

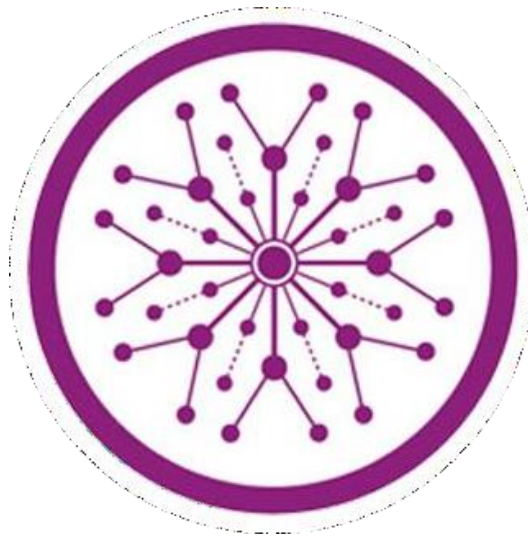
Online Grocery Store

Final Year Project

Session 2020-2024

A project submitted in partial fulfillment of the degree of

BS in Computer Science



Department of Computer Science

Faculty of Computer Science & Information Technology

The Superior University, Lahore

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Plagiarism Free Certificate

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Online grocery store

Change Record

Author(s)	Version	Date	Notes	Supervisor's Signature
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APPROVAL

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Date: _____

Signature: _____

HEAD OF THE DEPARTMENT

Comments: _____

Date: _____

Signature: _____

Dedication

This work is dedicated to my Teachers & Parents.

Acknowledgments

We take this opportunity to express our sincere gratitude to all those who helped us in various capacities in undertaking this project and devising the report. We are privileged to express our sense of gratitude to our respected teacher Sir Awais Mehboob whose unparalleled knowledge, moral fiber and judgment along with his know-how, was an immense support in completing the project. We are also grateful to Sir Awais for the brainwave and encouragement given. We take this opportunity also to thank our friends and contemporaries for their cooperation and compliance

Executive Summary

Our on line grocery maintain is a great solution that redefines the way humans maintain. Simple subjects are the most crucial subjects in modern rapid-paced global, and our app offers in reality that. Using an intuitive character interface, customers can resultseasily browse a huge type of products, customize their orders, pick transport or pickup options Highlights of the app embody actual-time catalog tracking to make sure product availability, custom designed tips for customized searching for research, seamless payments for regular transactions. Options and alternatives In addition to simplifying the purchase technique, we additionally provide precise reductions, loyalty applications and rewards to permit our customers to save widespread portions of cash. The marketplace opportunity for our grocery app is big, driven by using the growing name for for online shopping for and the call for for clean and time-saving answers. Given the competitive surroundings, we are able to stand out thru innovation, partnerships with network grocery stores, and a willpower to non-prevent development. The capability for growth is huge, as our app can scale to cover massive areas, increase capabilities, and create strategic communications. By implementing centered marketing and advertising and marketing efforts, we purpose to draw a big man or woman base and installation ourselves as a market chief. In precis, our grocery app is prepared to change the grocery buying experience via the usage of using providing comfort, personalization and economic financial savings. With a focal point on purchaser delight and non-prevent improvement, we are poised to be successful within the dynamic on-line grocery market.

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Chapter 1

Introduction

Chapter 1: Introduction

In this undertaking, we are growing a grocery app that prioritizes each incredible products and services, offering free delivery to our clients. The app requires customers to sign on earlier than use. It is designed to cater to customers who can't without issue visit physical shops, especially the ones living some distance from marts or their houses. In the event of any product defects or issues, clients can be eligible for cash lower back.

1.1. Background

An powerful on-line grocery app ought to boast a person-friendly interface, which gives a seamless and intuitive revel in. A secure and effective authentication gadget with multiple get entry to points to social media enables facilitate the person revel in. A comprehensive catalog packed with detailed descriptions and pix is important, as are handy filters and search features and superior buying carts and packaging, with multiple alternatives on price, enhancing the overall person experience Real-time stock management removes frustration with accurate inventory display. Personalized recommendations primarily based on consumer options and buy records encompass customization. Combined with discounts, promo codes and loyalty applications, you appeal to and keep customers. The combination of seamless logistics and actual-time order backlog ensures green and obvious shipping. Validated and applied research presents precious insights. Customer aid through multiple channels, a complete FAQ segment, and strong safety features shield user dataAn effective on line food app boasts an clean-to-use, experience-improving interface easy and clean. A stable and powerful authentication machine with more than one access points to social media helps facilitate the person revel in. A complete catalog full of distinctive descriptions and images is important, as are convenient filters and search features and superior buying carts and packaging, with more than one options on charge, improving the overall user revel in Real-time stock management removes frustration with correct stock display. Personalized hints primarily based on person preferences and purchase records encompass customization.

