E-Grocery with Live Support System
TECHNICAL REPORT

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DECLARATION

I hereby declare that the contents of the report "**E-Grocery with Live Support System**" are project of my own research and no part has been copied from any published source (except the references). I further declare that this work has not been submitted for award of any other diploma/degree. The university may take action if the information provided is found false at any stage. In case of any default the scholar will be proceeded against as per UAF policy.

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CERTIFICATE

To,
The Controller of Examinations,
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The supervisory committee certify that **SAAD SHAHZAD 2015-AG-5606 , QASIM SHABBIR 2015-AG-5627 , MUBEEN ASHRAF 2015-AG-5590** has successfully completed his project in partial fulfillment of requirement for the degree of BS Information Technology under our guidance and supervision.

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ABSTRACT

An online Grocery shopping system that permits a customer to submit online orders for items and/or services from our store which serves both walk-in customers say visitors and online customers. The online shopping system presents an online display of an order cut off time and an associated delivery window for items selected by the customer. This system accepts the customer's submission of a purchase order for the item in response to a time of submission being before the order cut off time. Our online Grocery shopping system does not settle with a credit supplier of the customer until the item selected by the customer is picked from inventory but before it is delivered. Therefore, the customer can visit online and make changes to the order. In addition, available service windows are presented to the customer as a function of customer selected order and service types and further. When ordering goods, Like many shopping systems our system provide a virtual shopping cart for holding items selected for purchase by customers or Visitors. Successive items selected for purchase are placed into the virtual shopping cart until a customer completes their shopping trip. Virtual shopping carts may be examined at any time, and their contents can be edited or deleted at the option of the customer. Once the customer decides to submit a purchase order, the customer may print the contents of the virtual shopping basket in order to obtain a hard copy record of the transaction.

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CHAPTER 1 - INTRODUCTION

1.1 Background:

We are living in the era of technology where people are too busy in their lives One-third of adults have purchased packaged food and beverage products online, Morning Consult found. Men and people who earn Rs.100,000 or more are the consumers most likely to buy their groceries this way, and convenience is by far the most common reason they do so. Online shopping helps people to purchase products without visiting the Market physically. Our Project is a web-based Grocery store which aims to be effective Order Processing within the given time and the customers can also track their orders. This project also provides many other features including user-friendly graphics, easy searching, pagination and more sorting orders.

1.2 Description:

Grocery Store includes many types of products from Fruits Vegetables Eggs everything fresh and fine. It also includes 24/7 customer support service system. Our Project Search system is a well-developed search includes different wide range categories from staples to grocery, home furnishing, breakfast and dairy, biscuits instant foods and many others. Search bar will search through the whole of the database for the required products and get the product for the customers. The online shopping of grocery is a blessing to get the required products over a few clicks. Our e-store will provide the customers with the best deals to get value addition on the purchase of products available online as a bundle offer.

Our Website provides

Single Page Application (SPA)

A single-page application (SPA) is a web application or web site that interacts with the user by dynamically rewriting the current page rather than loading entire new pages from a server. This approach avoids interruption of the user experience between successive pages, making the application behave more like a desktop application. [1]. Our Website consist on many SPAs as following

- **Shop Application**
- **Order Processing Application**
- **Admin Panel Application**
- **Product with their details Application**

Customer Support Service

Crisp Live Chat is a free and beautiful chat for our website. This is the ultimate free Live Chat plugin for MVC if you want to grow your email list, generate leads, and enhance your customer relationship within the same software. [2]

1.3 Problem Statement:

E-Grocery provides an easy way to sell products to a large no. of customers. However, there is a lot of competition among multiple e-grocery sites. When users land on an e-grocery site, they expect to find what they are looking for quickly and easily. Also, users are not sure about the brands or the actual products they want to purchase. They have a very broad idea about what they want to buy. Many customers nowadays search for their products on Google rather than visiting specific e-commerce sites. They believe that Google will take them to the e-grocery sites that have their product.

The purpose of any e-grocery website is to help customers narrow down their broad ideas and enable them to finalize the products they want to purchase. For example, suppose a customer is interested in purchasing Oil. His or her search for Oil should list Oil brands, Monounsaturated Fat, Omega-3 and Omega-6 fatty acids, and all other ingredients. As the customer selects more and more features or options from the facets provided, the search narrows down to a small list of Oils that suit his or her choice. If the list is small enough and the customer likes one of the mobiles listed, he or she will make the purchase.

1.4 Scope:

- Scope of this project is very broad in term of other E-commerce Sites as it Live Customer Support System.
- Product presentations come with greater depth and immersive experience (GIF, ads, detailed descriptions, live Q&A)
- Our search bar where you can search from a wide range of categories including grocery, household needs, biscuits and snacks, beverages, and a lot more.
- Web store which aims at saving users from the hassle of going out and buying every day necessities.
- It can easily understandable by every person there is no requirement for elaboration.
- It is Web base application we can access it from anywhere any time as it is mobile and PC responsive.

1.5 Objectives:

- Providing single cost services. Marketers can save the cost for staff, maintenance, communication and office rental by assigning our website to their company. The company pays a single cost for all mechanism.
- Build a Customer Support System module.
- Build a **B2C** shopping module.

- Build a Mobile and Web browser responsive application.
- Giving the best user experience while purchasing.
- Improve interaction with existing and potential customers
- Build a Module for providing real-time guidance to customers.

1.6 Feasibility:

Feasibility study of the system is a very important stage during system design. Feasibility study is a test of the system proposal according to its workability, impact on the organization, ability to meet user needs and effective use of resources. Feasibility study decides where the system is properly developed or not and weather the system is affordable or not.

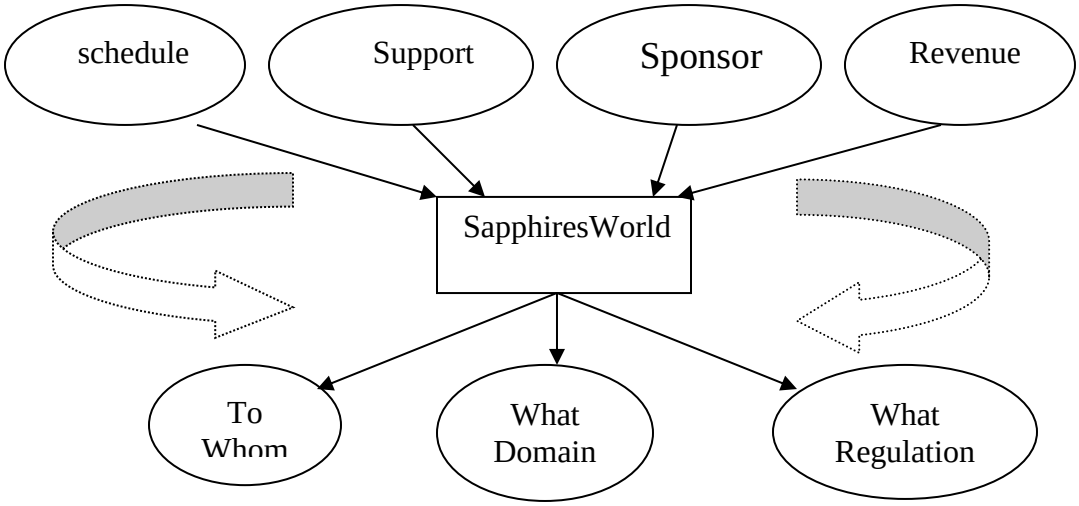


Figure 1.1 feasibility

Following aspects are taken into account during feasibility study:

1.6.1 Technical Feasibility

Technical analysis evaluates technical merits of the system, at the same time collecting additional information about performance, reliability, maintainability and information. In some cases, this system analysis step also includes a limited amount of research and design. As far as the management scheme of the E-Grocery Site is concerned, the project should be made in such a way that the administrator of the E-Grocery who is managing the information and arranging all the database record could perform his/her work in an easier manner.

1.6.2 Schedule Feasibility

The process of assessing the degree to which the potential time frame and completion dates for all major activities within a project meet organizational deadlines and constraints for affecting change. This Site will run on hosting domain 24/7 and provide facilities day and night

1.6.3 Economic Feasibility

During the process of economic feasibility study, we follow certain best practices to get the desired result. We do certain assumptions on the basis of which we give you solid plan of investment. These include

- Economic feasibility cash flow: Our project provide cash on delivery. So there is no control of cash flow on website.
- Estimated total project cost. We spend almost 10000 on making this site.
- Estimated total earnings: we have 3 pending orders of about Rs. 2000/-
- Risk factors
    - Site failure
    - Disk failure
    - System Crash
    - Transection failure
    - Losses of Messages
    - Network partitions
    - Communication component
- Cost benefits.

1.6.4 Cultural Feasibility

begin with asking people in your social circle about your product or service. Is it something that they want or are missing in their life? To get more critical & honest feedback, present it as someone else's idea. [4] If you have a good social media following, you can ask them the same thing and make a more informed decision before taking any major action.

1.6.5 Legal/Ethical Feasibility

SSL Certificates are small data files that digitally bind a cryptographic key to an organization's details. When installed on a web server, it activates the padlock and the https protocol and allows secure connections from a web server to a browser. Typically, SSL is used to secure credit card transactions, data transfer and logins, and more recently is becoming the norm when securing browsing of social media sites.

1.6.6 Resource Feasibility

Do you have enough resources, what resources will be required, what facilities will be required for the project, etc.

1.6.7 Operational Feasibility

This measure how well you will be able to solve problems and take advantage of opportunities that are presented during the course of the project

1.7 Requirements:

It means to check whether the developed software is as per requirement or not? Or simply stating whatever we are doing is right or wrong as per requirements? Here we checked each and every requirement and compared it with our developed system and we found that it satisfies the user need.

1.7.1 Functional Requirements

As we know, having a E-Grocery website in the digital era is essential. But while it's theoretically very easy to create a website, building one that is superbly optimized for user experience and high conversions is rather more challenging. The average landing page has a 10% conversion rate, which means 90% of opportunities to gain customers are being lost.[3] Here we will discuss some of the basic Functional requirements of our project

FR01: Provide user name and password to log in

FR01-01	System shall get Username and Password from user
FR01-02	System should authenticate user name and password
FR01-03	System shall let the user to log in if information is valid
FR01-04	If information is not valid then system will display message to get the account by admin

FR02: Create user account

FR02-01	System shall allow admin to create accounts for faculty members
FR02-02	System shall collect necessary details in this regard.

FR03: Add to cart

FR03-01	Customer can see the number of product he/she added to shopping cart at the top of the page.
FR03-02	Customers can add Multiple products in Multiple quantity in shopping cart.
FR03-03	Customer can remove products which they added by mistake in Cart.
FR03-04	Price is automatically calculated when a customer change quantity or add new product or when he removes product.
FR03-05	Customer can check whether a product is available in stock with respect to Quantity he provided.

FR04: Authentication and Authorization

FR04-01	Admin will directly redirect to Admin Panel after login.
FR04-02	Every user will have its own credentials for login.
FR04-03	Certain session will be generated for certain customers on their site. Users will see details only related to themselves

FR05: A Responsive Web Design

FR05-01	Our Best Responsive web design will give users, a very smooth and optimized experience on the device they have in their hands.
FR05-02	We are allowing users to use a phone friendly version of your website, for this our stats will be split into two.(Both Mobile and web Responsive)

FR05-03	Our Best Responsive web design will also allow users as a head of website to gather all the social links with one URL.
FR05-04	Image formats that the application should support: jpg, png
FR05-05	Users will not have to worry about any unnecessary redirects because it involves not user agent targeting.

FR06: Module Support Service System

FR06-01	GPS Tracking module through mobile application.
FR06-02	Easy to Use and Track distributer Live location on Web site.
FR06-03	Provide supply chain information to admin.

FR07: Customer Feedback and Q/A Module

FR07-01	Customers can place their value able comments related to products.
FR07-02	Customers can use chat-bot for helping and guidance
FR07-03	An API service which will show Visitors live location i.e. area, Region. Provide Help Desk Module

1.7.2 Non- Functional Requirements

Any requirement which specifies how the system performs a certain function is called non-functional requirement. In other words, a non-functional requirement will describe how a system should behave and what limits there are on its functionality. Non-functional requirements generally specify the system's quality attributes or characteristics, for example: "Modified data in a database should be updated for all users accessing it within 2 seconds." Typical non-functional requirements include: Performance – for example: response time, throughput, utilization, static volumetric, Scalability, Capacity, Availability, Reliability, Recoverability, Maintainability, Serviceability, Security, Regulatory, Manageability, Environmental, Data Integrity, Usability, Interoperability. [2]

NFR01: System shall remain available 24/7 to its users.
NFR02: System shall have 3 types of users i.e., Admin, Customers, Visitor.
NFR03: System shall provide tooltip for every option/button.
NFR04: Application needs to be available on the network if users enable the services.
NFR05: All the user private information must be secure from any kind of attack.
NFR06: Application must take care of utilization of resources for batter performance and power
. Consumption.

NFR07: The user needs to be able to launch the application quickly and log into the application. With minimal latency, sub 1 second.
NFR08: Application should be reliable and failure rate must not exceed 5%.

1.7.3 Hardware Requirements

Hardware:

- Processor (CPU) with 2 gigahertz (GHz) frequency or above
- A minimum of 2 GB of RAM
- Monitor Resolution 1024 X 768 or higher
- A minimum of 20 GB of available space on the hard disk
- Internet Connection Broadband (high-speed) Internet connection with a speed of 4 Mbps or higher
- Keyboard and a Microsoft Mouse or some other compatible pointing device
- Sound card

1.7.4 Software Requirements

- Quick Time--for audio/video content.
- PowerPoint viewer--PowerPoint Viewer lets you view full-featured presentations created in PowerPoint 97 and later versions.
- Adobe Shockwave--for Macromedia content.
- Adobe Acrobat Reader --for PDF files Adobe® Reader® software is the global standard for electronic document sharing. It is the only PDF viewer that can open and interact with all PDF documents. Use Adobe Reader to view, search, digitally sign, verify, print, and collaborate on Adobe PDF files.
- Adobe Flash Player--Flash Player allows you to enjoy content with video, graphics and animation.

Browsers:

- Chrome* 36+
- Edge* 20+
- Mozilla Firefox 31+
- Internet Explorer 11+ (Windows only)
- Safari 6+ (MacOS only)

Figure 1.2 Browsers

*Google Chrome version 42+ and Microsoft Edge do not support NPAPI-type plug-ins, including Java plug-ins and many media browser plug-ins. Blackboard does not support these browsers for use with media that require NPAPI plug-ins for viewing.

Browser Configuration:

Your browser must be configured as follows:

- JavaScript must be enabled
- Cookies must be enabled.
- Pop-up windows must be enabled

1.8 Stakeholders:

A Stakeholder is a person, or a group that has interest in an organization's activity. There are many different stakeholders in E-Grocery. Some of the main stakeholders are the buyers, designers, companies and competitors. They can affect or be affected by E-Grocery.
The following information shows the advantages and disadvantages of each stakeholder:

Buyers
Advantages: can easily shop online and able to buy products overseas
Disadvantages: Safety and privacy are issues

Designers
Advantages: Can sell products online without a store.
Disadvantages: it is hard to convince people to buy their products

Companies
Advantages: Can quickly and easily inform customer of their new products
Disadvantages: Sell might decrease since people start buying online.

