after some time which shows a test in their push to end hunger. A recreation model is actualized to determine the normal amount of food gifts got every month in a multi stockroom dissemination organization. The reproduction model depends on a state-space model for exponential smoothing. A measurable report is performed utilizing insights from a non-benefit hunger help association.

The result shows that superb assessment exactnesses can be achieve with this methodology. Also, non-benefit hunger help associations can apply the methodology banter in this paper to anticipate gifts for proactive arranging. The disadvantages of the above named task would not cover the specific answer for food wastage where it just re-enacts the food wastage amount every month.

2.3.3 Smartphone Based Waste Food Supply Chain for Aurangabad City Using GIS Location Based and Google Web Services

The "Smartphone Based Waste Food Supply Chain for Aurangabad City Using GIS Location Based and Google Web Services" [4], accessible in 2014, speak to the customer worker GIS and Smartphone application for the craving free city. At the customer side, App office to give food to the cause so as to help of yearning individuals. Benefactors enter their area data like scope and amount of waste food and kind of waste alongside worth and contact number. Noble cause can get that squander food and convey food to hungers.

Fruition of enlistment will set onto worker information base where good cause can store the passages of giver in table configuration and shows the ideal way between contributor areas to closest foundation alongside bearing. So wastage food can without much of a stretch convey to hungry individuals inside a period.

2.3.4 Development of a Sustainable Food Supply Chain by Post Harvest Program

Project on " Development of a Sustainable Food Supply Chain by Post Harvest Program" [5] started The Post Harvest Project (PHP), which is a gathering of innovation and capital accomplices quick to pass on mechanical answers for food squander in the flexibly chain. The different of innovative arrangements being seek after by PHP, a novel food assurance innovation called Nano ICE is outline in detail. An exertion is progressing in Ghana to assemble a succession of little network food measure plants dependent on upgraded cold stockpiling on fishing pontoons and on-shore offices for ensure fish, which in a huge wellspring of protein. The plan of PHP's exertion in Ghana is to draw in neighbourhood networks to take care of individuals and make openings, and advance wellbeing through great sustenance. This undertaking on gather program; PHP just focus on the best way to lessen the wastage on food spoliations where not consider the variables of commonplace utilization food squander in every single spots.

2.3.5 Food donation portal

The research "Food donation portal" [6], which was introduced in 2015 outlines to the development of food donations and propose a platform that join donors with NGOs. An idea for a food donation network is introduced and affect on society thereby is rising. The downside in this study is that there is no option offered for typical users to send their donation through the framework. That implies the application doesn't permit the clients who are occupant in their homes that are eager to give the excess nourishments in their homes.

2.4 Technologies

2.4.1 Alternative Strategies

With reference to mentioned success stories on food waste management systems used object oriented design strategy which is easy to implement and easy off use than the other strategies such as top down strategy. The used technologies in implemented projects are based on android platforms (Mobile app). The most applications provide the simulation facility to user in order to simulate their food wastage at their own but no way of reduce on their food wastage. All the technologies which used in similar systems are directly focus the web design technologies and android technologies. In order to make each and every user to access the solution its better to use web design technologies and develop portal to reduce their food wastage. The proposed system used technologies are listed as below

2.4.1 SQL Server

SQL Server Management Studio (SSMS) [7] is an incorporated domain for control any SQL infrastructure. Use SSMS to get to, arrange, oversee, direct, and build up all segments of SQL Server Database, and SQL Data Warehouse.

SQL Server Management Studio permits utilizing the Integration Services administration to oversee bundles and screen executing bundles. Additionally, Management Studio ready to organize bundles into envelopes, run bundles, import and fare bundles, move Data Transformation Services (DTS) bundles, and advance Integration Services bundles.

2.4.2 C#. NET

C# is an object-oriented, segment arranged programming language. C# presents language make to straightforwardly uphold these ideas, making C# a characteristic language where to make and use programming segments. Since its starting point, C# has added highlights to hold new outstanding burdens and rising programming plan practices. [8]

All C# types, including crude sorts, for example, int and twofold, acquire from a solitary root object type. Different kinds share a lot of normal tasks. Estimations of any sort can be put away, moved, and worked upon in a steady way. Moreover, C# facilitates user-defined characterized reference types and value types. C# permits dynamic distribution of articles and in-line stockpiling of lightweight structures.

2.4.3 Java Script

JavaScript [9] multi-worldview programming language that has wavy section punctuation, dynamic composing, model based article direction, and top of the line capacities. Close by HTML and CSS, JavaScript is one of the centre advances of the World Wide Web. JavaScript empowers intelligent site pages and is a fundamental piece of web applications. By far most of sites use it, and significant internet browsers have a committed JavaScript motor to execute it.

As a multi-worldview language, JavaScript underpins occasion driven, useful, and basic including object-situated and model based programming styles. It has APIs for working with text, exhibits, dates, ordinary articulations, and the DOM, however the language itself does exclude any I/O, for example, systems administration, stockpiling, or designs offices. It depends upon the host condition in which it is implanted to give these highlights.

At first just executed customer side in internet browsers, JavaScript motors are presently inserted in numerous different kinds of host programming, incorporating worker side in web workers and information bases, and in non-web projects, for example, word processors and PDF programming, and in runtime conditions that make JavaScript accessible for composing portable and work area applications, including work area widgets.

2.5 Server Support

Amazon Web Services (AWS) [10] is an assisting of Amazon giving on-request distributed computing stages and APIs to people, organizations, and governments, on a metered pay-more only as costs arise premise. These distributed computing web administrations give an assortment of fundamental conceptual specialized foundation and circulated registering building squares and devices. One of these administrations is Amazon Elastic Compute Cloud (EC2), which permits clients to have available to them a virtual bunch of PCs, accessible constantly, through the Internet. AWS's adaptation of virtual PCs imitates a large portion of the characteristics of a genuine PC, including equipment focal handling units (CPUs) and illustrations preparing units (GPUs) for handling; nearby/RAM memory; hard-circle/SSD stockpiling; a decision of working frameworks; organizing; and pre-stacked application programming, for example, web workers, information bases, and client relationship the board.

2.6 Summary

This chapter represents the overall view of the study including the existing issues in food waste management systems and the applicability of IT as a solution to enhance the current system. Furthermore, the technologies of existing food waste management systems are discussed. As a whole the high level review of the existing food waste management systems is represented though this chapter

Chapter 03

System Analysis and Design

3.1 Introduction

In this section for the most part examined about the Overall Architecture, Software Architecture, Module Architecture, Interface Design and Database Design of DFPP. The framework structural method depict through Overall Architecture of the framework. It can partition into three layers. They are Presentation Layer, Application Layer and Data Layer. Software Architecture represents all the modules, sub modules and all the segments of the framework. The modules, for example, login, Order module, Reports module are depicted through realistic portrayals in this section. Besides, Module Architecture depicts the connection among client and the database. And furthermore it speaks to the reaction of each level on the stream. Basically reflects how information is put away in the database and how information is recovered from the database. While considering about the Database Design, it incorporates the Entity Relationship Diagram to show the connection among clients and modules of the framework. And furthermore use standardization to speak to information without repetition. Moreover, Interface Design is for every module additionally portray in this section. It gives some information to the client how to function with this framework.

This chapter provides the diagrammatical representation of the process flow of the proposed system using UML techniques such as use case diagrams (refer Figure3.1: *Use Case for Overall DFPP*), sequence diagrams and the overall system of the proposed DFPP.

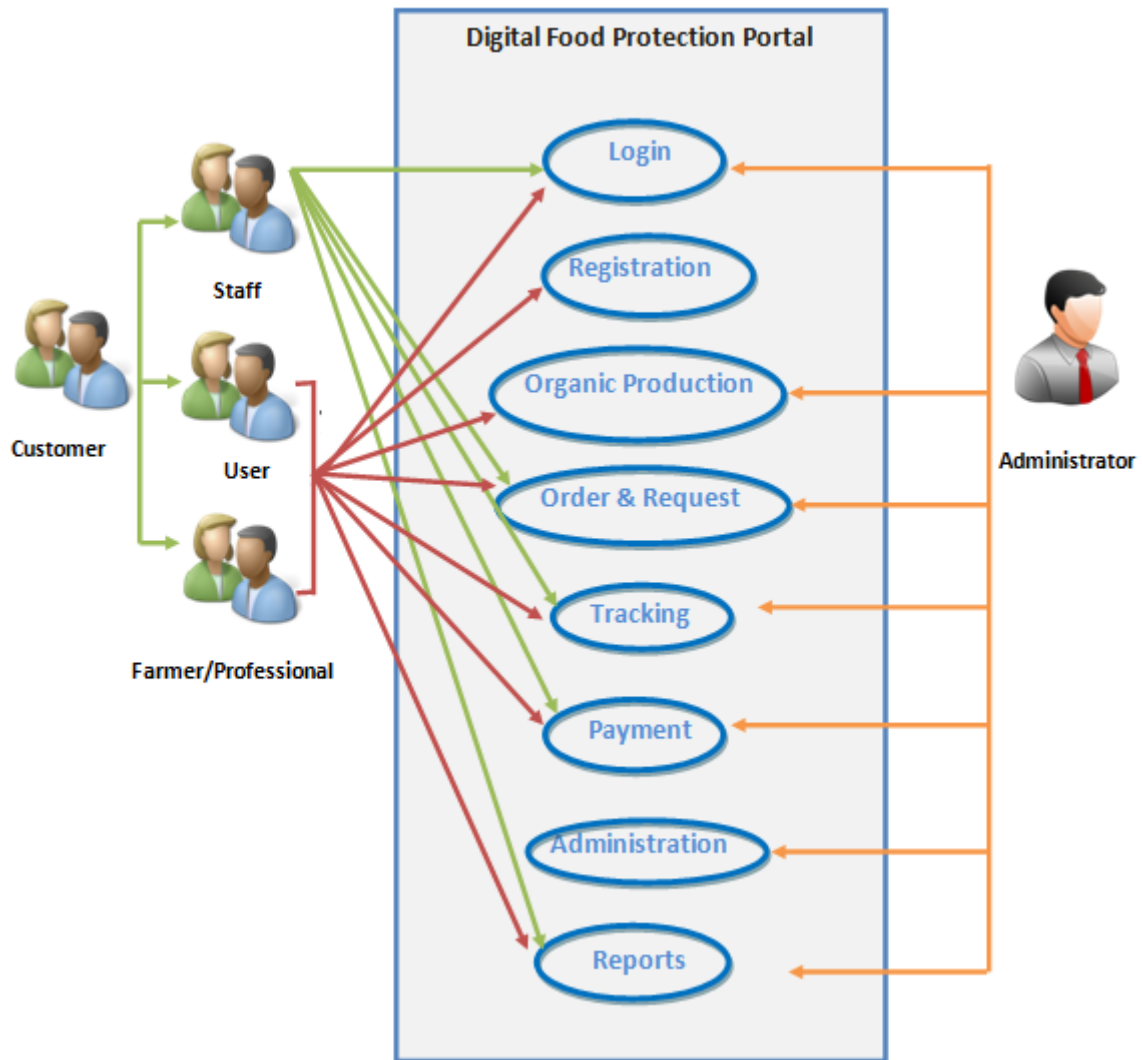


Figure 3.1: Use Case for Overall DFPP

3.2 Overall Architecture

Architecture design depicts the general structure of the DFPP refer on Figure 3.2, which creates to oversee and manage information in a several capacities. It gives some impression about how appropriate this software with the architecture and what is the boundary that the database ought to be secured inside the structural plan. The capacities and the parts are independently model for each capacity which speaks to by the layers, such as, presentation layer, application layer and data link layer.

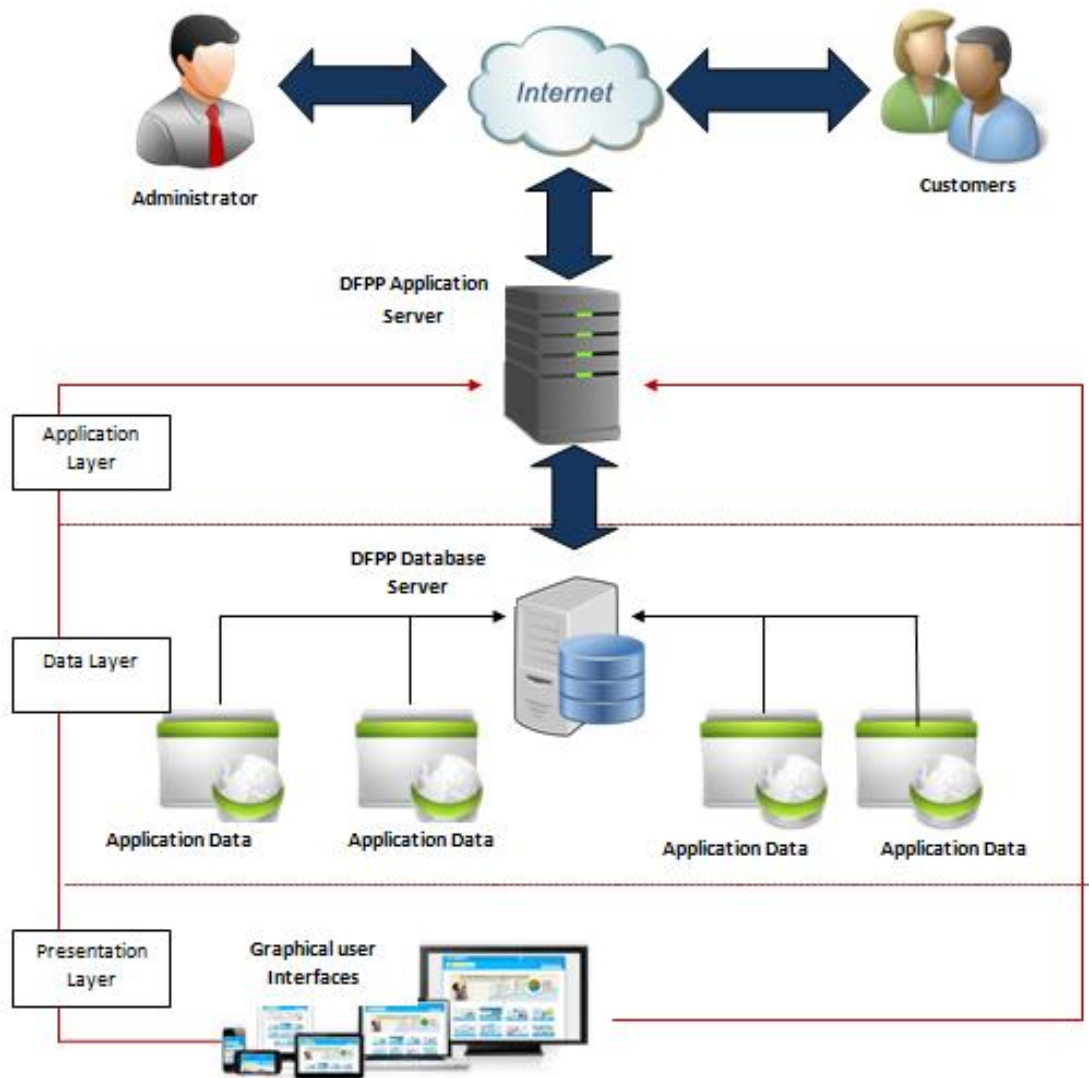


Figure 3.2: Overall Architecture

3.2.1 Presentation Layer

The interaction procedure of the DFPP is run on this layer where all clients can cooperate with the framework through the graphical UI. . Main activities of the users are fill the register in registration module, select items from organic production, order products, make requests, make payments and tracking. As indicated by the given subtleties, application layer control them in a request. Moreover, the director and higher specialists are different gatherings who communicate with the presentation layer. These gatherings are for the most part cooperating with this layer to keep up the entering subtleties which associate with the framework. Furthermore, the other significant part of this layer is the association of the Local Area Network (LAN) and the Internet. This LAN associates between the presentation layer and the application layer. Clients on the presentation layer and the server which introduced the system associate through the Internet.