1.2. Motivations and Challenges

Motivation: Revolutionizing grocery shopping for convenience and efficiency. Challenges: Intense competition, logistical complexities, and ensuring trust in security and product quality.

1.3. Goals and Objectives

Goals: Give an accent to customer interaction, offer great variety of products, make unique experience for everyone, enlarge marketplace's size as much as you can, better your daily performance, make transport services more beautiful, concentrate for security, go for the sustainable way, motivate loyalty, improve technology, and use analytical tools for that you need.

Objectives: Develop platform for users, be consistent in changing inventory in time, do user testing, particularized advertising, run effective backend processes, give free shipping, take good care of the customers confidential data, emphasize on green technology, create customer loyalty applications, and monitor new technologies coming up and use analytics for strategic decision making.

1.4. Literature Review/Existing Solutions

In recent years it has become a trend that some grocery stores are developing their apps in order for customers to have easy access to products. Some of the features include contracts for sale of goods. They essentially do a one-stop shopping services, eliminating the waiting lines at the groceries and delivering the products to their house. On the contrary, when clients do not manage to get their money back they lose trust in technology and use more alternatives. You don't pay for the return shipping or the trunkline oil consumption. We make sure to connect with the closeby grocery stores in your area. This is to ensure that we offer personalized and local shopping.

1.5. Gap Analysis

Up until now, the Internet shopping app has launched with simple navigation and nothing else. However, there are multiple opportunities for improvement. It is a small business which concentrates on a small variety of products during, which the stock can be out of sync with the showroom items. Stocking-up options are rather modest, and the app lags in terms of recent feats of technology for personalized recommendations. Data security measures are basic, and the area of everlasting activities is not covered deep enough. We want our clients have a good experience purchasing as the support is standardy, the app could be more accessible across various devices. To enhance the overall experience, the desired state covers all aspects, from implementing simple interfaces, diversity of product lines with their real-time updates, delivery options which are flexible with tracking, application of latest technologies for customers' personalized recommendations, data protection business systems, sustainability practice, stronger customers' support, responsive web design on all devices, and strategic

marketing partnerships to widen the market.

1.6. Proposed Solution

The process that optimally sketches a grocery application that would satisfy the clients' expectations and requirements would be the analysis of what solutions in market already satisfy somehow customers' wants, what future outlook leads to more competition against other applications in the market, and what aspects of technology are stable now and will remain stable so that in case of unstable internet the application won't be that advantageous to grow in populations. Here's a proposed solution for a grocery app that incorporates key features and best practices: This is an example for an online food store application having the set of most significant characteristics to be realized: [?]

- Admin Dashboard [?]
- User-Friendly Interface
- User Registration and Profiles [?]
- Product Catalog [?]
- Shopping Cart and Wishlist [?]
- Order Tracking [?]
- Promotions and Discounts [?]
- Reviews and Ratings [?]
- Security and Privacy

1.7. Project Plan

Planning out a grocery app calls for a number of stages that tackles every aspect of its development process to the final rollout. You will find a ground plan for grocery app below. According to the plan, you can make adjustments to fit your situation, but these should depend on the growth of your business.

Project Definition: In undoubtedly way, outline app's goals and objectives of grocery app. **Stakeholder**

Identification: Demarcate main participants such as users, developers, investors, and clearly state their