Competitors
Advantages: easily find out its competitors' sells and cost. Also, can improve itself
Disadvantages: customers might go to their shop

Figure 1.3 Stakeholders

Chapter 2 – MATERIALS & METHODS

2.1 Process Model:

To solve actual problems in making an Online Pharmacy app, a software engineering or a team of engineers must incorporate a development strategy that encompasses the process, methods, and tools. This strategy is often referred to as a process model or a software engineering paradigm. A process model for software engineering is chosen based on the nature of the project and application, the methods and tools to be used, and the controls and deliverables that required. We have used the **Incremental Process Model** for this project. This model, as illustrated in the figure below derives its name from the way in which the software is built.[6] More specifically, the model is designed, implemented and tested as a series of incremental builds until it provides proper information. A build consists of pieces of code from various modules that interact together to provide a specific function. At each stage of the Incremental Model a new build is coded and then integrated into the structure, which is tested as a whole. Note that the Online Pharmacy is only defined as finished when it satisfies all of its requirements.

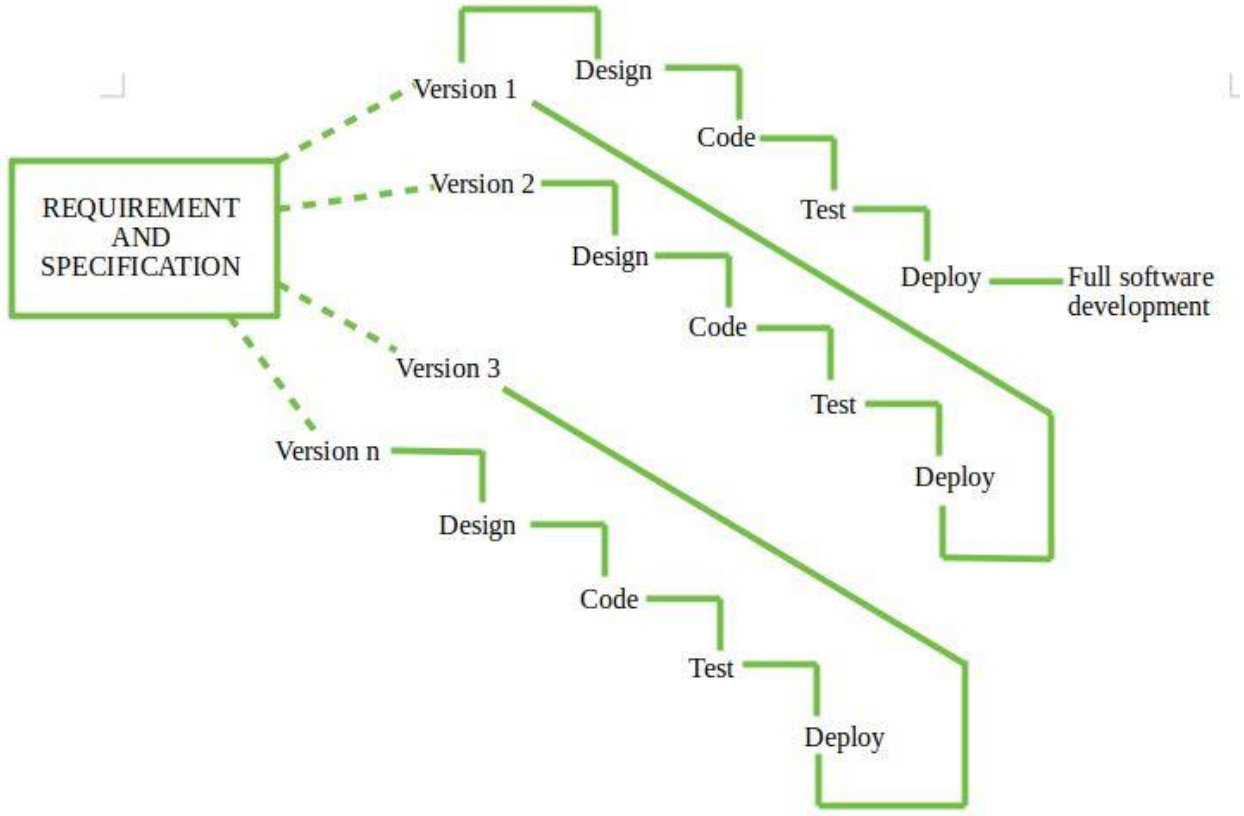


Figure 2.1 Incremental l Process Activities

Why we use Incremental model:

- This model can be used when the requirements of the complete system are clearly defined and understood.
- Major requirements must be defined; however, some details can evolve with time.
- There is a need to get a product to the market early.
- A new technology is being used.
- Resources with needed skill set are not available
- There are some high-risk features and goals.

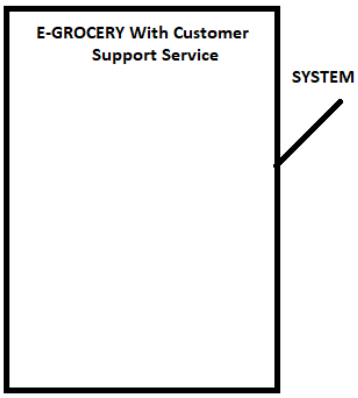
2.2 Tools & Technologies

- Microsoft Visual Studio
- Visual Studio Extensions
    - NuGet Package Manager
    - Web Essentials for Visual Studio
    - ReSharper
    - Version Control
- Entity Framework
- jQuery
- HTML
- CSS
- Bootstrap
- SQL Server
- SQL Management Studio
- Java Script
- Google Chrome developer tool
- Firefox
- Internet Explorer

2.3 Design:

A good SRS defines how an application will interact with system hardware, other programs and human users in a wide variety of real-world situations. Parameters such as operating speed, response time,availability, portability, maintainability, footprint, security and speed of recovery from adverse events are evaluated. Methods of defining an SRS are described by the IEEE(Institute of Electrical and Electronics Engineers) specification 830-1998.[5]

Note: Given below are some generic software design diagrams.



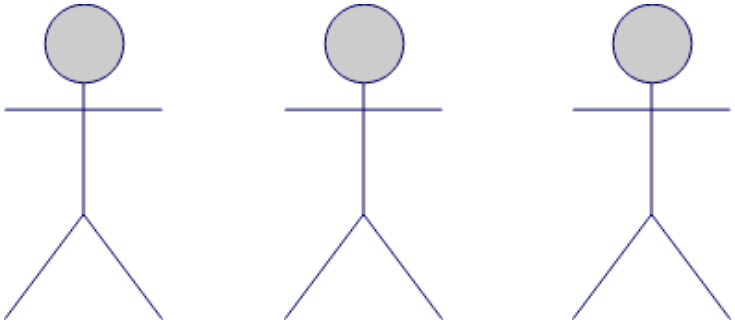
2.3.1 Use Case Diagram:

System:

System is whatever you are developing. It can be a website, software component, Business process, application or any number of other things. System is represented with rectangle shape; name of the system is put on the top of rectangle i.e.

Actor:

An actor is can be someone something that uses system to achieve a goal. That could be a person, organization, other system or external device. In our case there are two actor customer and admin primary actor.



Admin Customer Database

Primary Actor:

A primary actor initiates the use of the system. Here Customer and Admin both are is Primary Actor.

Secondary Actor: Is reactionary, database is secondary actor

Primary Actor: should be at right of the system.

Use Case:

Is represented by oval shape and represent action that accomplishment some sort of tasks. . They figure out what actions/functionalities a user will perform. Use cases are basically the functional requirements that you have pointed out in the functional and non-functional requirements topic

Relationship: are connections between use cases and with other things.

Association: Represent basic communication or interaction.

Include: happen every time.

External: happen just some times

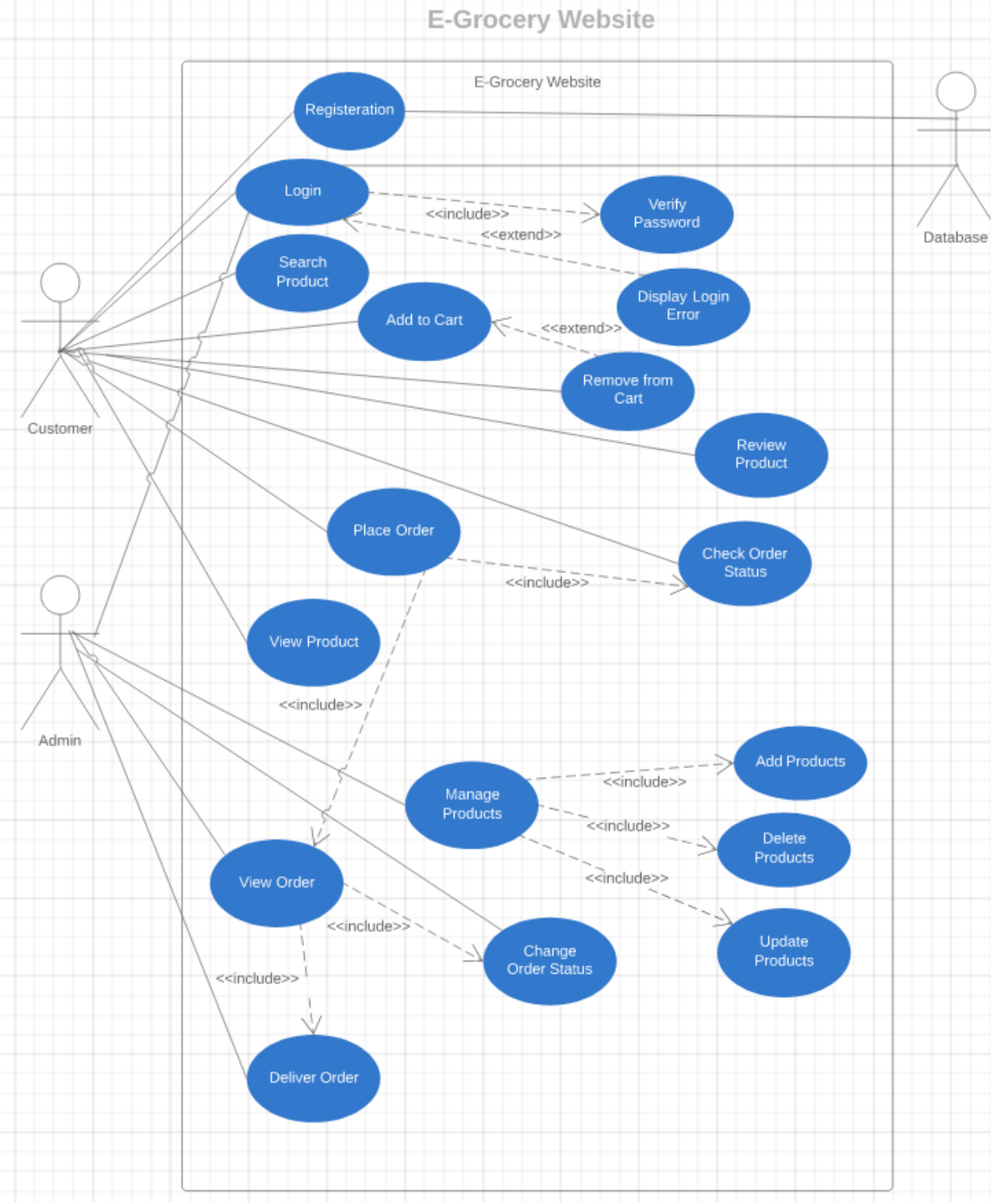


Figure 2.2 Use Case Diagram

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2.3.2 Usage Scenario

Usage scenario is the actual text-based representation of the use case, among various representation methods discussed above. A usage scenario is likely to have various sections depending upon the level of details required in a given system. There is no fixed standard so far for number of sections in a use case (usage scenario).
Following is a typical table structure for usage scenario, note that it is not mandatory to write a usage scenario in the table format only, and it is likely that you will find different structures for the same representation.

1-Customer Registration

Use Case Title	Customer Register
Abbreviated Title	User registration
Use Case Id	1
Requirement Id	1
Description: The user can register himself on the website so that he can check out from his cart and proceed with his order**.**	
Pre Conditions: The user must be on Account/Register and his email is not pre-registered.	
Task Sequence	**Exceptions**
1. The user comes to sign up page.	
2. User gives his email, password and other details.	Must provide correct details or validation error will occur.
3. The Web app will search the database, if the email has been used before.	If email already present, user will not be able to register.
Post Conditions: The user has successfully registered.	
Unresolved issues:	
Authority: Can checkout and proceed with order.	
Modification history: Author: Description:	

Table 2. 1: Customer Registration

2-User Login

Use Case Title	User Authentication and Authorization Control
Abbreviated Title	UAC
Use Case Id	2
Requirement Id	3

Description: The user must type correct user name or Email with correct Password. His/Her record will be check from database . After this authentication he will have certain privileges. Admin can access Admin Panel while user can proceed to check out	
Pre Conditions: The user must be on Account/Register and his email is not pre-registered.	
Task Sequence	**Exceptions**
4. The user comes to sign up page.	
5. User gives his email, password and other details.	Must provide correct details or validation error will occur.
6. The Web app will search the database, if the email has been used before.	If email already present, user will not be able to register.
Post Conditions: The user has successfully registered. The admin can see and access admin panel.	
Unresolved issues:	
Authority: Can perform CRUD operation on Brand, Categories and Product	
Modification history: Author: **Admin** Description:	

Table 2.2: User Login

3- Make Purchase

Use Case Title	Make Purchase
Abbreviated Title	Purchasing a product
Use Case Id	4
Requirement Id	4
Description: The registered user purchases products. Users buy products from shop/Index page.	
Pre-Conditions: The user may be registered or not.	
Task Sequence	Exceptions
1. The user logs in to his registered account.	
2. User selects a product, add to cart and then purchase the order with desired product quantity.	**.**
Post Conditions: The user has purchased the no of products.	
Unresolved issues:	
Authority: The user can purchase a product**.**	
Modification history: **Author:**	

Table 2. 3: Make Purchase

4- Order Processing

Use Case Title	Order processing	
Abbreviated Title	Admin will process the order.	
Use Case Id	3	
Requirement Id	3	
Description: The admin will received the order and check its delivery details, check product status and process it. The Admin can change the order status pending to In Progress or Delivered.		
Pre Conditions: The order has been placed by the authenticated user with order shipping details.		
Task Sequence		**Exceptions**
1. The user has placed an order.		
2. The admin will receive the order and will check product status, delivery details and finalize the order.		.
Post Conditions: The order has been finalized.		
Unresolved issues:		
Authority: The admin can accept and reject orders based on customer input.		
Modification history: **Author:** **Description**:		

Table 2. 4: Order Processing

2.3.3 Sequence Diagram:

A sequence diagram simply depicts interaction between objects in a sequential order.

