Independent University, Bangladesh

Web Development of Online Grocery System at Decimal IT

An undergraduate internship report submitted by

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In consideration of the partial fulfillment of the requirements for the degree of

BACHELOR OF SCIENCE

In

Computer Science and Engineering

Department of Computer Science
and Engineering Spring 2021

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Acknowledgements

First and foremost, praises and thanks to Allah, the Almighty, for his showers of blessings throughout my Internship work and allowing me to complete the Internship work successfully within the timeframe. I would like to thank Independent University, Bangladesh (IUB) for offering an Internship program for me.

From the core of my heart, I would like to express great appreciation to all those who provided me the possibility to complete this report. A special thanks I give to my course instructor, Mohammad Noor Nabi, senior lecturer of Independent University, Bangladesh, whose contribution and suggestions were extremely helpful to complete this report. The timely completion of this project is mainly due to the attentiveness and perseverance of my company.

I am tremendously thankful to my parents for their affection, devotions, kindness and sacrifices for educating and organizing me for my future.

I am also grateful to **Decimal IT** for recruiting me as an intern.

I want to offer my utmost gratitude to Mr Mainul Islam (MD, Decimal IT) for his Monitoring and guidance to fulfill my Internship.

Iffat Sybin Anika

April 30, 2021

Dhaka, Bangladesh

Letter of Submission

30th April 2021,

Mohammad Noor Nabi,

Senior Lecturer of Independent University, Bangladesh

Aftabuddin Ahmed Road, Block-B, Bashundhara R/A Dhaka

Subject: Letter of Submission of Internship Report, spring 2021.

Dear Sir,
I am writing this letter to kindly inform you that I, Iffat Sybin Anika, have completed my Internship program and its report. The Internship started from **1st February 2021** and ended on **2nd May 2021**. I completed my internship at Decimal IT which is a Software and Technology Company.
The following report is based on my experience and the work I did in the development sector of this company. I was assigned to work as a **Front End Web Developer**. I have worked for 3 months in this company and did my best work there with high passion, dedication and enthusiasm.
I hope that you will be kind enough to consider any mistakes in preparing this report and accept it.

Thanking you
Sincerely yours,

Iffat Sybin Anika

Abstract

The Internship course fulfills part of the requirements in pursuing the degree of Computer Science Engineering in the Institute of Independent University Bangladesh. This report serves to summaries of the activities and experiences gained with Decimal IT in Development team as an intern.

An online grocery store permits the customer to submit online orders and/or services from a store that serves both customers walking into the store or ordering online. The online store system presents an online display of all the items available that they want to sell. This web based application helps the customers to choose their daily needs and add products to their shopping carts. Customers provide their complete address, name and contact information and they can get their chosen product delivered to their home.

I joined Decimal IT for the Internship program as a Frontend Web Developer. My task was to develop an online grocery website. I was assigned to the lead developer of Decimal IT to assist him. Decimal IT used Agile Methodology to develop the website. The lead developer gave me the task to complete with their requirements. I have done all the works on time with the requirements. I faced requirements gathering phase suddenly, but I managed quite nicely.

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Chapter 1

Introduction

1.1 Overview/Background of the work

As a student of the undergraduate program, the program requires that we complete an internship period with a reputable company where I will be trained practically with working environment practices and get familiar with the industry. I worked at a software company Decimal IT where I have completed 3 months of internship. In this report, I have discussed my internship period at Decimal IT, an overview of the work and everything I have done there. This section gives a viewpoint about the project. Web application has become very essential for any organization which has a number of members connected with it, along with new associates interested in joining it.

I designed an online grocery website so that people can buy everyday items from our site during these pandemic times and after it too. I was told the kind of design I needed to do from my supervisor. I followed the kind of design he wanted me to do and I would also tell if I felt I could add something here and there and often I would get the approval. Our communication was over emails, Skype, Google hangouts.

An online grocery store permits the customer to submit online orders and/or services from a store that serves both customers walking into the store or ordering online. The online store system presents an online display of all the items available that they want to sell. This web based application helps the customers to choose their daily needs and add products to their shopping carts. Customers provide their complete address, name and contact information and they can get their chosen product delivered to their home.

Our website will allow customers to buy grocery items online. Often people don't feel like going outside, they can be busy, and especially during times like this buying grocery products online can be very convenient and time saving as no waiting in the queue to make the payments.

1.2 Purpose of the Internship

The purpose of this internship is to expose students to real work of environment experience and at the same time. The report is prepared for the purpose of explaining the achievement of the author during the internship period. The purpose of internship program are as follows:

- To build the strength, teamwork spirit and self-confidence in students' lives.
- Provides the opportunity to learn real-life work skills and etiquette hands-on at a real job.
- To Gain valuable skills, knowledge and experience in a field to allow you to make a career transition.
- Explore a career interest, develop skills, and gain experience.
- Internships focus on the skills you will learn and the experiences you will have, not simply on the company name.

- To help you apply the theory and skills you have learned in the classroom setting, and for your personal development.
- The student will be able instilled with good moral values such as responsibility, commitment and trustworthy during their training

1.3 Objective/Goal

The objective of the project is to make an application to purchase items in an existing shop. In order to build such an application complete web support need to be provided. A complete and efficient web application which can provide the online shopping experience is the basic objective of the project. Other objectives are:

- Design an online grocery site.
- Test the system many times.
- Make sure to order products that are out of stock immediately.
- Building sales and profits
- Increasing customer traffic
- Building customer loyalty
- Improve ratings
- Make the System user friendly so that customers find it easy to use.
- Make shipping of the products faster.
- Have ratings and reviews of products.
- Allow filter search options, and there should be a range of products to choose from the search result.
- Make the System secure and safe to use.

1.4 Scope of the project

Features available to user and administrator after developing this web application are:

- The admin can add any new vendors or update the vendor's information or delete any existing vendor.
- Customers can register and login into the system, view the products and select their desired ones. Once they do that they will be directed to the shopping cart and then they can make the payment and will receive a confirmation message.
- Customers can also give their feedback and contact us.
- The admin can add new categories of items or update or delete the existing ones.
- The admin can view the messages customers have sent.
- The admin can edit the coupons or add new ones or delete the existing ones.
- The admin can also deactivate or activate any category of products.
- The admin can also view the customer information of the ones who have registered into the system.

- Customers can view the recently added products and select them and add them to the shopping cart.
- Customers can view the about page.

Chapter 2
Company Profile
2.1 Overview of Decimal IT

Founded in 2017 with packed software brains, Decimal IT is already providing software solutions and services throughout the world. Decimal IT combines a unique blend of extensive technical expertise, state-of-the-art infrastructure, innovative offshore methodologies and well-defined development, testing and project management processes to provide clients with reliable, secure, affordable development solutions. Decimal IT has been offering web application design and development services to the customers around the world. We specialize in web design, website development, web application development, e-commerce development, search engine optimization and customized software development and also experts in several Open Source platforms. Decimal IT's primary focus is to provide our customers a first-class service without compromising on quality for affordable prices, hence we maintain a very high standard of service from start to finish on every step of the process from design, development to ongoing support. We like to go for quality, not quantity!

An IT solutions company with the dedication and passion to provide quality IT services. Here at Decimal IT, the group of ICT professionals thrive to provide Web and Mobile App development services, e-commerce solutions, digital marketing services, UI & UX designing services among many other fabulous things to help grow a business digitally. Decimal IT is a one stop solution for all ICT needs.

2.2 IT services offered

Custom development is the best option for developing, or having someone develop your own custom software/ script/ application/ system can greatly help business. It can be made to perform your business processes exactly how you want them done, and can be customized to include exactly what you want or need out of that software. Our custom products are as follows:

- Custom Web Application Development
- Human Resource Management Development (HRM)
- Customer Relationship Management Development (CRM)
- Modules and Document Management System Development (MDMS)
- Customer Satisfaction Survey System Development (CSSS)
- Property Management System Development (PMS)
- Office Accounting System Development (OAS)

- Employee Management System Development (EMS)
- Customer Payment Management System Development (CPMS)

2.3 Mission, Vision and Value

Amongst Decimal IT's missions providing B2B Web/App Solution to all SME, besides providing digital marketing Solution for various kind SME, providing quality solution and support to customers are mainly focused.

Initial Vision: Providing low cost Web/App Solution to Startup and onboard many Partners as possible to create long term relation ensuring satisfactory services.

Long Term Vision: Building some solutions and trying to sell them a subscription-based model to SME.

Ultimate-Vision: Providing data related solutions and Automated SME Business Process.

Amongst values Teamwork functions for Decimal IT as assigning teams to tasks are successful because teamwork encourages communication and the flow of ideas. Employees work in teams because working with others allows each employee to bring their best to work.

Trust amongst employees and customers is another value here. Therefore, emphasize the value, integrity. The company is saturated with confidential information. Decimal IT does business with integrity to gain their customers' respect and trust.

Maintaining a quality behavior between customers – employees is one of the most important values in Decimal IT.

Chapter 3

Literature Review

3.1 Relationship with Undergraduate studies

The web development course was a huge help for this project of mine. I learned HTML, CSS, JavaScript, PHP, jQuery. I learned MYSQL in my Database course.

The HyperText Markup Language, or HTML is the standard markup language for documents designed to be displayed in a web browser. It can be assisted by technologies such as Cascading Style Sheets and scripting languages such as JavaScript. Web browsers receive HTML documents from a web server or from local storage and render the documents into multimedia web pages. HTML describes the structure of a web page semantically and originally included cues for the appearance of the document. HTML elements are the building blocks of HTML pages. With HTML constructs, images and other objects such as interactive forms may be embedded into the rendered page. HTML provides a means to create structured documents by denoting structural semantics for text such as headings, paragraphs, lists, links, quotes and other items. HTML elements are delineated by tags, written using angle brackets. Tags such as <img /> and <input /> directly introduce content into the page. Other tags such as <p> surround and provide information about document text and may include other tags as sub-elements. Browsers do not display the HTML tags, but use them to interpret the content of the page. [3]
With HTML you it is possible to create one's own Website(s).

Cascading Style Sheets is a style sheet language used for describing the presentation of a document written in a markup language such as HTML. CSS is a cornerstone technology of the World Wide Web, alongside HTML and JavaScript. CSS is designed to enable the separation of presentation and content, including layout, colors, and fonts. This separation can improve content accessibility, provide more flexibility and control in the specification of

presentation characteristics, enable multiple web pages to share formatting by specifying the relevant CSS in a separate .css file which reduces complexity and repetition in the structural content as well as enabling the .css file to be cached to improve the page load speed between the pages that share the file and its formatting. Separation of formatting and content also makes it feasible to present the same markup page in different styles for different rendering methods, such as on-screen, in print, by voice (via speech-based browser or screen reader), and on Braille-based tactile devices. CSS also has rules for alternate formatting if the content is accessed on a mobile device. CSS has a simple syntax and uses a number of English keywords to specify the names of various style properties. A style sheet consists of a list of rules. Each rule or rule-set consists of one or more selectors, and a declaration block. [4]

JavaScript often abbreviated as JS, is a programming language that conforms to the ECMAScript specification. [5] JavaScript is high-level, often just-in-time compiled, and multi-paradigm. It has curly-bracket syntax, dynamic typing, prototype-based object-orientation, and first-class functions. Alongside HTML and CSS, JavaScript is one of the core technologies of the World Wide Web.[6] Over 97% of websites use it client-side for web page behavior,[7] often incorporating third-party libraries.[8] All major web browsers have a dedicated JavaScript engine to execute the code on the user's device. As a multi-paradigm language, JavaScript supports event-driven, functional, and imperative programming styles. It has application programming interfaces (APIs) for working with text, dates, regular expressions, standard data structures, and the Document Object Model (DOM). The ECMAScript standard does not include any input/output (I/O), such as networking, storage, or graphics facilities. In practice, the web browser or other runtime system provides JavaScript APIs for I/O. JavaScript engines were originally used only in web browsers, but they are now core components of other software systems, most notably servers and a variety of applications. [9]

PHP is a general-purpose scripting language especially suited to web development. It was originally created by Danish-Canadian programmer Rasmus Lerdorf in 1994.The PHP reference implementation is now produced by The PHP Group.PHP originally stood for Personal Home Page, but it now stands for the recursive initialism PHP: Hypertext Preprocessor. PHP code is usually processed on a web server by a PHP interpreter implemented as a module, a daemon or as a Common Gateway Interface (CGI) executable. On a web server, the result of the interpreted and executed PHP code – which may be any type of data, such as generated HTML or binary image data – would form the whole or part of an HTTP response.

Various web template systems, web content management systems, and web frameworks exist which can be employed to orchestrate or facilitate the generation of that response. Additionally, PHP can be used for many programming tasks outside of the web context, such as standalone graphical applications and robotic drone control. PHP code can also be directly executed from the command line. The standard PHP interpreter, powered by the Zend Engine, is free software released under the PHP License. PHP has been widely ported and can be deployed on most web servers on almost every operating system and platform, free of charge. [11] Fast, flexible and pragmatic, PHP powers everything from your blog to the most popular websites in the world. [12]

MySQL is an open-source relational database management system (RDBMS). Its name is a combination of "My", the name of co-founder Michael Widenius's daughter, and "SQL", the abbreviation for Structured Query Language. A relational database organizes data into one or more data tables in which data types may be related to each other; these relations help structure the data. SQL is a language programmers use to create, modify and extract data from the relational database, as well as control user access to the database. In addition to relational databases and SQL, an RDBMS like MySQL works with an operating system to implement a relational database in a computer's storage system, manages users, allows for network access and facilitates testing database integrity and creation of backups. MySQL is free and open-source software under the terms of the GNU General Public License, and is also available under a variety of proprietary licenses. MySQL was owned and sponsored by the Swedish company MySQL AB, which was bought by Sun Microsystems (now Oracle Corporation). In 2010, when Oracle acquired Sun, Widenius forked the open-source MySQL project to create MariaDB. [13] MySQL Database Service is a fully managed database service to deploy cloud-native applications. [14]

System Analysis and Design

The planning part and strategy and analyzing wise the System analysis and Design course really helped. Before all the implementation it is important to plan well and get a nice picture of what we really want to do. System analysis is the process of collecting and interpreting facts, identifying problems, and decomposition of the system into its components. It is conducted to study or evaluate a system and its components in order to identify the objects. Another definition of System analysis is its evaluation of a particular system to identify the areas of improvements and make any necessary enhancements, if needed. Objective of System Analysis are: First of all, It helps to design systems where subsystems may have conflicting objectives. Also, System analysis helps to achieve inter compatibility and unity of the sub systems It helps in understanding of complex structures. Above all, System analysis gives an advantage of understanding and comparing the subsystems functions with complete system. Some benefits of System Analysis are as below:

- Reduced costs

- Efficiency & Flexibility
- Better Management, better Quality
- Reduced Costs
- Furthermore, Proper system analysis makes the clear path for web application development by minimizing the future IT requirements.
- Gathering of a clear set of requirement for any system will give an advantage of the precise planning of the resources for development, this will bring the final product at low cost.
- Efficiency & Flexibility
- System analysis will not only reduce the costs, and also helps to gain flexibility & flexibility in the system development. Also, it gives clear development targets for each version by defining the set of requirements
- The greater flexibility of System Analysis is to cater almost every future requirements of business by mitigating the IT requirement [15]

I learned about the security issue from the cryptography course I took in the previous semester.

