



An Undergraduate Internship Project on E-grocery

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Spring, 2021

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June 16, 2021

Dissertation submitted in partial fulfillment for the degree of Bachelor of
Science in Computer Science

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Attestation

This is to certify that the project on e-grocery is done by Abdullah Al-Amin under the supervision of **Md. Lutfor Rahman** from **Flora Limited** for the partial fulfillment for the degree of Bachelor of Science in Computer Science. I certify that the whole project documentation is authentic and done under the guidance of **Md. Asif Bin Khaled**.

Abdullah Al-Amin

15.06.2021

Signature

Date

Abdullah Al-Amin

Name

Acknowledgement

Firstly, I would like to thank the **Almighty** for helping me finish this project. Then I would like to express my honest gratitude to my respected teacher **Md. Asif Bin Khaled** for his restless guidance and support throughout the entire course.

My sincere thanks goes to Independent University Bangladesh (IUB) for having such a wonderful and unique course in my undergraduate studies. I got to learn so many things being with different companions at my workplace. My special regards goes to my supervisor, Mr. **Lutfor Rahman**, for guiding me throughout the project. I am blessed to have a nice working environment.

I will always remember this 3 month internship period and carry forward the experience in the future.

Letter of Transmittal

The 20th March 2021

Md. Asif Bin Khaled

Lecturer, Department Of Computer Science & Engineering

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Subject: Submission of Internship Report

Dear Sir,

This is my pleasure to submit my term report entitled “A Report on E-grocery in Flora Limited”. This report gave me an opportunity to have a practical experience to the working environment and activity of the IT department through Flora Limited. I have acquired a good knowledge by working on a web application project.

In the report, I tried to mention briefly about the ongoing web application project on e-grocery and thoroughly described and designed the system by analyzing the customer requirements.

With your kind supervision I believe that the knowledge and experience that I gathered during the term project period will help me in future.

Thanking you.

Sincerely,

Abdullah Al-Amin

ID: 1631055

Evaluation Committee

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Supervisor

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Internal Examiner

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External Examiner

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Convener

Abstract

In this modern era's fast-changing business environment, it is really important to understand the client's needs in the most effective manner. Most of the online buyers nowadays wish to see businesses online so that they have instant access to the products or services. E-grocery, online shopping is an e-commerce web-based application, where all the grocery products are easily accessible. The project helps in viewing various products that are available and not out of stock, it facilitates the registered users to buy their desired products instantly through different payment gateways. It also allows users to view the products without signing in. The users of the website find an extra feature where they can convey their message and request a product. The project gives easy access to the system administrator to read, update, delete the orders placed. The system administrator can generate weekly reports by extracting them to CSV file format. Several different topics have to be studied to build an e-commerce project, which includes client-server scripting techniques, implementation technologies such as the front-end languages HTML, CSS, JavaScript, and the back-end languages PHP, MySQL. relational databases. The main objective of this project is to simply build a friendly user interface to make shopping hassle-free and this, in turn, gives the system administrator to continuously monitor, keep records, and tracks the transaction details. The document outlines the detailed information required to build an e-grocery project.

Contents

Attestation	i
Acknowledgement	iii
Letter of Transmittal	iii
Evaluation Committee	iv
Abstract	vi
1 Introduction	1
1.1 Overview/Background of the Work	1
1.2 Objectives	1
1.3 Scope	2
2 Literature Review	3
2.1 Relationship with Undergraduate Studies	3
2.2 Related works	4
3 Project Management & Financing	5
3.1 Work Breakdown Structure	5
3.2 Activity wise Time Distribution	6
3.3 Gantt Chart	6
3.4 Activity wise Resource Allocation	6
3.5 Estimated Costing	7
4 Methodology	8
5 Body of the Project	10
5.1 Work Description	10
5.2 System Analysis	11
5.2.1 Six Element Analysis	11
5.2.2 Feasibility Analysis	12

5.2.3	Problem Solution Analysis	13
5.3	System Design	14
5.3.1	Rich Picture	14
5.3.2	UML Diagrams	15
5.3.3	Activity Diagram	16
5.3.4	Functional and Non-Functional Requirements	18
5.4	Product Features	20
5.4.1	Input	20
5.4.2	Output	23
5.4.3	Architecture	24
6	Results & Analysis	25
7	Project as Engineering Problem Analysis	27
7.1	Sustainability of the Project/Work	27
7.1.1	Environmental:	27
7.1.2	Economic:	27
7.1.3	Social:	27
7.2	Social and Environmental Effects and Analysis	28
7.3	Addressing Ethics and Ethical Issues	28
8	Lesson Learned	29
8.1	Problems Faced During this Period	29
8.2	Solution of those Problems	29
9	Future Work & Conclusion	30
9.1	Future Works	30
9.2	Conclusion	30
	Bibliography	31

List of Figures

3.1	Work Breakdown Structure	5
5.1	Rich Picture of the system	14
5.2	Use Case Diagram of the System	15
5.3	Activity Diagram for Searching a Product	16
5.4	Activity Diagram for Buying a Product	17
5.5	An Attractive Login Interface	20
5.6	Registration Page	20
5.7	E-grocery Home Page	21
5.8	E-grocery Home Page Navigation Bar	21
5.9	E-grocery Product Page	22
5.10	Contact Us page	22
5.11	Admin login credentials in Database	23
5.12	Contact Us page information in database	23

List of Tables

3.1	Activity wise Time Distribution	6
3.2	Activity wise Resource Allocation	6
3.3	Estimated Costing	7
5.1	Six-Element Analysis	11
5.2	Problem Solution Analysis	13
6.1	Results Analysis	26

Chapter 1

Introduction

1.1 Overview/Background of the Work

Due to the COVID-19 outbreak from the late 2019, situation has become more pathetic, the miserable way of living has escalated drastically with thousands of people around the world getting infected. Now, people have started to become more health conscious. They try to maintain proper hygiene and practice social distancing. In order, to fulfill all the necessities of the people remaining indoors, a virtual platform with all the grocery items can make life easier. This will reduce the people gatherings in shops and malls and will help reduce the widespread of the deadly disease.

1.2 Objectives

The project aims to establish a computerized online shopping system, including customer product requests. The project is specifically designed for the use of people staying indoors during the pandemic and is intended to serve the purpose of the daily necessities. It will work as complete user interface for grocery management system for the administrator. This website helps in searching for the products through related information of products, can manage the insertion and monitoring of products and is very useful.

- To serve the humanity by helping them with a hassle free shopping experience.
- To reduce the manual work of shopping through a web based automated system.
- An user friendly interface for the satisfaction of the users.
- To make sure that the data, information and login credentials of the admin and users are safe.
- A two factor authentication so that the user account remains unharmed.