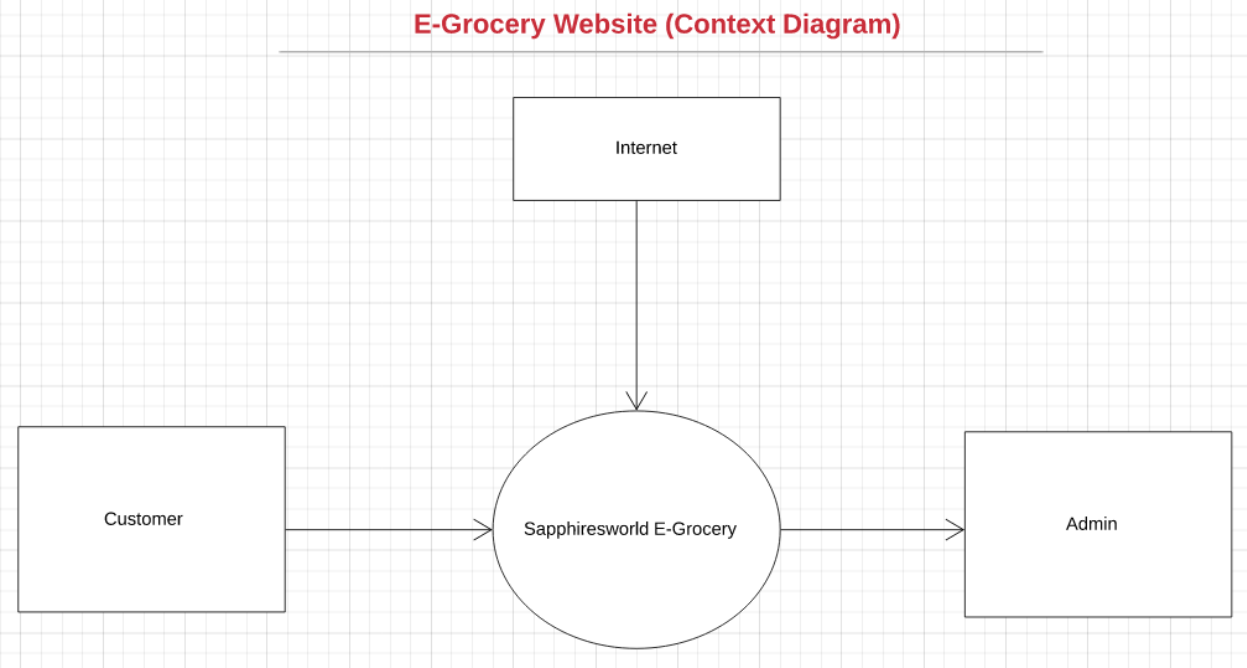


Figure 2.3 Context Sequence Diagram

A sequence diagram simply depicts interaction between objects in a sequential order i.e. the order in which these interactions take place. We can also use the terms event diagrams or event scenarios to refer to a sequence diagram. Sequence diagrams describe how and in what order the objects in a system function. These diagrams are widely used by businessmen and software developers to document and understand requirements for new and existing systems.

Sequence Diagram Notations:

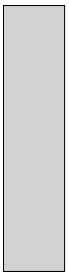
Actors – An actor in a UML diagram represents a type of role where it interacts with the system and its objects. It is important to note here that an actor is always outside the scope of the system we aim to model using the UML diagram.

Class Roles or Participants:

Class roles describe the way an object will behave in context. Use the UML object symbol to illustrate class roles, but don't list object attributes.

Activation or Execution Occurrence:

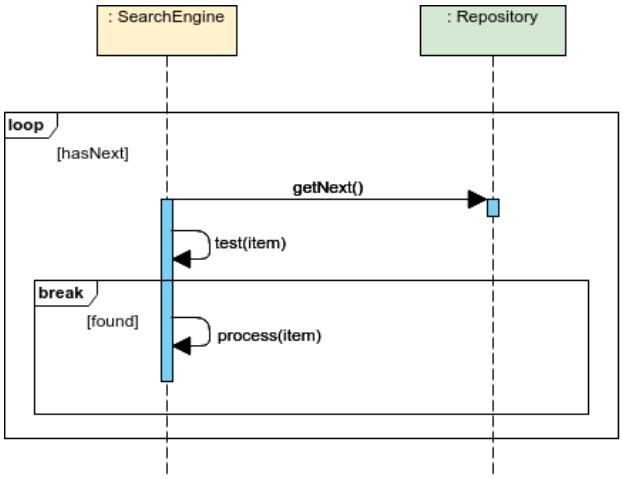
Activation boxes represent the time an object needs to complete a task. When an object is busy executing a process or waiting for a reply message, use a thin gray rectangle placed vertically on its lifeline.



Activation or Execution Occurence

Messages

Messages are arrows that represent communication between objects. Use half-arrowed lines to represent asynchronous messages. Asynchronous messages are sent from an object that will not wait for a response from the receiver before continuing its tasks. For message types, see below.

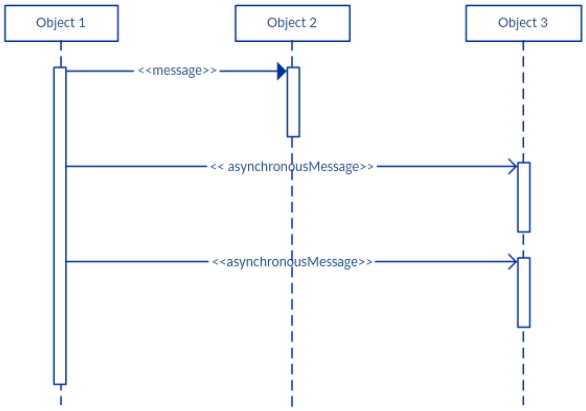


Lifelines

Lifelines are vertical dashed lines that indicate the object's presence over time.

Destroying Objects

Objects can be terminated early using an arrow labeled "<< destroy >>" that points to an X. This object is removed from memory. When that object's lifeline ends, you can place an X at the end of its lifeline to denote a destruction occurrence.



Loops

A repetition or loop within a sequence diagram is depicted as a rectangle. Place the condition for exiting the loop at the bottom left corner in square brackets [ ].

Sequence Diagram Example:

Note: Make sequence diagram for each use case illustrated in use case diagram

Admin role sequence Diagram

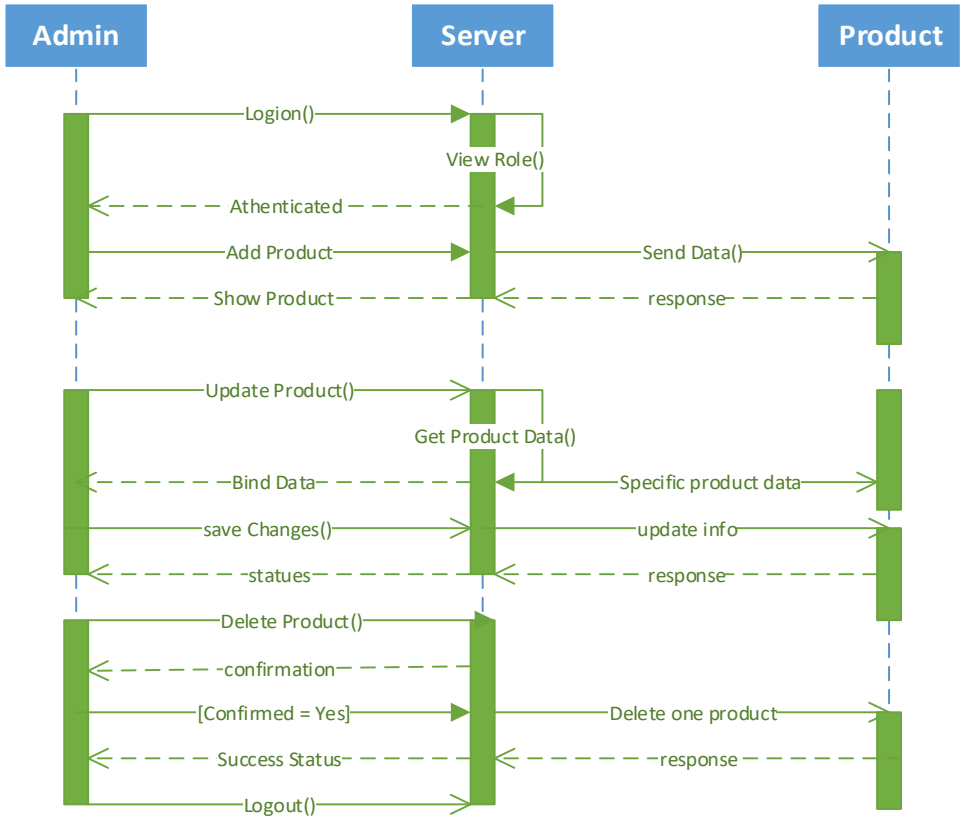


Figure 2.4 Sequence Diagram 1

Customer Role Sequence Diagram

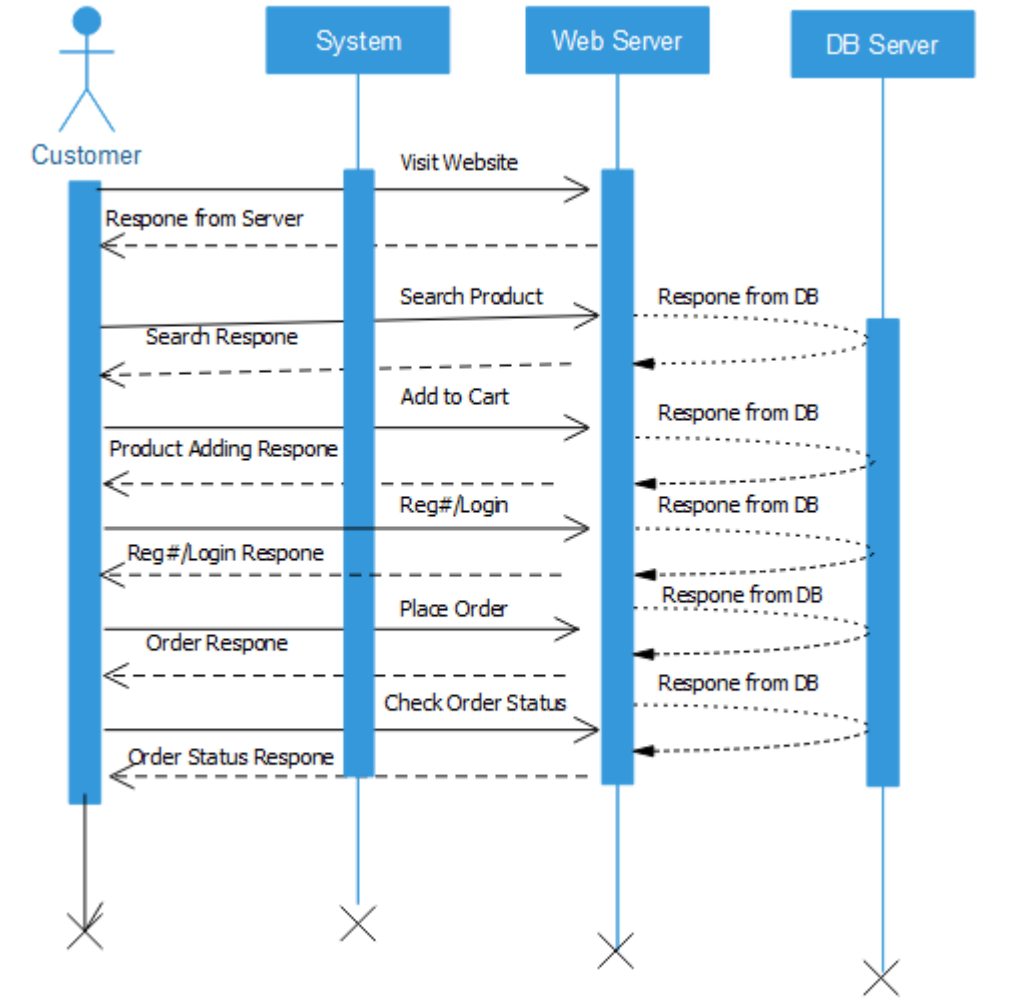


Figure 2.5 Sequence Diagram 2

Admin Order Processing Sequence Diagram

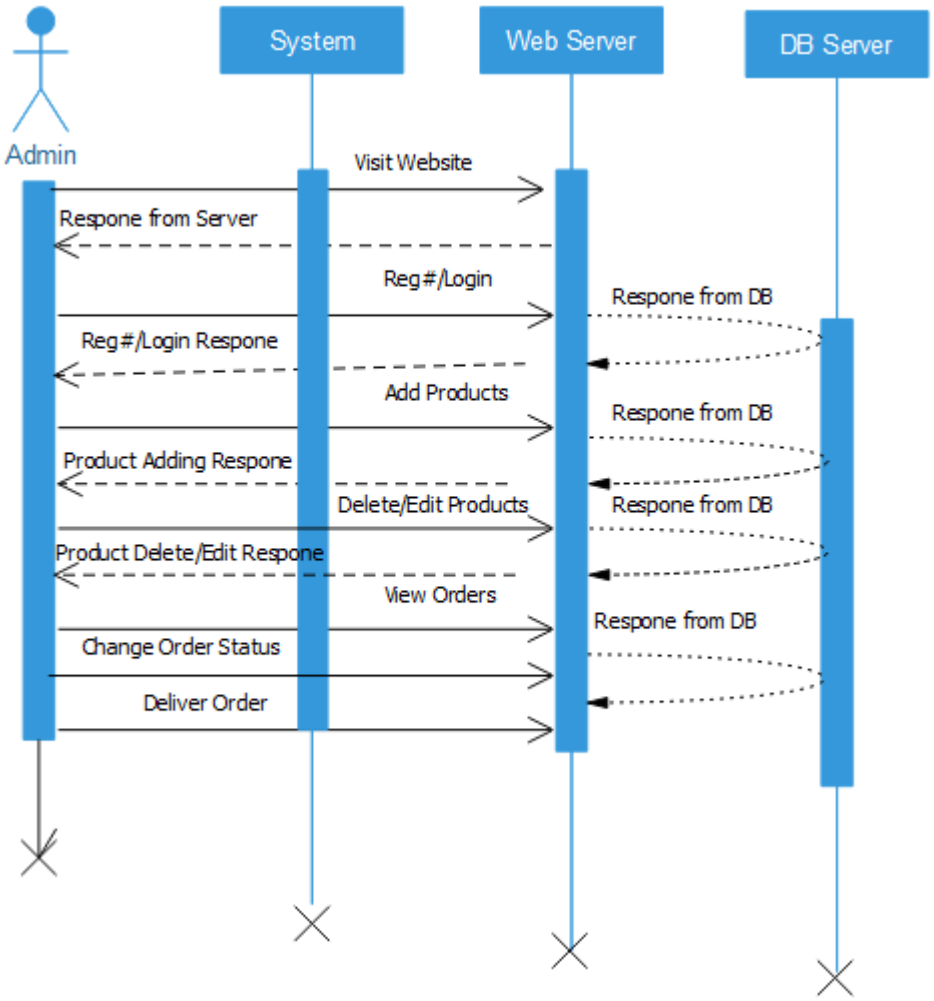


Figure 2.6 Sequence Diagram 3

2.3.4 Class Diagram:

A class diagram is a type of static structure diagram that describes the structure of a system by showing the system's classes, their attributes, operations (or methods), and the relationships among objects. Below is the class diagram for E-Grocery management system discussed above.