3.2 History leading to the project

The late 1990s was a time of great optimism for internet retailers. Consumers had just started ordering products online, and there was a widely held view that this new method of shopping would completely revolutionize the industry. As the largest single retail sector, grocery was an early area of focus. It potentially offered the lucrative reward of high-spending consumers who shopped regularly. It also had the benefit of being something that many people did not particularly enjoy shopping for and so was crying out for a change that increased convenience and saved consumers time. Significantly, the early movers in the industry were not supermarkets or food manufacturers, but technology companies keen to use their knowledge of coding and systems to shake up a sector they believed to be ripe for change. They were encouraged and supported by investors who, at this time, were throwing money at any company with a .com suffix. HomeGrocer.com was one of the first online supermarket players. It started in 1997 in Washington state and quickly obtained investment to allow it to create the infrastructure needed to support the business, including a huge warehouse and a fleet of vans. Early growth was impressive, and by mid-2000, sales had reached over $1 million a day. This rapid growth fueled more investment for expansion into other markets, including California, Oregon, Texas, Georgia and Illinois. The other early mover in online grocery was Webvan, founded in 1996. After a successful launch in California, the firm embarked on aggressive expansion plans, with a goal to operate in 26 major cities around the United States. Its confidence in the future of online grocery was underlined by an astonishing $1 billion order with an engineering and construction firm to build out new warehouses and the infrastructure to support them.

Today, online is once again a battleground for grocery. However, the field is not dominated by technology firms or pure-play online retailers. Rather, it is crowded with traditional grocery chains like Walmart, Kroger, Target and even Amazon-owned Whole Foods. The arguments that applied to the early pioneers are still relevant and represent issues that grocers are having to work through. However, supermarkets have several strategic advantages that make their

ventures into online more likely to generate success. First, they already have extensive infrastructure and logistics networks, including their stores, which can be used as warehouses and distribution centers for online orders. Second, they have huge economies of scale, which allows them to obtain better margins, which, in turn, means that online profitability, while challenging, is not completely elusive. Third, they are able to appeal to consumers by offering a range of services, like click and collect from stores and curbside pickup, that helps overcome some shopper objections to buying online. [1]

3.3 Product summary and stakeholders

Product summary - Products or services are bought online and money payment is done online electronically. People need an electronic device such as a laptop, computer, tablet or smartphone, a credit card or PayPal or similar account and a connection to the internet to do online shopping. Customers no longer need to go outside and all the way to the store, they can shop anytime and from the comfort of their home. There are several different product options available and customers don't need to go to different markets to but different stuff, they can do everything here just by searching properly. Thus making life a lot easier and peaceful.

Stakeholders - Employees, developers, customers, product management, Customer Services, Marketing department, Finance department, Security, Sales Engineers.

3.4 Technical Features

- High resolution photo and video
- Must be mobile friendly as more people use smartphone than a PC or laptop.
- Customers should be able to give their reviews.
- Have find in store options so that if customers want they can go and get the product immediately if they don't want to wait for the shipping.
- Should have a frequently asked Questions page.
- Should provide good security.

Chapter 4
Project management and Financing
4.1 Work Breakdown Structure

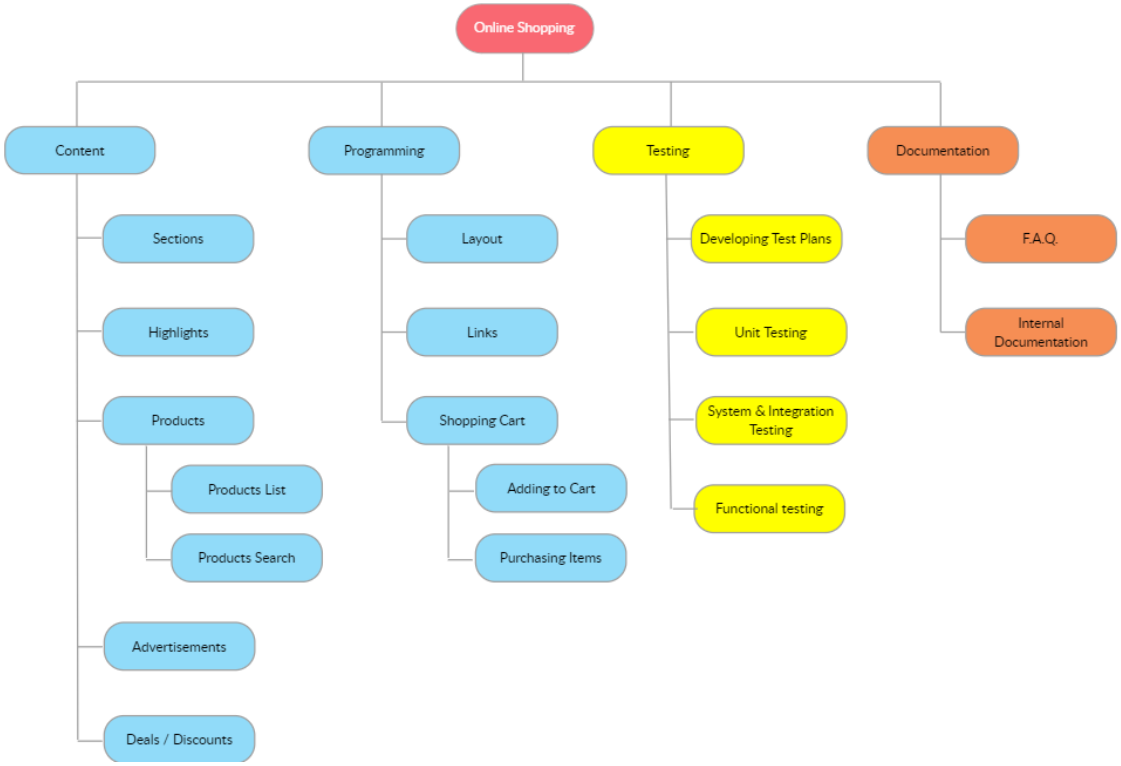


Figure 4. 1 Work Breakdown Structure

4.2 Gantt chart

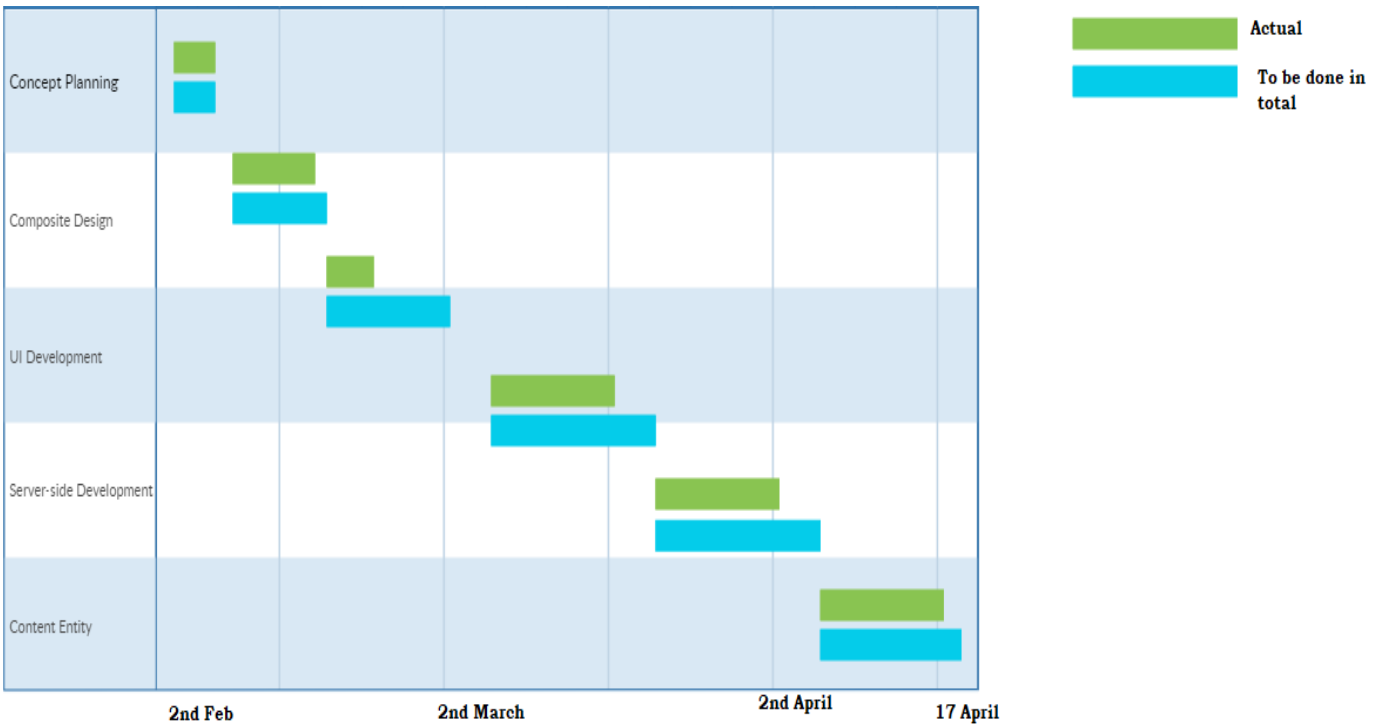


Figure 4. 2 Gantt chart

4.3 Estimated Costing

We are planning to get hosting from SiteGround as it is one of the best hosting provider. Domain name will cost us around $15.95/year. The hosting will cost us $5.95/month, so it will be $71.4 per year. SiteGround provides free SSL certificate. For SEO our estimated cost will be around $50.

Chapter 5
Methodology

We have sued agile methodology for our project. Agile methodology is a project management system that advocates for self-organizing, adaptive planning, flexible development, continuous changes, and early delivery. The main idea is to have teams work with shorter (and multiple) deadlines. This allows for more feedback from end-users, while also providing them a working product sooner, even if it isn't necessarily the final product.

It can be thought like this: a user wants you to build them a house. Instead of giving the user a house in a year from now, you give them a gazebo after a month before continuing to build and improve the final product: a house. Users get a product with value (a roof over their head), while also being able to provide feedback in order to make the future house even better than originally planned. These shorter deadlines and increased feedback loops can bring the following advantages: teams can be more flexible as the users' needs change over time users to get a working product much faster teams can create a better final product for the end-users. It can be thought of like breaking one big project into a lot of smaller projects (called "runs"). After each run is "completed", there is a time to reflect on what was (or wasn't) accomplished, get feedback from the product owner/consumer, and then make some adjustments while planning the next run and product release. [2]

Figure 5. 1 Agile Methodology

Along with the four core values/themes, there are also twelve main Agile principles:

- Customer satisfaction by early and continuous delivery of valuable software
- Welcome changing requirements, even in late development
- Deliver working software frequently (every few weeks rather than months)
- Close, daily cooperation between business people and developers
- Projects are built around motivated individuals, who should be trusted
- Face-to-face conversation is the best form of communication
- Working software is the primary measure of progress
- Sustainable development, able to maintain a constant pace
- Continuous attention to technical excellence and good design
- Simplicity—the art of maximizing the amount of work not done—is essential
- Best architectures, requirements, and designs emerge from self-organizing teams
- Regularly, the team reflects on how to become more effective, and adjusts accordingly

It is clearly visible that flexibility and feedback are two of the biggest core concepts in Agile. Through feedback and adaptability, it is believed that Agile can help companies produce better products, faster. [2]

Chapter 6
Body of the Project
6.1 Work Description

I used HTML, CSS, JavaScript, jQuery and Bootstrap. PHP and MYSQL were also used for the backend but I did the frontend part.

The online grocery store is a website where customers can simply order their everyday demanding food items. An online grocery store permits the customer to submit online orders and/or services from a store that serves both customers walking into the store or ordering online. The online store system presents an online display of all the items available that they want to sell. This web based application helps the customers to choose their daily needs and add products to their shopping carts. Customers provide their complete address, name and contact information and they can get their chosen product delivered to their home.

Our website will allow customers to buy grocery items online. Often people don't feel like going outside, they can be busy, and especially during times like this buying grocery products online can be very convenient and time saving as no waiting in the queue to make the payments. The admin can add any new vendors or update the vendor's information or delete any existing vendor. Customers can register and login into the system, view the products and select their desired ones. Once they do that they will be directed to the shopping cart and then they can make the payment and will receive a confirmation message. Customers can also give their feedback and contact us. The admin panel has a section where the admin can add new categories of items or update or delete the existing ones. The admin can view the messages customers have sent. The admin can edit the coupons or add new ones or delete the existing ones. The admin can also deactivate or activate any category of products. The admin can also view the customer information of the ones who have registered into the system.

It is a user friendly, responsive website that resizes itself, and depending on the type of device like desktop computer monitor, laptop or small screens devices like smartphone, tablets.