- To reduce number of workers working in the existing system.
- Retrieving information from the database by using parallel processing speeds.
- To make a load balancing mechanism to make the system run smoothly in case of too much traffic.
- A back up plan if the system fails
- To reduce the work load.
- Efficient searching algorithms.

1.3 Scope

- Login of the system(admin login and user login)
- Inclusion of Add to Cart
- Adding different Payment Methods
- Listing all the possible categories
- Product Request Page
- Contact Us Page
- Admin access to see the Request page and contact us page
- Generating weekly reports
- Change password option for both user and admin
- View self account information for both members
- Visit only website,this access is only for the guest users
- View account informations of all the members, this access is given to only admin
- Scroll to Top option for the product pages
- Logout for both member and admin

Chapter 2

Literature Review

2.1 Relationship with Undergraduate Studies

The project is related to four courses in undergraduate studies :

1. Introduction to Programming: This course teaches and provides the necessary information related to the introduction to a new programming language and the basics of programming from declaring variables, iteration, conditional statements, switch-case, arrays and functions.
2. Object Oriented Programming: The course goes a step ahead by introducing the concept of classes and objects, variables inside the classes, types of classes. A Graphical User Interface of a real life problem.
3. Web Application & Internet : This course provides a comprehensive overview of technologies related to web and their uses. The discussions in the course are held on front-end languages: HTML and Cascading Style Sheet(CSS) and back-end languages: PHP and MySQL followed by the responsiveness for devices with different sizes by jQuery.
4. System Analysis & Design: The course teaches the tools and techniques to design a system with proper analysis of information systems. Topics that are covered include: Systems and models, Project management, Tools for determining system requirements, Data flow diagrams, decision table and decision trees. Systems analysis topics include SDLC Systems development life cycle models.
Object oriented analysis include use-case modeling, Unified Modeling Language. Feasibility analysis is introduced in the later chapters along with the user experience of a front-end design. The user expectations, background colors, text colors and font-size.

2.2 Related works

Some websites like daraz.com.bd, chaldal.com, ghorebazar.com, shwapno.com, othoba.com, agorasuperstores.com, meenaclick.com are already in use in Bangladesh. The websites has become popular as an ample number of people prefer to buy their daily grocery items online. The websites have unique features in them to attract a decent amount of customers. Their online platform is enriched with all the local products and some exported products which require shipping.

Important websites are:

Daraz.com.bd: The website consists of a huge collection of products including the local and global products. The users of the system gets overwhelmed with their collection and the user interface. The website allows free shipping for different products and discounts are allowed on local products depending on the occasion and cheap home delivery services are also included.

Chaldal.com: The website consists of a collection of over 4000+ local products. The users of the system get the facility of home delivery services, sharing thoughts and can order over phone. Different payment methods are used for the convenience of the users.

Chapter 3

Project Management & Financing

3.1 Work Breakdown Structure

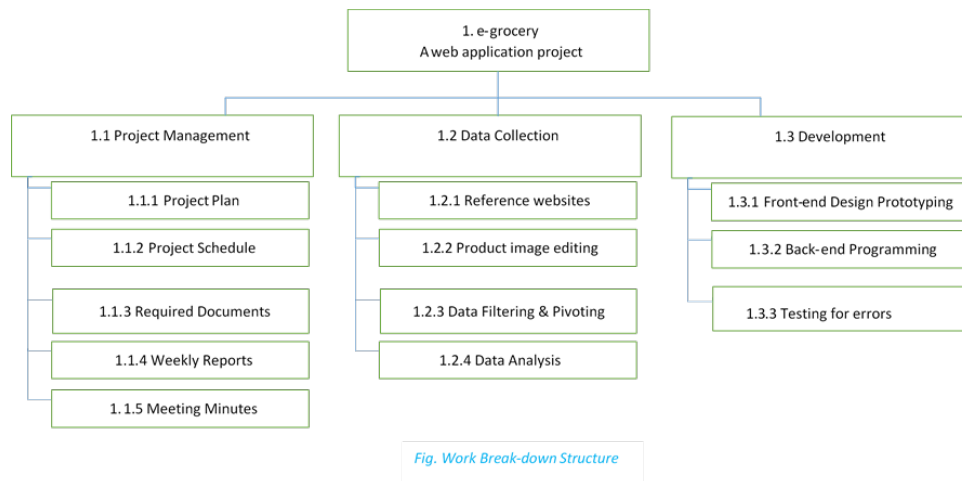


Figure 3.1: Work Breakdown Structure

The project is branched to three important phases named Project Management, Data Collection and Development.

- Project Management ensures a documentation for the project to be carried out. The project goes through certain plans and schedules, which in turn helps in time management and equally distributes the work load.
- Data collection is the most important phase of the project where the desired data is accumulated, sorted, analyzed, pivoted for the remaining phases.
- Development is the last phase of the project and this determines the quality and safety of the users.

3.2 Activity wise Time Distribution

SL No.	Activity	Time Distribution
1	Data Collection from reference websites	35 days
2	Product image editing and uploading	
3	Preparing the documentation	15 days
4	Front-end Design	15 days
5	Database creation	10 days
6	Back-end Programming	7 days
7	Testing	5 days