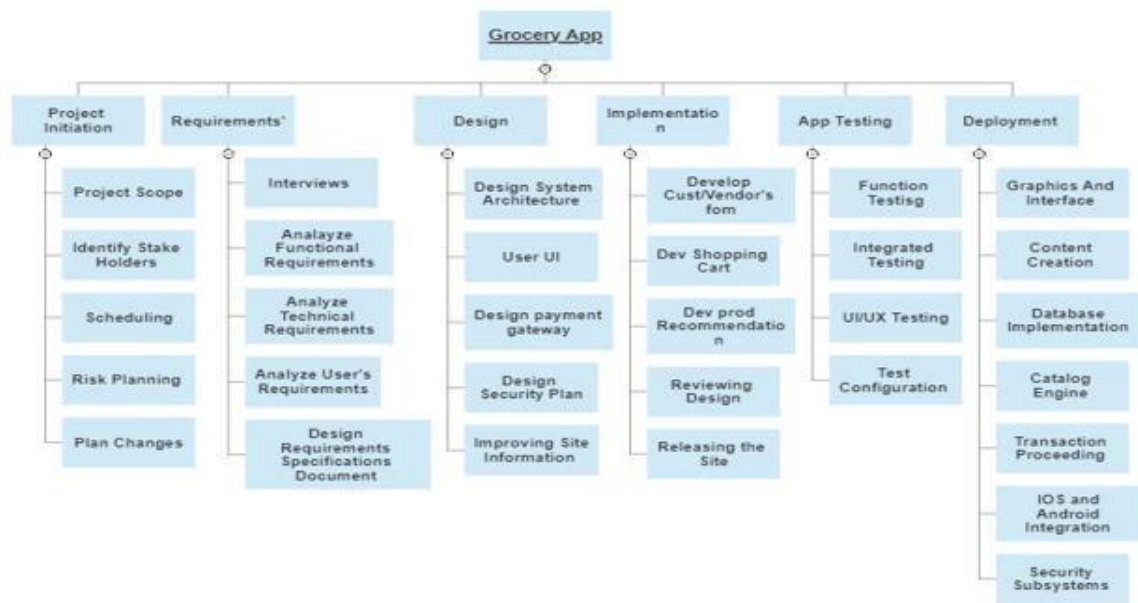
roles. **Project Scope:** Specify the app's attributes and functions then. **Market Research:** Competitor

Analysis **User Research** **Market Trends** **Project Planning** **Organization:** Project Team Budget Group

Work **Technology Stack** **Design and User Interface:** It is vital for designers to find the perfect balance

between intuitive interfaces and personalized experiences in UI/UX Design. Branding and Logo Accessibility Development: Frontend design Frontend development Backend development of API integration Testing Data Management: Product Database: User Profiles Payment Integration: Quality Assurance: Testing. Bug Tracking Deployment: App Stores Server Deployment Security and Compliance: Data Security Privacy Policy Customer Support.

1.7.1. Work Breakdown Structure



1.7.2. Roles & Responsibility Matrix

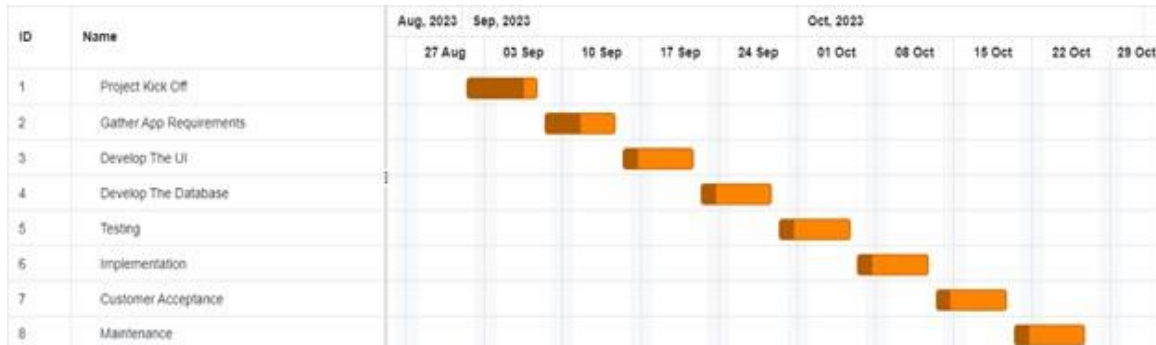
The purpose of roles & responsibility matrix is to identify who will do what.

WBS #	WBS Deliverable	Activity #	Activity to Complete the Deliverable	Duration (# of Days)	Responsible Team Member(s) & Role(s)
1	Information Gathering	1.1	0	6	Ahmad, Hamza Tahseen
2	SRS	1.2	1.1	5	Tahseen, Ahmad, Hamza
3	Define classes and functions	1.3	1.2	4	Tahseen , Ahmad, Hamza