Our goal is to:

- Design an online grocery site.
- Test the system many times.
- Make sure to order products that are out of stock immediately.
- Building sales and profits
- Increasing customer traffic
- Building customer loyalty
- Improve ratings
- Make the System user friendly so that customers find it easy to use.
- Make shipping of the products faster.
- Have ratings and reviews of products.

- Allow filter search options, and there should be a range of products to choose from the search result.
- Make the System secure and safe to use.

6.2 Feasibility Analysis

There are 5 different kinds as technical, operational, economic, schedule and social feasibility. The main goal of feasibility study is not to solve the problem but to achieve the scope. Let's check the different kinds of feasibilities:

Technical feasibility: Our Company has technical expert and system developer team. They are highly qualified to make any software and reach any requirement goal. As well as company has a lots of resources to create this kind of software. Making it technically feasible.

Operational Feasibility: Whenever a customer orders a good from the website, the products table changes in the database. Manually it is very difficult to keep this records but it is easy using the web based application. So, it is operationally feasible.

Economic Feasibility: When people will use our website and buy their everyday products from it then we will make a profit. So, it is economically feasible.

6.3 Six Element Analysis

Table 6. 1 Six Element Analysis

Process	Human (Role)	Non-Computing Hardware	Software	Hardware	Database	Connectivity
Choose Product	Select product from Website	Customer buy product by phone call	Decimal grocery store	PC or any other smart device	MySQL	Internet
Upload New Product	Admin upload new Product, pictures, description, etc	None	Decimal grocery store	PC or any other smart device	MySQL	Internet
Review the product	Customer Review the product after purchase	None	Decimal grocery store	PC or any other smart device	MySQL	Internet
Deliver the Product	If the product available, deliver person picks up	Place signature	Decimal grocery store	PC or any other smart device	MySQL	Internet