Table 3.1: Activity wise Time Distribution

3.3 Gantt Chart

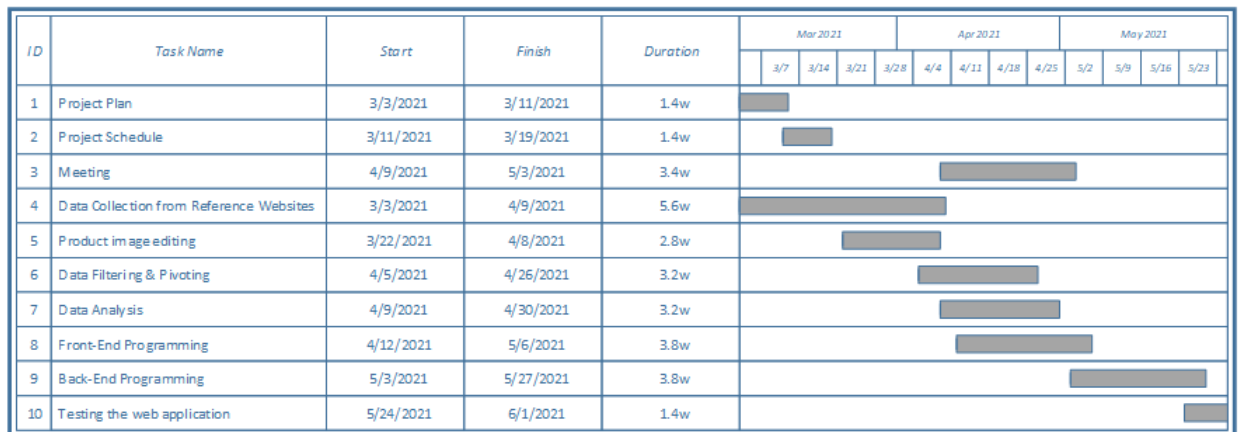


Fig. Gantt chart

3.4 Activity wise Resource Allocation

SL No.	Activity	Resource Allocation
1	Data Collection from reference websites	Desktop Computers with Internet Connection
2	Product image editing and uploading	Adobe Photoshop experts
3	Preparing the documentation	Qualified Personnel with required skills
4	Front-end Design	Front-end developers
5	Database creation	Experienced Back-end Programmers
6	Back-end Programming	
7	Testing	Qualified Personnel with required skills

Table 3.2: Activity wise Resource Allocation

3.5 Estimated Costing

SL No.	Task	Monthly Salary	Working Months	Total
1	Data Entry Operator(intern)	Tk. 5000	2	Tk. 10000
2	Image Editing by Graphic Designer	Tk. 15000	2	Tk. 30000
3	Front-end Developer(Intern)	Tk. 5000	1	Tk. 5000
4	Back-end Programmer	Tk. 15000	1	Tk. 15000
			Total	Tk. 60000

Table 3.3: Estimated Costing

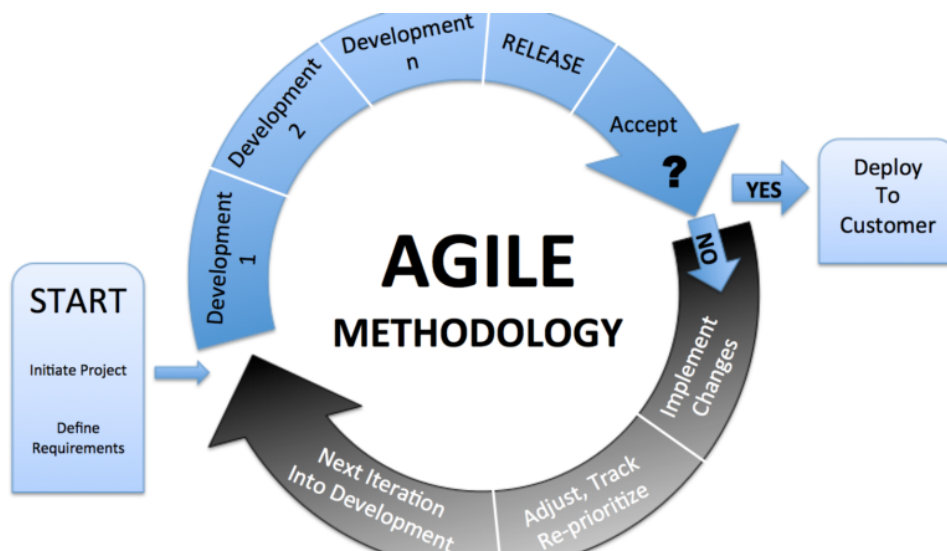
Chapter 4

Methodology

The system helps in building a website to buy, sell products or goods online using internet connect. Unlike traditional commerce that is carried out physically with effort of a person to go and get products, this project will make it easier for human to reduce physical work and to save time. The basic concept of the application is to allow the customer to shop virtually using the Internet and allow customers to buy the items of their desire from the store. In this system customers need not to commute to shops for purchasing the products.

To manage all these things in this project is really important in order to increase the success rate. Hence, to maintain and manage a project efficiently, the project manager and the development team must sit together to sort out the best software development methodology that suits their project. This includes breaking down the process into sub processes to strengthen the software design and project management. This can be termed as System Development Life Cycle (SDLC).[1] SDLC is a detailed planning of the system to be built. This process is a cycle of planning, requirement analysis, design and prototyping stage, system development stage, system testing stage, Implementation and Integration stage and Operations and Maintenance stage. There are several different methodologies that can be implemented in a project to intensify the inner workings of the system. Some of them are given below:

- Agile
- Prototyping
- Spiral Model
- Waterfall Model
- DevOps
- Rapid Application Development



For the project e-grocery, according to the manager, agile methodology can work better. This eventually minimizes the risks if a new functionality is being added[2]. The project is basically designed for the users where feedback is constantly reported. So, the project is done in several iterations with small amount of increments depending on the user needs. Customers can order the product they wish to have through the use of this system. To make this more flexible different payment gateways are included in the system. Shop owners can play the part of the system admin or assign a team to handle this. The system provides a home delivery facility just to ensure the product reaching the customer. The best part is that customers can buy anytime in a day. Customers can search for products using the category list or by the product name. Each categories are divided into sub categories in order to find the desired product easily.[1]

Chapter 5

Body of the Project

5.1 Work Description

The project is on an online grocery shop. To build an online platform for the users, the necessities of the users are very essential in to the process. To carry out the survey, different online platforms that already exists are taken as a sample. A data entry operator is assigned a task to extract all the information from the reference websites. The data is then entered into excel where the product, quantity, price and image is taken into consideration. Mostly visited websites have a different category for daily essentials which can really bring out the products that are bought and visited daily. The product images are then downloaded and manually entered into excel. Since, the manual entry is really cumbersome, a plan to build a web scraper was initiated, but different websites are build using different programming languages and with different architecture. The plan did not work out well. After the extraction of data, the data has to be pivoted, analyzed and ready for the front-end web developers. Front end developers are to use the data set to design the website using the technologies: HTML, CSS, Javascript. The back-end developers work simultaneously as the project progresses. For the database, mySQL is used as an option.

5.2 System Analysis

5.2.1 Six Element Analysis

	System Tools					
Process	Human	Non-Computing Hardware	Computing Hardware	Software	Database	Comm. & Network
Data Collection	Employee	Paper Work	Computer	MS excel	SQL	Internet
	Make records of the information collected	Table for the records	-To access web-site.			
			-To download any particular file.			
Data Analysis process	Employee	Paper work	Computer	MS excel	SQL	Internet
	Analyze the entered data	Making tables, charts and graphs	-To access web-site.			
			-To download any particular file.			
Survey of the required products		Paper work	Computer	MS excel	SQL	Internet
		-Collecting data and receiving feedback of the products	-To access web-site.			
			-To download any particular file.			
			-To fill forms for importing the products			

Table 5.1: Six-Element Analysis

5.2.2 Feasibility Analysis

Technical Feasibility:

Technical Feasibility can be judged by the measure of current resources including hardware and software and other essential technology required to build a project. Besides, skills of the technical team are also taken into consideration.