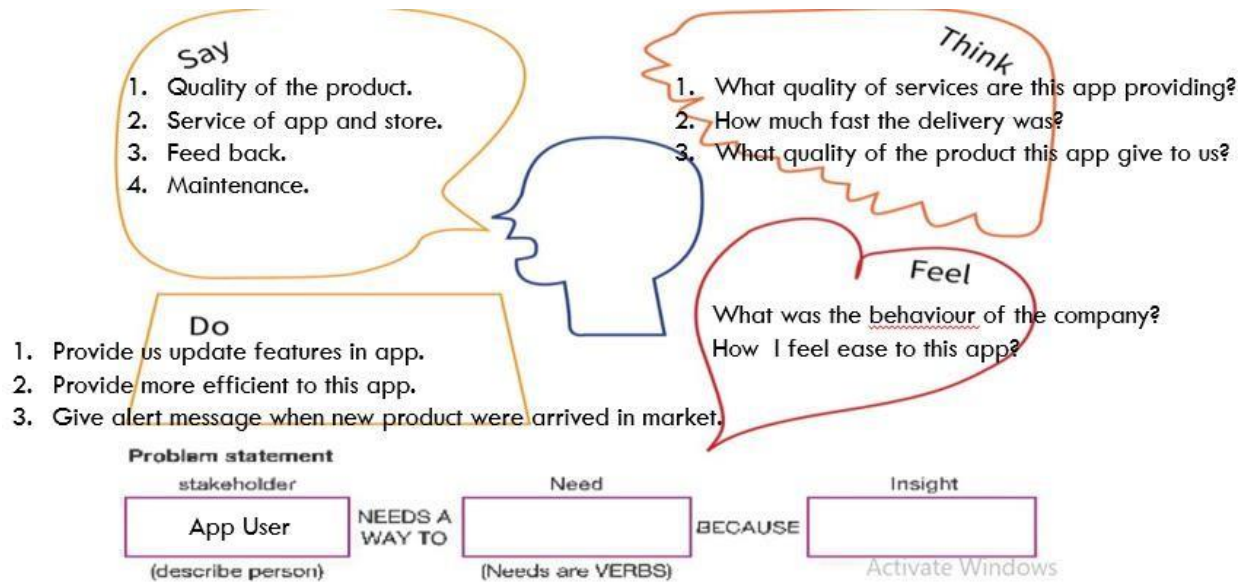
Project Report: Online Grocery Store

4	Interface Designing	1.4	1.3	8	Tahseen, Hamza, Ahmad
5	Database designing	1.5	1.4	8	Tahseen , Hamza , Ahmad
6	API Purchasing	1.6	1.5	6	Hamza , Ahmad, Tahseen

1.7.3. Gantt Chart



1.8. Empathy Map



Chapter 2

Software Requirement Specifications

Chapter 2: Software Requirement Specifications

2.1. Introduction

2.1.1. Purpose

Just now it is a digital age of the internet and innovation phenomena which not only is a cause of the merger of the traditional theory of a physical products but also evolves into the historic service theory. The critical determinant as to whether or not any commercial has stability at the end is the service level which it sets as a target. On our website, our access to service will be the main focus. We will achieve this by making the website easily accessible. Along with it, this will mean that physical stores do not guarantee the buyers to purchase products or services. In this case, the shopping process all they need is to go online, with the sole purpose of making their own purchases. Different from the service "brick and mortar" that is set up in a real field, our (shop's) will operate from in virtual cyberspace.

2.1.2. Document Conventions

For our web-based grocery store app, we've established a few rules that are to be followed to avoid a flawless database and data entry. Within the context of our output-oriented approach, we have the following tools: a definite method of naming files and folders, a specific date format, and a clear-cut versioning system. Each of our papers follows the same layout, each with headings and titles all over, hence easier to read. We picked a complementary style and size of the font for headings and text, also, there is a set of color codes so that things will look the way they should. The list of defining abbreviations is approved and tools for different document templates are made in order that documents are totally identical in terms of presentation. Concerning the coding, we deal with a number of things such as indentation, comments, and variable naming and so on. Consequently, these documents will either be a user manual, project plan, or a piece of code - the point is that from now on everyone will go by the same rules and execute their tasks in the same manner.

2.1.3. Intended Audience and Reading Suggestions

Our online grocery app targets the general user group, which includes a variety of players such as

customers, delivery personals, and administrative staff. By clients, the app has been made to make it user-friendly and give customers an easy shopping that is smooth and offers such features like personalized recommendations and easy checkout. The delivery workers will have a suite of tools that will help them in making orders easily and tracking them in real-time. The particular staff of administration will be in a position to capitalize on the features that concentrate on making order processing and inventory management more efficient. To ensure the app is adapted and fulfilling to all user needs, we suggest customer guide checking as a core tool, along to delivery training materials as a minor element. bags, bags and more bags. In addition to customers, couriers' meddling with the paperwork too so that staffs are not left out, indeed. It means, among other things, that these sources contain comprehensive and client-selected guidelines which are carefully adapted to every user group, and as a result, it's the ideal experience for the producers, retailers and consumers working with an online grocery app.