6.4 Rich Picture

Figure 6. 1 Rich Picture

6.5 UML Diagrams

6.5.1 ERD

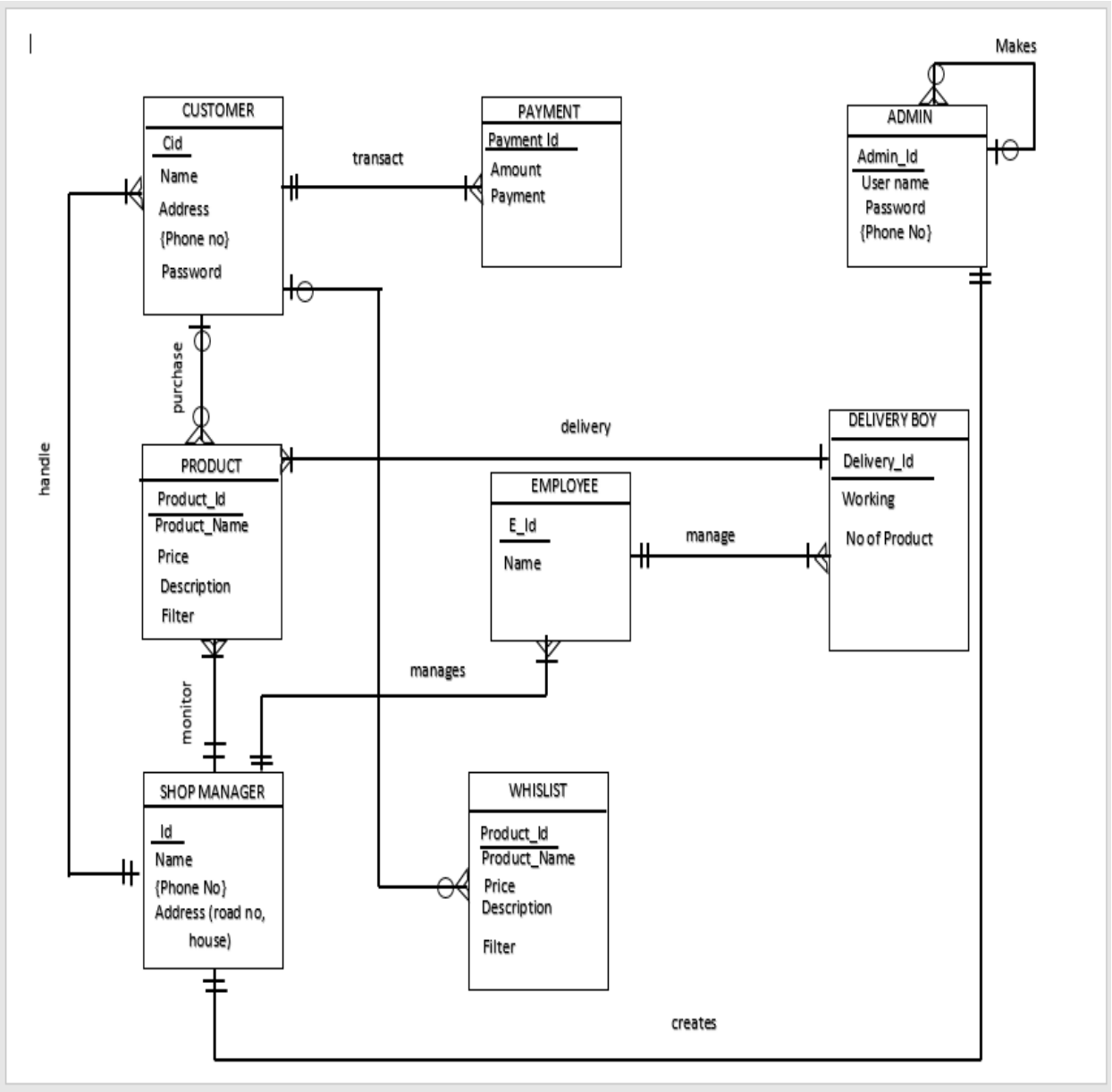


Figure 6. 2 Entity Relationship Diagram

6.5.2 Data Flow Diagram

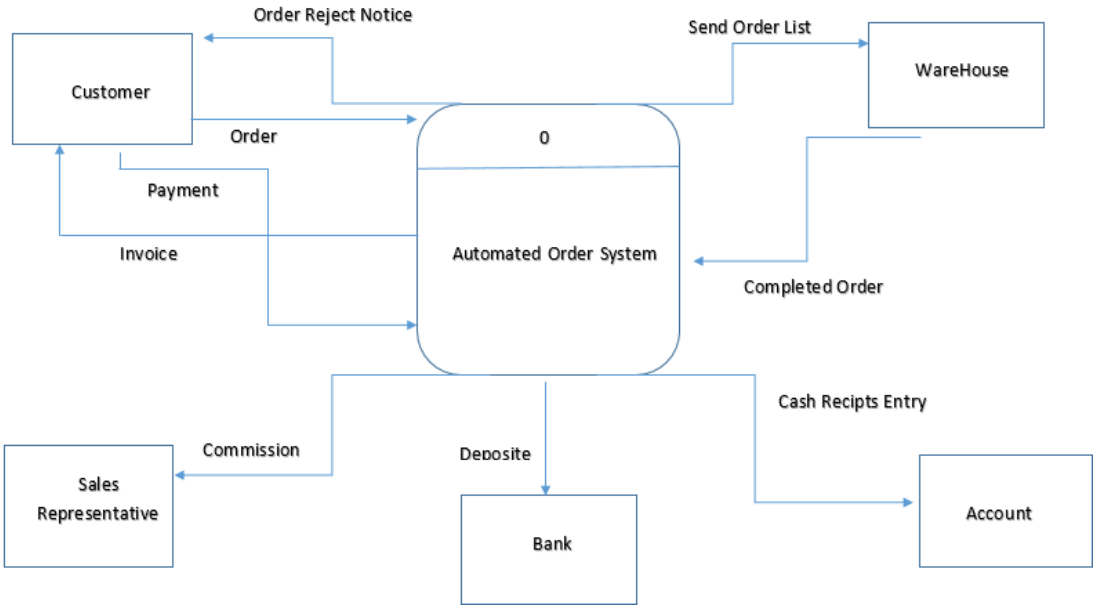


Figure 6. 3 Data Flow Diagram

6.5.3 Activity Diagram

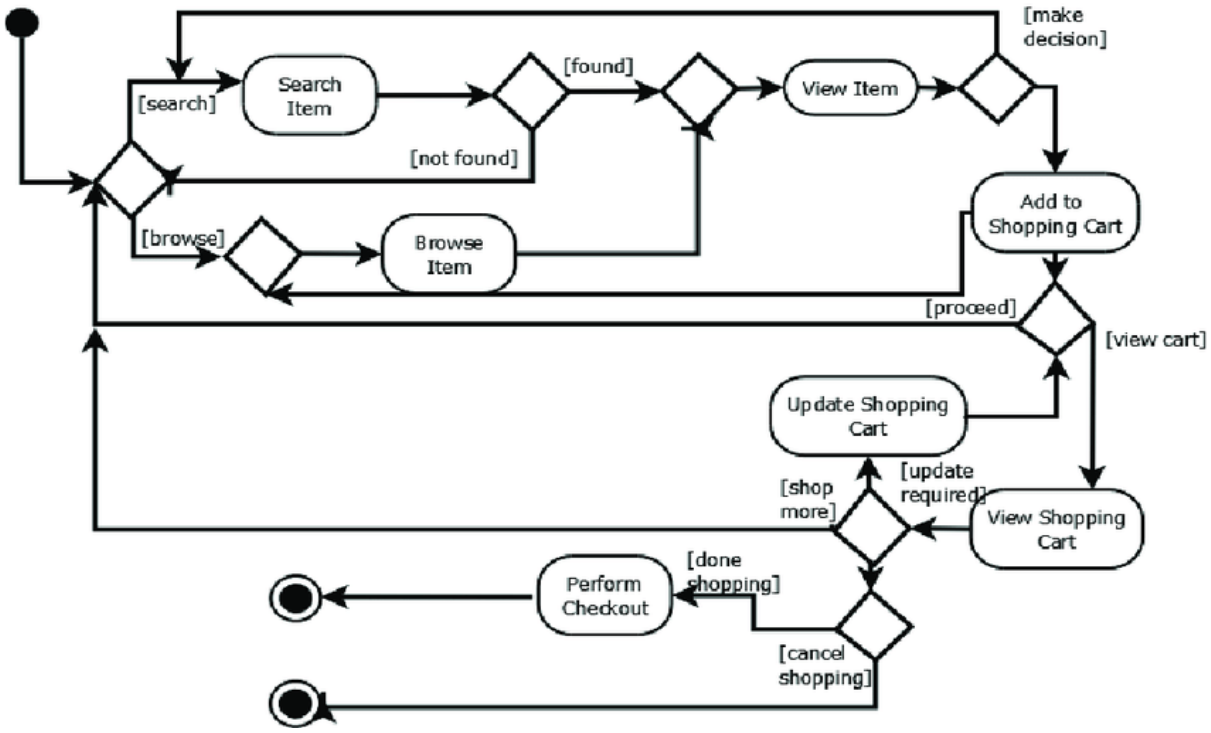


Figure 6. 4 Activity Diagram

6.5.4 Sequence Diagram

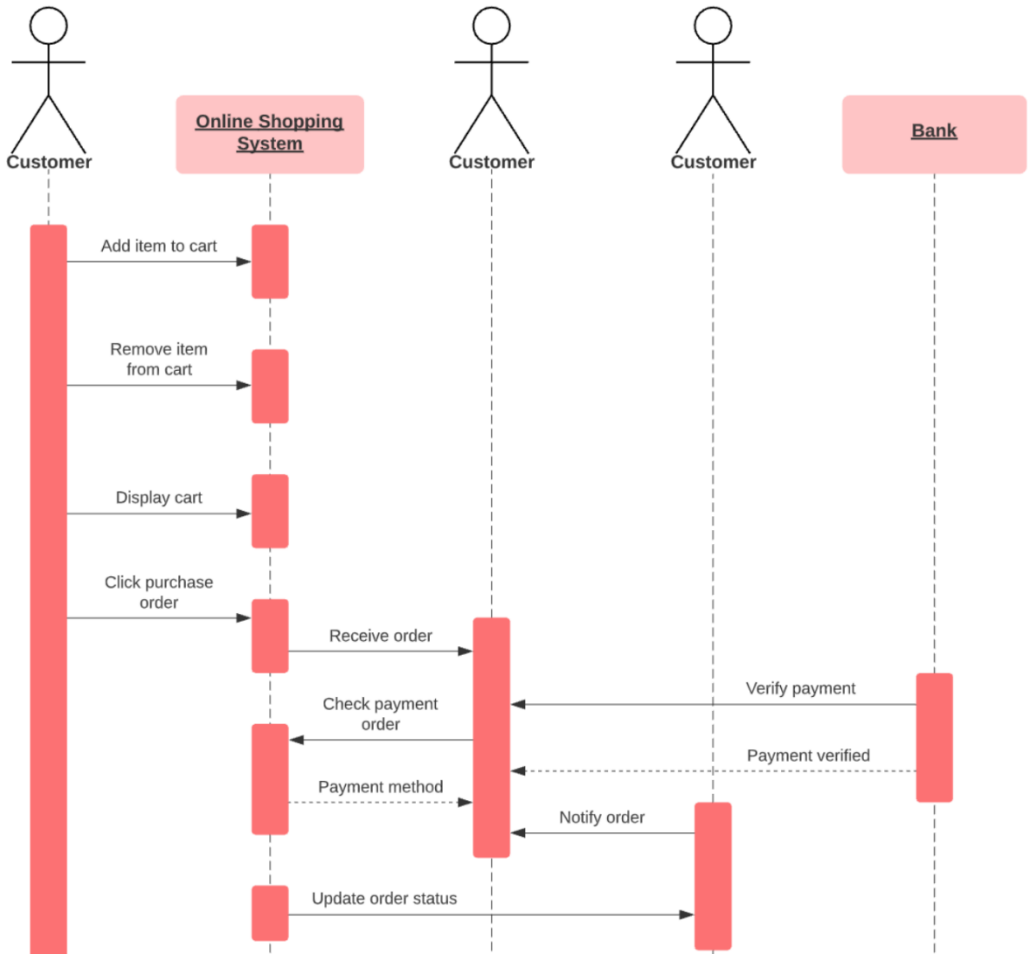


Figure 6. 5 Sequence Diagram

6.5.5 Class Diagram

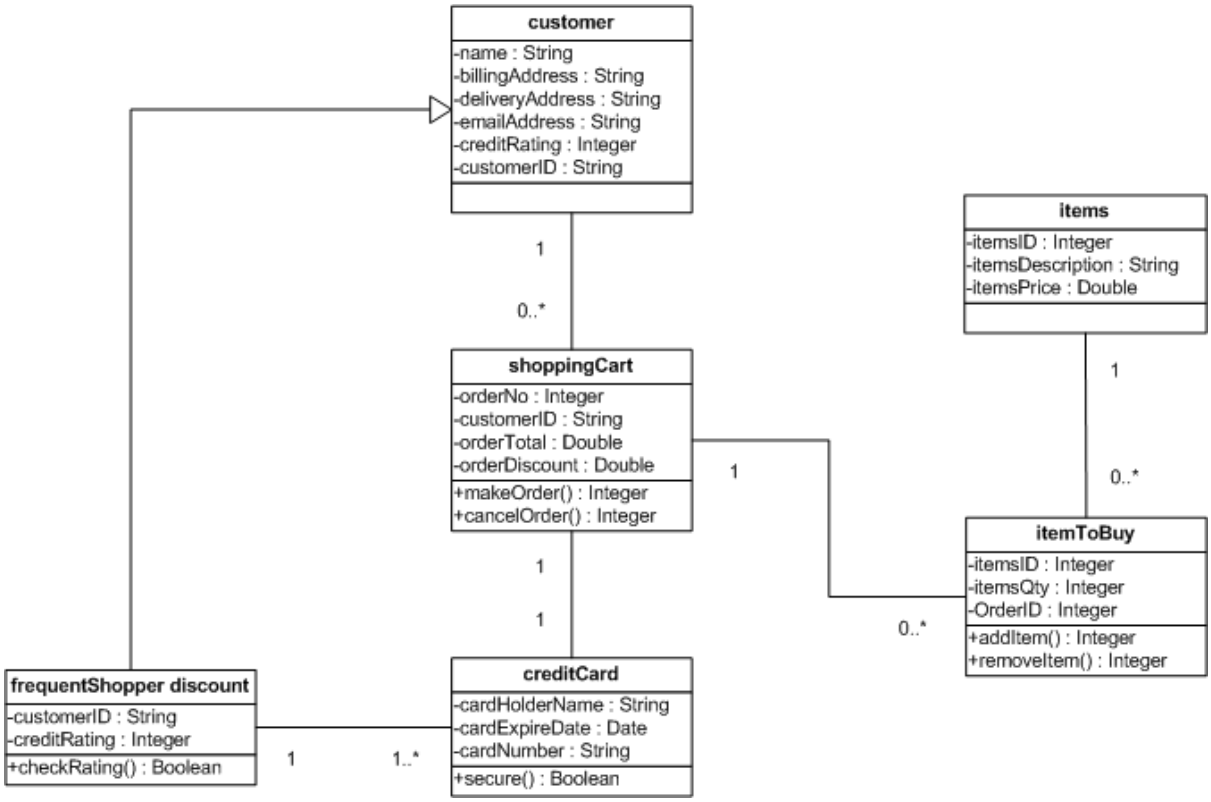


Figure 6. 6 Class Diagram

6.5.6 State Chart Diagram

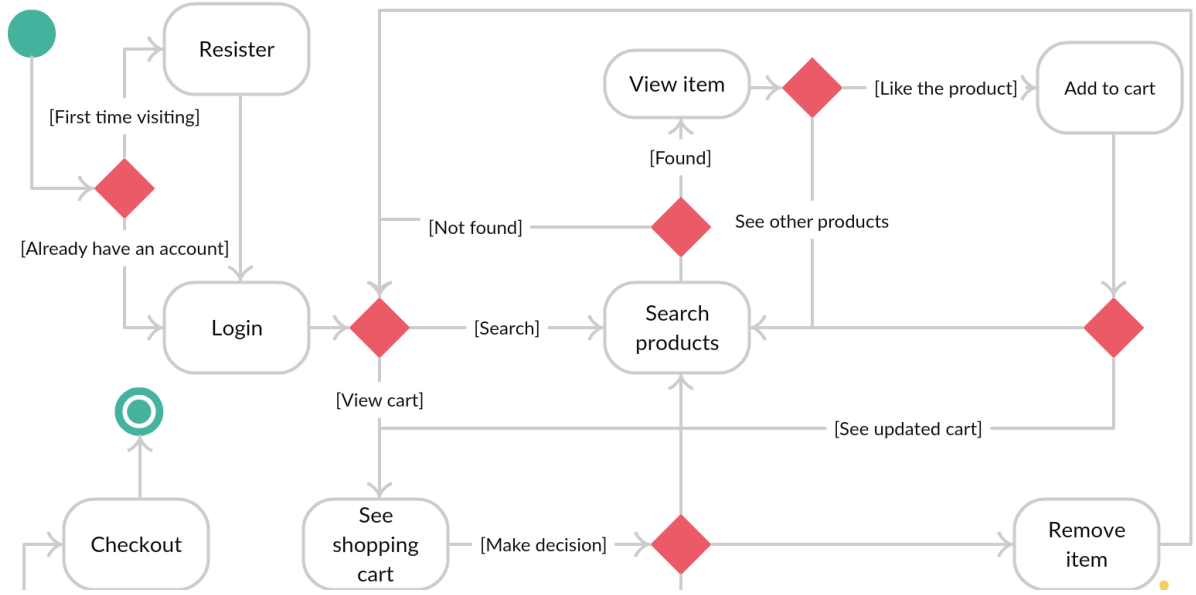


Figure 6. 7 State chart Diagram

6.5.7 Use Case Diagram

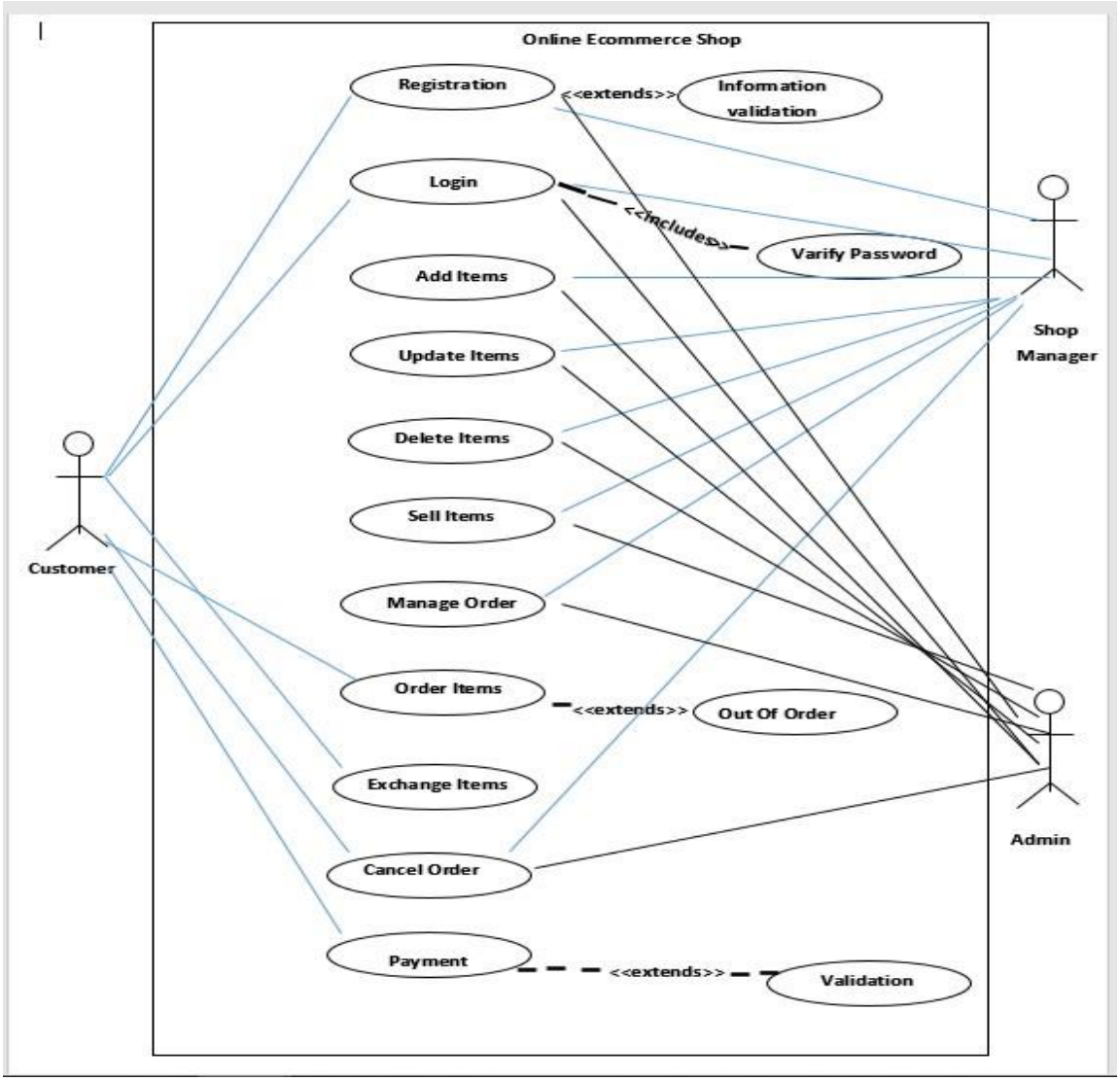


Figure 6. 8 Use Case Diagram

6.5.8 Context Diagram

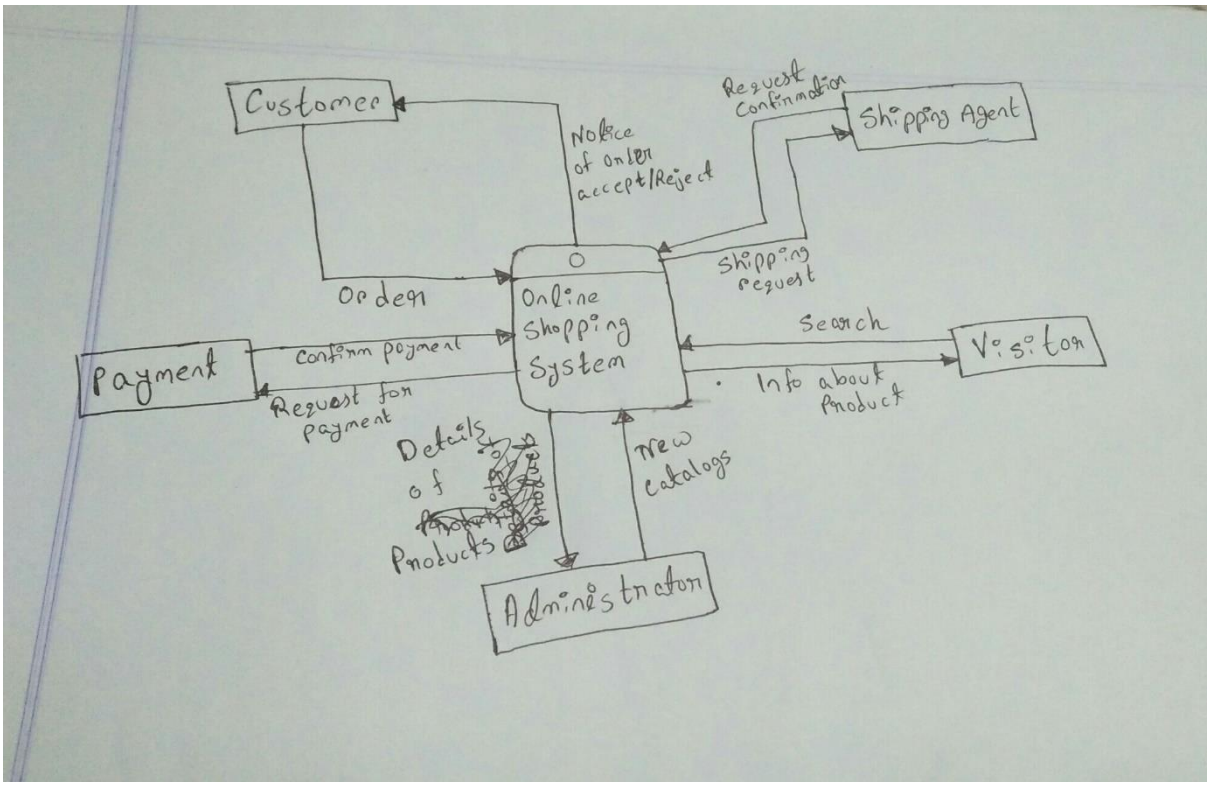


Figure 6. 9 Context Diagram

6.6 CRUD Matrix

Table 6. 2 CRUD Matrix

Activity	Customer	Item	Order	Order detail
Customer Login	R			
Search Item		R		
Select Item			C	C
Make Payment and Purchase Item	U	U	U	R
Add account	C			
Close Account	D			
Cancel Order		D	D	
Change Customer demographics	RU			
Change Order	RU	RU	RU	CRUD

6.7 Use case Scenario

Table 6. 3 Use Case: Online Order

Use case 1:

Use case name:	Order
Area:	Online Shopping system
Actor(s):	Requested User/Customer
Stakeholder:	Customer, Shipping agent, Developer
Description:	Customers will order their desired products
Triggering event:	Customer clicks on the order button after selecting the desired product
Trigger type:	External

Steps performed (Main path)	Information for steps
1) The Customer logs onto the web server	User ID, password, user type
2) Password is being verified	User ID, password, user type
3) The customer selects the product	Products page
4) Payment page appears	Secure credit card webpage
5) All the required credit card information are filled in	Secure credit card webpage
6) Credit card is charged for ordering the product	Secure credit card webpage
7) Order confirmation	Confirmation webpage
8) Download the order receipt	Confirmation webpage
9) Confirmation email is sent	Confirmation webpage

Preconditions	Must have an Online Shopping system account
Postconditions	The customer successfully Placed the order

Table 6. 4 Alternative Use Case: Online Order

Alternative scenario for use case – order

1) Customer views a list of products
2) Filters the products using search option
3)Selects the desired product
4)Information is sent to the system
5)The product is out of stock

6.8 Functional Requirements

- The system should allow the admin/stuff to upload product pictures

- The system should allow the admin/stuff to add/edit product description
- The system should allow the customers to write a message in the contact section
- The system should allow customers to give their reviews
- The system should allow admin/stuff to add new categories of grocery items, or update or delete categories of grocery items
- The system should allow admin to add new vendors or update existing vendor information or delete existing vendor
- The system should allow admin/stuff to view customer details
- The system should allow admin/stuff to add new coupons, or edit existing ones or delete existing ones.
- The system should allow customer, vendor or admin to log into the system
- The system should allow customers to register
- The system should allow customer to choose brand of the product.
- The system should allow customers to view their order history.
- The system should allow customers to place orders
- The system should allow to track orders after placed
- The system should give option to download the order receipt upon order confirmation.
- The system should cancel order if required
- The system should send email confirmation upon successful ordering of products
- The system should give a number of different payment options and handle the payment by contacting with the bank
- The admin can also deactivate or activate any category of products

6.9 Non Functional Requirements

- Only administrator can perform administrative task on pages they are privileged to access.
- The system shall display confirmation message within 3 seconds as the users completes the payment.
- The system must be reliable and be secure for everyone.
- The system must be user friendly.
- Customers can view only their own previous history of orders.