E-grocery is technically feasible since it has an ample amount of resources and humans for the development of the system.

Operational Feasibility:

It is deduced after analyzing how the website will behave after deployment. Operational feasibility can be determined with the amount of functional requirements it provides and the efficiency of the system. E-grocery can be said to be operationally feasible since it has all the capabilities to solve the problem that has increased during the pandemic. The most important feature here is the home delivery services and the product request service which stands out e-grocery.

Economic Feasibility:

It is inferred from the cost analysis of the product from the idea stage to market stage. E-grocery is affluent enough to carry the product through all the stages, thus, making it economically feasible.

5.2.3 Problem Solution Analysis

Process Name	Stakeholders	Problems	Analysis	Proposed Solution
Data Collection Process	Data Entry Operator	Data might be incorrectly inputted	No change required	Using a web scraper to extract data can make the process error free.
Website Access	Customers	Too much traffic in time of flash sales can make the web server slow.	Too many users accessing the same webpage can cause problems	Using a load balancer can be an effective way to approach the problem
Data Analysis Process	Employee	Data might be incorrectly inputted	As it is done by human with a huge amount of data so some data might be missed out.	Fully automated system will notify for missing data.
		Human error	As humans are not perfect, mistakes may occur.	Automated system which eliminates human error.
		Data duplication	Data might be inputted more than once.	If duplicate data exists, system will notify.
		Time consuming	Manually processing the information is time consuming.	Let the system handle the processing.
		Using Excel or other spreadsheet software	Analyst/Programmer may not be proficient with all the functions of the software.	Easy to use software. It will automatically generate the data.