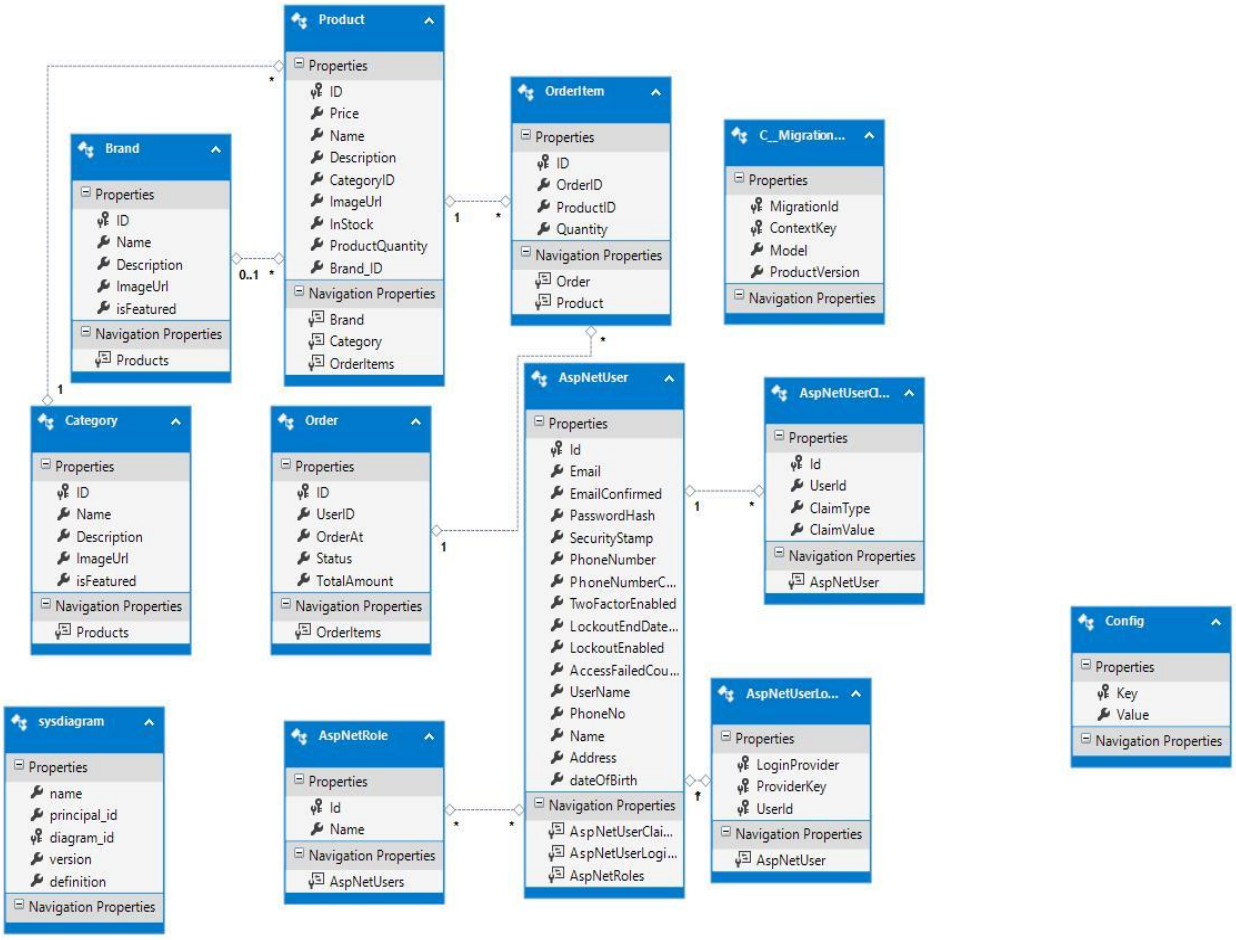


Figure 2.7 Class Diagram

2.3.5 Data Flow Diagram:

A data flow diagram (DFD) maps out the flow of information for any process or system. It uses defined symbols like rectangles, circles and arrows, plus short text labels, to show data inputs, outputs, storage points and the routes between each destination. A Data Flow Diagram (DFD) is traditional visual representation of the information flows within a system. A neat and clear DFD can depict a good amount of the system requirements graphically. It can be manual, automated, or combination of both.

It shows how information enters and leaves the system, what changes the information and where information is stored. The purpose of a DFD is to show the scope and boundaries of a system as a whole. It may be used as a communications tool between a systems analyst and any person who plays a part in the system that acts as the starting point for redesigning a system. [3]

It is usually beginning with a context diagram as the level 0 of DFD diagram, a simple representation of the whole system. To elaborate further from that, we drill down to a level 1 diagram with lower level functions decomposed from the major functions of the system. This could continue to evolve to become a level 2 diagram when further analysis is required. Progression to level 3, 4 and so on is possible but anything beyond level 3 is not very common. Please bear in mind that the level of details for decomposing particular function really depending on the complexity that function.

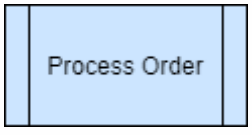
DFD Diagram Notations

External Entity

An external entity can represent a human, system or subsystem. It is where certain data comes from or goes to. It is external to the system we study, in terms of the business process. For this reason, people used to draw external entities on the edge of a diagram.

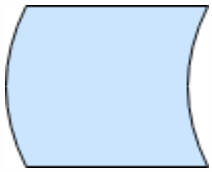
Process

A process is a business activity or function where the manipulation and transformation of data takes place. A process can be decomposed to finer level of details, for representing how data is being processed within the process.



Data Store

A data store represents the storage of persistent data required and/or produced by the process. Here are some examples of data stores: membership forms, database table, etc.



Data Flow

A data flow represents the flow of information, with its direction represented by an arrow head that shows at the end(s) of flow connector.

Context Diagram:

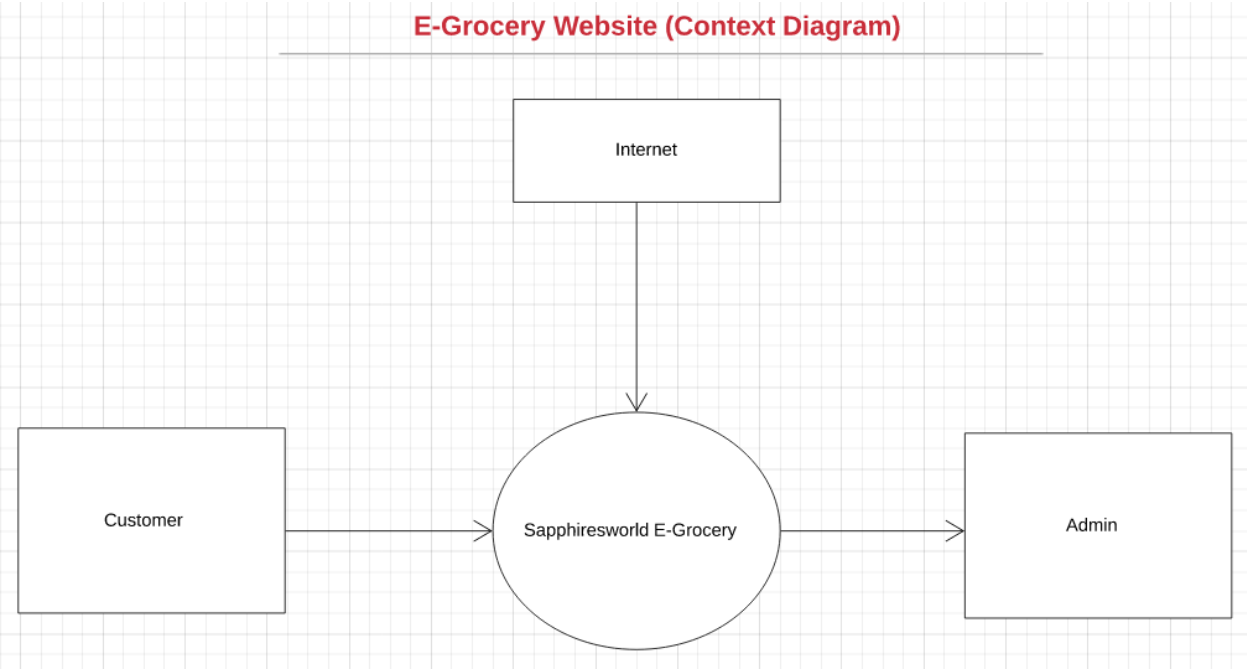


Figure 2.8 Data flow Context Diagram

Level 0:

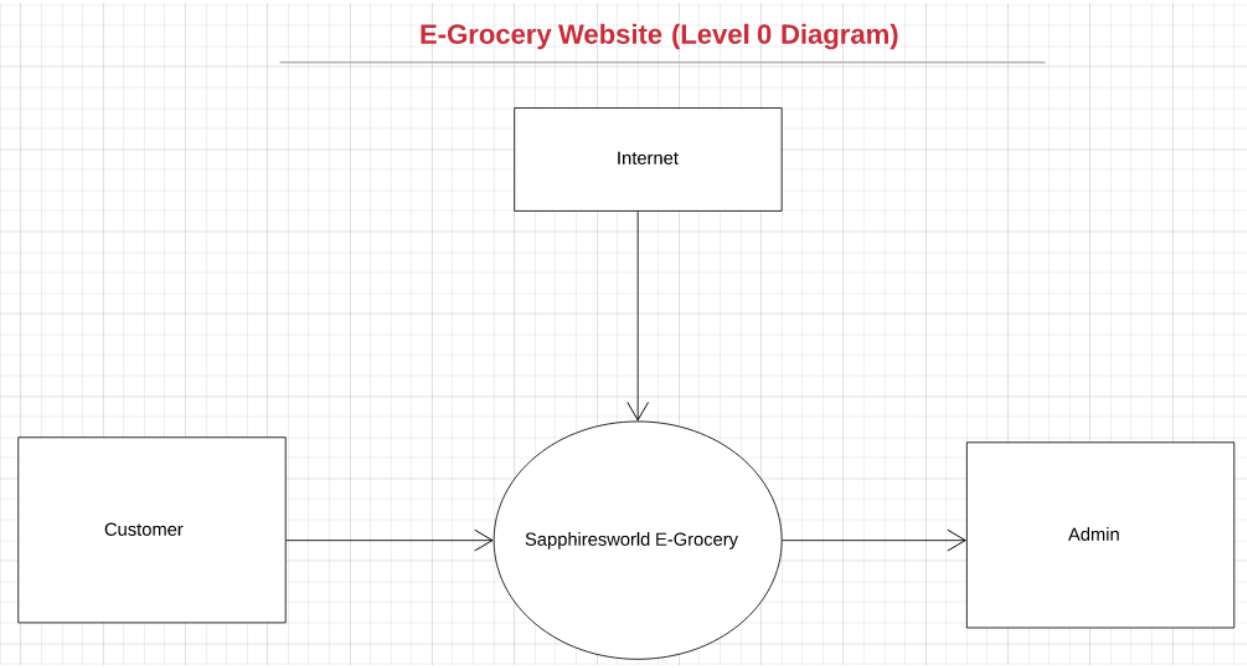


Figure 2.9 Data Flow Diagram level 0

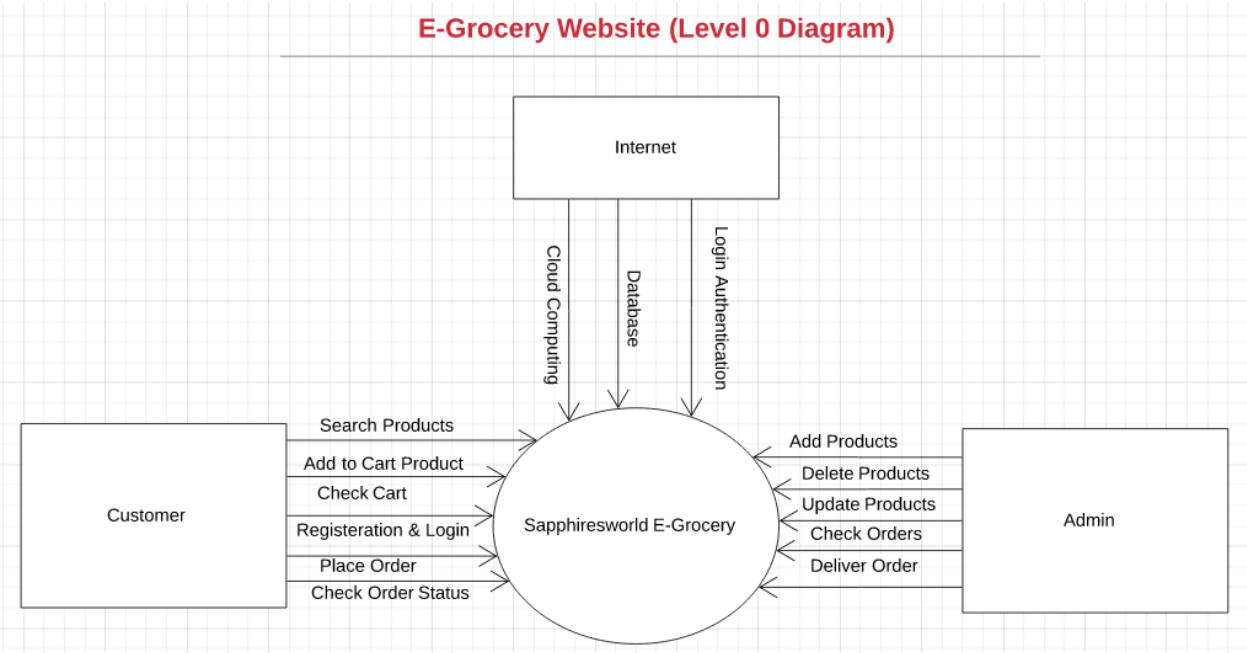


Figure 2.10 Data Flow Diagram level 0

Level 1:

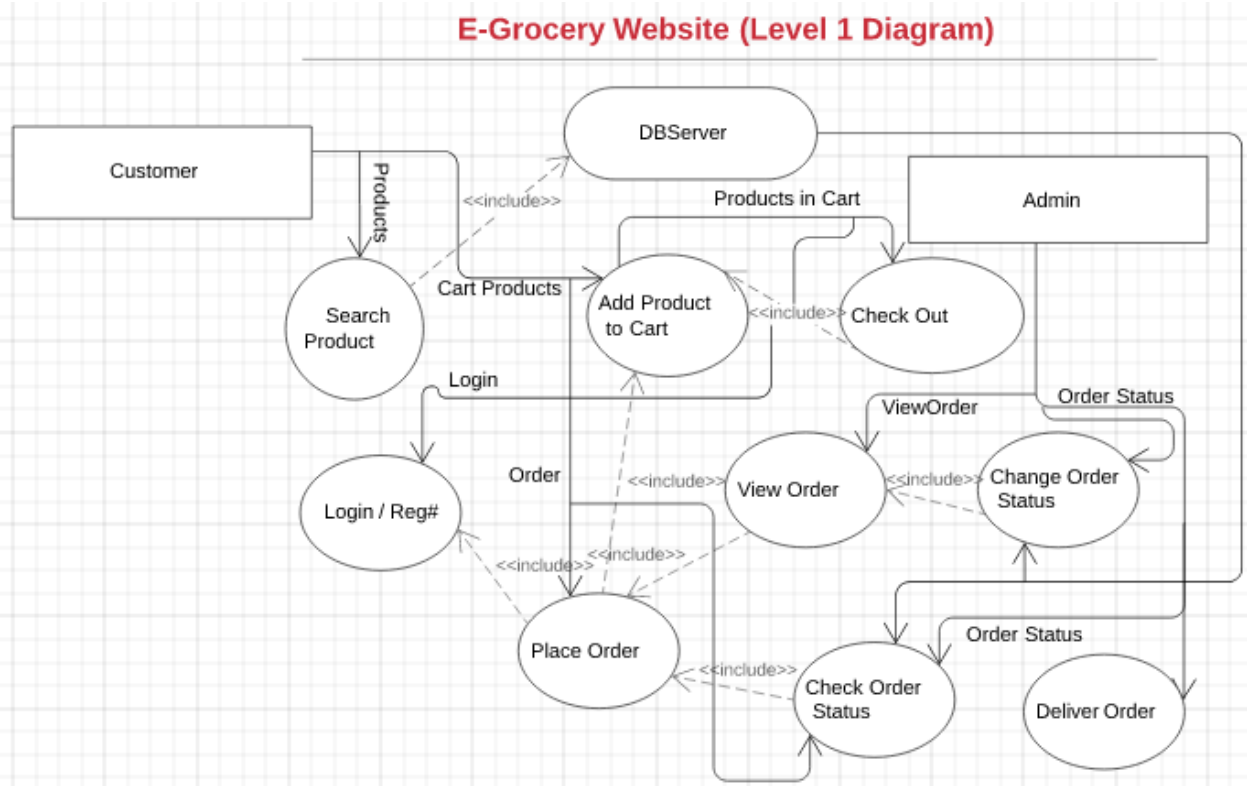


Figure 2.11 Data Flow Diagram level 1

2.3.6 ER Diagram:

An *entity relationship model*, also called an *entity-relationship (ER) diagram*, is a graphical representation of entities and their relationships to each other, typically used in computing in regard to the organization of data within databases or information systems. An entity is a piece of data-an object or concept about which data is stored. To learn more about ERD visit:

Figure 2.11 *Entity Relationship Diagram*

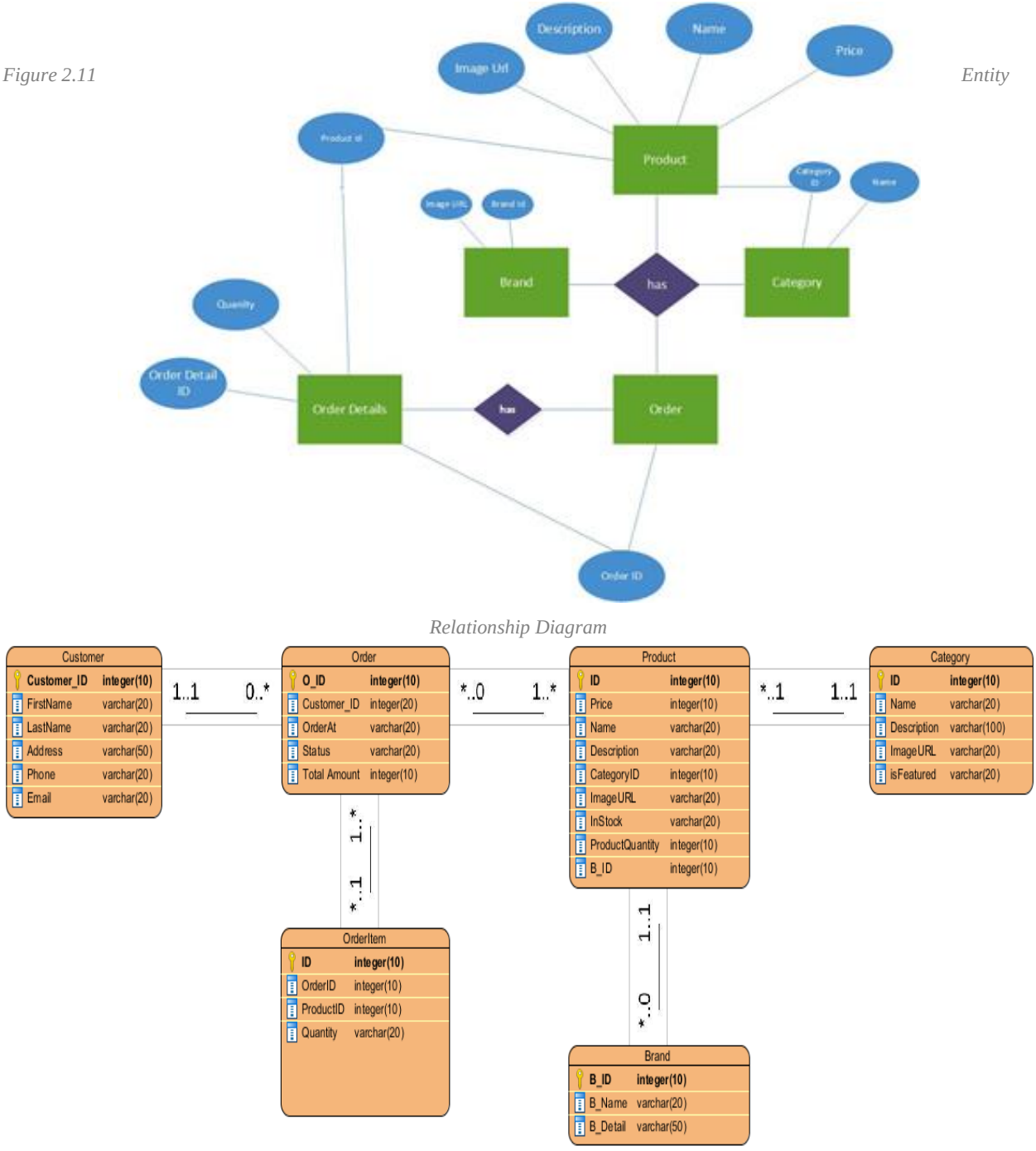


Figure 2.12 Entity Relationship Diagram

2.3.7 Database Model:

A database model shows the logical structure of a database, including the relationships and constraints that determine how data can be stored and accessed. Individual database models are designed based on the rules and concepts of whichever broader data model the designers adopt. Most data models can be represented by an accompanying database diagram. Below is an example for library management system. [4] To read more about designing database model visit:

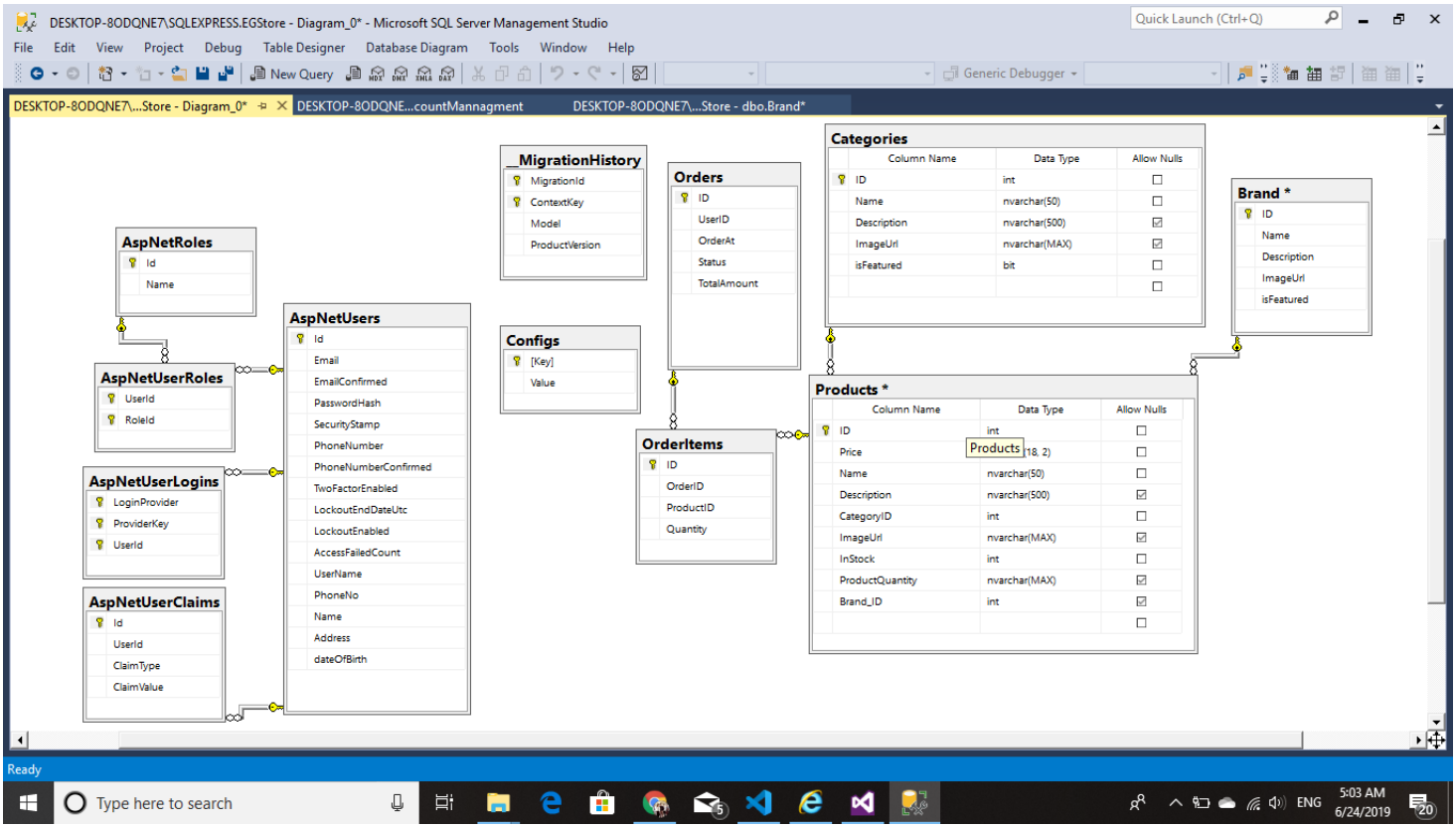


Figure 2.13 Database model

Product Relations

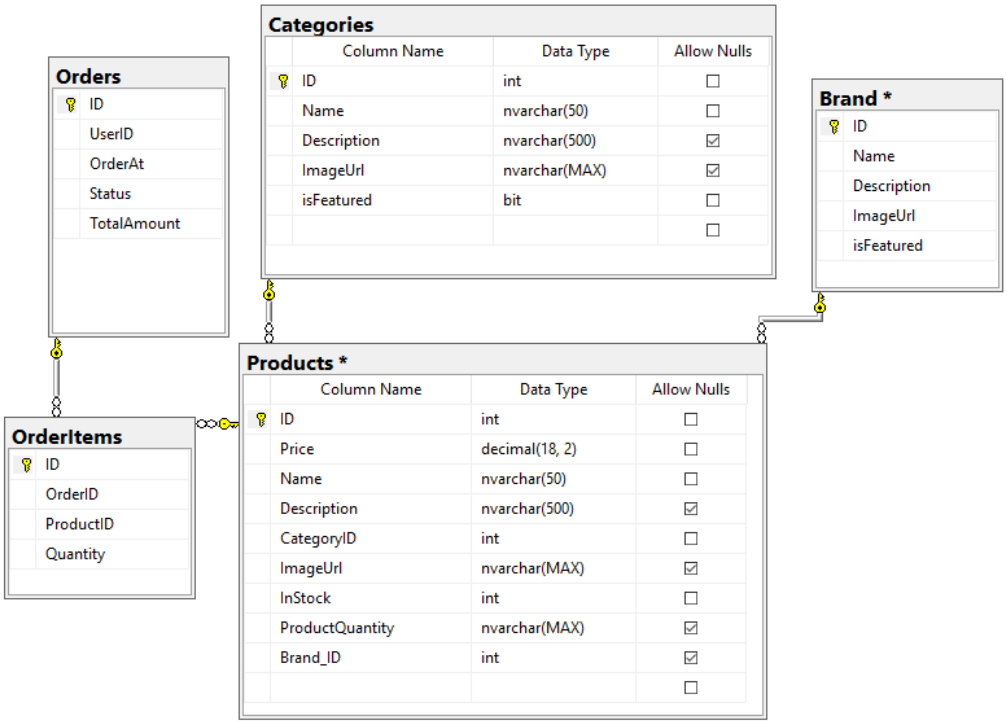


Figure 2.14 product relationship Diagram

Microsoft identity Model

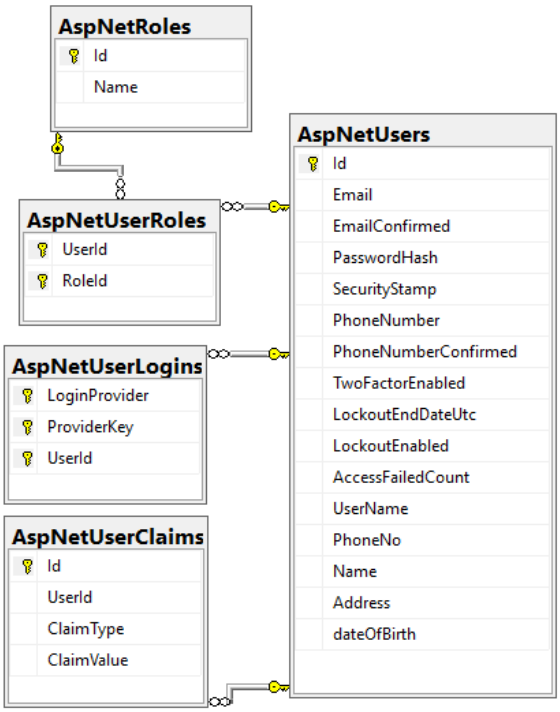


Figure 2.15 Microsoft identity Database Model

2.3.8 Architecture:

3-Tier:

Once you've decided to build your .NET application following a modern, pattern-based, 3-tier architecture, you may be asking yourself: How do I organize and structure my Visual Studio .NET Solution and Projects? Patterns in Action will demonstrate exactly how this is done - again, with great documentation and 100% pure source code.