3.2.2 Data Layer

The general subtleties which contributions to the framework are put away in data link layer. The all the tasks are put away in database and database applications are running on this layer. Information Layer characterizes the connection between the substances of the database. Proposed DFPP will be actualized with a database server which is utilized to store all the necessary data which is have to process with the framework functionalities. Data layer consistently have the availability to the application just as the presentation layer of the general framework architecture. Storage will be utilized adequately so as to keep up effectiveness of the information preparing of the framework. Information which is accumulated by the client (inputs) is intended to store at the database after the information control done in the application layer. And furthermore information layer encourage the recovery of information from the database, cancellation and refreshing of records which is secure at the database.

3.2.3 Application Layer

The web services component will be built with .Net frame work. Application layer is dependable of structuring the sensible design of the proposed framework. Functionalities of the framework are proposed by the logical architecture of the framework. Fundamentally usefulness, effectiveness, exactness, efficiency of the framework dependent on the validation which is planned at the application layer. At the point when clients sign-in to the framework, they need to enter the client name and secret phrase, validation of confirming the client name and secret word happens. At that point the application layer will interface with the Data layer so as to check the client confirmation. There will be process validation check with the web service to ensure data integrity before the information is saving to the database.

3.3 Software Architecture

This software architecture will clarify about the total procedure of DFPP refer on Figure 3.3: *Software Architecture*, Following chart delineates the insights regarding principle modules of this DFPP. The database taking care of will be finished by the organization of the framework claimed organization utilizing the interfaces. Clients just can see their subtleties, purchase things and request natural items as per their inclinations after effectively logging to the framework through WAN. The information is assembled in to a focal database and the whole framework is then run however this database. The web administration is then associated with the database data module and the framework is then connected up the database data module and the web administration. The server base DFPP database interfaces principally separated in to five modules. Such as personal details management module, order module, Performance management module and the resignation management module. Personal details module and the order module directly link with the database.

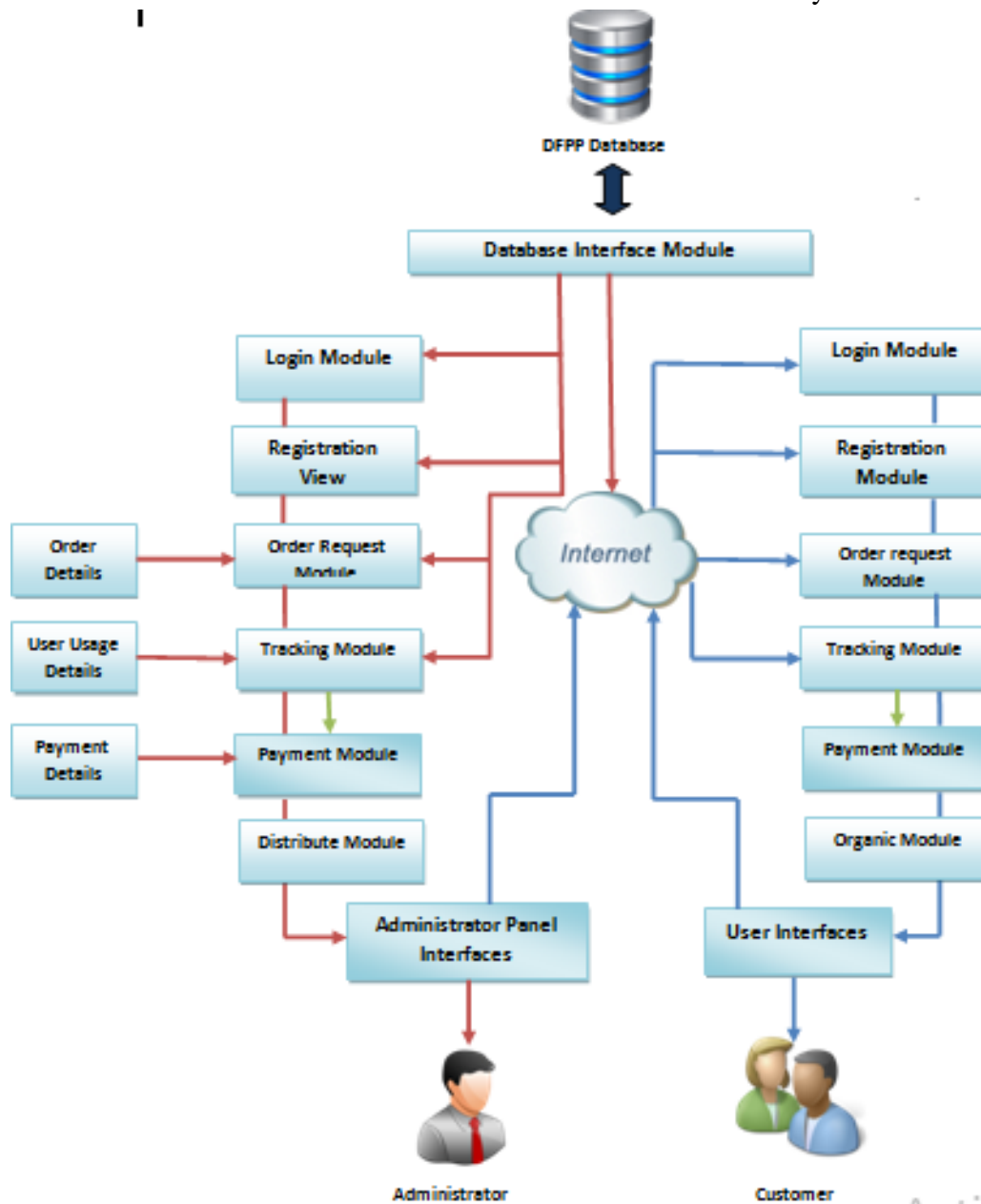


Figure 3.3: Software Architecture

3.4 Module Architecture

Under this section mentioned about the detail description of separate modules incorporated with DFPP.

3.4.1 Login Module

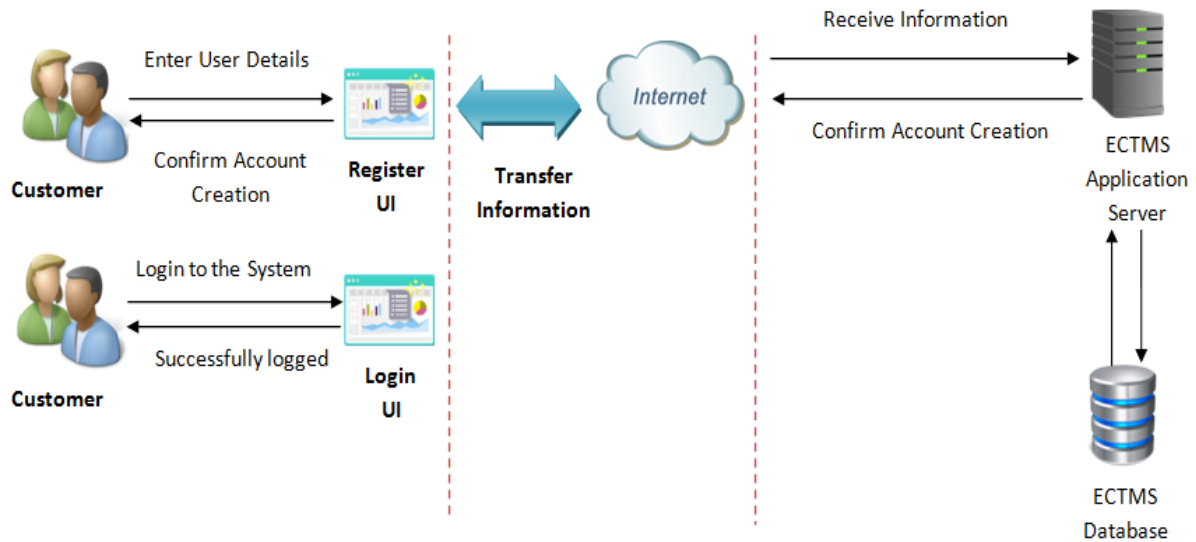


Figure 3.4.1: Login Module

This module refers on Figure3.4.1: *Login Module* empowers clients of the framework to login and utilize the administrations gave from the framework. This module has many access levels, for example, head, clients and distinctive power levels. Each head and client must have one of a kind username and secret phrase to login to the framework. Clients not generally need the username and secret phrase, however in the event that they need to do arrange and online payments; they required the username and password. Subsequent to entering the username and secret key is checked with the information put away in clients table and just as the client get to level. On the off chance that client is new client he/she have to register with the system. The client is more significant position authority; administrator needs to maintain user accounts for them after defining user privileges. As indicated by data, the system will grant User Interfaces

3.4.2 Organic Production Module

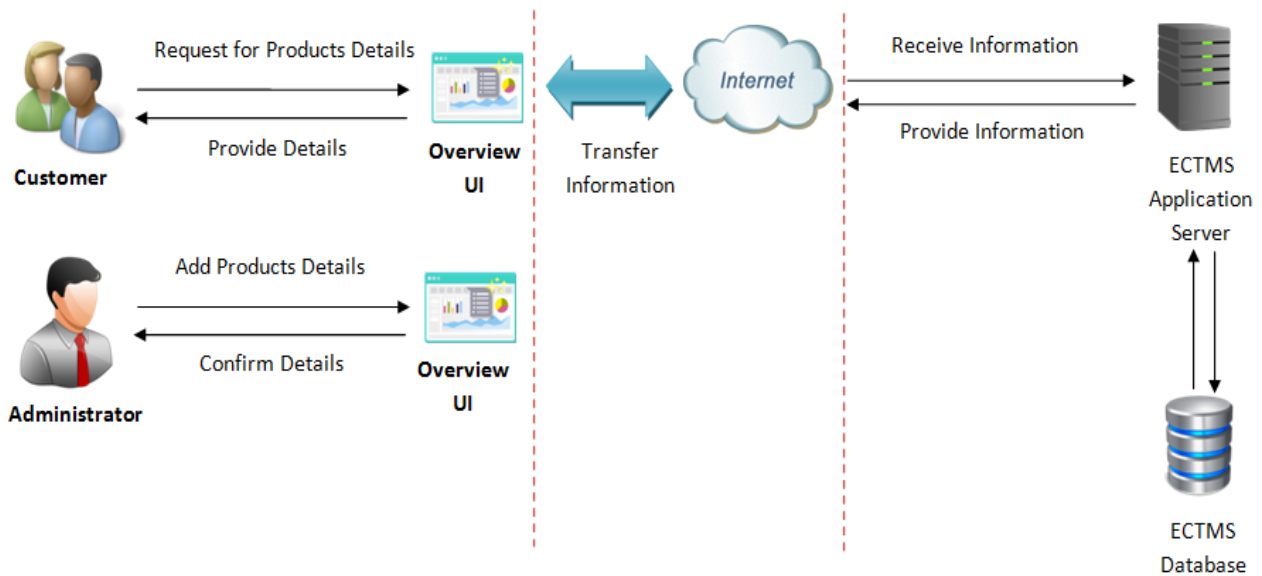


Figure 3.4.2: Organic Production Module

The module refers on Figre3.4.2: *Organic Production Module* will be consisting with all the compost productions along with quantity and prices. The users who need the compost productions can make their order through this module. This module can be viewed or access through any user (especially farmers) to make their order with relevant quantities. Farmers can bargain the prices of organic compost with their contribution of harvest for the users. The leftover foods which coming through the users request to DFPP will be recorded in this module separately as “pending for compost production” and mange with the intervention of administrator.

3.4.3 Order Module

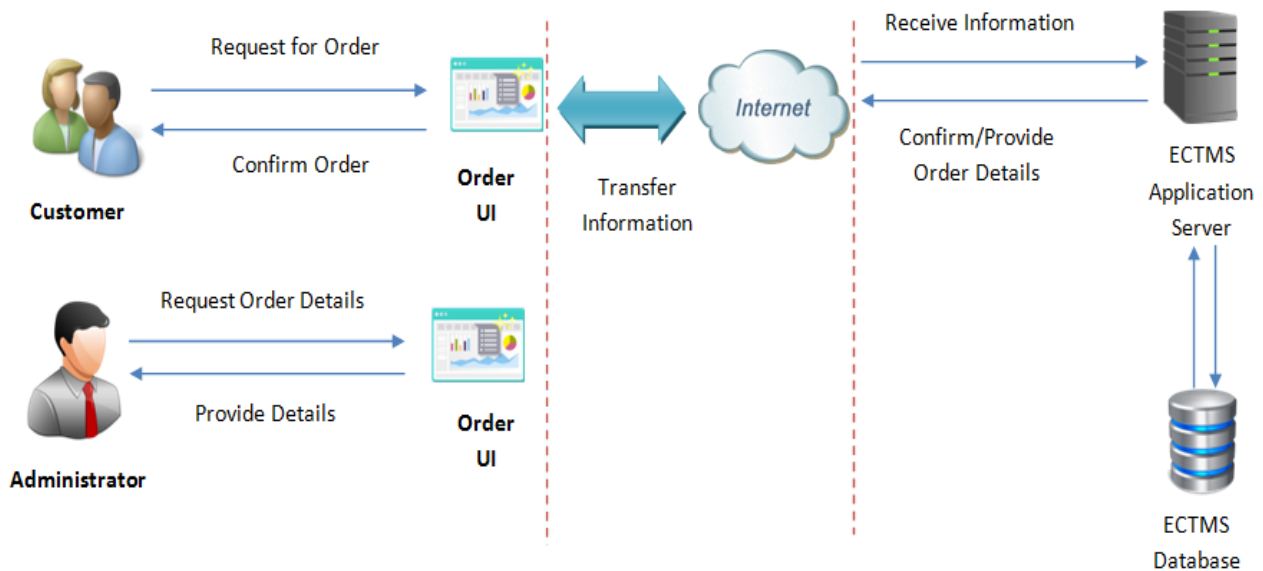


Figure 3.4.3: Order Module

This module refers on Figure 3.4.3: *Order Module* will allow the all the users to make requests through their own user profiles. Requests and Orders are managed through two levels such as Regular Users (Residencies) and Professionals. This module will provide separate request facilities for residencies users to make their request on excess foods without their own user profiles. Professionals will allow to create requests (for needy people) and orders (organic compost) with this module through their user profiles logins. Moreover, this module will allow the users to select their distribution methods between DFPP staff or other. Only distribution which aligned with DFPP staff will be managed through the Delivery module with the intervention of administrator

Farmers will allow to make request through this module for their excess harvest (Ex: 1Kg of Tomato with 500Rs) with relevant quantity and prices. These requests can be viewed through DFPP by users and they will allow to make an order through the system for mentioned prices. Distribution for the above orders will be manage through the delivery module with administrator intervention where user can chose whether they choose to buy their order from farmers places or not. Other professionals such as restaurants, hotels, food industry companies can make their requests for distribution to needy people along with quantity or make orders for the harvest (Ex: Tomato, Potato etc.) from farmers for their food productions.

The regular users who are in their residencies will allow making requests through this module. They should mentioned the quantity of the excess and type of the food which they going to donor. At the end of the request they can select the DFPP staff distribution service or our registered transport service third party vendor to deliver their donation for needy people (the location will decide by user).