Table 5.2: Problem Solution Analysis

5.3 System Design

5.3.1 Rich Picture

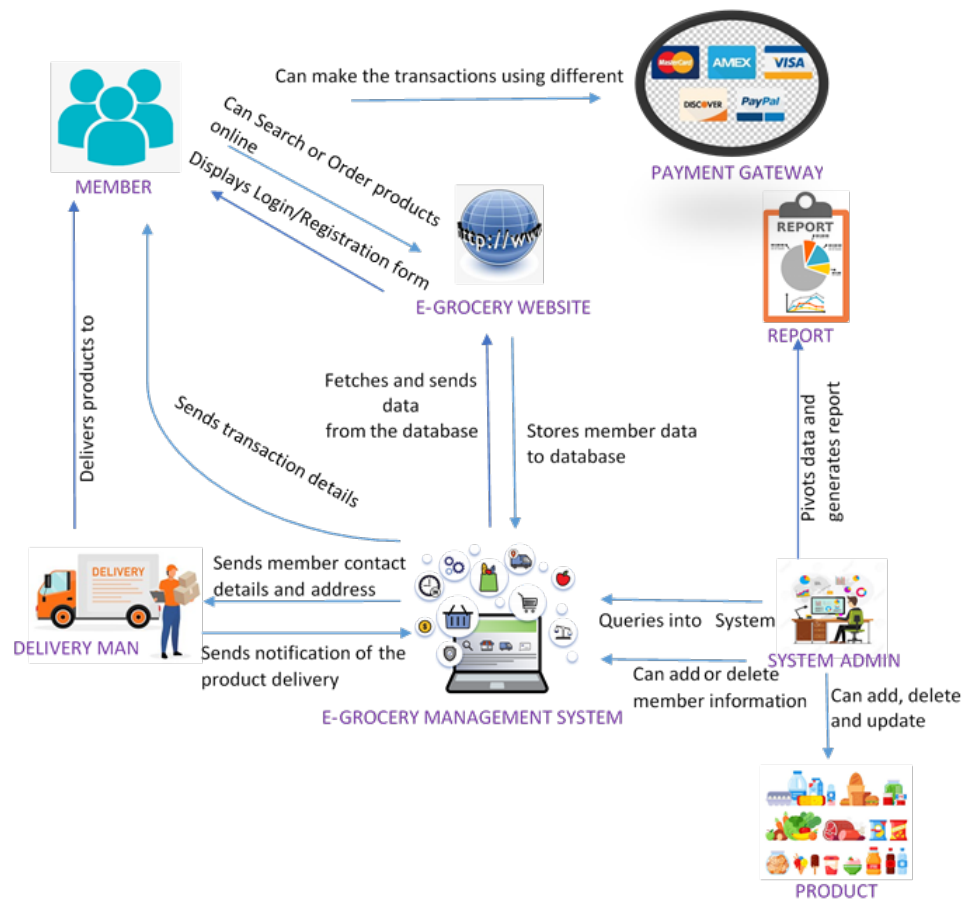


Figure 5.1: Rich Picture of the system

5.3.2 UML Diagrams



Figure 5.2: Use Case Diagram of the System

5.3.3 Activity Diagram

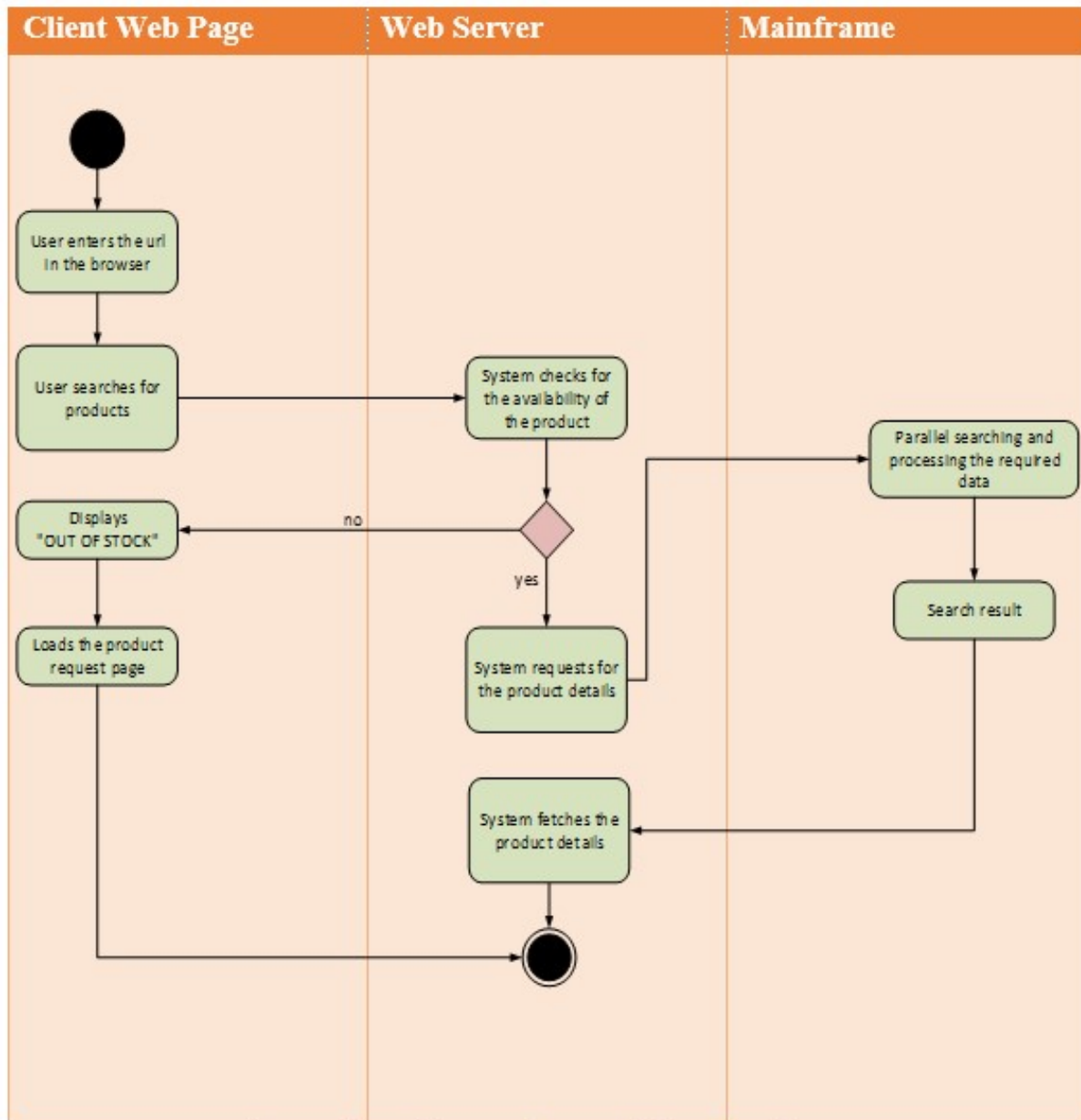


Fig. Activity Diagram for Searching a Product

Figure 5.3: Activity Diagram for Searching a Product

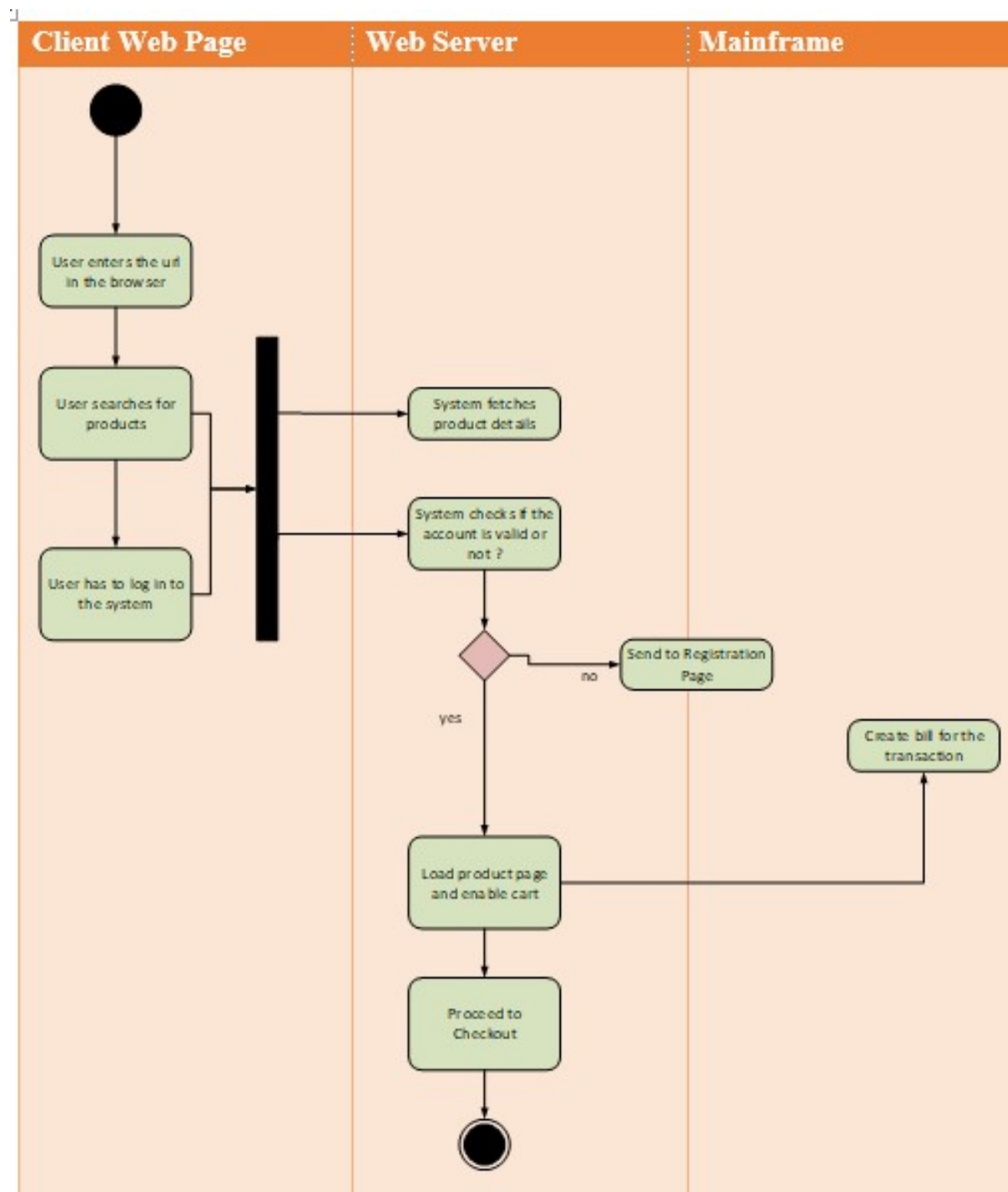


Figure 5.4: Activity Diagram for Buying a Product

5.3.4 Functional and Non-Functional Requirements

Functional Requirements

1. Create Account.
2. Manage Member Account
3. Log in to the system
4. Search for Products
5. Select an item from the menu bar
6. Add selected items to wish list
7. Member can Add Multiple Products
8. Member can Ask for Refund
9. Member can Return Products
10. Member can change Personal Information
11. Member can select payment methods for transaction
12. Member can select coupons
13. Member can check out
14. Member can Generate check out details
15. Member can Print Check out details
16. Member can Print transaction details
17. Member can give feedback
18. Admin can Update Categories
19. Admin can Add/Delete/Update Products
20. Admin can View Account information
21. Admin can Update the System if Needed
22. Admin can Generate Report