- All the webpages must load within 5 seconds.

Chapter 7
Results and Analysis

So far what we have accomplished:

- Customers can register into our system.
- Admin/Customer/Vendor can login or logout of the system.
- Customers can view the products available.
- Customers can view the recent products that have been added.
- Customers can select a product they like and add it to their shopping cart and then confirm their order.
- Customers can edit their shopping cart before placing the order.
- Customers can give their feedback.
- Customers can write to us using the contact section.
- Admin can view the customer details
- Admin can add/edit/delete/view stuff members and vendors.
- Admin can add/delete/view/activate/deactivate the different categories of groceries.
- The admin can view the messages customers have sent.
- The admin can edit the coupons or add new ones or delete the existing ones.
- The admin can also view the customer information of the ones who have registered into the system.
- Admin/Customer/Vendor can view the about page.

Problems

- Sometimes the product could be a little distorted due to shipping issues.
- Wrong item delivered.
- Product quality.
- Have to wait for the product, product is not instantly available.
- Unclear website policies for customers.
- There could be hidden cost and customers could be charged extra when they make the online payment.
- Often payment confirmation is not received by the customer and that causes unnecessary anxiety among the people.

Solutions

- Include all the tax or VAT and make sure there are no hidden fees.
- Keep experienced people for delivery so that mistakes are rare.
- Make sure all website policies are clear.
- Develop the system well and make sure customers receive an email confirmation once they have made payment for a product.

Opportunities

- Orders can be placed 24/7.
- Wide range of products available.
- Wide range of customers available, resulting in more profit.
- Building good relation with customer and giving them a good experience.

Chapter 8
Project as Engineering Problem Analysis
8.1 Sustainability of the Project/Work

When a company incorporates a "green" mentality into its project management strategy, the positive effects can ripple throughout the organization, leading to greater efficiency, lower waste and higher employee morale. There are five strategies for planning and executing sustainable projects in our company.

Start by assessing current project sustainability - Before taking steps toward greater sustainability, it's important to know where you currently stand. A sustainability analysis always helps to find the greatest opportunities for improvement, and will help you measure progress as your sustainability initiative takes shape. When assessing your project sustainability, consider first whether the concept of sustainability applies to a given project or project management practice, then evaluate the costs and effort needed to make improvements, the potential benefit to the environment and the company's reputation and the potential cost savings that could result.

Develop a sustainability strategy - Once your assessment is complete, the next step is to draft a strategy that defines the goals in improving sustainability, how the improvements will be achieved and what the organization hopes to gain in the process. Similar to a project plan, the strategy should name the people, roles or departments who will be responsible for leading the sustainability initiative and the level of authority they will have in determining project priorities.

Adopt a sustainability standard - As interest in project sustainability continues to grow, organizations have begun to set standards to help executive leaders and project managers determine whether they are meeting their sustainability goals.

Look for sustainability in partners and vendors - The larger an organization is, the more pressure it can exert on the companies it does business with. Asking vendors and suppliers to increase their own sustainability can not only reduce your own organization's environmental footprint, it can lead to broader improvements among your vendors' other customers as well.

Spread the word - As with any organizational effort, communication is the key to success. As soon as your sustainability strategy is defined, start engaging your project teams in the process. Ask for feedback on your sustainability goals, and solicit new ideas that employees might have based on their previous projects. The more ownership your employees feel in the sustainability effort, the harder they'll work to make it a success.

Sustainability can be f 3 main types:

Financial Sustainability – Once our website will be launched we will have to promote it and do the SEO successfully. Once that will be done we can expect visitors to come to our site. Once the customers begin placing orders and we can please them with our service and product

quality there will be more customers and our company will make profits so it is financially sustainable.

Community Sustainability – Once customers are pleased with our service and products they will tell about our site to their friends and family members so it is sustainable in terms of community.

Organization Sustainability – Once the website will be live there will more updates that will be added soon as well which have been planned. So, it is sustainable in terms of organization.

8.2 Social and Environmental Effects and Analysis

As we continue to expand our products and add more products and vendors we can expect to have a greater social effect about our website and people using our service more often.

Our website is not detrimental or harmful to the environment in any ways. We hope that customers will throw away the packaging in the garbage after their products are delivered.

8.3 Addressing Ethics and Ethical Issues

It is important that the ethical guidelines are being followed. Here are some that should be followed:

- Maintaining the privacy and Keeping user data safe and secure.
- Only the administration has access to the database.
- API services should be used properly.
- There shouldn’t be any favoritism.
- Only relevant user data should be collected.

Chapter 9
Future Work and Conclusion

9.1 Future Works

We have further plans to add new updates and features to our website. We hope to start working on those as soon as we launch our website. Here are few ones we have plans on:

- Track the order.
- Customers should be able to contact the delivery person.
- Make a mobile application of our current system.
- Add more vendors/products.
- Add more different brands of products.
- Add a customer profile.
- Customer should be able to view their history of shopping.
- Have a customer profile with their details.
- Have a vendor profile with their details.
- Offer cheap deals.

9.2 Conclusion

The online grocery store is a great way to help people during this tough times. People won't have to go outside to but their everyday food items. As a conclusion, I can say that this internship was a great experience. Thanks to Decimal IT again. I acquired deeper knowledge concerning my technical skills but I also personally benefited. Currently, there are huge opportunities available for the students who want to work in this field. Many private and public organizations hire web designers for their online work and website development. With the rapid advent of the online industry, the demand of web designing professionals is increasing and this has created a huge job opportunity for the aspirants in the upcoming days. Also, an experienced person in this field can also work as a freelancer; there are many online companies which provide online projects to the individuals.

9.3 Future Scopes

- To work in an IT company.
- Can work as a Web Designer.
- New and improved skills and how to apply them.
- Gain valuable work experience.
- Prepare me for a future career.

9.4 Limitation of the work

Due to time shortage for an internship program, there is still a lot of work that is to be done as we had planned earlier. During this recent pandemic COVID-19 we could not go to the office physically and that's why we had to discuss via online platforms and faced some internet issues.

Bibliography

[1] https://www.onespace.com/blog/2018/10/online-grocery-lessons-history/

[2] https://business.trustedshops.com/blog/agile-methodology-help-your-online-shop

[3] https://en.wikipedia.org/wiki/HTML

[4] https://en.wikipedia.org/wiki/CSS

[5] https://tc39.es/ecma262/#sec-overview

[6] Flanagan, David. *JavaScript - The definitive guide* (6 ed.). p. 1. JavaScript is part of the triad of technologies that all Web developers must learn: HTML to specify the content of web pages, CSS to specify the presentation of web pages and JavaScript to specify the behaviour of web pages.

[7] https://w3techs.com/technologies/details/cp-javascript/

[8] https://w3techs.com/technologies/overview/javascript_library

[9] https://en.wikipedia.org/wiki/JavaScript

[10] https://jquery.com/

[11] https://en.wikipedia.org/wiki/PHP

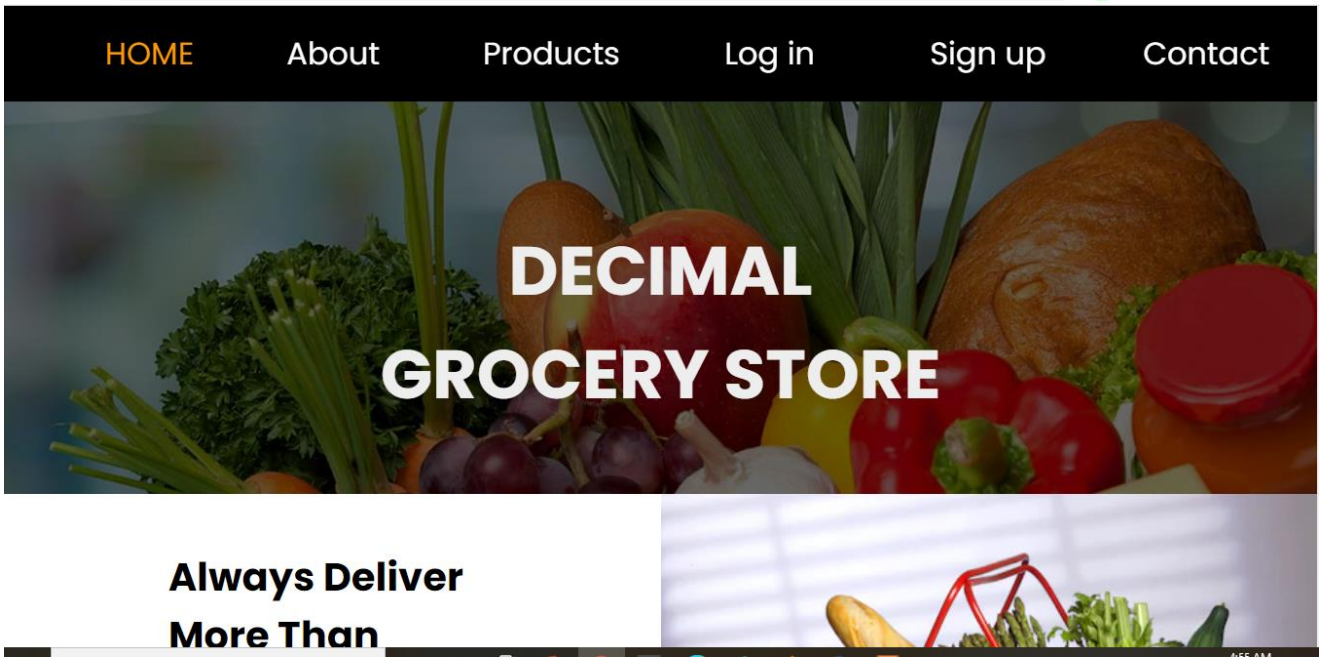
[12] https://www.php.net/

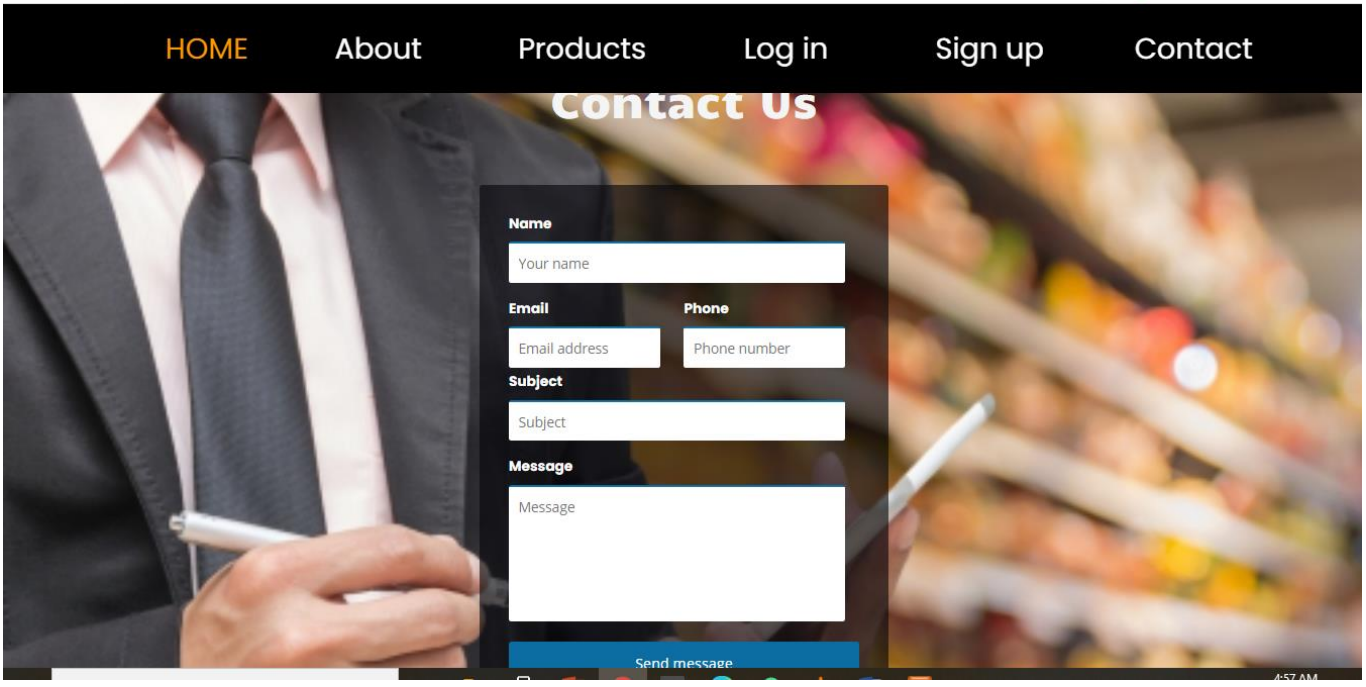
[13] https://en.wikipedia.org/wiki/MySQL