3.4.4 Tracking Module

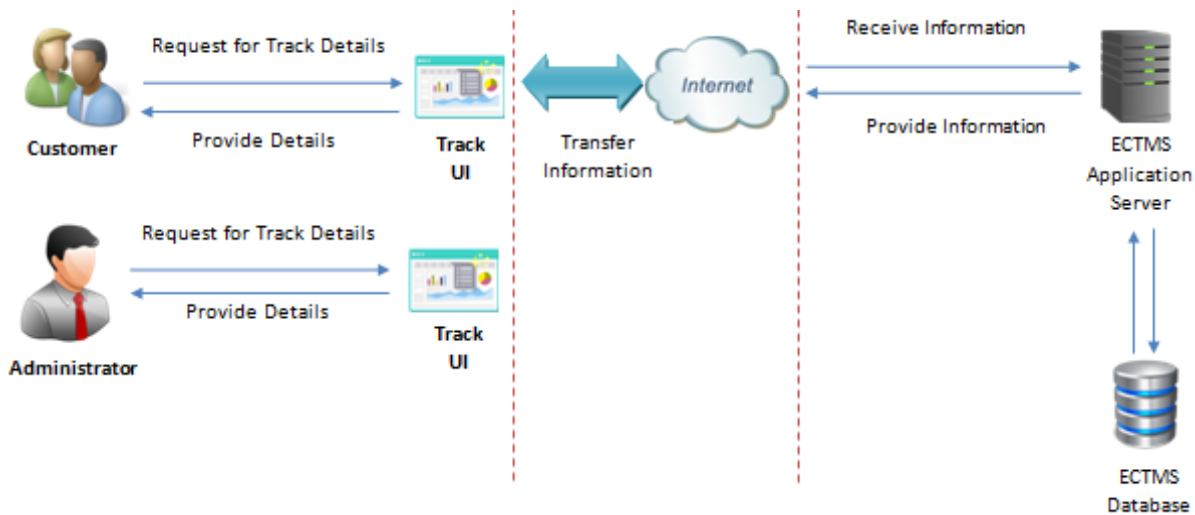


Figure 3.4.4: Tracking Module

DFPP tracking module refers on Figure 3.4.4: *Tracking Module* will facilitate the customer to track their order and direct their order with desired destinations which will make satisfaction between giver and taker. System will be able to capture the nearest needy people to donate if they are no reservation or else customer will allow to assign their donation as they desired organization. DFPP will provide the distribution services along with small fee charges.

3.4.5 Payment Module

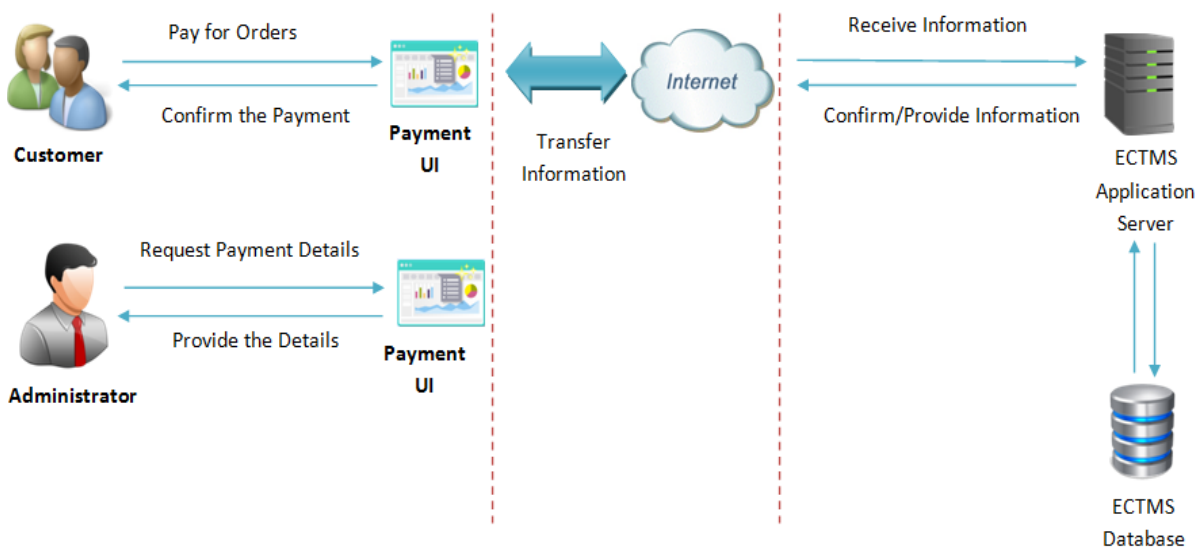


Figure 3.4.5: Payment Module

This module refers on Figure 3.4.5: *Payment Module* will handle the all payments for the place orders and distributions. Users can use their credit/debit cards for the relevant payments for DFPP. User need to place their order number or product number (organic compost) with relevant paid amount. User will be facilitate with major two types of payments methods such as Payment gateway or other online payment methods where user allow to select either one of method as they desired. Finally, Users will get an E-receipt through this module for their payments. All the payments will be viewed for the administrator through the administration module.

3.5 Data Design

Data Design speaks to the Entity Relationship Diagram, standardized arrangement of table structure so as to give an away from about the structure of the database with the base data repetition and decreasing data anomalies. The Appendix C provides the Entity Relationship diagram.

3.6 Interface Design

Proposed DFPP is actualizing with two interface classifications, specifically UI and the overseer interfaces. All the interfaces are open by the client through the web. Interfaces are structured so as to meet the objective of ease of use and the effectiveness in utilizing the system.