Non-Functional Requirements

1. **Safety Requirements:** It is important to take the backup of the database as there is a possibility of it getting crashed due to virus or any malicious software at any point in time.
2. **Security Requirements:** There are different categories of users namely guest user, registered user(member), system administrator. Depending upon the category of user the access rights are decided. It means if the user is an administrator then he can be able to modify the data, delete, append etc.
3. **Software Quality Attributes** The Quality of the database is to be maintained in such a way so that it can be very admin friendly to all the admins of the database

5.4 Product Features

5.4.1 Input

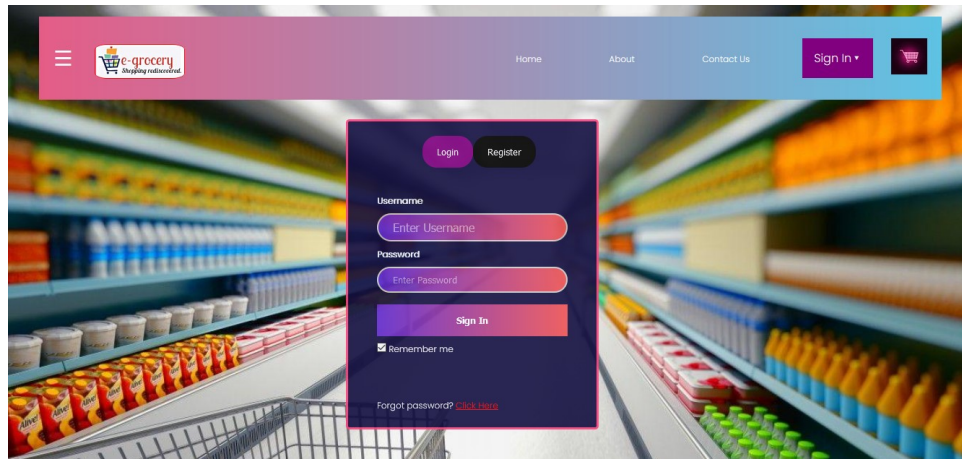


Figure 5.5: An Attractive Login Interface

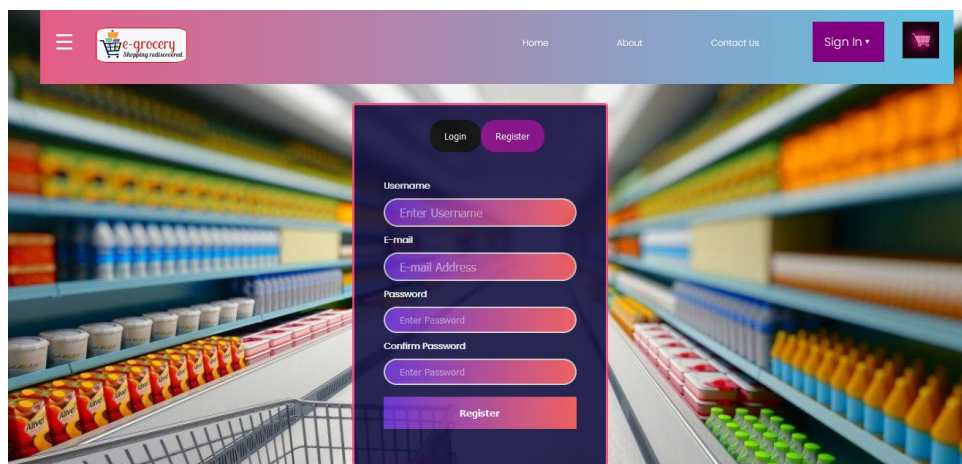


Figure 5.6: Registration Page

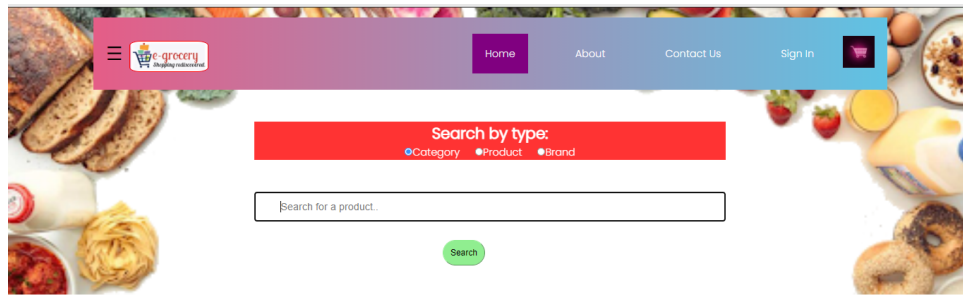


Figure 5.7: E-grocery Home Page

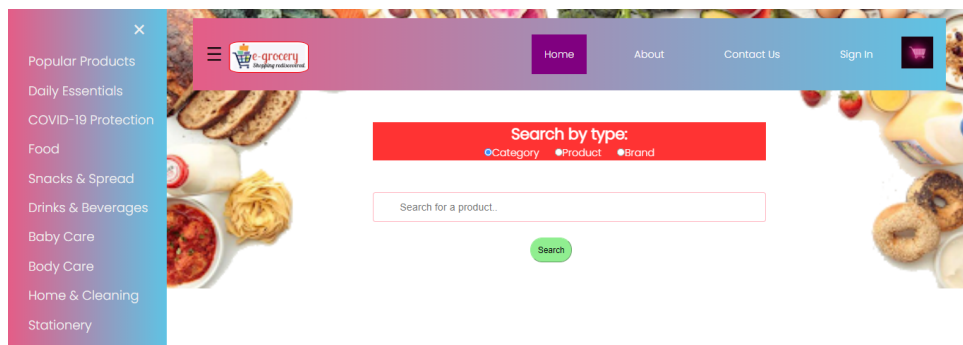


Figure 5.8: E-grocery Home Page Navigation Bar

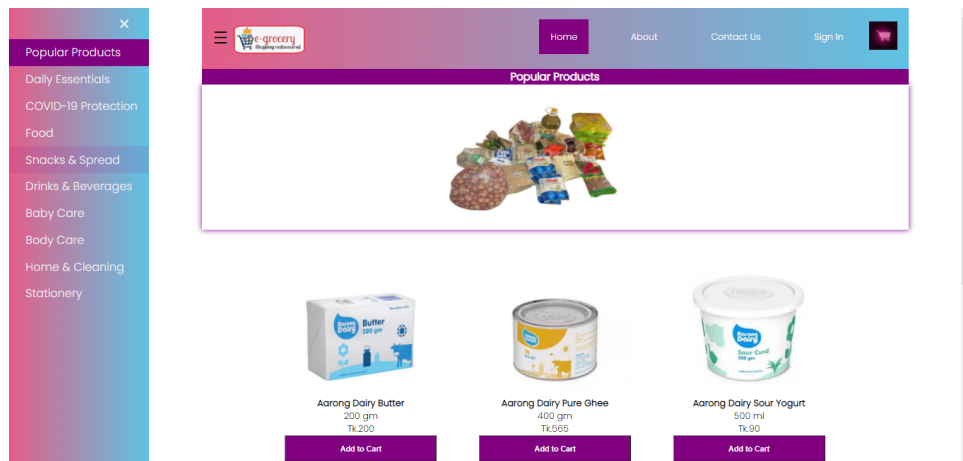


Figure 5.9: E-grocery Product Page

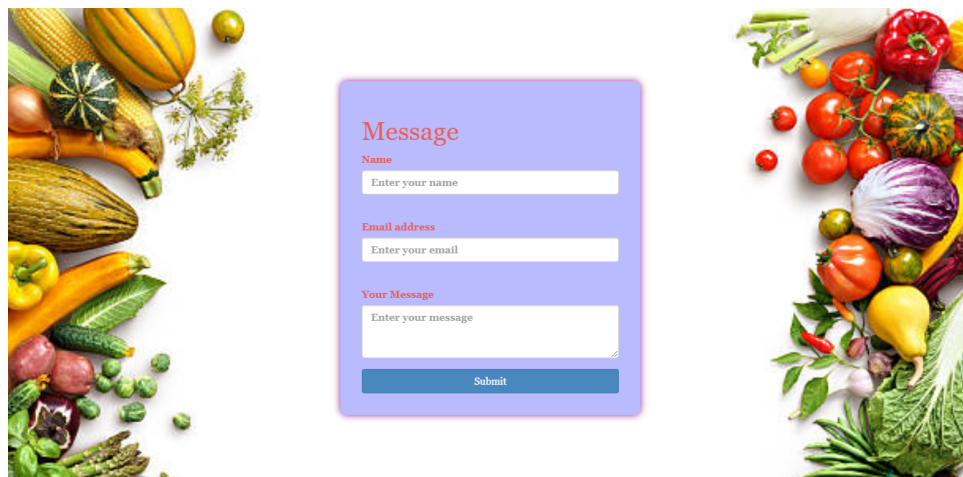


Figure 5.10: Contact Us page

5.4.2 Output

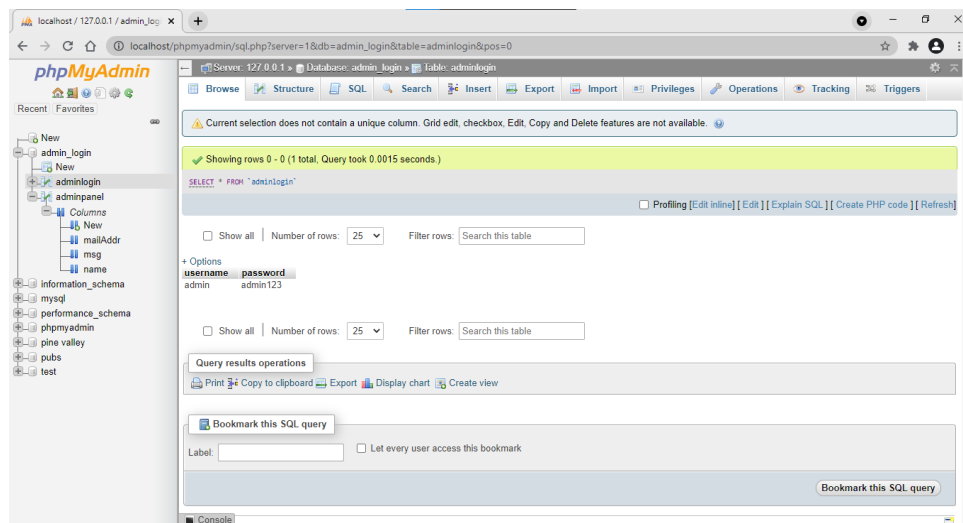


Figure 5.11: Admin login credentials in Database

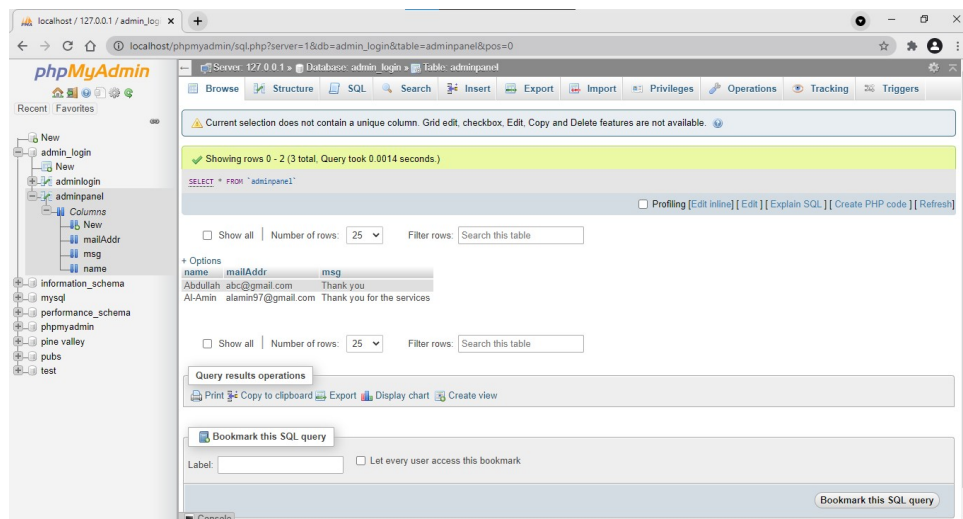
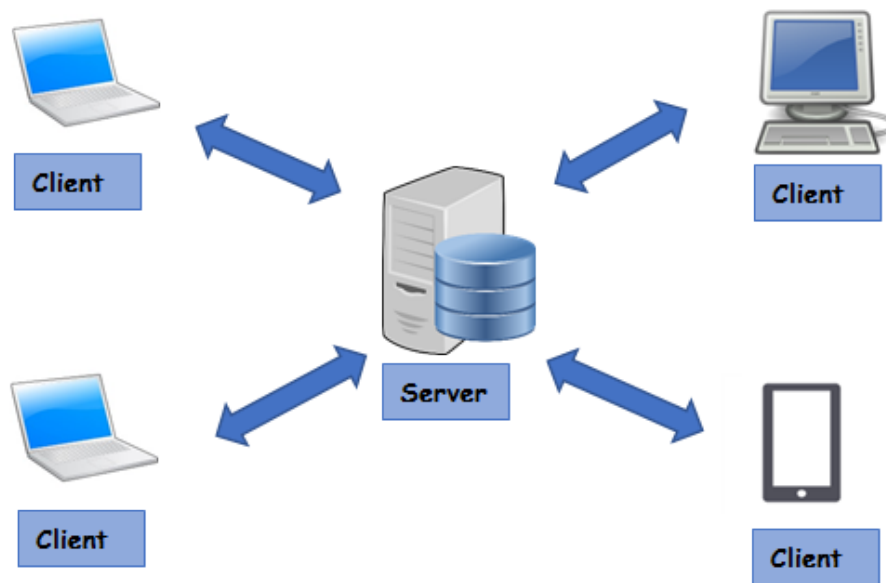