Controllers are never meant to be your business logic. For me, business logic belongs to the Model layer. And though, Views (and to some extent controllers) and part of the presentation layer, model is never a part of it in an MVC application. Model should be the heart and soul of an MVC application and that is what Domain Driven Design is all about which can be easily implemented in an MVC application.

Please remember that you don't have to have the model inside the same project (speaking of ASP.NET MVC). It could reside in an entirely different project and it can still act as a model to the application .An MVC application acting as a presentation layer only can work in a huge project with many tiers but it can never act as a presentation only layer in a 3 tier architecture which is what the questioner asked.

So we can say that MVC makes two (third can be the data layer which isn't really part of MVC architecture per se) out of three layers of a 3-tier architecture.

3-tier is a Architecture Style and MVC is a Design Pattern.so is Different in that.
but we could using mvc pattern in 3-tier architecture style.so:

Presentation Tier: "Controllers and Views" from MVC Pattern.
Business Tier: "Model(Data)" from MVC Pattern.
Data Access Tier: "Original Data Access Tier.

3-Tier Architecture in MVC 5

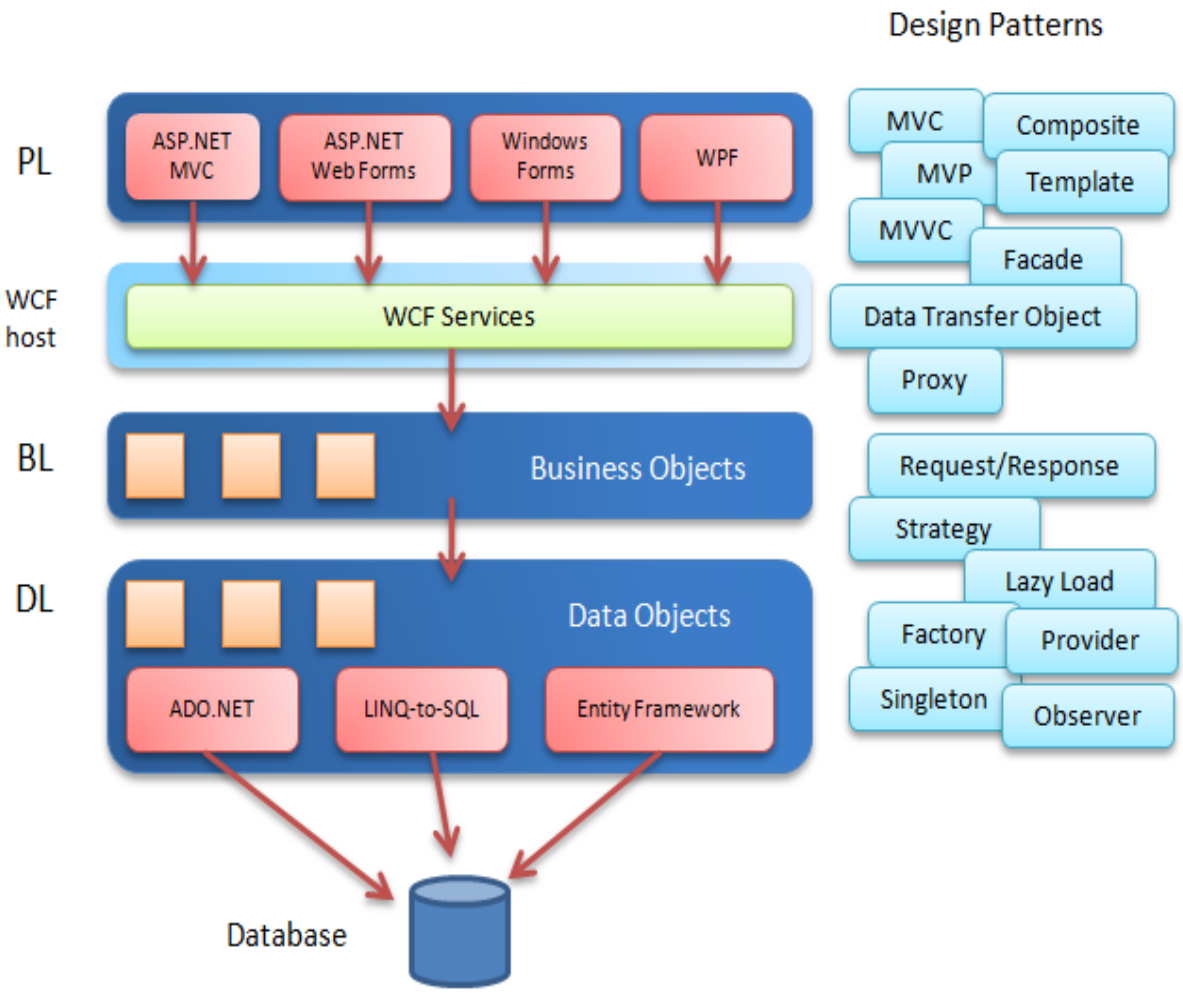


Figure 2.16 Application Architecture

Chapter 3 - RESULTS & DISCUSSION

All the functional and non-functional requirements of the project are illustrated and tested in this phase.

3.1 Testing:

Software Testing is evaluation of the software against requirements gathered from users and system specifications. Testing is conducted at the phase level in software development life cycle or at module level in program code. Software testing comprises of Validation and Verification. [10]

3.2 Test Cases:

- Test cases need to be simple and transparent
- Create Test Case with End User in Mind
- Avoid test case repetition.
- Do not Assume
- Ensure 100% Coverage
- Test Cases must be identifiable.

E-Grocery with Live Support Test Cases:

Test Case: Verify Login

Test Case ID:	**TC-1**
Test Case Title:	Verify the login functionality of the website.
Test Case Priority:	High
Requirement:	The user must be registered.
Test Description:	Enter a Valid User Email and Password.
Test Date:	mm/dd/yyyy
Pre-Conditions:	1. Search the website URL in Browser. 2. Click Sign in button..
Dependencies:	Global Domain Availability
Test Steps:	1. Enter valid email, valid password and click on login button. 2- Click on login without entering email and password. 2. Enter valid email, invalid password and click on login button. 3. Enter invalid email, valid password and click on login button. 4. Enter invalid email, invalid password and click on login button.
Test Data	Email id and password of user.
Expected Results:	1. System should open home page. 2. Login page should be displayed. 3. An error message is shown asking to enter valid password. 4. An error message is shown asking to enter valid email. 5. Error message should be shown to enter correct password and email.
Actual Results:	As above

Post Conditions:	The website will be redirected to the homepage if data entered is correct, otherwise in case of failure it will be redirected back to login page.
Status: (Pass/Fail)	Pass
Other Comments:	None

Table 2. 5: Verify Login

Test Case: Verify Registration

Test Case ID:	**TC-2**
Test Case Title:	Verify the registration module of the website.
Test Case Priority:	High
Requirement:	The user must be on sign up page
Test Description:	Enter correct details required for your registration.
Test Date:	mm/dd/yyyy
Pre-Conditions:	1. Search the website URL in Browser. 2. Click Sign up button.
Dependencies:	Global Domain Availability
Test Steps:	1. Enter full name, email, password, phone number, address and enter sign up. 2- Click on sign up by leaving one or more than one field empty. 3. Enter invalid email. 4. Enter email already registered. 5. Enter invalid phone number. 6-Enter invalid address.
Test Data	Full Name, Email id, password, phone number, and address.
Expected Results:	1. System should open home page with a registered account. 2. Sign Up Page Should be displayed. 3. An error message is shown asking to enter valid email. 4. An error message is shown showing the email is already registered. 5. Error message should be shown to enter correct phone number. 6- Error message should be shown to enter correct address.
Actual Results:	As above
Post Conditions:	The website will be redirected to the homepage if data entered is correct, otherwise in case of failure it will be redirected back to Sign Up page.
Status: (Pass/Fail)	Pass
Other Comments:	None

Table 2. 6: Verify Registration

Test Case: Check Out

Test Case ID:	**TC-3**
Test Case Title:	Verify the functionality of checkout feature.
Test Case Priority:	High
Requirement:	The user must be registered and/or logged in.
Test Description:	Add desired products and checkout by clicking on cart icon.
Test Date:	mm/dd/yyyy
Pre-Conditions:	1. Add items into the cart. 2. Click on cart icon to checkout.
Dependencies:	Global Domain Availability
Test Steps:	1. Add the products into the cart by clicking on Add to Cart. 2. Click on cart icon to check the products in cart. 3.increase or decrease quantity by clicking on – and + icon 4. price is automatically calculated.
Test Data	Full Name, Email id, password, phone number, and address
Expected Results:	1. By clicking on place order a successful message will be shown as order is place successfully (Sweet alert). 2. By clicking on Check order status customer can check order status. 3.Sweet alert message.
Actual Results:	An error message is not shown instead a successful massage is shown.
Post Conditions:	None
Status: (Pass/Fail)	Partial Failures
Other Comments:	None

Table 2. 7: Check Out

Test Case: CRUD Operation

Test Case ID:	**TC-4**
Test Case Title:	Verify the CRUD Operation of Admin Panel
Test Case Priority:	High
Requirement:	The Admin must be logged in.
Test Description:	All the CRUD operation should work properly.
Test Date:	mm/dd/yyyy
Pre-Conditions:	1. The Admin must be logged in
Dependencies:	Global Domain Availability
Test Steps:	1.Add the products by selecting the category from droop down. 2.Delete the products. 3. Edit the product and its category if need. 4.Change the order status
Test Data	CRUD operation on Products.
Expected Results:	1.Sweet alert as Successfully added a product. 2. Sweet alert product is deleted successfully. 3. Product edit change can see by admin 4. Validation is applied so invalid data cannot be entered. 5. Required filed must be filled otherwise button will not work.
Actual Results:	As above
Post Conditions:	If correct data is entered the product will be added/updated or deleted otherwise the entry will not be submitted.
Status: (Pass/Fail)	Pass
Other Comments:	None

Table 2. 8: CRUD Operation

Test Case: User Login:

Below is test case format:

Test Case ID:	**1 or TC-1**
Test Case Title:	To verify the Login functionality of the application
Test Case Priority:	High
Requirement:	User Login
Test Description:	This test will verify the user login process.
Test Date:	mm/dd/yyyy
Pre-Conditions:	1. Run the application. 2. Click Sign in button.
Dependencies:	Internet Availability
Test Steps:	1. Enter Valid user name and password and click Login 2. Click Sign Out 2. Without entering user name click sign in 3. Without entering password click sign in 4. Enter wrong password or user name and click sign in
Test Data	Email id and password of user
Expected Results:	1. System should open home page. 2. Login page should be displayed. 2. An error message should be shown to enter user name 3. An error message should be shown to enter password 4. Error message should be shown to enter correct password and user id
Actual Results:	As above
Post Conditions:	System shows Dash board page of signed in user. In case of unauthorized sign in attempt system shows the message “Invalid username/password”.
Status: (Pass/Fail)	Pass
Other Comments:	None

Table 2.9: User Login

3.3 Conclusion:

After all testing is done most of the functions and modules of the web-based Grocery Store project is confirmed to be running smoothly. Some minor exceptions of minor importance may have occurred during the testing phase, but we will try to resolve these exceptions in later versions of the Online Grocery Web-Based project. In light of our findings we have concluded that all the main functions and modules of the website are running without a hitch. The login functionality, registration functionality, admin panel module, payment method module, search functionality etc are all working accordingly. All the major aspects of these functionalities and modules are working properly. The registration functionality registers a user, who can later login into the website either as a user or a admin depending on their authority. After login the admin will manage the website and perform different functions like adding, deleting and updating products, Categories, Brands and other administrating functions are successfully done by admin. On the other hand the user will be redirected to Home Page, the user will be able to select desired products put them into the cart and check out successfully.