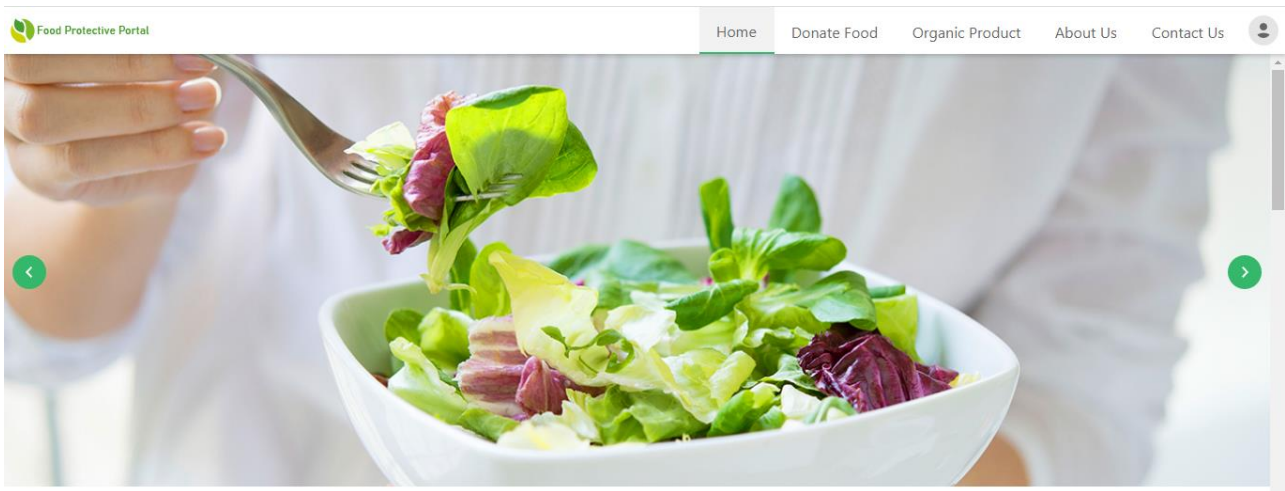


Figure 3.5.1: Home Interface

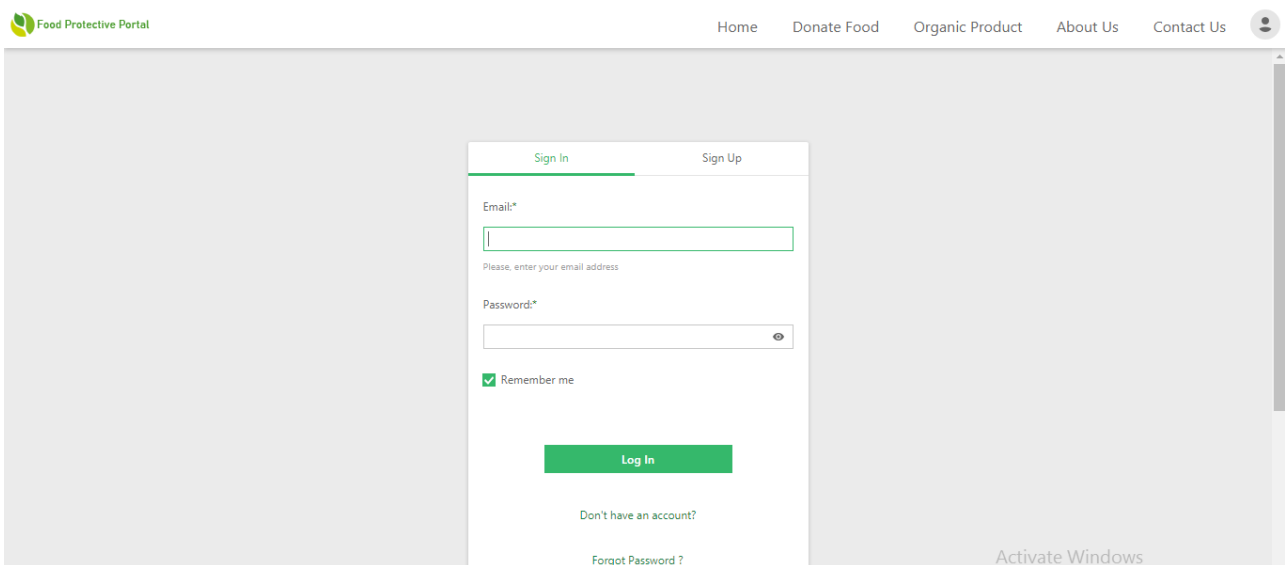


Figure 3.5.2: Login Interface

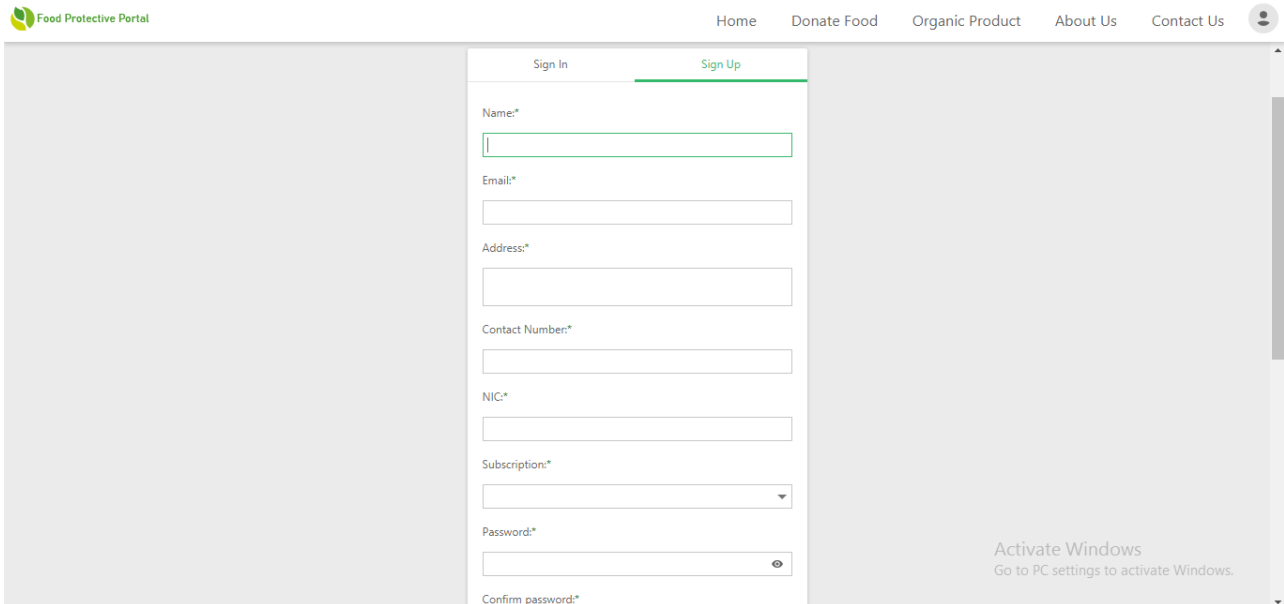


Figure 3.5.3: Register Interface

3.7 Database Design

- User Details

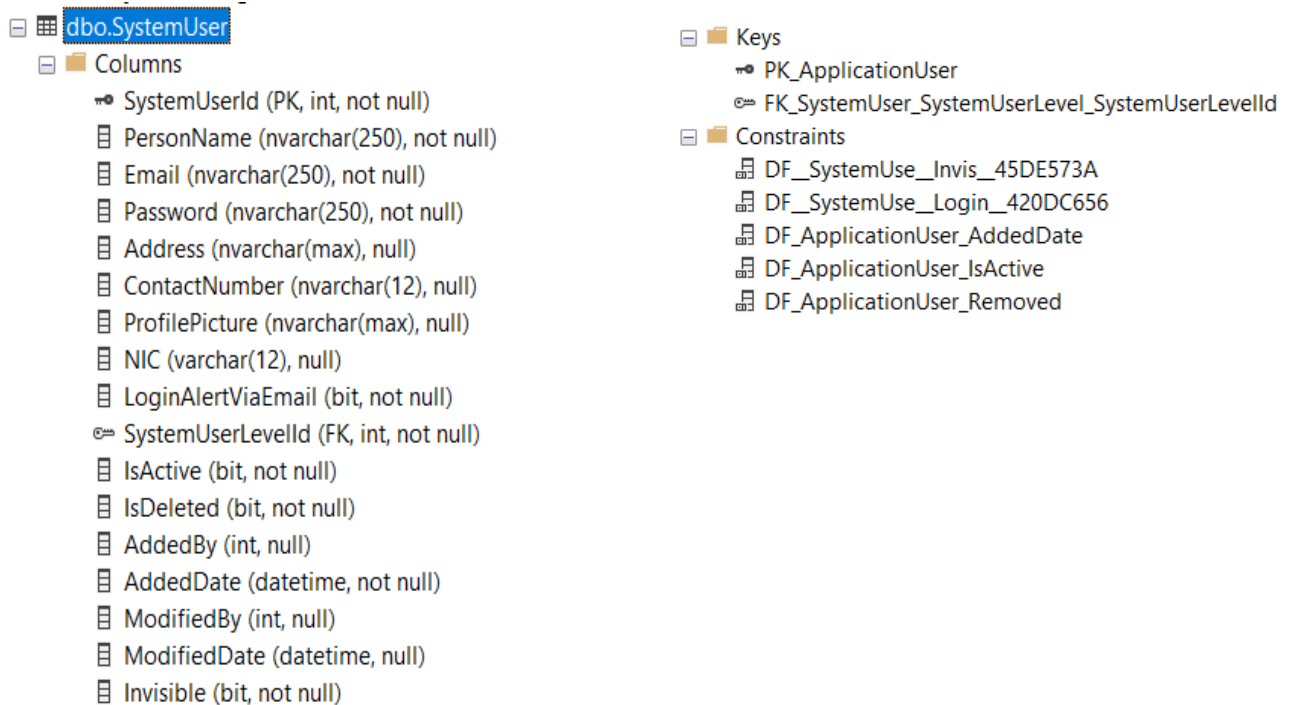


Figure 3.7.1: User detail

- Order Details

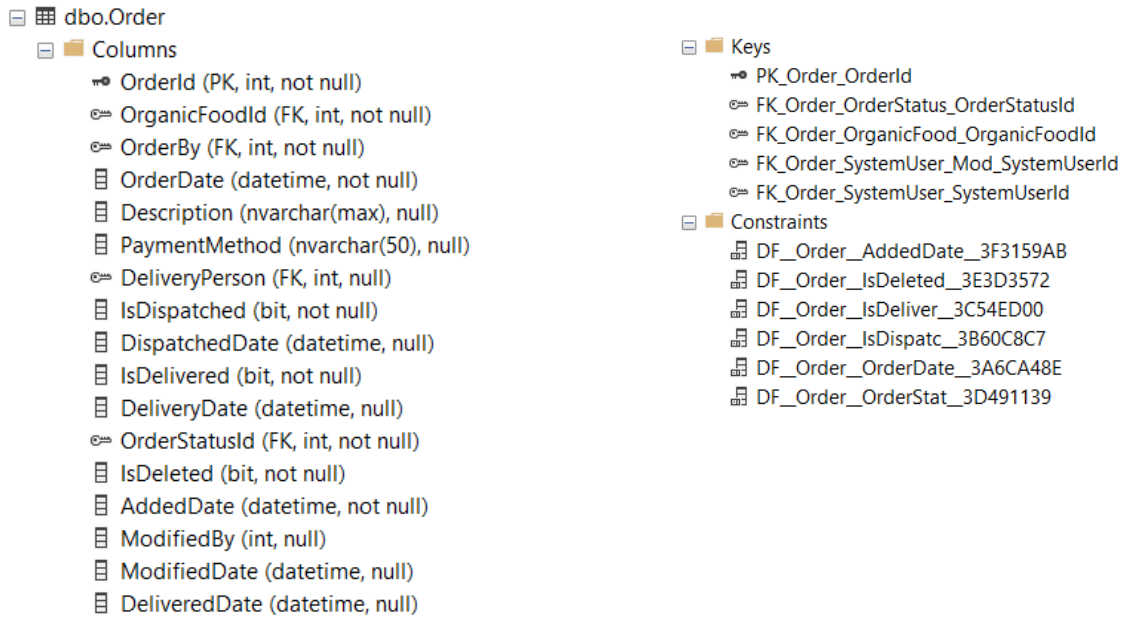


Figure 3.7.2: Order Details

- Donation Details

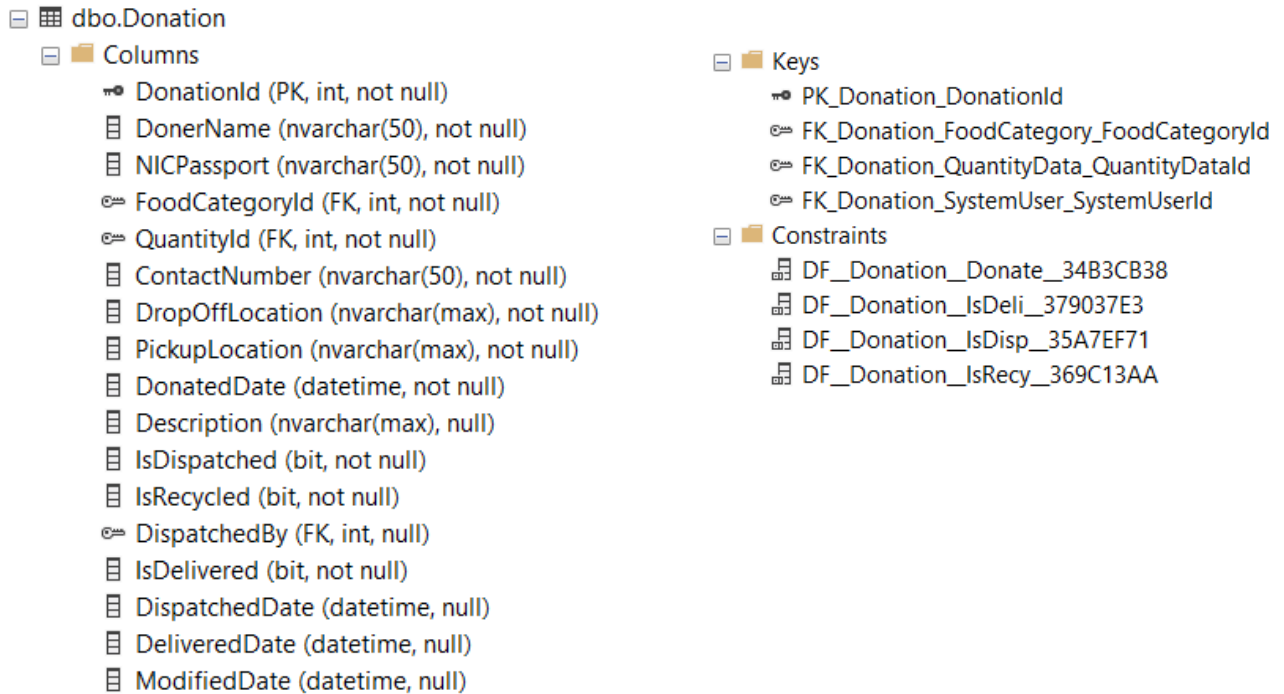


Figure 3.7.3: Donation Details

- Payment Details

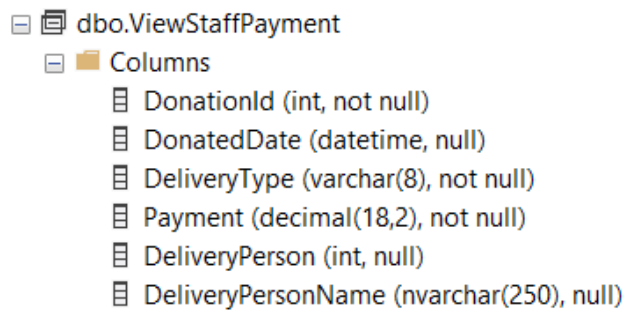


Figure 3.7.4: Payment Details

3.8 Summary

This chapter gives the whole idea of the design of the system and the flow of the proposed system. In conclude this chapter gives the idea of how the system designed the web based solution with databases.

Chapter 04 Implementation

4.1 Introduction

In this section for the most part examined about the advancement request of the project. The development request was chosen which starts with interface structuring to build up the proposed DFPP. As indicated by the Top-down methodology once the interface modules are finished advancement descends to the following arrangement of segments of the product configuration as demonstrated as follows Figure 4.1: *Components of Software Design*.

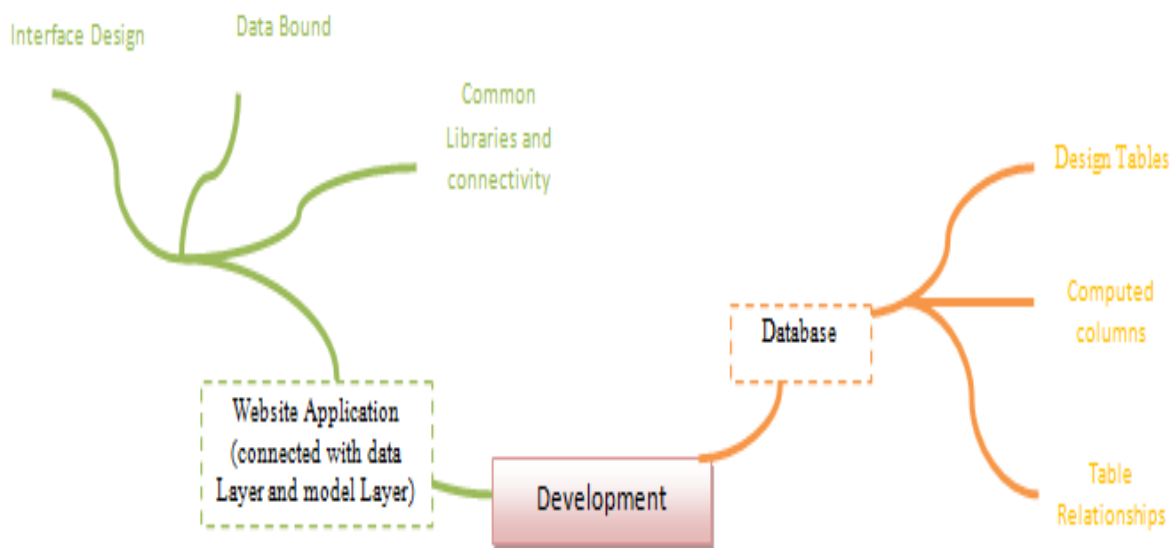


Figure 4.1: Components of Software Design

4.2 Development of Technologies in Data Layer

- **Database Connection**

The class webconfig is the responsible class for the Database connection. This connection string has named as the variable “connection string”. The connection string has four variables with hostname, username, password and database name. The values of those variables are localhost, root, blank and food respectively. These values will make connection with required destination.

```
<!--
For more information on how to configure your ASP.NET application, please visit
http://go.microsoft.com/fwlink/?LinkId=169433
-->
<configuration>
  <configSections>
    <sectionGroup name="devExpress">
      <section name="themes" type="DevExpress.Web.ThemesConfigurationSection, DevExpress.Web.v20.1, Version=20.1.6.0, Culture=neutral, Publ
      <section name="compression" type="DevExpress.Web.CompressionConfigurationSection, DevExpress.Web.v20.1, Version=20.1.6.0, Culture=neu
      <section name="settings" type="DevExpress.Web.SettingsConfigurationSection, DevExpress.Web.v20.1, Version=20.1.6.0, Culture=neutral,
      <section name="errors" type="DevExpress.Web.ErrorsConfigurationSection, DevExpress.Web.v20.1, Version=20.1.6.0, Culture=neutral, Publ
      <section name="resources" type="DevExpress.Web.ResourcesConfigurationSection, DevExpress.Web.v20.1, Version=20.1.6.0, Culture=neutral
    </sectionGroup>
    <!-- For more information on Entity Framework configuration, visit http://go.microsoft.com/fwlink/?LinkId=237468 -->
    <section name="entityFramework" type="System.Data.Entity.Internal.ConfigFile.EntityFrameworkSection, EntityFramework, Version=6.0.0.0,
  </configSections>
  <connectionStrings>
    <add name="FoodPortalEntities" connectionString="metadata=res://*/Infrastructure.FoodProtalModel.csd1|res://*/Infrastructure.FoodProtal
    <add name="DirectConnectionString" connectionString="Data Source=localhost;Initial Catalog=FoodPortal;User ID=sa;Password=sa;multipleac
  </connectionStrings>
```

Figure 4.2.1: Database Connection-config

- **Page path configurations**

Configure each and every page along with its destination

```
namespace FoodPortal.Web
{
    public static class RouteConfig
    {
        public static void RegisterRoutes(RouteCollection routes)
        {
            routes.Ignore("{resource}.axd/{*pathInfo}");

            routes.MapPageRoute("Home", "", "~/Page/Home.aspx");

            routes.MapPageRoute("SignIn", "SignIn", "~/Page/SignIn.aspx");
            routes.MapPageRoute("SignUp", "SignUp", "~/Page/SignUp.aspx");

            routes.MapPageRoute("SignOut", "SignOut", "~/Page/SignOut.aspx");
            routes.MapPageRoute("oops", "oops", "~/Page/Error.aspx");

            routes.MapPageRoute("Verify", "verify", "~/Page/Login.aspx");
            routes.MapPageRoute("Success", "{mode}/Success", "~/Page/Static/Success.aspx");
            routes.MapPageRoute("ForgotPassword", "ForgotPassword", "~/Page/Static/ForgotPassword.aspx");
            routes.MapPageRoute("ResetPassword", "Resetpassword/{systemUserId}/{token}", "~/Page/Static/ResetPassword.aspx");
        }
    }
}
```

Figure 4.2.2: Page route Configurations

- **Save registration details**

Save details in database which are entered by the user

```
public sealed class B_SystemUser : SingletonBase<B_SystemUser>
{
    #region SystemUser
    2 references
    public bool AddSystemUser(M_SystemUser systemUser)
    {
        using (var unitOfWork = new UnitOfWork(new FoodPortalEntities()))
        {
            var entity = unitOfWork.SystemUser.GetMany(x => x.Email == systemUser.Email && !x.IsDeleted);

            if (entity.Any())
            {
                throw new Exception("The SystemUser Name/Login Name already belongs to another SystemUser");
            }

            unitOfWork.SystemUser.Add(new Data.Infrastructure.SystemUser
            {
                PersonName = systemUser.PersonName,
                Email = systemUser.Email,
                Password = systemUser.Password,
                SystemUserLevelId = systemUser.SystemUserLevelId,
                IsActive = systemUser.IsActive,
                Address = systemUser.Address,
                ContactNumber = systemUser.ContactNumber,
                ProfilePicture = systemUser.ProfilePicture,
                NIC = systemUser.NIC,

                AddedBy = systemUser.AddedBy,
                AddedDate = DateTime.Now
            });

            unitOfWork.Complete();

            return true;
        }
    }
}
```

Figure 4.2.3: Insert Data to Database

- **Save Donation details**

Save donation details which entered by the user

```
11 references
public sealed class B_Donation : SingletonBase<B_Donation>
{
    1 reference
    public int AddDonation(M_Donation donation)
    {
        using (var unitOfWork = new UnitOfWork(new FoodPortalEntities()))
        {
            var entity = new Data.Infrastructure.Donation
            {
                DonerName = donation.DonerName,
                NICPassport = donation.NICPassport,
                FoodCategoryId = donation.FoodCategoryId,
                QuantityId = donation.QuantityId,
                ContactNumber = donation.ContactNumber,
                DropOffLocation = donation.DropOffLocation,
                PickupLocation = donation.PickupLocation,
                DonatedDate = DateTime.Now,
                Description = donation.Description
            };

            unitOfWork.Donation.Add(entity);
            unitOfWork.Complete();

            return entity.DonationId;
        }
    }
}
```

Figure 4.2.4: Save Data to Database

4.3 Development of Presentation Layer

4.3.1 Develop Web based solution

- Design the registration interface

```
<dx:ASPxFormLayout runat="server" ID="FormLayout" ClientInstanceName="formLayout" CssClass="formLayout" UseDefaultPaddings="false">
  <SettingsAdaptivity AdaptivityMode="SingleColumnWindowLimit" />
  <SettingsItemCaptions Location="Top" />
  <Styles LayoutGroup-Cell-Paddings-Padding="0" LayoutItem-Paddings-PaddingBottom="8" />
  <Items>
    <dx:LayoutGroup ShowCaption="False" GroupBoxDecoration="None" Paddings-Padding="16">
      <Items>
        <dx:LayoutItem Caption="Name">
          <LayoutItemNestedControlCollection>
            <dx:LayoutItemNestedControlContainer>
              <dx:ASPxTextBox ID="tbName" runat="server" Width="100%">
                <ValidationSettings Display="Dynamic" SetFocusOnError="true" ErrorTextPosition="Bottom" ErrorDisplayMode="Image">
                  <RequiredField IsRequired="true" ErrorText="Name is required" />
                </ValidationSettings>
                <ClientSideEvents Init="function(s, e){ s.Focus(); }" />
              </dx:ASPxTextBox>
            </dx:LayoutItemNestedControlContainer>
          </LayoutItemNestedControlCollection>
        </dx:LayoutItem>
        <dx:LayoutItem Caption="Email">
          <LayoutItemNestedControlCollection>
            <dx:LayoutItemNestedControlContainer>
              <dx:ASPxTextBox ID="tbEmail" runat="server" Width="100%">
                <ValidationSettings Display="Dynamic" SetFocusOnError="true" ErrorTextPosition="Bottom" ErrorDisplayMode="Image">
                  <RegularExpression ErrorText="Invalid e-mail" ValidationExpression="\w+([-+.]\\w+)*@[\\w+([-.]\\w+)*\\.\\w+([-.]\\w+)*" />
                  <RequiredField IsRequired="true" ErrorText="Email is required" />
                </ValidationSettings>
              </dx:ASPxTextBox>
            </dx:LayoutItemNestedControlContainer>
          </LayoutItemNestedControlCollection>
        </dx:LayoutItem>
      </Items>
    </dx:LayoutGroup>
  </Items>
</dx:ASPxFormLayout>
```