2.1.4. Product Scope

The product scope of our online grocery app is a large application which meets the needs of customers related to the whole process of buying grocery. It includes a user friendly mobile app both to the customer for the selection, and purchase of grocery items. The shopping app uses personalised recommendations, secure payment modes, and easy check out. For the personnel, the app is furnished with tools to quickly deal with orders and track delivery in real time which makes the work less stressful and more accurate. Technically, the app crosses the line with the inventory management, order, processing and data analytics for making good decisions. The products are also involved in regular updates to enhance user experiences, add more features, and to ensure all new technologies are used. The goal of it is to make the entire online grocery shopping for the customers, delivery personnel and the administrative staff to be integrated.

2.1.5. References

The following references are used in preparing this SRS:

- The SRS Template and Sample sent by Prof. Ravi Gorthi.
- Wikipedia.

2.2. Overall Description

2.2.1. Product Perspective

Online Departmental Store is aimed towards the vendors who want to reach out to the maximum cross-section of customer and common people who can be potential customer. This project envisages bridging the gap between the seller, the retailer and the customer. Site should be user-friendly, 'quick to learn and reliable software for the above purpose. It is intended to be a stand-alone product and should not depend on the availability of other software. It should run on both UNIX and Windows based platform.

2.2.2. User Classes and Characteristics

A grocery store app user can fall in the category, which is closely linked to the particular user's features and business-seeking ideas. Here are some user classes with their corresponding characteristics: Here are some user classes with their corresponding characteristics:

Regular Shoppers: Characteristics: Repeat users who oft buy fruit and vegetables as their staples. Behavior: Making lists and ordering fast, and also getting to a program for loyalty are some things that are common in the grocery shopping.

Occasional Shoppers: Characteristics: Users who might sometimes purchase groceries when necessary and occasional or casual users Behavior: Probably use deals and discounts, refers to a less frequently used auxiliary feature like lists.

Bulk Shoppers: Characteristics: Agricultural programs are highly customized and meet the needs of customers who bulk-buy a lot. Behavior: For example, buying in bulk can be cheaper than buying in small quantities. and look to stock up on items with quick navigation to easily locate required items.

Budget-Conscious Shoppers: Characteristics: buyers who do their best to pay less for the same quality of a product. Behavior: Look for deals, check them against other sites and use as individuals who primarily want it for budget planning would depend on it for that purpose.

Tech-Savvy Users: Characteristics: Users which are well-versed in technology Behavior: Probably to employ the advanced app options that fish for enhanced software features such as voice commands, image recognition, and other tech-enabled applications.

Eco-Friendly Shoppers: Characteristics: Users but for who care about sustainability. Use our AI-powered essay writing tool to craft impressive essays with ease! Behavior: Focus on eco-labeled goods for the shoppers wanting to look for green practices in their production.

Busy Professionals: Characteristics: Those with a very busy schedule such as full-time working parents who may not have enough time for grocery shopping. Behavior: Alter their habits to use the quickest and efficient navigation facilities, choose onslaught deliveries coming at regular intervals, and find reason in personalized suggestions for saving time.

Senior Citizens: Characteristics: The other user group that experience older users who might not be tech-savvy. Behavior: The notable characteristics of a customer include: simplicity and easy use of the interface, dependency on certain functions, and clear products information.

Health-Conscious Shoppers: Characteristics: Customers find themselves more health-conscious and well-being-conscious. Behavior: Search for the nutritional information, these filters are great, and exclusive offers for personalized medical advice.

2.2.3. Operating Environment

A virtual grocer application works on androids and iPhones with necessary internet access. It needs to work effectively on various platforms I.E phones and PCs. The app has to allow for access by those who will use it, it must follow regulations to the letter, and make sure payments are secure. The logistics can be equally challenging as the store needs to move things from store to the user. Being knowledgeable of other app-type products is easy and can enhance our application's performance. Sensitive data of users and responding to their questions regarding the products are also much have to be strongly protected. The app is also a keener and smart one, it plans for seasons as well as weather, it can sometimes change the way it works due to that. The main purpose is to make shopping not just simple but enjoyable by everyone in the end.

2.2.4. Design and Implementation Constraints

Each online store application faces some standards and restrictions. Should the application work properly on lots of devices, such as mobile phones and computers, and an internet connection is of high significance. It must get this governed in line with the relevant laws on handling user data safely and securely. As to the design of the app, it should have a familiar-looking look and be easy to use regardless of device. The application has to deal with various ways people can discharge the groceries and these have to be put into account during the delivery process. At times, the app has to make some adjustments so that people can find it in places they live and understand its messages if those messages are not in a language that they speak well. Also, it must be the best in its business niche and being up to date, technologically constantly developing. To sum it up, our app endeavors to make food shopping easy for all by frustrating violations of the rules!