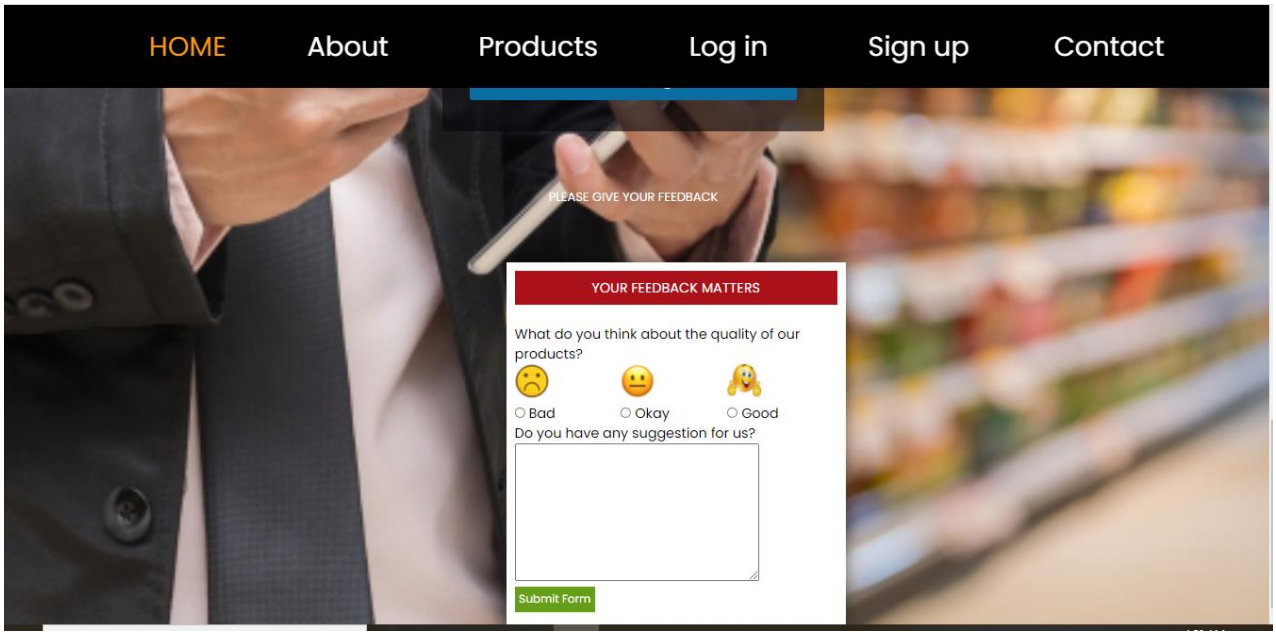
[14] https://www.mysql.com/

[15]https://www.cyblance.com/system-analysis/why-system-analysis-is-important/#:~:text=Objective%20of%20System%20Analysis%20are,in%20understanding%20of%20complex%20structures.

Appendix (UI Screenshot)