Figure 5.12: Contact Us page information in database

5.4.3 Architecture



System Architecture is the one of the important aspect to think about when working on a project. This is an overview of the system, about how it works and the decisions concerning the manageability, performance and security issues. A good architecture can be effectively managed and its can be thought for a long run. Moreover, it should provide scalability and the system can be restored or modified easily. There are several different architecture with pros and cons. The most important for the project is the Client-server architecture. This includes mainly 2 entities to communicate in between. In this architecture, the client side components sends a request to the server side. The server side in turn receives the request, process and responds back.[3]. A particular protocol is enabled when the connection between the server and the client side is established. A server tracks and maintains record of requests from the client side which can be termed as a session.

Chapter 6

Results & Analysis

By surveying all the reference websites and analyzing all the data has been collected and analysed. The data collection process was really cumbersome since there was an ample amount of product names from different websites. A web scraper is proposed to be built just to remove the hassle of data collection, insertion and formatting the data. The front-end of the web application has been tested with the local server xampp. Front-end of the website is not fully functional. The images of the products are inserted. Design is created to attract users. A side navigation bar for the users is created to provide a three click rule. Users can easily move to the desired categories. Moreover, the user has a provision of searching the products by products, categories and brands. The user have the privilege to share their views on products and can even request for a product. The back-end is partially done for the admin login to view the messages inserted by the user. Most of the functions of the project are in progress and is done by the back-end developers.

SL No.	Process	Status	Result
1.	Data Collec- tion	Done	This process is done manually, a web scraper can be made for different websites to increase efficiency.
2.	Product page	Done	A collection of all local products are inserted in the front end design.
3.	Contact Us page	Done	User inputs and feedbacks are recorded in database for the administrator to check
4.	Log in Page	Done	Design is created
5.	Product Re- quest Page	Done	User requests are recorded in database for further processing

Table 6.1: Results Analysis

Chapter 7

Project as Engineering Problem Analysis

7.1 Sustainability of the Project/Work

7.1.1 Environmental:

As companies tend to reduce the carbon footprint, wastage from packaging, the environmental factors gets the most attention. E-grocery has a plan on tracking and reducing the impact to the environment which can have both a positive impact on the planet. This will attract most customers and more financial benefit.

7.1.2 Economic:

For a company to get bigger and better, it must focus on its profitability. To be sustainable, profit has no alternative solution. The best possible way of maintaining a equilibrium between serving quality products and earning, is to make the system more flexible for the users. Collection of good and up-to-date products attracts customer and earns a goodwill of the company.

7.1.3 Social:

Social factors are also important when it comes to the sustainability of a business. This includes operating in a way that benefits employees and the surrounding community according to the social license. It means also to pay attention to the people who are operating the supply chain and are involved in creating the products.

7.2 Social and Environmental Effects and Analysis

This project is intended to work during the pandemic, it will help people maintain social distance and practice proper hygiene. Moreover, the communication between user and the business gets stronger and e-grocery can earn user's trust.

E-grocery is highly concerned with the adverse effects on the environment and that is why it has taken actions on minimizing all the variables that can harm the environment. E-grocery is also implementing a quality management system corresponding to the requirements of ISO 9001.[4]

7.3 Addressing Ethics and Ethical Issues

Websites,when connected to internet becomes vulnerable to hacking. Customer/user information can be breached due to any flaw in the system. So, to eliminate all the risk factors affecting the user data or causing harm to the system, e-grocery has taken initiatives to secure their website by installing SSL certification to convert to https. This will give user more authentication about the website and make it more user friendly.[5]

Chapter 8

Lesson Learned

8.1 Problems Faced During this Period

During the pandemic, it is really an onerous task to find an internship in a reputed company where most of the employees are living through a hard time. The three month period of internship was a different chapter of my life with a nice experience in a new environment, working with different classes of people and getting introduced with the requirements. This was obviously a tough job at hand since I was a rookie and a fresher in the company. It was really cumbersome for me to wake up early and commute to the workplace, and the traffic jam of Dhaka city making it more difficult. In the second month, I suddenly fell sick and lost the sense of smell. In that time, Dhaka city went under a strict lock down. I had to constantly indulge myself in learning new things regarding web scraping since I was working with an immense amount of data.

8.2 Solution of those Problems

By the grace of Almighty, I came round within a week. This was a very sorrowful moment where I had to maintain social distancing with my family members and took medications. For the problems relating to collecting data from reference websites, I had to search for different softwares and learn them to scrape the data. I learned different techniques working with excel. I had to constantly indulge myself in learning new things regarding web scraping since I was working with an immense amount of data.

Chapter 9

Future Work & Conclusion

9.1 Future Works

The front-end of the website is completed but the connection with the database is not established. Future works will include creating product tables and joining them with each other. Some of the features that will be modified and added to this system in future. Third Party proprietary software can be used for validation check so that user can log in using their cell phone number. For the satisfaction of the users notification of the newly added products will be included as a service. Moreover, a mobile application is planned to be deployed in the google app store. This will give the users an extra edge to get in contact with the services.

9.2 Conclusion

This has been a nice and fruitful internship in Flora Limited. The training and constant learn and grow process helped to create innovative ideas and created opportunities on working with the latest technologies. The work experience is somewhat gained through this online grocery management system. I am really thankful to my supervisor , though having a workload, has came out to help me in the project. Lastly, the guidance of my course instructor has made life easier.

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