2.2.5. Assumptions and Dependencies

For example, if there are different assumptions or dependencies in the online grocery app's software development and operations, they can be classified as such or obviously also as facts or necessities. Here are some common assumptions and dependencies: Here are some common assumptions and dependencies:

1. User Internet Access: Assumption: Internet users experiences are pretty much the same all the time. During the resilience workshop, I had the chance to hear from experienced professionals in the field of disaster management. One aspect that particularly resonated with me was their emphasis on the importance of building community resilience. They shared personal accounts of how communities had successfully bounced back from crises, highlighting the need to foster social connections, promote resilience in individuals Dependency: This app features an internet connectivity dependent mode, employing a stable internet connection for browsing through options, order placing, and regular updates.
2. Device Compatibility: Assumption: To the users either smartphones or computers will be available. Dependency: Design and Input Features are device capability and specification dependent Are.
3. Data Security Compliance: Assumption: Persons data privacy is protected via complying with data protection regulations. Dependency: Growth that includes security measures to protect data users should be in place and their processing will be conformed with the law.
4. Payment Services Availability: Assumption: Among users, there is variety of payment methods access availability. Dependency: Integrating with the various payment gateways is a must because different payment methods such as cashless are preferred by people.
5. Supply Chain Integration: Assumption: A few taps on the app will set the wheels in motion. Suppliers are well acquainted with the app software and the delivery service providers work closely with the app. Dependency: As is the case with integration with suppliers and logistics partners, inventory management and order fulfillment rest mainly on this process.
6. Weather and Seasonal Considerations: Assumption: The seasonal fluctuations of user behavior affect the activity. Dependency: Transiting app might as well be able to have seasonal changings functions and weather conditions accordingly.

7. User Adoption of Technology: Assumption: People know how to use all type of technology. Dependency: User experience is the key to the success of the required app, and people must start using and directly interacting with the digital platform.

8. Regulatory Stability: Assumption: So the legal and the regulation framework is fixed. Dependency: Amendments to the regulations might demand refitment of the app's components and its effective functioning.

9. Vendor APIs and Third-Party Services: Vendor APIs and Third-Party Services: Assumption: The successful advantage of integration with external services is achievable. Dependency: Brokerage engages all through APIs and third-party electrical outlets likewise; consequently, managing all of their occurrence and modification cannot be an easy job.

2.3. External Interface Requirements

2.3.1. User Interfaces

Every user interface whether it is designed for a Web App, or a traditional software application- should exhibit the following characteristics:

- Easy to use.
- Easy to learn.
- Easy to navigate.
- Intuitive.
- Consistent.
- Efficient.
- Error-free.
- Functional.

It should provide the end-user with a satisfying and rewarding experience. Our OSM web application follows all these principle of effective user interface design. Like an effective interface, OSM is visually apparent and forgiving, instilling in its users a sense of control. Users quickly see the breadth of their options, grasp how to achieve their goals, and do their work. It

does not concern the user with the inner workings of the system and the users have the full option to undo activities at any time eg, to remove item from the shopping cart.

Like effective applications and services, OSM performs a maximum of work, while requiring a minimum of information from the users.

2.3.2. Hardware Interfaces

The hardware solution of the online grocery app will be the platform that enables hassle-free and simple shopping experience. Individuals interact with the platform by means of different devices, which may include smart phones, tablets, scopes, personal computers, and laptops. The corresponding app is geared up to interact even with different models and brands maximizing customer's convenience with a similar compatibility across various platforms. The capacitance at the main touchscreens on mobile devices and connected keyboard and mouse input methods for the computer are modified to simplify navigation and interaction. Further, the app is likely to leverage hardware functions such as camera for scanning barcodes and recognizing images, GPS for location-based services, biometric sensors in encryption, and NFC/RFID in transition-less transactions.