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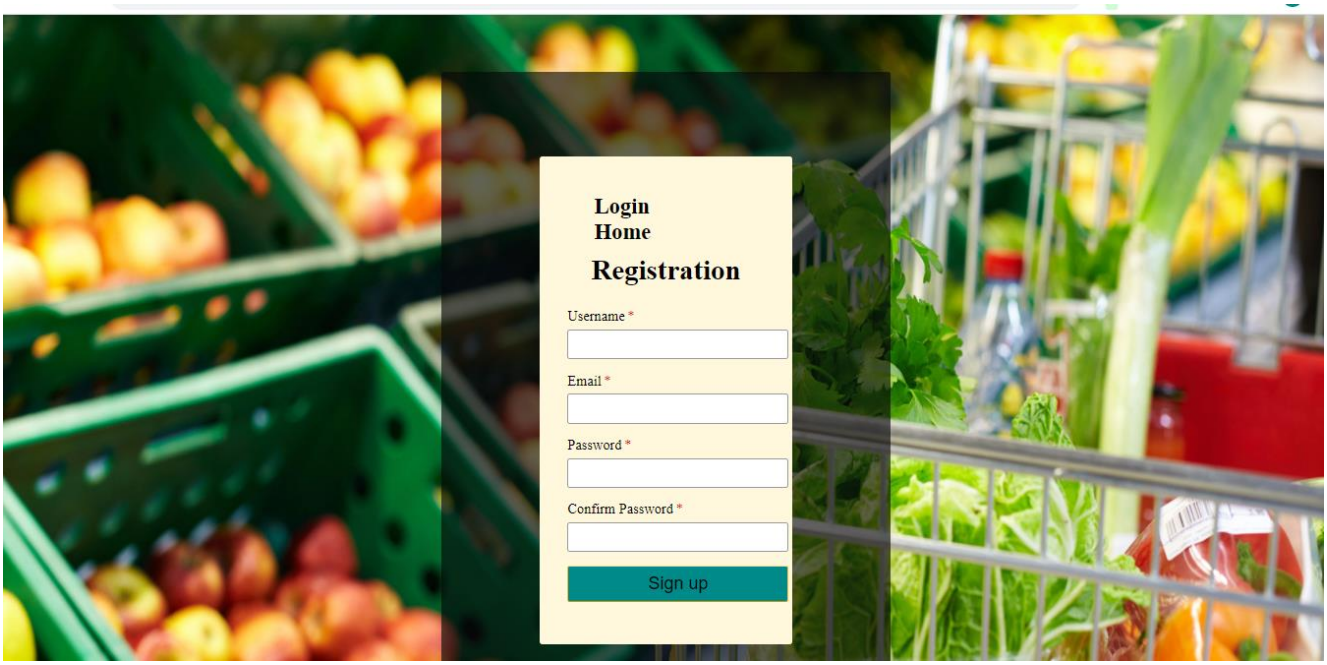
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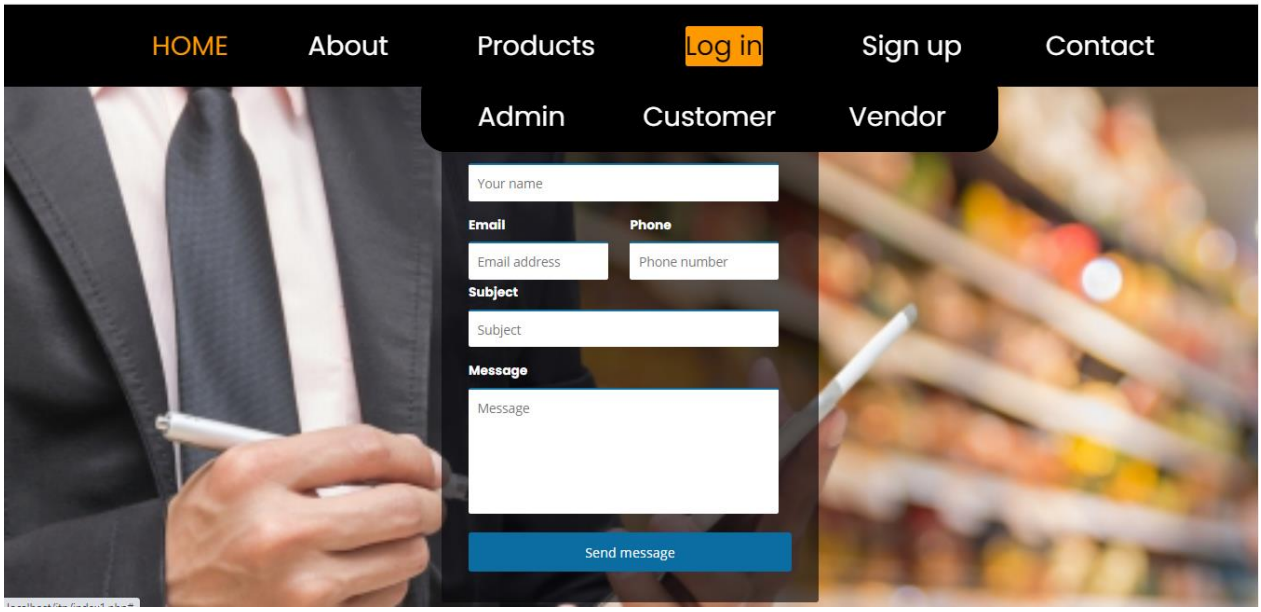
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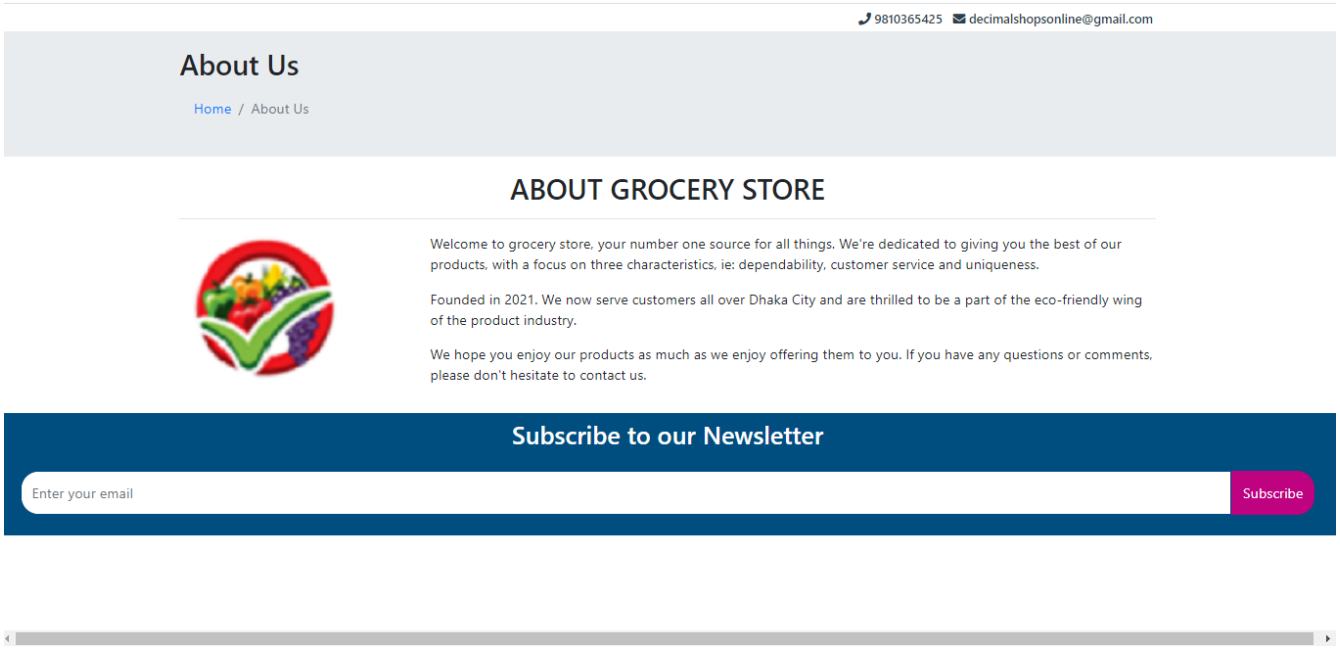
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ABOUT GROCERY STORE
Welcome to grocery store, your number one source for all things. We're dedicated to giving you the best of our products, with a focus on three characteristics, ie: dependability, customer service and uniqueness.
Founded in 2021. We now serve customers all over Dhaka City and are thrilled to be a part of the eco-friendly wing of the product industry.
We hope you enjoy our products as much as we enjoy offering them to you. If you have any questions or comments, please don't hesitate to contact us.
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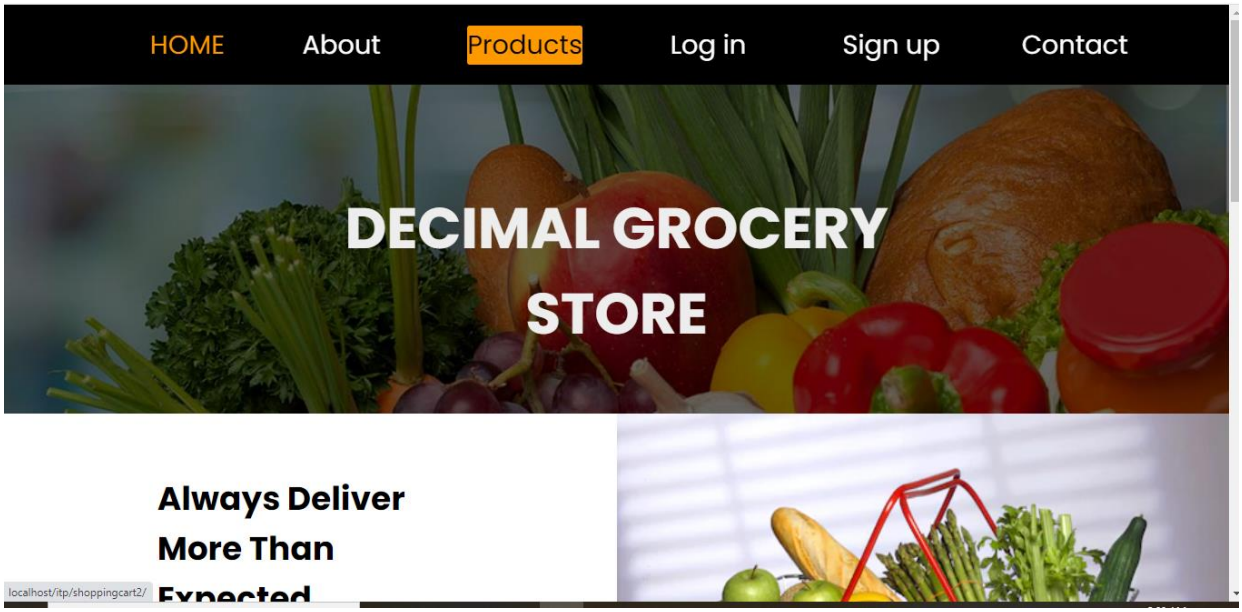
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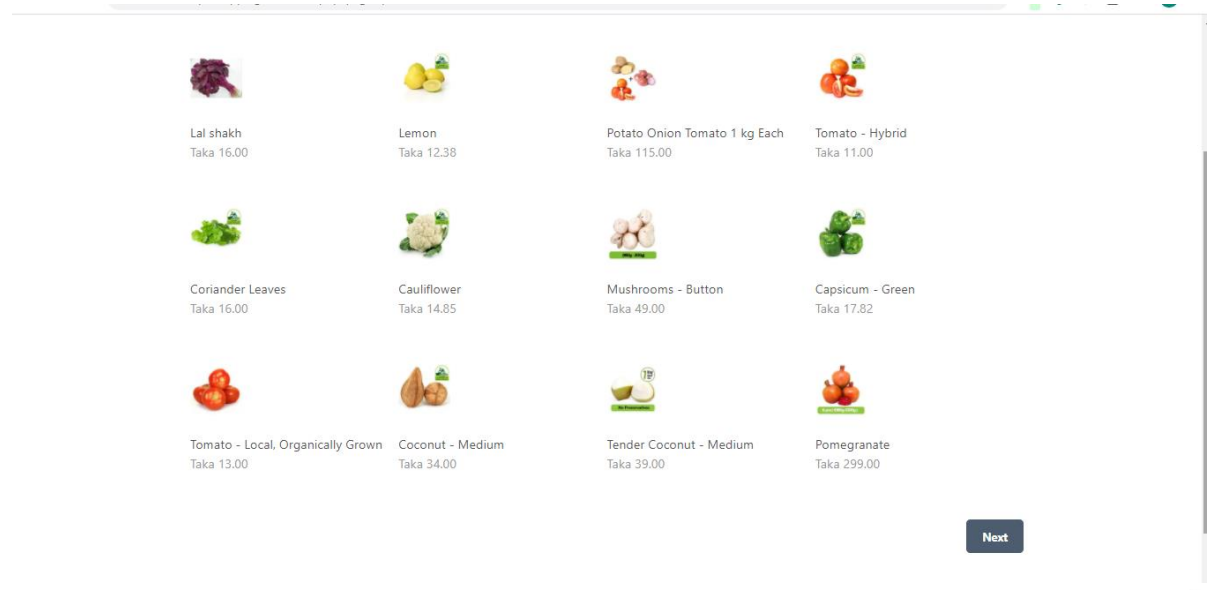
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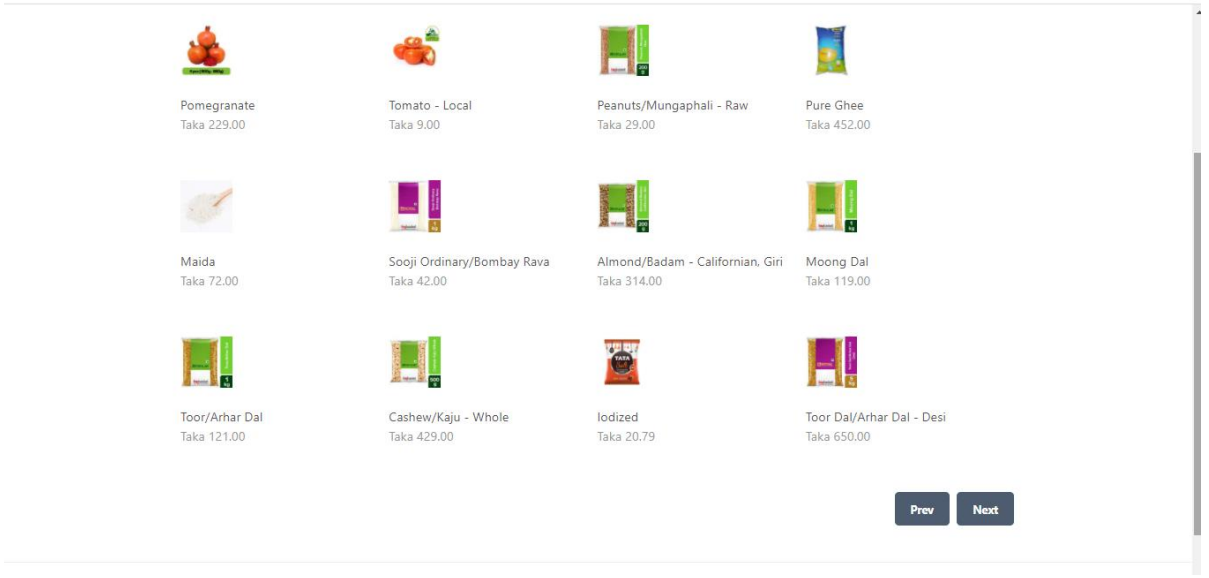
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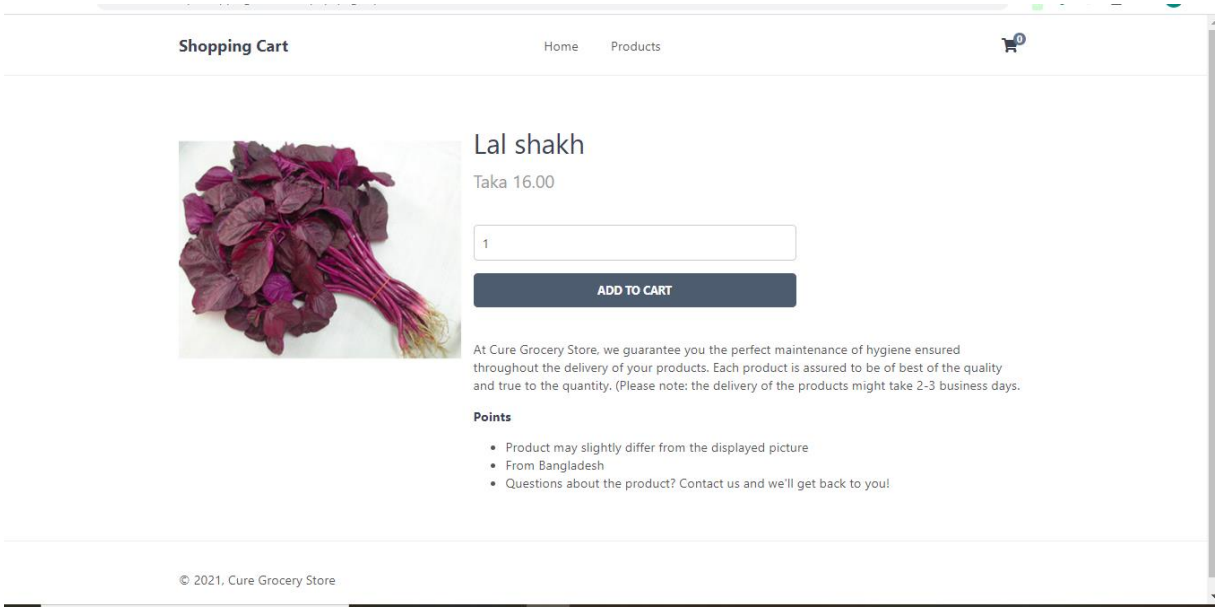
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Product may slightly differ from the displayed picture
From Bangladesh
Questions about the product? Contact us and we'll get back to you!
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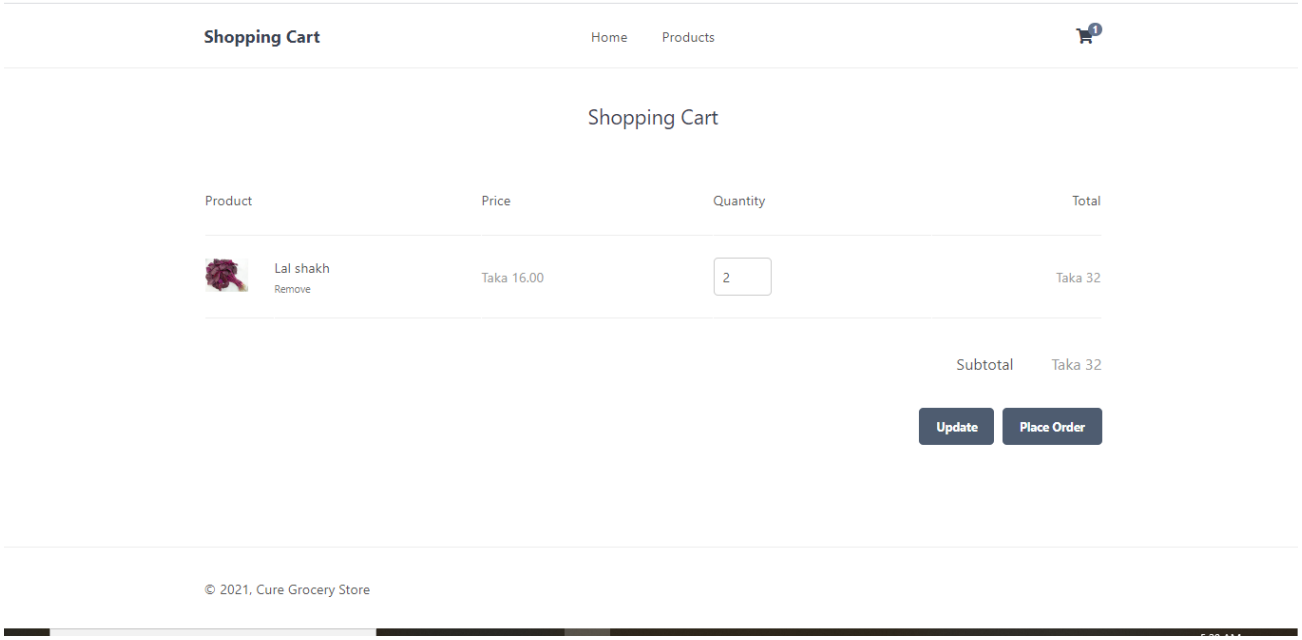
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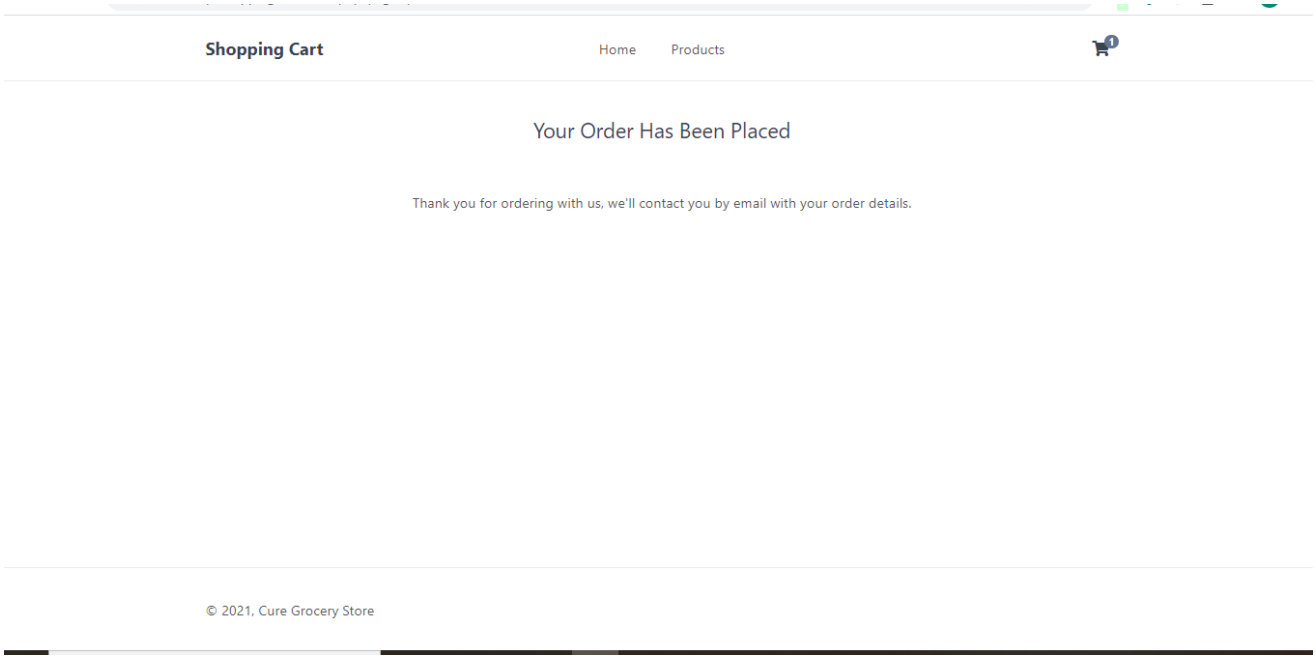
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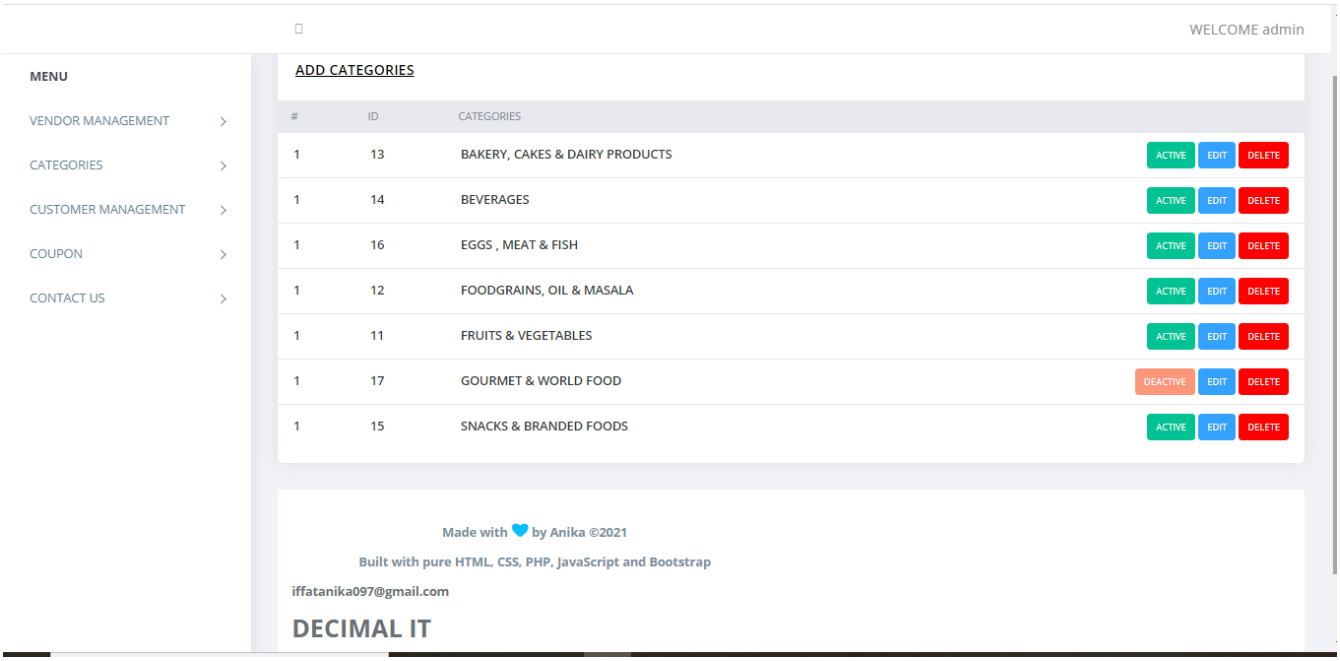
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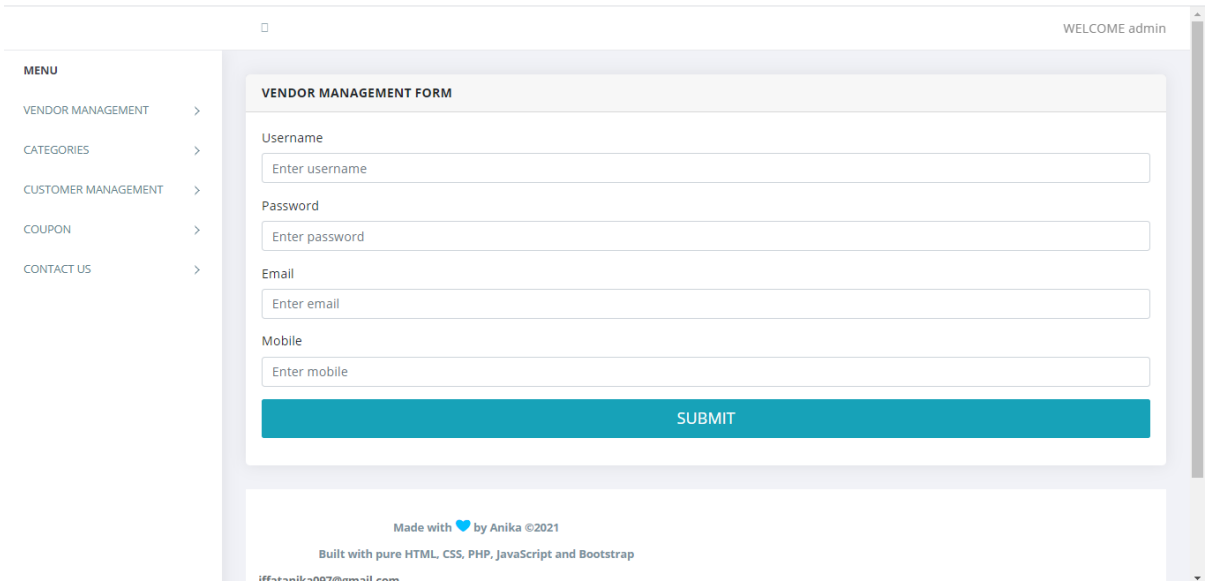
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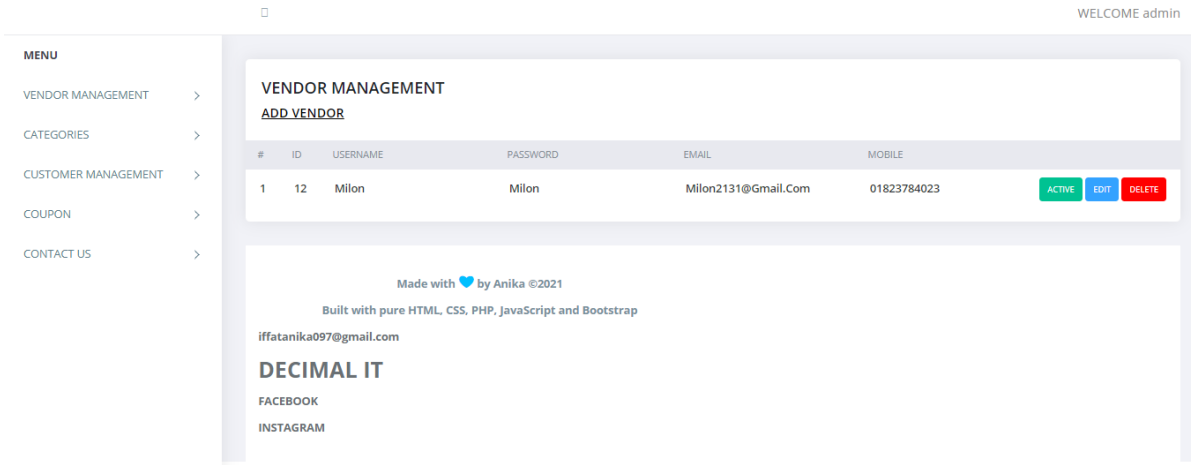
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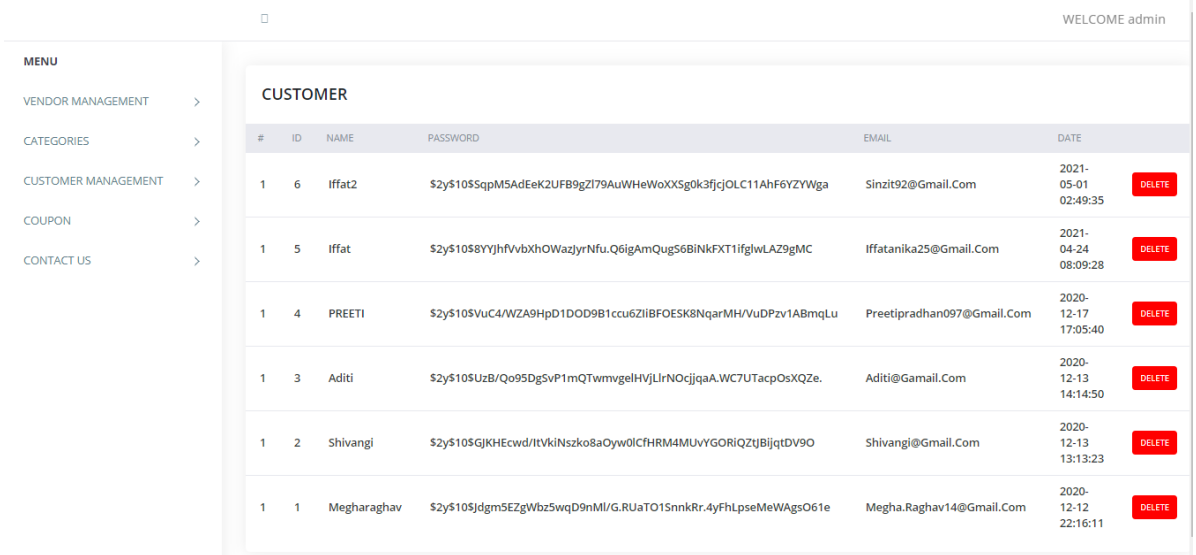
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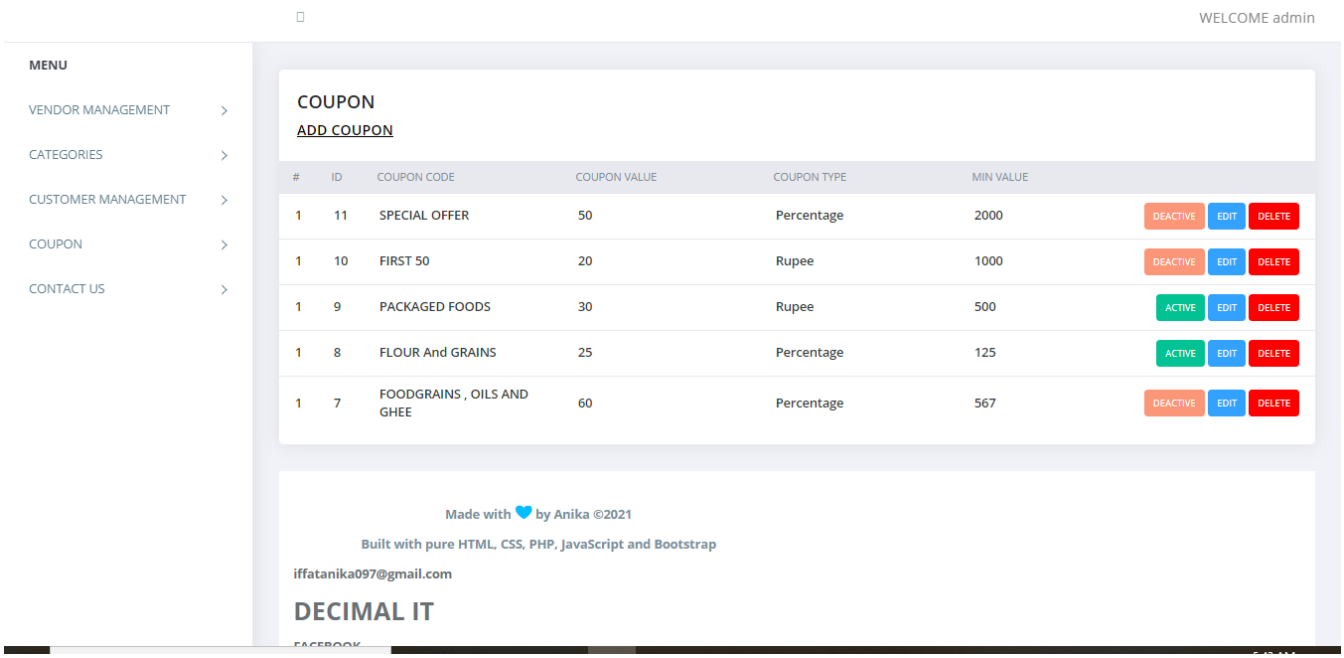
1 1 Megharaghav $2y$10$Jdgm5EZgWbz5wqD9nMl/G.RUaTO1SnnkRr.4yFhLpseMeWAgsO61e Megha.Raghav14@Gmail.Com 2020-12-12 22:16:11 DELETE