Figure 4.3.1.1: Design Form of Registration

- Design the Donation interface

```
<dx:ASPxFormLayout ID="ASPxFormLayout1" runat="server" Width="500px">
  <Items>
    <dx:LayoutItem Caption="Your Name" ColSpan="1">
      <LayoutItemNestedControlCollection>
        <dx:LayoutItemNestedControlContainer runat="server">
          <dx:ASPxTextBox ID="tbYourName" runat="server" Width="100%">
            <ValidationSettings Display="Dynamic" SetFocusOnError="True">
              <RequiredField IsRequired="True" />
            </ValidationSettings>
          </dx:ASPxTextBox>
        </dx:LayoutItemNestedControlContainer>
      </LayoutItemNestedControlCollection>
    </dx:LayoutItem>
    <dx:LayoutItem Caption="NIC/Passport Number" ColSpan="1">
      <LayoutItemNestedControlCollection>
        <dx:LayoutItemNestedControlContainer runat="server">
          <dx:ASPxTextBox ID="tbNICPassport" runat="server" Width="100%">
            <ValidationSettings Display="Dynamic" SetFocusOnError="True">
              <RegularExpression ErrorText="Wrong NIC number" ValidationExpression="[0-9]{9}[x|X|v|V]$" />
              <RequiredField IsRequired="True" />
            </ValidationSettings>
          </dx:ASPxTextBox>
        </dx:LayoutItemNestedControlContainer>
      </LayoutItemNestedControlCollection>
    </dx:LayoutItem>
    <dx:LayoutItem Caption="Contact Number" ColSpan="1">
      <LayoutItemNestedControlCollection>
        <dx:LayoutItemNestedControlContainer runat="server">
          <dx:ASPxTextBox ID="tbContactNumber" runat="server" Width="100%">
            <ValidationSettings Display="Dynamic" SetFocusOnError="True">
              <RegularExpression ErrorText="Wrong Contact Number" ValidationExpression="^(?:0|94|+94|0094)?(?:11|21|23|24|25|26|27|28|29|30|31|32|33|34|35|36|37|38|39|40|41|42|43|44|45|46|47|48|49|50|51|52|53|54|55|56|57|58|59|60|61|62|63|64|65|66|67|68|69|70|71|72|73|74|75|76|77|78|79|80|81|82|83|84|85|86|87|88|89|90|91|92|93|95|96|97|98|99)" />
              <RequiredField IsRequired="True" />
            </ValidationSettings>
          </dx:ASPxTextBox>
        </dx:LayoutItemNestedControlContainer>
      </LayoutItemNestedControlCollection>
    </dx:LayoutItem>
  </Items>
</dx:ASPxFormLayout>
```

Figure 4.3.1.2: Design Form of Donation

- **Develop cascading style sheet**

The cascading style sheets help to design the web interfaces in a creative way. The particular style sheet helps to use another web interface by simply importing it to that PHP or html file. This style techniques can be used within the <head> tag in the html file but CSS files gives best programming technique to apply the styles to the particular html file. Following style sheet shows how to apply styles for a registration form.

```
.content-wrapper {
  padding-bottom: 0;
}

.content {
  display: table;
  /*height: calc(100vh - 3.13rem);*/ /* 3.13rem is the Header size */
  padding-top: 100px;
  padding-bottom: 100px;
}

.formLayout-verticalAlign
{
  /* display: table-cell;*/
  vertical-align: middle;
}

.formLayout-container
{
  background-color: white;
  margin-left: auto;
  margin-right: auto;
  max-width: 362px;
  box-shadow: 0px 1px 4px 0 rgba(0, 0, 0, 0.2) !important;
  border-radius: 2px;
}

.formLayout-groupBox
{
  margin: 0;
  padding: 0 !important;
}

.formLayout-generalErrorText
{
  color: red;
  padding-top: 1em;
}
```

Figure 4.3.1.3: Add Styles for Registration Form

4.4 Summary

This chapter principally explained about more insights concerning the framework advancement methods, for example, Common layers' libraries architecture, development advances of data layer and presentation layer.

Chapter 05

System Testing

5.1 Introduction

This section principally concerns about how the system will be tested. In here, the significance of choosing the correct testing procedures and their goals which is utilized with the improvement will be examined in detail.

5.2 Importance of Testing

Testing is the most significant phase of the system. Testing should look and find the all the weaknesses focus and deficiency that can happen inside certain conditions. Since it confirm the test results with the normal client prerequisites goals. To build up a most solid system the designer and the system clients ought to be associated with the testing stage. It is important to concur that all modules of the system are created and incorporated in general system as per the course of action. When building up the system ought to be consider about the advancement time of the system. It tends to be progressively successful if the designers select a legitimate language and quality advances. Along these lines this proposed framework ought to be grown for the most part canter with observing the system. With thinking about the systems administration, it is increasingly compelling on the off chance that it uses steadiness devices and advancements. When utilizing innovations ought to be consider about the accompanying characteristics.

- Efficiency and Performance
- Object oriented development support
- Re-usability and flexibility

Top-down advancement methodology has been chosen to build up the system due to the intricacy and the framework improvement time. The fundamental purpose behind the advancement request are creating interfaces toward the starting which will be utilized to make model of the system. And furthermore they are progressively sensitive with the database parts.

5.3 System Testing Objectives

As depicted over the product framework is an assortment of incorporated parts. These parts or the modules can be tried exclusively or in gathering or as the entire programming framework. In addition, framework testing assists with guaranteeing that the details and business capacities are as of now met with the segments. Some of framework target elements of the system as below.

- Assure the quality on web portal and provided information within the operations.
- Avoid defects and prevent errors.
- Ensure the end results to meets the business and user requirements.
- Ensure that system align with the Business Requirement Specification and System Requirement Specifications along with functional and non-functional requirements.
- Achieve the assurance of the customers by provide them a worth and defect free product.

Subsequently, programming testing ensures that the testing is being done appropriately and the system is prepared for use. It additionally establishes that the application can be sent effectively to the machine and with no opposition. Subsequently the application is anything but difficult to introduce, learn and use.

5.4 Testing Strategies

Testing methodology is intended to guarantee that all the tests which are to be applied must be recognized and the test will cover every single piece of the system before it is placed in to utilize. Testing procedure will actualized with the project state just as the technique use for system improvement. These are the tests which guarantee to convey of high quality product. Some of main test cases are provided in Appendix A.

5.4.1 Unit Testing

Unit testing will just tests the parts of the project. Be that as it may, this doesn't assist with recognizing each mistake in the framework, for example, execution issues, and coordination errors and different issues with applicable to the framework. Hence unit testing will be profoundly compelling just when it utilized in association with other testing methods. The unit testing intended to ensure that a module of the system for the most part manage to a single function which developed by the specifications.

5.4.2 Integration Testing

Through integration testing, distinguish the errors that were not and couldn't recognize in the unit testing. Accordingly this testing guarantees that the useful and execution prerequisites particular on project plan determinations. Integration testing will take the modules of the project which are tried under unit testing. At that points they will apply to test in test intend to conveys the yield as coordinated project which is prepared for the integration testing.

5.4.3 System Testing

System testing won't get numerous mistakes, since it utilizes inputs which are tried under unit testing and mix testing. In framework testing the conduct of entire project is tried as characterized by the extent of the advancement venture. It might incorporate tests dependent on necessity details, business process, use cases and framework assets and so on. System testing is regularly the last test to check that the framework to be conveyed meets the particular and its motivation. It should investigate both useful and non-useful prerequisites of the testing.

5.4.4 Acceptance Testing

After the unit testing, integration testing and system testing acceptance testing will be performed to verify that all the progressions made to the framework during the structure and improvement process are meet with unique framework determinations and client prerequisites. More often than not for acceptance testing stakeholders might be included as well.

5.5 Test Plan

Test plan is mainly focus around the testing procedures of the proposed DFPP for nourishments savers around the globe. The test plan can be separated in to two characterizations. They are unit trying and system testing. Under unit testing, system testing and combination testing parts are incorporated. Under framework testing, framework testing and acknowledgment testing are incorporated. When planning the test plan following criteria are considered.

- Have to identify the components and the features which are tested and not tested.
- Ensure the all required and necessary elements are in ready to testing.
- Which authorities are conducted the testing part for particular component or feature.
- Identify the issues and problems which arise from the testing and plan to correct them.

5.5.1 Test Plan -Unit Testing

Unit testing behaviour to approve the individual modules or units of source code are working appropriately. Every essential part of the product is tried to check that the components plan for the unit has been accurately. Unit testing refers on Table 5.5.1: *Unit Testing Test Plan* is performed before the usage and integration of DFPP modules to guarantee the usefulness. Principle modules of the system will be tested during the unit testing.

Table 5.5.1: Unit Testing Test Plan

Component	Description
Login Module	This module mainly focuses to sign in the users for the system, such as customers, Administrator etc. Therefore in testing part check whether the activities such as the entering details of the stakeholders, add and update new members are working properly and the authorized access levels can involve with the system successfully.

<p>Registration Module</p>	<p>This tested whether the customers are allowed to register with the system successfully by filling required details. Without filing one of the required details the system would not allow to register to the system. This testing that the database connections and server and view the details successfully.</p>
<p>Order Module</p>	<p>This module focuses to ensure that customer can request an order for a particular request. In order to ensure system should test whether the user have been registered person. Moreover testing conduct for entire order details to the system by user and view details by the administrator.</p>
<p>Requests Module</p>	<p>Request module focuses the testing of generating requests from specific user or a customer. The user can check the needy people within the system and make donation for their excess foods. The module checks whether the database connection has made successfully and the required data has been stored within the relevant database table.</p>

<p>Payments Module</p>	<p>This module focuses to ensure that customer can make relevant payments for a particular order. In order to ensure system should test whether the user have been registered person. Moreover testing conduct for entire payment details to the system by user and view details by the administrator.</p>
<p>Distribution Module</p>	<p>The module is to manage the distribution details with the involvement of system administrator. Administrator will be able to assign the distributions to system staff and view the relevant details of existing distributions of customers. Moreover testing conduct for entire distribution details of the system by user and view details by the administrator</p>
<p>Wastage Module</p>	<p>Wastage module will manage the expired requests via the system. Once the request expired within specified time period excess food will send to compost production. Hence testing will perform on time period and engage details with database connectivity</p>

Delivery Module	This module will focus on delivery management via administrator within system staff. Once the delivery has made on location it will closed and others will be as opened. Testing will perform on status changes along with database connection
-----------------	--

5.5.2 Test Plan-System Testing

The system testing will be for the most part centering to three functionalities to be specific client login exercises which are utilized to do with inserting, updating and deleting. Test plan for the monitoring system is appeared as follows refers on Table 5.5.2: *Monitoring system Testing – Login*.

Table 5.5.2.1: Monitoring system Testing – Login

Test Scenario	Description
User login	The user Login consists with user name and password. The users who were registered with the system can only make orders via system.
Admin Login	The administrator of the system can access with the system when he entered the valid user name and the password. All the valid username and password should store in the database.

Incorrect Login	When there is an invalid username and password an error message will be displayed on the screen.
Change Password	To ensure the confidentiality and the security purpose of the user's information the users allow changing their password.
User functionality	When login in to the system as an administrator, delivery person or customer, they can perform their tasks with all the modules as per their user level access. In here ensure that they can perform their tasks very well.

The second system test is used to manage the administrator's activities. It contains main three functionalities of user allocation, user enable or disable such as customer, Add or Edit user details, product details and order details refers on Table 5.5.2.2: *Monitoring system testing – administrator*.

Table 5.5.2.2: Monitoring system testing – administrator

Test Scenario	Description
User Enable or Disable	<p>Any user can view the content of the website but the order only can be made by the registered users within the valid range.</p> <p>The payment details are only view by the administrator where the users only have access to pay the amounts through the system.</p>

<p>Add or Edit User Details</p>	<p>The user details can be edited by the user by change their name and mail addresses etc. After doing changes to their profiles they can save them to the database by one click.</p>
<p>Manage distribution and delivery</p>	<p>Administrator will allow managing all the distributions and delivery among their staff in order to provide better services on their customers. Administrator will assign the delivery and distributions which are pending from hours</p>

5.5.4 Test Deliverables

The tested outcomes will be offered to the required organization and different authorities by methods for reports, graphs and different records all the time during system advancement and testing.

5.5.5 Errors and Bugs uncovered

Following are the most significant errors which occurred with the testing some portion of the system on the grounds that frequently the distinctive sort of the data inputs and with large volume of data.

- **Run-time errors**

The run time errors were happened in different circumstances. The greater parts of them are emerging from the calculations of the average and percentage. Those errors are kept up by fixed the invalid calculations. And furthermore can oversee detail with fixing the system memory space.

- **Store data with null values**

With storing away the data in database the issues can be happened when entering the approval for the input data. In any case, the issues will arise while retrieving data from the database. This error refers on Figure 5.5.5.1: *Storing the Data with Null Values* were fixed utilizing validation techniques.

Server Error in '/' Application.

Failed to enable constraints. One or more rows contain values violating non-null, unique, or foreign-key constraints.

Description: An unhandled exception occurred during the execution of the current web request. Please review the stack trace for more information about the error and where it originated in the code.

Exception Details: System.Data.ConstraintException: Failed to enable constraints. One or more rows contain values violating non-null, unique, or foreign-key constraints.

Source Errors:

```

Line 28360:         }
Line 28361:         SDMDDL.SDM_Tran_GenerateInvoiceDataTable dataTable = new SMDMDDL.SDM_Tran_GenerateInvoiceDataTable();
Line 28362:         this.Adapter.Fill(dataTable);
Line 28363:         return dataTable;
Line 28364:     }

```

Source File: c:\Windows\Microsoft.NET\Framework\v4.0.30319\Temporary ASP.NET Files\vialad56348932406\App_Code\akey6q-14.cs Line: 28362

Stack Trace:

```

[ConstraintException: failed to enable constraints. One or more rows contain values violating non-null, unique, or foreign-key constraints.]
System.Data.DataTable.EnableConstraints() +2001567
System.Data.DataTable.set_EnforceConstraints(Boolean value) +39
System.Data.DataTable.EndLoadData() +234
System.Data.Common.DataAdapter.FillFromReader(DataSet dataset, DataTable datatable, String srcTable, DataReaderContainer dataReader, Int32 startRecord, Int32 maxRecords) +340
System.Data.Common.DataAdapter.Fill(DataTable[] dataTables, IDataReader dataReader, Int32 startRecord, Int32 maxRecords) +340
System.Data.Common.DbDataAdapter.FillInternal(DataSet dataset, DataTable[] datatables, Int32 startRecord, Int32 maxRecords, String srcTable, IDbCommand command, CommandBehavior behavior) +160
System.Data.Common.DbDataAdapter.Fill(DataTable[] dataTables, Int32 startRecord, Int32 maxRecords, IDbCommand command, CommandBehavior behavior) +108
System.Data.Common.DbDataAdapter.Fill(DataTable dataTable) +108
SDMDDLTableAdapters.SDM_Tran_GenerateInvoiceTableAdapter.GetInvoiceBillingBySPID(String SPID) in c:\Windows\Microsoft.NET\Framework\v4.0.30319\Temporary ASP.NET

```

Figure 5.5.5.1: Storing the Data with Null Values

- **Query problems**

When connecting queries with tables it can be more errors. The query problems will be occurs due to the syntax errors of the select statements. The incorrect table names, column names and databases. The statement should be in the correct structure with the statement logic. If the logic of connecting tables are incorrect the query problems refers on Figure 5.5.5.3: *Query Problems* will occurred.