2.3.3. Software Interfaces

Online grocery app interface involves interactive and multi-software components including operating system for instance making an interface perfect and user-friendly. This tool performs the task of interconnecting with operating systems designed for application on the mobile platform such as iOS and Android, as well as browser for PC. Furthermore, it utilizes the well-known programming languages such as Java, Swift, and Javascript for cross-platform development. The components of user interface (UI) are constructed by using the instruments such as React Native or Flutter and tries to provide one and the same feel and control across different devices. Furthermore, apps can team up with databases that are involved in developing products, the platform becomes more customer friendly, and transaction histories are stored, so in case a user wants used data, the app can search it and save it. Integration of security payment gateways provides an environment with a smooth transaction processing and a secure channel which is free from clamor. Data oscillation through the APIs represents data exchange addressed by the APIs when such module is connected with separate services, e.g., inventories systems, delivery systems, or weather or location services provided by the third-party APIs. All in all, what you see and how you interact on the frontend is determined by the software's interface that coordinates everything whether it be backend components, numbers' ease of

use and sorting which collectively contributes to the smooth and fast experience the online grocery shoppers are offered.

2.3.4. Communications Interfaces

The role of communication interface of the online grocery app could not be overestimated, as it is the application of this interface that guarantees user friendly interaction between users and the given app. For the said platform, such an interface is afferent to diverse modes of communication aimed to provide information effective sharing. Users can get the instant feedback, order confirmation and delivery alerts via their smartphones, through the pushes notification, so that they will generally have a better usability experience. On top of that, the app might present a chatbot with messaging functionality so clients can chat with a customer support agent to solve their concerns or to get help. In the app, secure communication protocols are available to extend the wiretapped protection of the information during the transactions in order to provide users with a secure and trustable platform to trade in. Additionally, the communication medium may consider incorporating email notifications about order summaries, promotional deals, and critical announcements. Through its efforts on straightforward and appropriate communication, this online grocery app hopes to remain active in its shoppers' journey and satisfy their interests.

2.4. System Features

The app of online grocery store has got a big database of the system requirements developed to make the shopping as fast as possible without any hassle. Through a user-friendly interface, customers easily can go through the full range of the product catalog with the minimum effort required and complete with all the necessary product parameters (names, descriptions and images). The app has a powerful search, and filtering option so that one can quickly access a product they desire. At the forefront, there is personalization via the AI-powered recommendations adjusted to particular customer preferences, making the checkout process more dynamic and vivid. The secured checkout procedure will offer many types of payment methods. That is why, customers will stay satisfied all the time. In a real time order tracking users receive information about the situation with their deliveries, which is very important for the transparent order. On the other hand, the app goes ahead to include inventory management and preemptive stocking system which optimizes stock levels for the popular goods that effect the out-of-stock scenarios. All these functionalities in a nutshell, is what makes this online marketplace the app of choice of shoppers looking to get their shopping done easily in the present world. To say it shortly and to the point, it is the way of the future.

2.4.1. System Feature 1

2.4.1.1. Description and Priority

At the center of the innovation in online grocery shopping, the app is purpose-built to revolutionize the method in which users perform the daily shop on groceries through the means of convenience and efficiency for the users via the online outlets. The app is equipped with all the technological to make the user experience easy. It offers a wide variety of grocery items that can be browsed, selected, and bought with no hassles. The efficiency and usefulness are the ultimate goals, achieving that by making the app easy-to-use and quick with the products search, personalized tips and recommendations, and intuitive navigation. The app is created with customer order expectation in mind, and it offers an awesome experience by presenting a clear view of products available, order tracking in real-time and a secure checkout process. The primary goal should be focused on the satisfaction of users by consistently being at their position and offering them a convenient, time-saving and enjoyable grocery shopping experience. In the app design, we made a decision to consider the user needs and to embrace technological advancements while striving to remain relevant for the online customer base in the grocery industry.

2.4.1.2. Stimulus/Response Sequences

The online grocery app stimulus/response sequences pin down the interactions between users and app, and they illustrate what app responds to when the user makes input. Stimuli is the resulting event when a user starts using the app, which can be triggered via different actions like tapping on icons, entering search queries, or picking products from the product lists. Hence, the application will show the needed tips like product feature, price, and availability to the customer. While users are placing items in their shopping bag, the cart summarization is updated with the help of real-time processing. This cycle of responses/triggers remains in the checkout step as well, where users opt for the delivery details and payment options. Instant order tracking acts as fast response, which promises users with ready updates of their order process. Notifications related to discounts, deals, or personally tailored suggestions generate brisk reactions that motivate online consumers to browse rather than scroll over such messages. A real-time success of the online grocery app is a smart stimulus response that guarantees on the one hand, a user-friendly interface and on the other hand enables an effective app

navigation through its options.