WELCOME admin
MENU
VENDOR MANAGEMENT
CATEGORIES
CUSTOMER MANAGEMENT
COUPON
CONTACT US
COUPON
ADD COUPON
ID COUPON CODE COUPON VALUE COUPON TYPE MIN VALUE
1 11 SPECIAL OFFER 50 Percentage 2000 DEACTIVE EDIT DELETE
1 10 FIRST 50 20 Rupee 1000 DEACTIVE EDIT DELETE
1 9 PACKAGED FOODS 30 Rupee 500 ACTIVE EDIT DELETE
1 8 FLOUR And GRAINS 25 Percentage 125 ACTIVE EDIT DELETE
1 7 FOODGRAINS , OILS AND GHEE 60 Percentage 567 DEACTIVE EDIT DELETE
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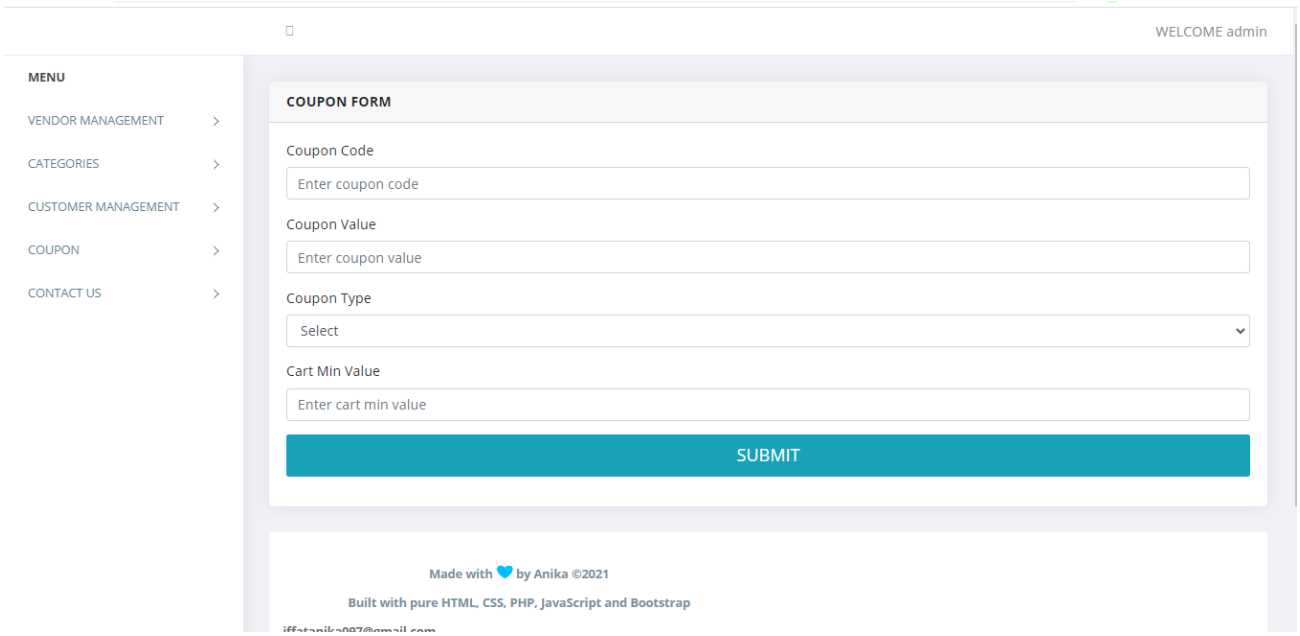
iffatanika097@gmail.com
DECIMAL IT


WELCOME admin
MENU
VENDOR MANAGEMENT
CATEGORIES
CUSTOMER MANAGEMENT
COUPON
CONTACT US
COUPON FORM
Coupon Code
Enter coupon code
Coupon Value
Enter coupon value
Coupon Type
Select
Cart Min Value
Enter cart min value
SUBMIT
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