Server Error in '/' Application.

Internal error. The string routine in file e:\sql10_main_t\sql\ntdbms\storeng\dmu\dbcc\source\dumplog.cpp, line 5084 failed with HRESULT 0x8007007a.

Internal Query Processor Error: The query processor encountered an unexpected error during execution.

Description: An unhandled exception occurred during the execution of the current web request. Please review the stack trace for more information about the error and where it originated in the code.

Exception Details: System.Data.SqlClient.SqlException: Internal error. The string routine in file e:\sql10_main_t\sql\ntdbms\storeng\dmu\dbcc\source\dumplog.cpp, line 5084 failed with HRESULT 0x8007007a.
Internal Query Processor Error: The query processor encountered an unexpected error during execution.

Source Error

An unhandled exception was generated during the execution of the current web request. Information regarding the origin and location of the exception can be identified using the exception stack trace below.

Stack Trace

```
[SqlException (0x80131904): Internal error. The string routine in file e:\sql10_main_t\sql\ntdbms\storeng\dmu\dbcc\source\dumplog.cpp, line 5084 failed with HRESULT 0x8007007a.  
Internal Query Processor Error: The query processor encountered an unexpected error during execution.]  
    Notice_OEMapper.DataProviders.SqlBlockBuilder.EndStatement(SqlCommandEventArgs args, DataRow row) +503  
    Notice_OEMapper.DataProviders.SqlBlockBuilder.ExecuteCommand(SqlContext context, ICommand data) +712  
    Notice_OEMapper.DataProviders.SqlDataProvider.Update(DataSet updateData) +1711  
    Notice_OEMapper.Data.Transaction.Commit(Boolean FCommitSuccess) +980  
    Notice_OEMapper.Data.Transaction.Commit() +10  
    Telerik.Cms.Data.StagePage.Publish() +773  
    Telerik.Cms.Data.StagePage.CheckIn() +90  
    Telerik.Cms.Web.UI.FrontPage.Button_Command(Object sender, CommandEventArgs e) +123  
    System.Web.UI.WebControls.LinkButton.OnCommand(CommandEventArgs e) +108  
    System.Web.UI.WebControls.LinkButton.RaisePostBackEvent(String eventArgument) +135  
    System.Web.UI.WebControls.LinkButton.System.Web.UI.IPostBackEventHandler.RaisePostBackEvent(String eventArgument) +10  
    System.Web.UI.Page.RaisePostBackEvent(IPostBackEventHandler sourceControl, String eventArgument) +12  
    System.Web.UI.Page.RaisePostBackEvent(NumericalClickAction postData) +173  
    System.Web.UI.Page.ProcessRequestStart(Boolean includeStagesBeforeAsyncPoint, Boolean includeStagesAfterAsyncPoint) +1505
```

Figure 5.5.5.3: Query Problems

5.6 Summary

The section explained about the system testing of the proposed system of DFPP. Software testing can initiate whenever in the product improvement process. The system testing process is utilized to confirm the improvement against the requirements, to check the system for errors and the system work process. The errors found in testing the system are being discussed about in a more detail approach in this part. While considering this section the primary reason for existing is to show how the system conveys a high quality product with least mistakes.

Chapter 06

Evaluation

6.1 Introduction

The evaluation chapter offer the entire evaluation on the task of DFPP and how the undertaking carries on from its unique conditions and the issues during the project and the choices that are make to defeat for distinguished issues are discussed. Also this chapter examined about the information that could be procured during the undertaking. As item assessment it will additionally explained about how far it met the useful necessities during the underlying phases of the project.

6.2 Evaluation of the Project Practices

This section represents the evaluation of the project plan and variations which are occurred during the project phases. Moreover these sections discuss about the success of the process and the difficulties and recovery solutions which arise within the project in terms of analysis, design and implementation phases.

6.2.1 Analysis Phase

The analysis stage is the first phase that met when developing a project where it supports to name the possible requirements for develops of the system. In terms to gather the requirements the research, articles are used as the main fact gathering techniques. Within the phase, analyze the identify issues, limitations and gathered requirements to model the proposed system and its non functional and functional requirements. The questioner and interviews process are involved with some issues though they are convenient way to facts gather. The both techniques are engage with the delay of stakeholders' responses and meeting them. But the requirement collection plan was effectively directed the requirements gathering process smoothly.

Throughout the fact gathering process the papers of the researchers are very much helps to prioritize the requirements and identify the additional minor problems in different angles. The requirements have made from the different users in different directions with respect to their locations and life styles. Therefore most of the requirements are really valuable to the development of the system among the great number of requirements.

6.2.2 Design Phase

After identifying the requirements the design phase will be process as the next stage of development of the system. The design phase includes the design of overall architecture and identified major components of the proposed system. Moreover, designs the databases and interfaces of the system will be proceed during this stage. This phase primarily focuses to design the system with the software and module architecture, databases, design interfaces and finally integrate the modules of the system.

With the appropriate understanding of the user requirements gave feedback to continue the design process without much complexity. The overall system architecture insists to identify the major tasks and components of the proposed system. The Software architecture represents a clear idea about the components of the system and communication between components. But in implementation process was changed due to the system characteristics. Interfaces designs were helped to develop the prototype of the system.

The second phase, allows acquiring experience which are gathered through the analysis phase. This identified how far design theories are pop up in to practical environment. For an example when design the databases using normalization techniques and theories, helped to identify the attributes, primary keys and foreign keys of the database.

6.2.3 Implementation phase

This phase will establish the responsibility on set up the system as indicated by the determinations which are recognized. All the development, testing and execution of the system will be spoken to during this stage. The principle key procedure of this stage are recognizing trying systems, structure the test plan, distinguishing significant undertakings on usage and arranging execution. The system will be developed as isolated parts and coordinated in to the improvement of by and large turn of events. To guarantee the improvement of mistake free programming total tests ought to be executed during this stage. The significant implementation of usage was making a legitimate execution plan. Since any disappointment happened during this stage it will influence to the day today process. Consequently, legitimate changing strategies ought to be applied for the procedure to limit the dangers and the usage time. Best testing systems and legitimate execution techniques were assists with leading the usage in a viable manner.

6.3 Evaluation Techniques

In the evaluation phase primarily focus whether the ultimate outcome of the project is achieved the functional requirements which are locate by the users. To gather the results of evaluation process it is necessary to practice methods such as questioners and interviews. Following described the some of the techniques which are used to gather the results of evaluation.

Questioners: A questionnaire is a research tool consisting of a chain of questions and other prompt for the reason of assembly information from respondents. Although they are often intended for statistical analysis of the responses. Questionnaires have advantages over some other types of surveys in that they are economical, do not require as much effort from the questioner as verbal or telephone surveys, and often have standardized answers which make it effortless to compile data.

Interviews: An interview is a dialogue where questions are asked and answers are given. In common phrasing, the word "interview" refers to a one-on-one conversation with one person acting in the role of the interviewer and the other in the role of the interviewee. The interviewer asks questions, the interviewee responds, with participants taking turns talking.

6.3.1 Evaluation Criteria

The evaluation criteria are designs by comparing the identified issues and the limitations which are mentioned in the requirement gathering process with the functions of the proposed system. System is assessed considering with these aspects such as user friendliness, accuracy, Compatibility, time effectiveness and the functionality of the system.

6.3.2 Evaluators and the Problems of the current system

In this scenario describe the evaluators who access with the system usually. Since they are the people who interact with the system and can name the issues regard to the system. A brief description can be shown as follows refers on Table 6.3.2.1: *Evaluators and the Problems of the Current System*.

Table 6.3.2.1: *Evaluators and the Problems of the Current System*

Evaluator	Problems of the exists systems
Regular customer	Unavailability of options and sophisticated process to donor excess foods for needy people
Professionals	Use separate portals or logins to donor the excess foods at restaurants Unavailability of portal to donor the excess harvest at their fields

6.3.3 Solutions for the Problems

User inclusion assists with conveying the new system as the user required. In this stage the issues of the current systems are contrasted with the new system. The satisfactory level of the users can be shown as follows refers on Table 6.3.3.1: *Solutions for the Problems*.

Table 6.3.3.1: Solutions for the Problems

Problems Addressed	Solutions Provided	User Comment
Unavailability of options and sophisticated process to donor excess foods for needy people	Allow a convenient process to donor foods for regular customers	Satisfied
Use separate portals or logins to donor the excess foods at restaurants	Allow to donor and choose needy people to donate foods using one account	Satisfied
Unavailability of portal to donor the excess harvest at their fields	Allow to donor/ sell their excess harvest to needy people	Satisfied
Manual procedure to pay and order the foods for needy people	Provide the web based solution to access make orders and relevant payments	Satisfied
Unavailability of a system to manage the distributions and delivery on excess foods and harvest	Provide web based solution to link with the distributions and delivery and manage the details	Satisfied

Unavailability of a process without taking order for needy people	Provide web based solution to send the unreserved orders of foods for compost production	Satisfied
--	--	-----------

6.3.4 Evaluating Functional Requirements

Purpose for assessing the functional requirements are to recognize whether the system's components meet the prerequisites indicated refers on Table 6.3.4.1: *Evaluating Functional Requirement*.

Table 6.3.4.1: Evaluating Functional Requirement

Functional Requirements	Component Developed
<ul style="list-style-type: none"> • Allow to order organic products • Allow to handle the customer Payment details 	Order Module
<ul style="list-style-type: none"> • Able to maintain the customer details regularly • Maintain the user accounts for each user 	Registration and Login Module
<ul style="list-style-type: none"> • Able to make requests for donation of excess foods 	Request Module
<ul style="list-style-type: none"> • Able to manage wastage of foods without reservation 	Wastage Module

<ul style="list-style-type: none"> • Able to make payments easily via online for ordered products 	Payment Module
<ul style="list-style-type: none"> • Able to manage distribution and delivery on donations 	Distribution and Delivery Module

6.4 Project Achievements

Other than the previously mentioned project accomplishments following are the achievements obtained during the project timeframe. Learning encounters picked up all through the project are a lot of imperative to confront the future difficulties in project improvement. Some of accomplishment got and exercises got the hang of during this project are,

- Improve the project management skills learnt
- Have knowledge about many programming languages during the language selection process
- Improve the knowledge and find additional features of web designing
- Learning of effective time management
- Improve writing skills by preparing a comprehensive thesis
- Learning of lining the software with hardware components and programming the hardware equipments

6.5 Summary

This chapter given a detailed assessment on the project and the system created. Phases of the project life cycle were assessed under project assessment. Moreover, the executed system is assessed by discussing about the issues of the current system and utilitarian requirements of the new system.

Chapter 07

Conclusion & Recommendations

7.1 Introduction

Research works had been completed all through the model application improvement process. DFPP is presently evolved dependent on all the partners' prerequisites and conclusions assembled by means of the researchers' works. The motivation behind this part is to finish up the exploration about the improvement of DFPP. This section portrays the result of the issue. Along these lines this part centres to evaluate the results and the findings of this exploration how to apply for the various circumstances. And furthermore this section incorporate with overview of the project results, project practices and exercises learned, project accomplishments, future upgrade and proposals of the undertaking.

7.2 Research Results Overview

The main aim of this project is to offer an DFPP to donating excess foods and harvest to all needy people or organizations in vast. The proposed DFPP is feasible enough to donate all excess foods and harvest to all needy people or organizations within the Srilankan domain. Moreover, DFPP is shown to be a useful way of donating foods to organizations and all people who required while engaging as potential for keep away from the wastage of food and how the product facility for betterment of the people. Overall project results assembled utilizing truth gathering procedures, for example, documentations and examination articles. These subtleties help to investigation and distinguished diagnostic points of view as far as technical, economical, operational and social conveniently.

7.3 Overview of Practices & Lessons Learned

The significant purpose of this research is giving the arrangement as per the difficult area. Along these lines with the direction of the writing audit meeting can recognize the issues which were happened in such circumstances. With the comprehension of the past systems issues it was anything but difficult to consider about the proposed system highlights. With the end goal of the information gathering from clients' different strategies, for example, interviews, questioners and perception techniques were utilized. With the functional help of these strategies can recognize the system requirements. Considering about the quantitative and subjective approaches which were utilized in information gathering methods they were extremely valuable to investigate the information. When utilizing the reality gathering strategies, for example, meets and ought to know about the time plan of the project.

7.4 Research Achievement

The Digital Food Protection Portal is proposed as a solution for the weaknesses of food donation systems. The developed system will be reduced the highlighted problem in well manner in the future. The solution is model with web based solution which linked with the all categories of donors within Srilankan domain. The web based solution is enhanced functionality to the existing food donation systems which are manually operated with defined user categories.

The entire web based solution can be access through the registered customer mobile phone, tab or even from desktop in remotely.

An underlying model of the DFPP framework is created with the adaptable design that can be upgraded for future extension. Testing was directed on DFPP to test accuracy and fruition of the model application, this includes the testing for ease of use, efficiency just as the technical feasibility of this model application.

This system development provides consumers with a new way of donating their foods and harvest using their own laptop, desktop, Tab or mobile phone. This solution provides the customer to save time with their busy schedule. Consumer can select their own needy people and donate their foods within few seconds. The each and every feature of DFPP is converted into functional and non-functional requirements which mentioned in chapter4.

The system presents the functionalities such as registration user, login, order and requests. The availability of the system is mainly dependable for the customers who registered with the system. So the customers able to make request, view details of their personal details as well as the order details. The customer able to pay for their orders through the web based solution. The authorities can view the detail reports of all the functions which are carried throughout the system. Additionally, the administrator able to insert the details to the variety of requests and orders.

The DFPP mainly concern to meet the giver and taker on their own without any limitations based on locations. Moreover, let the user to experience the technology to reduce food wastage within their country.

7.5 Future Enhancement

The initial development of the DFPP is only have considered the Srilankan context and donor the excess foods and harvest for needy people. At the initial stage with the basic functionalities of the web based solution facilitate to provide the consumer needs. In contrast, with changing future requirements whoever interested to enhance the system, this will provide as the foundation to maintain to make the DFPP system with more and more facilities. The DFPP is created with its adaptability as far as system architecture which is effortlessly took into consideration the future improvements. When consider about this project improvement there are a few suggested territories for future upgrades. The improvements can be as followed.

- Enhance the domain through the world
- Enhance payment methods globally and improve distribution methods
- Locate nearest location of needy people for donations
- Use more encryption methods.
- Implement mobile application which compatible with all platforms (android, ios etc.)

7.6 Recommendations

DFPP ought to offer exact and successful support to the givers and poor individuals everywhere throughout the world with the accessibility and high proficiency. In this way, it is important to access with the framework through high alter and secure way. The clients ought to have the option to get to the project inside the substantial range whenever. In this manner the manual framework has moved in to the mechanized online framework. The client can login to the framework utilizing legitimate username and password. The handled computerized project is profoundly concern about the ease of use of the framework, expands the customization and decreases the very strong through of the client significant time.