Chapter 4 - USER MANUAL

Figure 3.1 Home Page

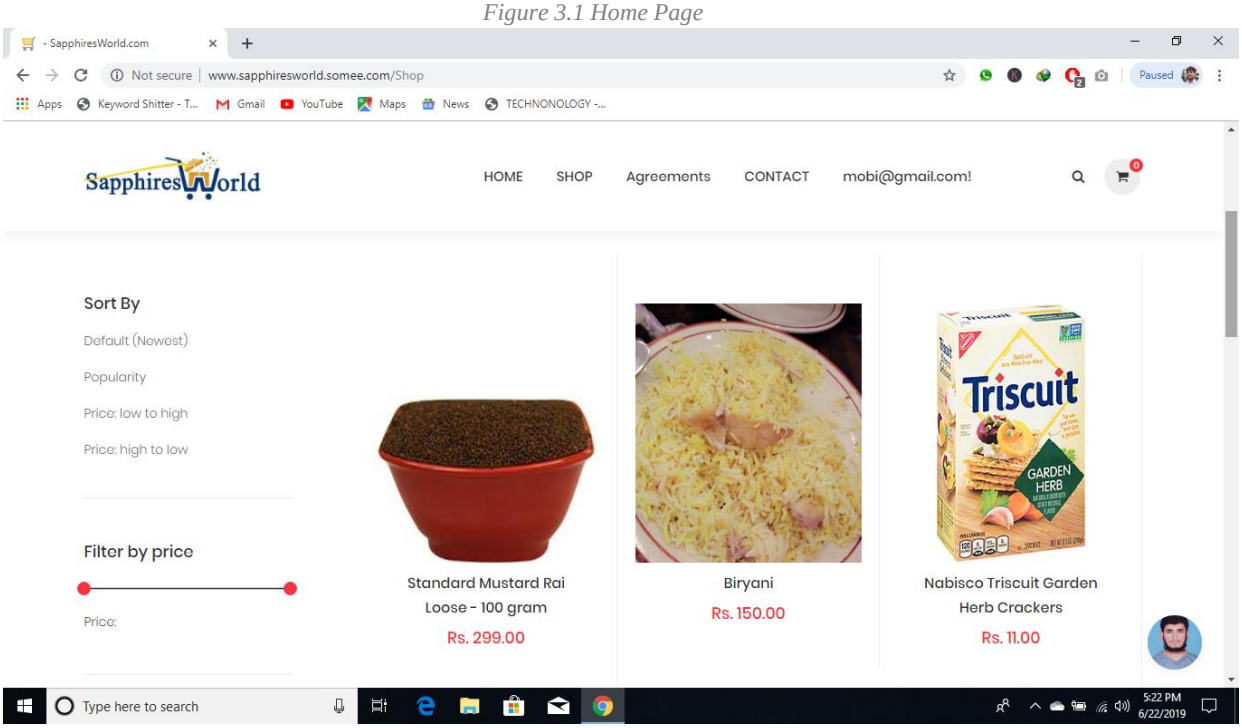


Figure 3.2 Shop Page

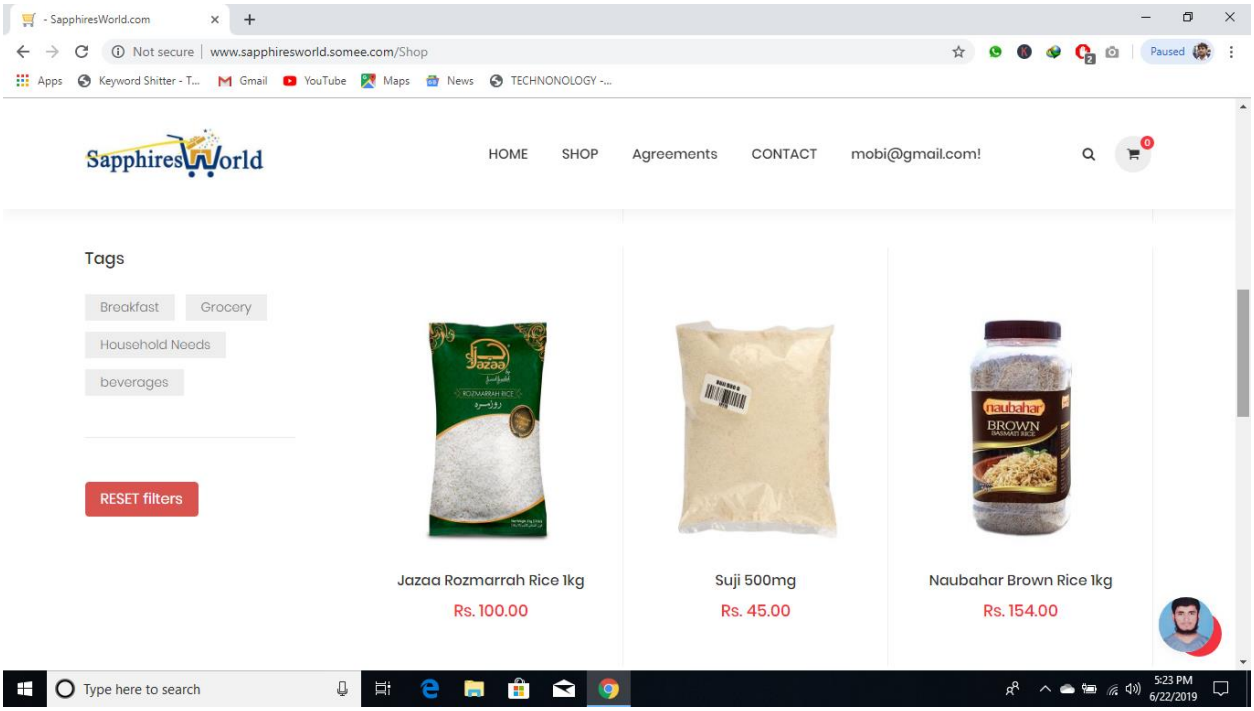


Figure 3.2.1 Shop Page

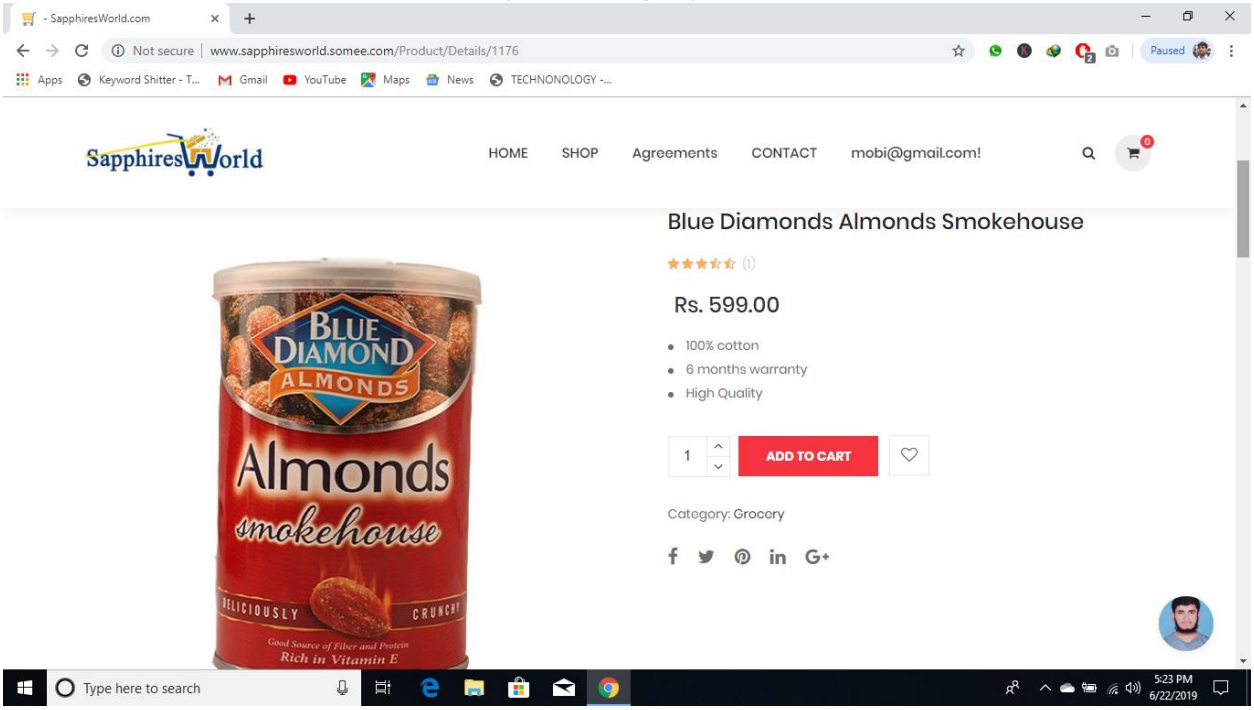
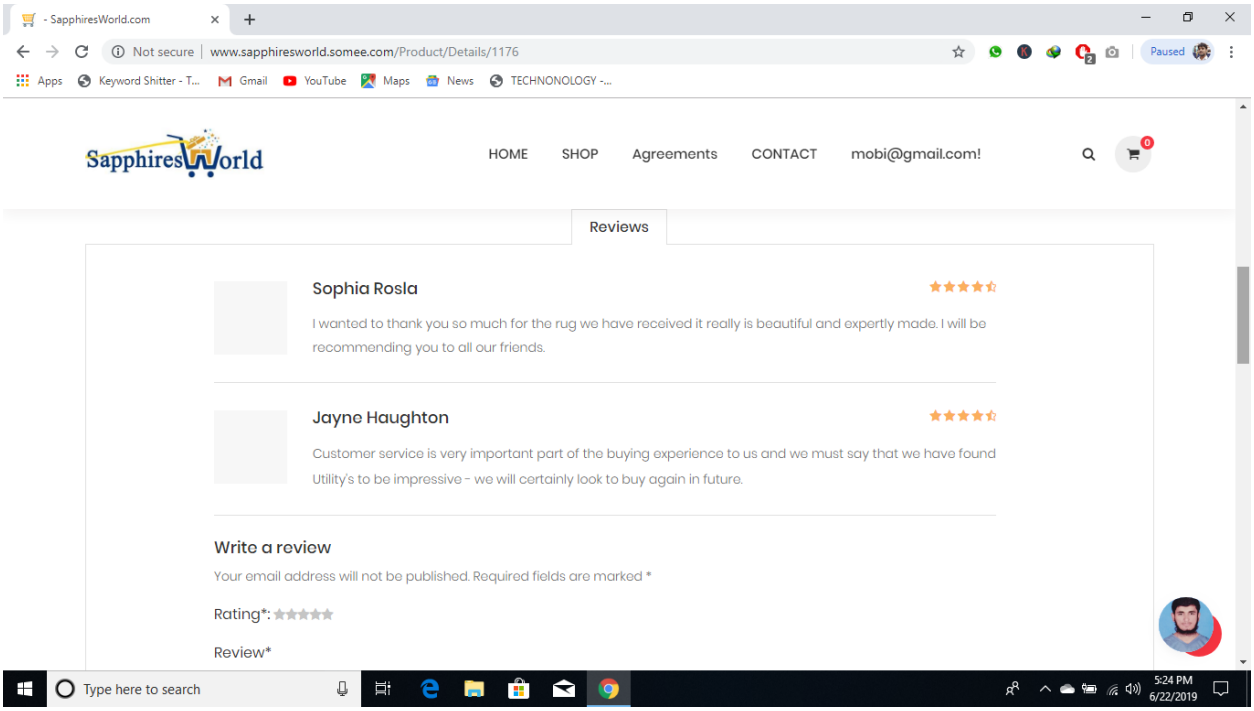


Figure 3.3 Product Details Page



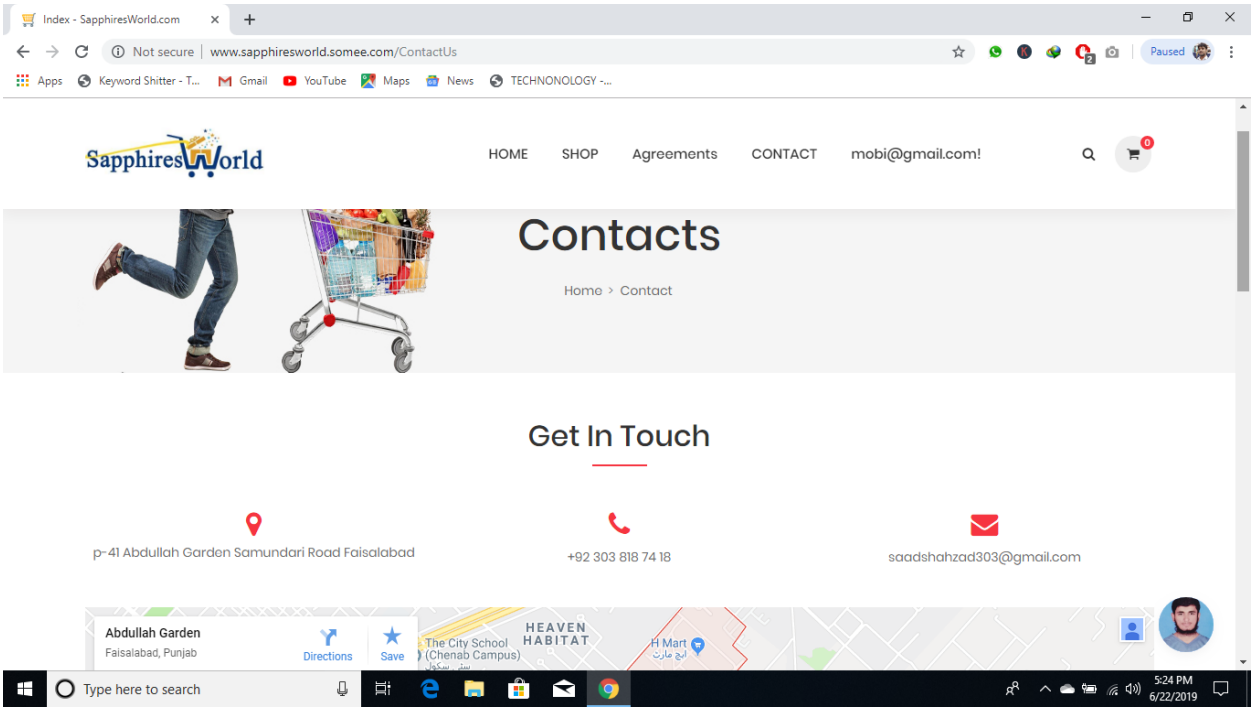


Figure 3.3.1 Contact us

Admin Panel:

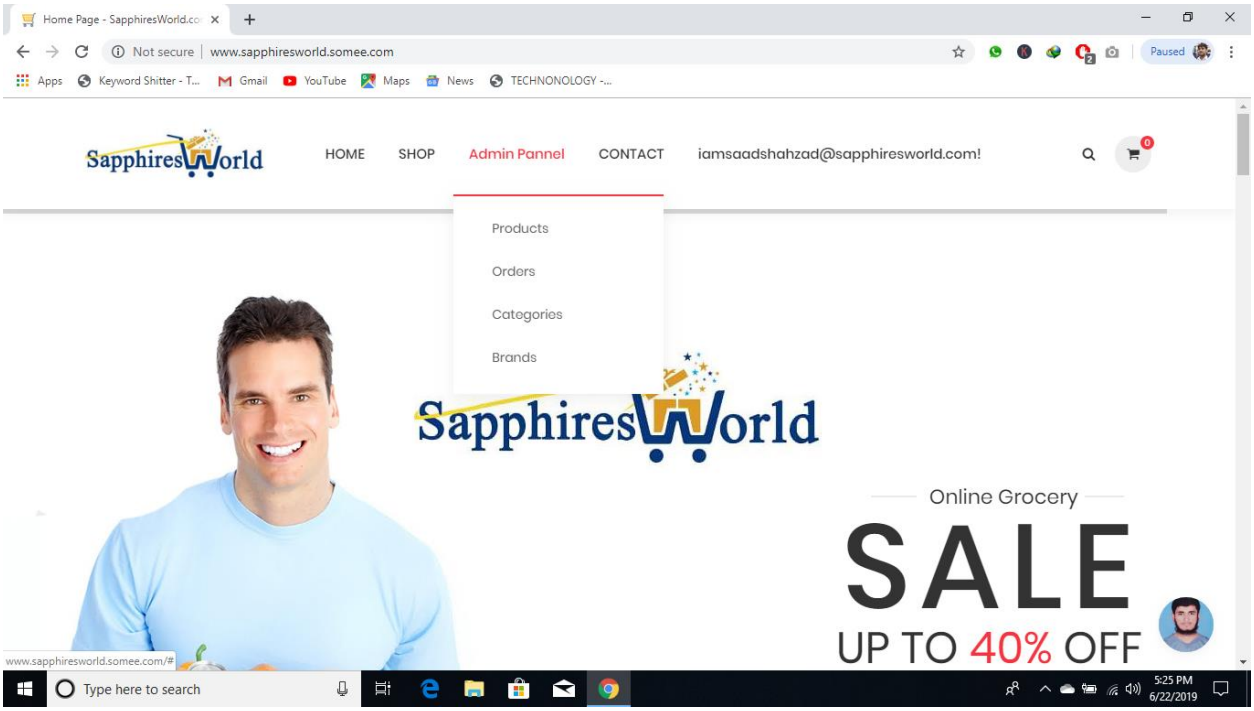
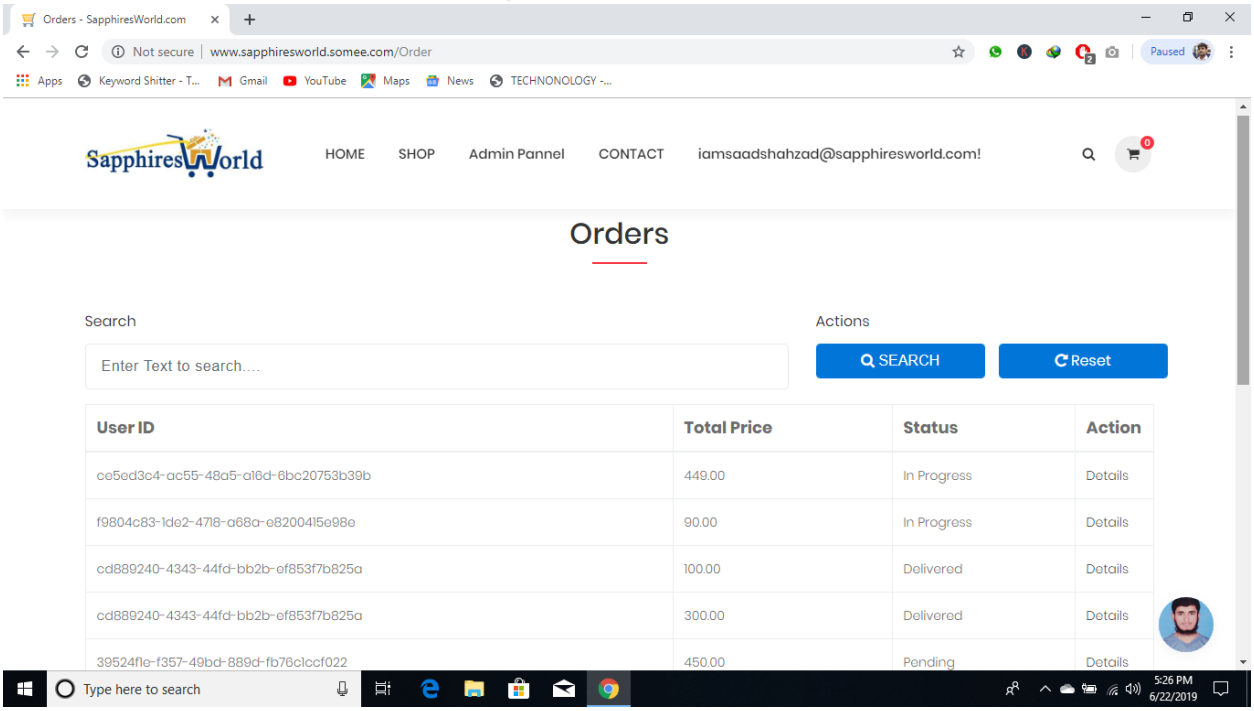