7.7 Summary

This chapter clarified whether the difficult space is count with the result of the system improvement and how the result of the framework advancement is satisfying the client prerequisites. In addition, the part referenced the review of the exploration, practices and exercises got the hang of during the procedure, accomplishments of undertaking and proposals which can be picked up from the research. Besides, the general foundation of the undertaking condition, issue space and the prerequisites gathering procedures are discussed.

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Appendix A

Test Cases for Login						
Pre-condition: User has valid username and password						

Step	Test step	Test Data	Expected Results	Actual Result	Status	Notes
1	Navigate to Login page	Click login button	Display login page	Same as expected result	Pass	
2	User able to login successfully	Correct username and password	User must successfully login to the system	Same as expected results	Pass	
3	Unregistered users is restricted to login	Incorrect username and password	Proper error must be displayed and prompt to enter login again	Same as expected results	Pass	
4	Test with valid username and empty password such that login must get failed	Valid username and empty password	Error must be displayed and prompt to enter login again	Same as expected results	Pass	
5	Test with empty username and valid password such that login must get failed	Empty username and valid password	Error must be displayed and prompt to enter login again	Same as expected results	Pass	

6	Check if the login function handles case sensitivity	Case changed username and password	Login must fail saying incorrect username/password	Same as the expected results	Pass	
7	Verify the URL without logging into the site	Registered username and password	The URL should not redirect to a logged in page but to a logged out page of the site	Same as the expected results	Pass	
8	Verify register button click navigate to registration page	Click registration button	Display registration form	Same as expected results	Pass	

Test Cases for Registration Page

Pre-condition: Access the web based solution

Step	Test Step	Test Data	Expected result	Actual Result	Status	Notes
1	Navigate to Registration page	Click registration button	Display registration page	Same as expected results	Pass	
2	Verify that all the specified field are present on the registration page	Name, Username, Password, email and all other fields	All the required/mandatory fields are marked	Same as expected results	Pass	

3	Verify that the required /mandatory fields are marked	All the fields of the registration form	All the required/mandatory fields are marked	Same as expected results	Pass	
4	Verify that not filling the mandatory fields and clicking register button will lead to server without any validation error	Keep name, username, password, email fields empty	Display error message “please fill the required fields ”	Same as expected values	Pass	
5	Verify that not filling the optional fields and clicking submit button will still send data to server without any validation error	Address and contact number fields keep empty	Redirect to the Login page	Same results as expected	Pass	
6	Verify that clicking register button after entering all the required fields, submits the data to the server	Fill registration form details and click register button	Display registration is successful data save into the database	Same as expected results	Pass	
7	Verify that clicking cancel button, after entering all the required fields, cancels the submit requests and resets all the fields	Fill registration form details and click cancel button	Resets all the fields	Same as expected results	Pass	
8	Enter empty value for name	Keep name field empty and click register button	Display error message “please fill required field”	Same as expected results	Pass	

9	Enter empty value for password and confirm password	Keep username and password field empty and click the register button	Display “please fill the required field ”	Same as expected result	Pass	
10	Enter empty value for either password or confirm password	Password:123 And confirm password keep empty	Display error message “password does not match”	Same as expected result	Pass	
11	Enter empty value for contact number	Keep username and passwords fields empty and click the button	Display error message	Same as expected result	Pass	
12	Enter non-numeric value in Contact Number field	aaaaaaaa	Display error message	Same as expected result	Pass	
13	Enter empty value for Address no	Keep address No empty and click the button	Display error message “Address No required”	Same as expected result	Pass	
14	Value entered in Password field must be visually encrypted	123	xxxxxxx	Same as expected result	Pass	
15	check for the error message for mobile no field by enter less than 10 characters	01231556	Display error message	Same as expected result	Pass	

Test Cases for Product Insert, update and delete

Pre-condition: User has valid username and password

Step	Test Step	Test Data	Expected result	Actual result	status	Notes
1	Navigate to products insert, update, delete page	Click on product button	Display product insert update delete page	Same as expected result	Pass	
2	Verify that all the specified fields are present on the product insert update delete page	Product ID, Name, Price and other all fields	All the specified fields are present on the product insert update delete page	Same as expected result	Pass	
3	Verify that the required/mandatory fields are marked		All the required/mandatory fields are marked	Same as expected result	Pass	
4	Verify that not filling the mandatory fields and clicking submit button will lead to validation error	Keep Name, Price fields empty	Display error message as “Please try again”	Same as expected result	Pass	
5	Verify that not filling the optional fields and clicking submit button will still send data to server without any validation error	Discount field keep empty	Display successful message	Same as expected result	Pass	
6	Verify that clicking submit button after entering all the required fields, submits the data to the server	Fill Product details and click save button	Display successful message for data save into database	Same as expected result	Pass	

7	Verify that clicking cancel button after entering all the required fields, cancels the submit request and resets all the fields	Fill the form details and click cancel button	Resets all the fields	Same as expected result	Pass	
8	Enter empty value for Product Name	Keep Product name empty and click save button	Display error message "Product Name required"	Same as expected result	Pass	
9	Enter empty value for Product price	Keep Product Price field empty and click the button	Display error message "Please select the product price"	Same as expected result	Pass	
10	Enter Characters for Price	aaaaaaaaaaa	Display error message "invalid Price."	Same as expected result	Pass	
11	Enter empty value for Price	Keep Price field empty and click the button	Display error message	Same as expected result	Pass	
12	Check Product details are select for correct fields	Select data record from grid	Select data into text box fields	Same as expected result	Pass	
13	Check Product details update correctly to the server	Edit text box data and click button to save data	Display success Message	Same as expected result	Pass	

14	Check Product details delete correctly from the server	Select data from the grid and click delete button	Display success Message	Same as expected result	Pass	
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Test Cases for Online payments

Pre-conditions: User has valid username and password

Step	Test step	Test Data	Expected results	Actual result	Status	Notes
1	Verify click the URL link for the online payments page	Click payment button	Display payment page	Same as expected result	Pass	
2	If customer is new user register for system	Please refer Registration test cases				
3	If already registered customer login to system	Please refer Login test cases				
4	Verify that all the specified fields are present on the payment page	Card details, and user details	All the specified fields are present on the payment page	Same as expected results	Pass	
5	Verify that not filling the mandatory fields and clicking submit button will lead to validation error	Keep credit card number, credit card holder's Last name empty	Display error message as "Please try again"	Same as expected result	Pass	

6	Verify that the required/mandatory fields are marked		All the required/mandatory fields are marked	Same as expected result	Pass	
7	Verify that not filling the optional fields and clicking continue button will still send data to server without any validation error	Address	Display Payment is successful	Same as expected result	Pass	
8	Verify that clicking continue button after entering all the required fields, submits the data to the server	Fill payment form details and click continue button	Display payment is successful data save into database	Same as expected result	Pass	
9	Verify that clicking cancel button after entering all the required fields, cancels the submit request and resets all the fields	Fill payment form details and click cancel button	Resets all the fields	Same as expected result	Pass	
10	Verifying Payment Methods					
11	Verify with expired credit card					

Test Cases for Order products

Pre-condition: User should have valid username and password

Step	Test step	Test data	Expected result	Actual result	Status	Notes
1	Click the URL link for the order	Click on Order link	Display Login Page	Same as Expected result	Pass	
2	If already registered customer login to system	Please refer Login test cases				
3	If customer is new user register to the system	Please refer Registration test cases				
4	Verify that all the specified fields are present on the Order page	Enter Quantity	All the specified fields are present on the Order page	Same as expected result	Pass	
9	Verify cancelation of order	Click the cancel button	Display the message "cancel the order"	Same as expected results	Pass	
10	Verify success of an order	Click the order button	Display message "Success order and save please wait "	Same as expected results	Pass	

Appendix B

System Models

System Models In this segment, venture group depicts the procedure of the system utilizing four sorts of UML diagrams.

Activity diagrams

The activity diagrams generally process as a one procedure independently utilizing a few outlines. Procedures which have a typical method are demonstrated utilizing a model.

Login Module

This process is common for every function Before doing anything all clients need to experience this process. After the login procedure, they can proceed with different procedures. The choosing capacity in this outline is depicts more in following graphs after this.

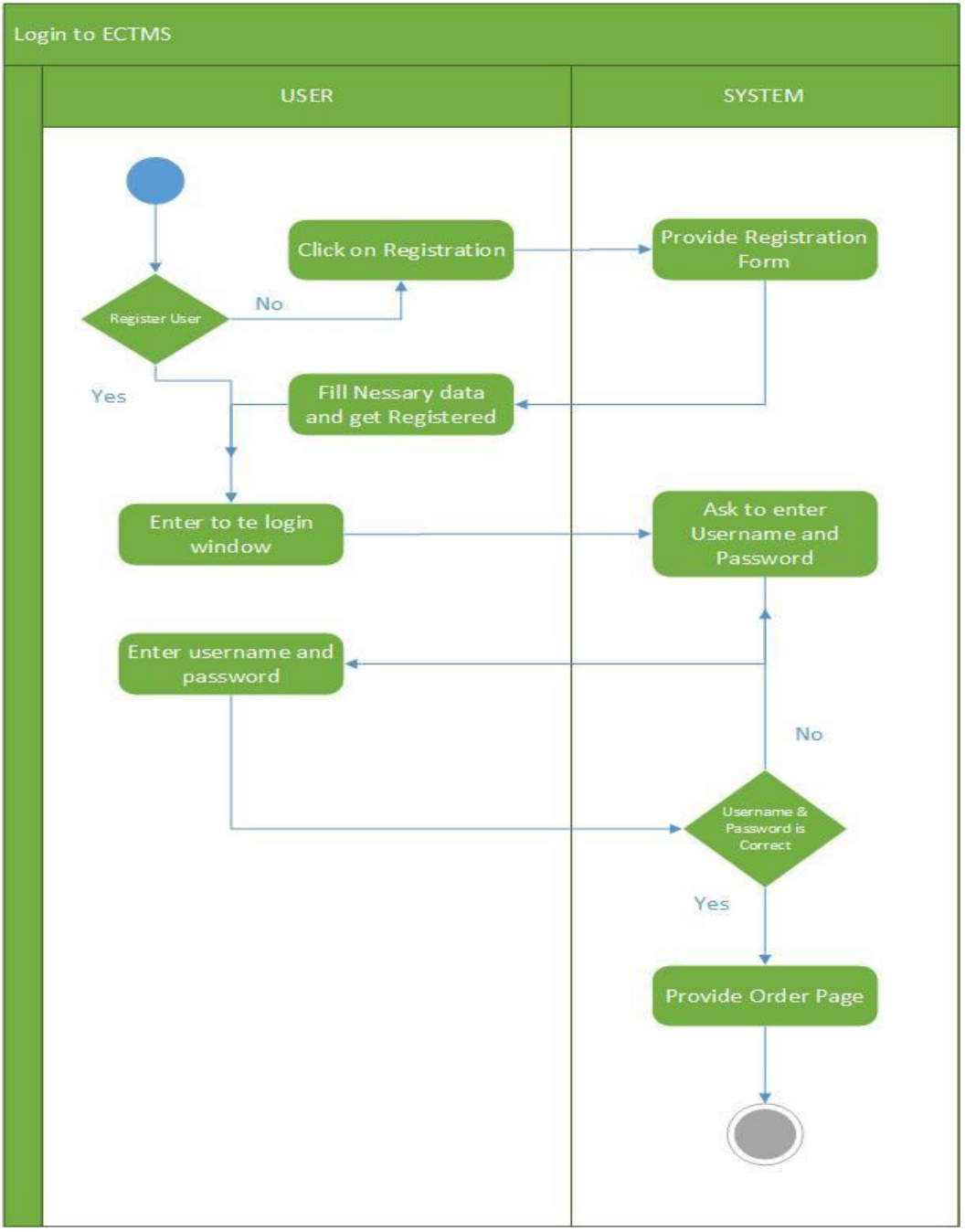


Figure: Activity Diagram for Login

Order Products

This Module is involved with the order of different organic products with the user preferences.

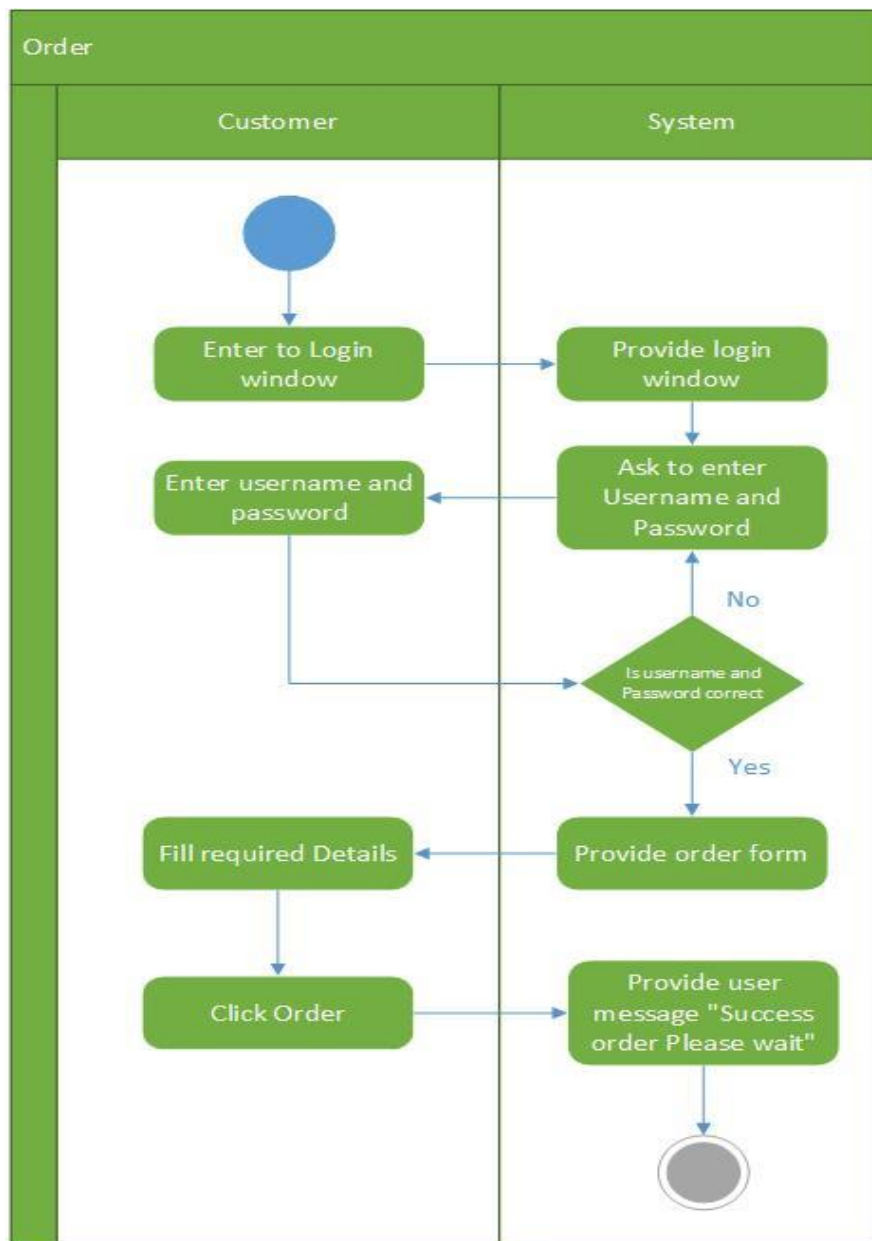


Figure: Activity Diagram for Order Products

Sequence Diagrams

The sequence diagrams clarified correspondence with clients and collaboration with the database in the procedures. There are outlines which have normal procedures in a few modules and a model from one module is utilized to make that procedure understand clearly