Figure 3.4 Admin Nav Bar



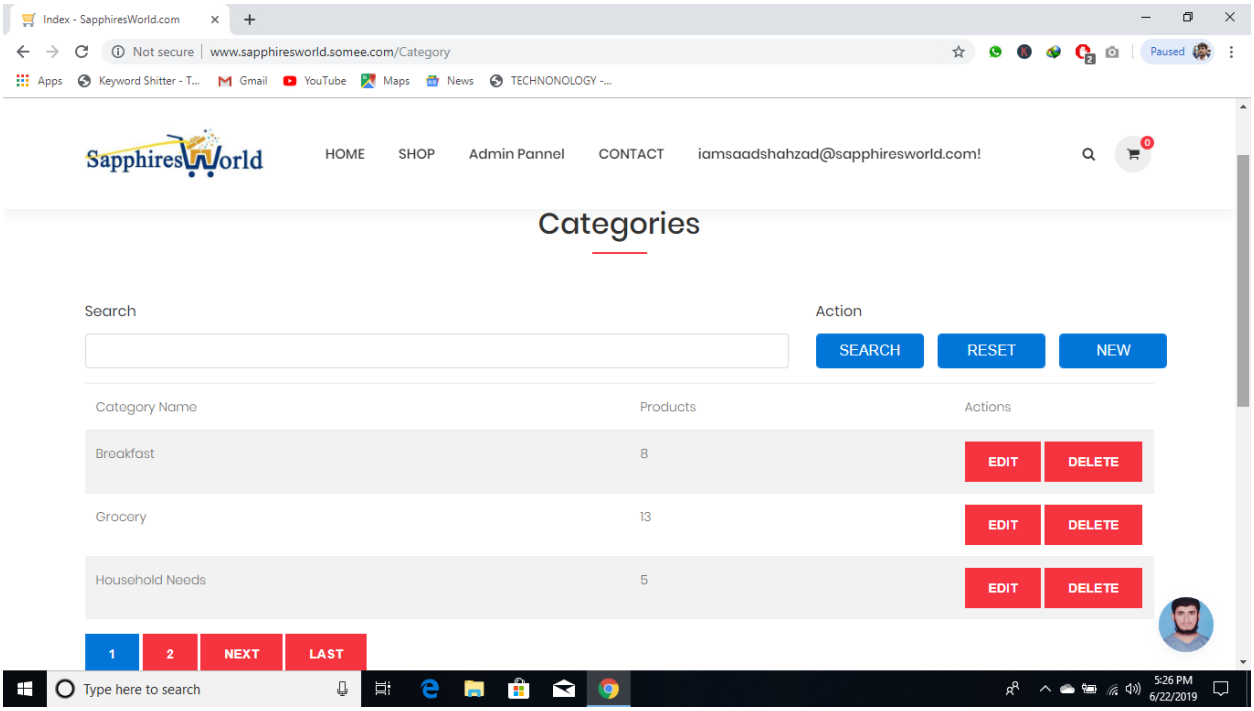


Figure 3.4.1 Category

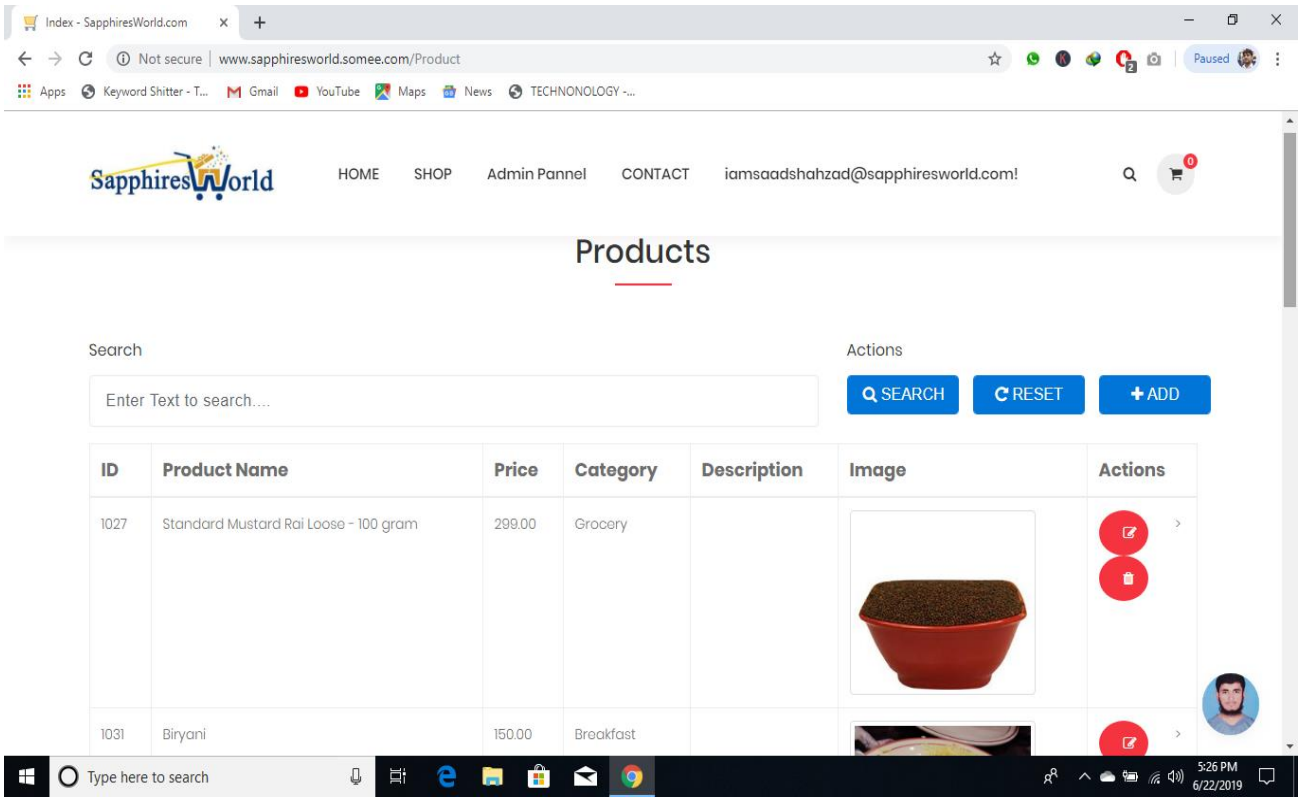


Figure 3.4.2 Product

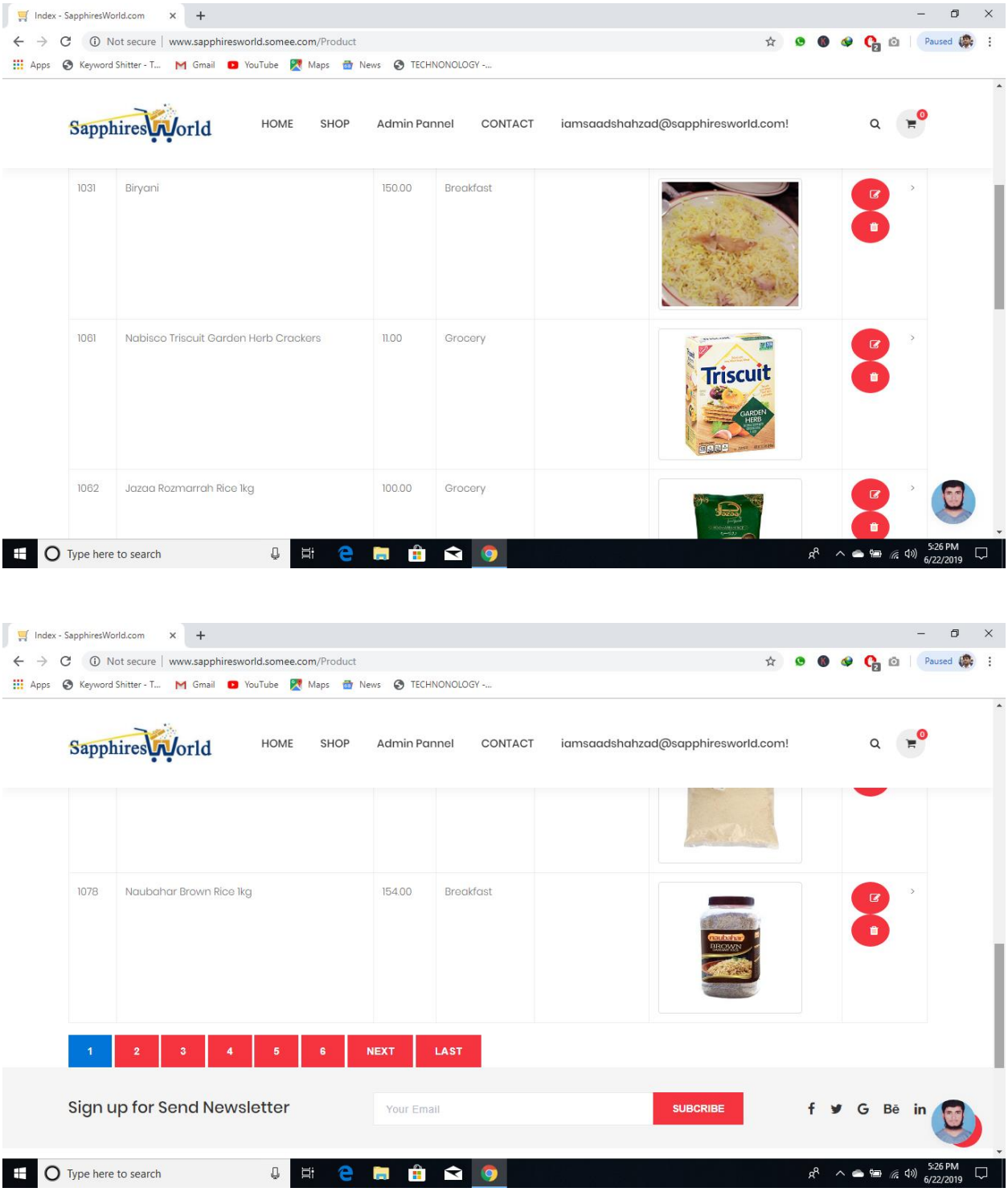


Figure 3.4.3 Admin Pagination

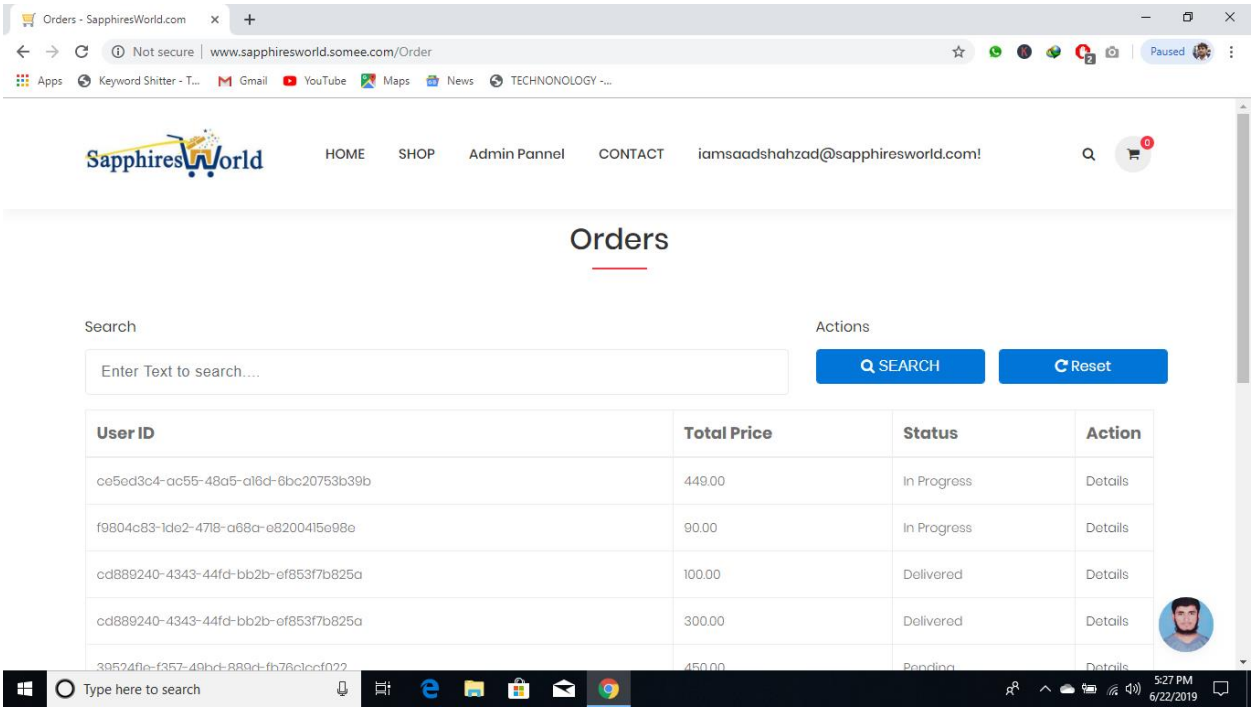


Figure 3.5 Order

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