Login

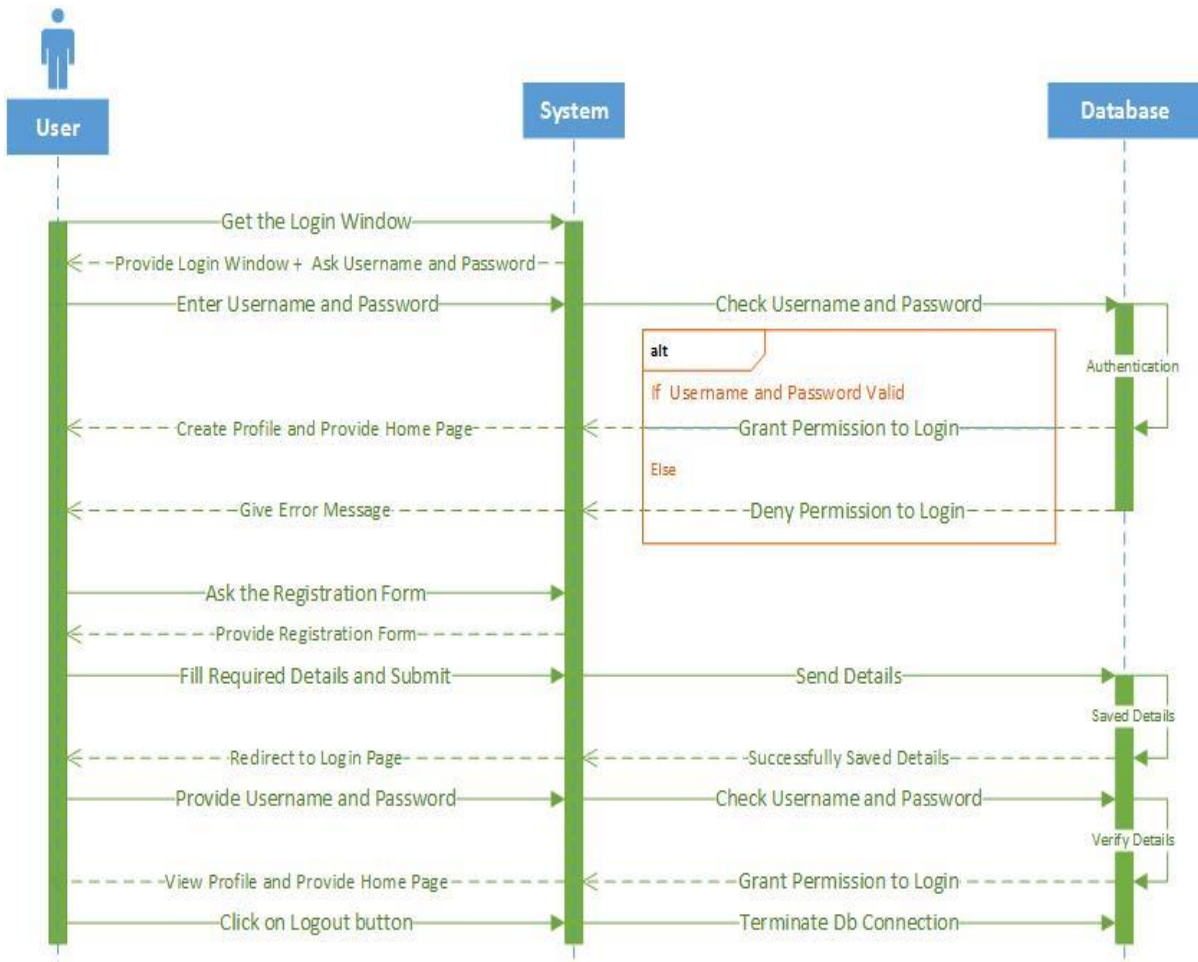


Figure: Sequence Diagram for Login

Order

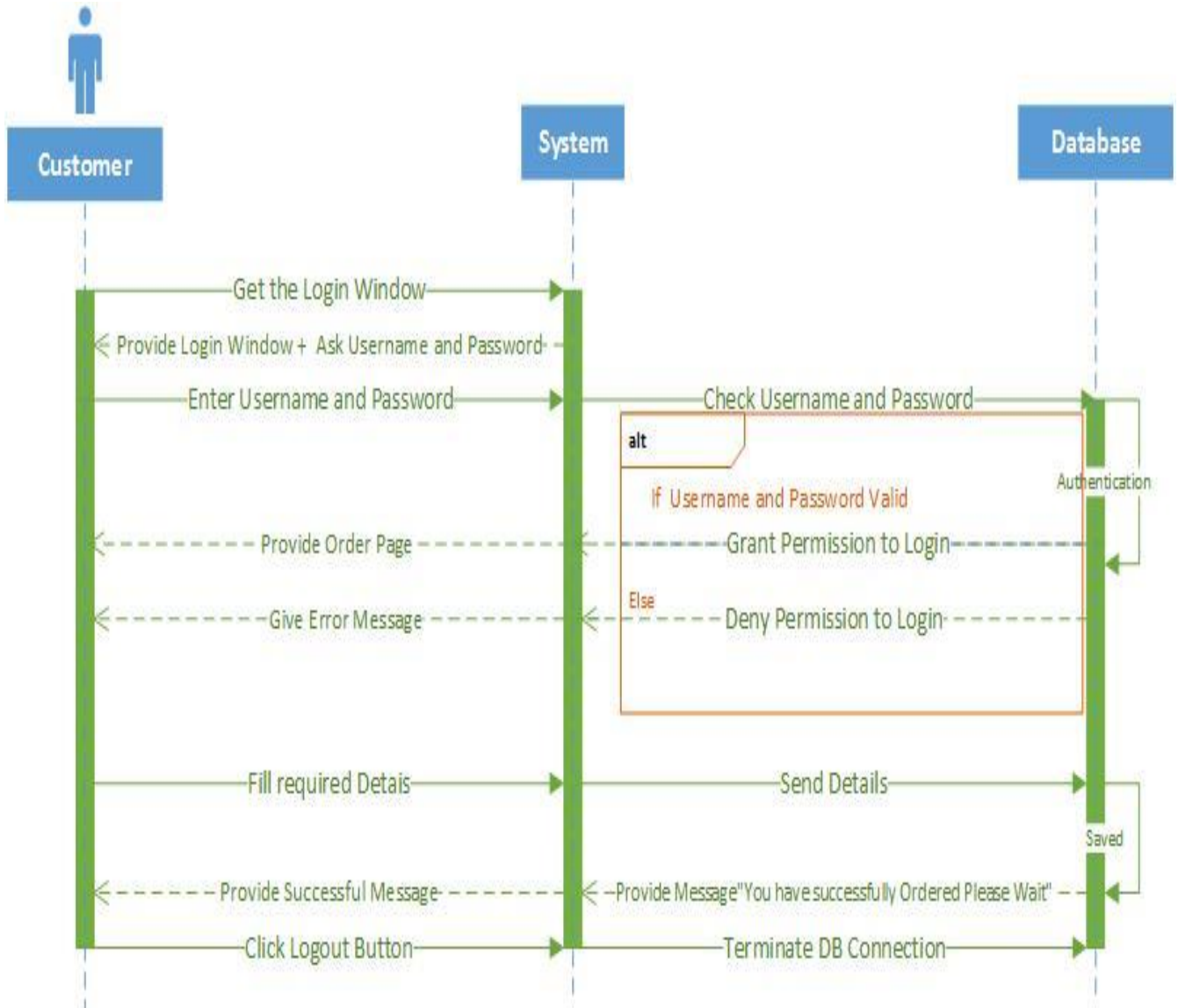


Figure: Sequence Diagram for Order

Products Details

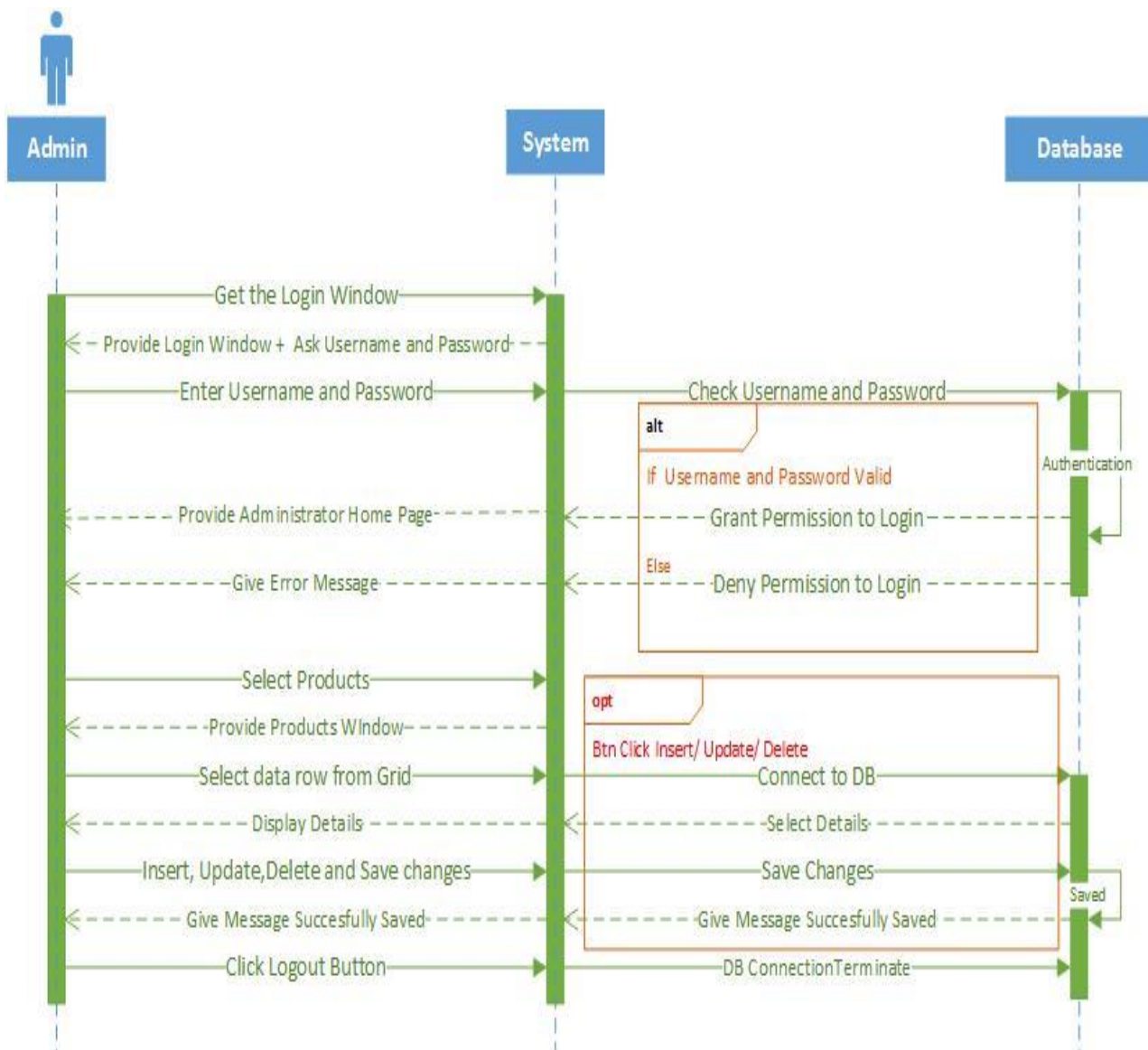


Figure: Sequence Diagram for Products

Appendix C: Entity Relationship Diagram

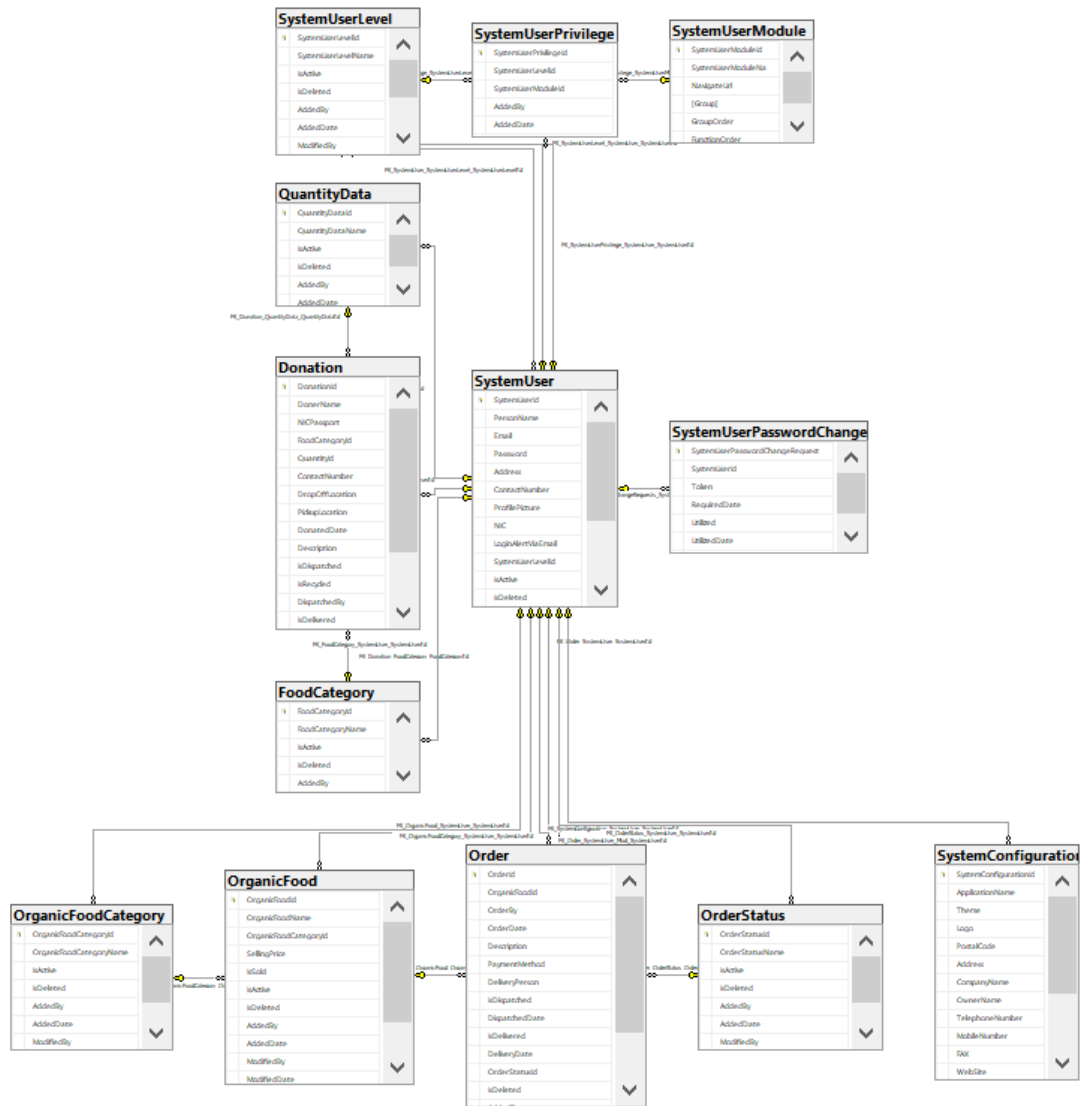


Figure: Entity Relationship Diagram