2.4.1.3. Functional Requirements

An online grocery app handles its functions with equal importance - it all matters about the conditions which are set as a requirement. First, the app will get the user interface as this would be the portal for the user to choose the achievements as well as set objectives which they would later on want to edit or add from their past activities. simple interface free from unnecessary stuff and easy to navigate by the customers to browse inventory that is big, and every product is detailed, accompanied by a photo. Searching should be easy and precise with a properly laid-out navigation menu, which is supposed to prevent exhaustive information selection by the users. Another key element you would do is the personalized options appearing for a given user. The app must design with the purpose of the transactions being made private and quick with the versatility of the payment system. Different options should be available. Properly designed inventory, & a dynamic nature of the products which are often either randomly or specially available are expected to attract the audience. Customers who use these kinds of online platforms will also get a chance to enjoy benefits of features such as one-tap payments, order tracking and real-time updates that cater checkout process and also help customers to trace their order. Moreover, the application designed to personalize shopping lists, feature promotional marketing and are in real-time chat tool may make it more than one-functional. Although partnerships, deliveries, location based services, and other agents must necessarily constitute critical elements that must be put into consideration, interacted with is a key one of them. Users put emphasis on peace of mind; speed, and enjoyment of the offered product range when using online grocery services and keep changing their needs which has to be absorbed by the app to continue being their service provider.

2.4.2. System Feature 3 (and so on)

2.5. Nonfunctional Requirements

2.5.1. Performance Requirements

Online grocery app performance requirements become a prerequisite for providing its consumers with

the smooth and provision them with efficiency. The application must show quick reaction to the command of the end customer, thus being able to easily and smoothly pass through the listings of products, search items and else checkout. The loading speed for images and other various things should be done in a way that will minimize any delays that a user can experience. Apart from that, the app should be able to deal with a lot of concurrent user requests while maintaining normal operation or not getting lags during peak usage hour. The competence to resilient and secure payment processing without much lag time is crucial. In addition, the most essential immediate features including order monitoring and feedback processes should work in real-time as well. In order to boost total efficiency, the app should be developed using the idea that resources get consumed wisely, by considering the battery life on mobile devices, form one part. Continuous performance testing and search engine optimization (SEO) strategies for these needs are indispensable and integral processes that make an online shopping experience perform faster and without any delays.

2.5.2. Safety Requirements

Meeting the safety demands of the users and their data is the most important thing for us as a grocery app. The security of the app is kept to the highest standards at each level by the effective implementation of the rigorous safety policy. On this, apart from the encrypting transmission of data using encryption protocols, safe user information during the transaction and the time when the user interacts within the app. We are committed to the application of industry-standard authentication standards and, specifically, secure login processes that, if called for, can be reinforced with biometric authentication to create extra security. Thorough security audits and vulnerability assessments is carried out by our team, so that the system can be checked for any risks, that are present, and addressed promptly. Furthermore, we provide denationalized data protection regulations meaning that confidential information is a safeguard of user privacy and their owns information. It is our goal to ensure a secure and safe space for all of our users, by consistently upgrading our security measures and keeping threats a step ahead. We do this in order to provide you, the user, with ultimate protection.

2.5.3. Security Requirements

Security and user protection are the key elements to address in the online grocery app to protect user data confidentiality, transactions, and user trust. The app needs a mechanism that ensures that confidential information, for instance, personal details and payment information, should be shielded by the use of secure encryption protocol during transmission and storage. Adding a 2-factor authentication along with user authentication further reinforces their security because it makes it even harder for criminals to gain access to digital accounts. It is necessary to conduct security audits and vulnerability assessments on a recurring procedure so as to spot as well as to correct the flaws in the application infrastructure. As an additional control point, access must be limited by user privileges that make the unauthorized entry impossible. The app should only utilize information that is secure and thus long as the user's data protection rights are safe-guarded, it is fine. Apart from that, an effective backup-and-recovery system should be put in place to be protected from possible data damage. One of the most efficient methods of ensuring that over-all online shopping security is maintained involves the surveillance for suspicious activities, timely software updates, and the educating of users on best security practices. The collective effort of these measures promotes online grocery shopping's secured and safe polis.

2.5.4. Usability Requirements

Usability objectives of the grocery e-Commerce app will be focused on bringing the customer experience closer to the real world where customers have pleasure when they shop. The app must have an easy to access user interface design that can be used to navigate, helping clients fast locate products, add them to their shopping cart, and finally make a purchase. customers are not to inform of complexities and make checkout through it simple. Simple and comprehensive product descriptions, illustrated with a sharp pictures of items, make for a good decision- making. The app meanwhile should give first priority to accessibility ensuring that capable of being used, and navigated through effortlessly in the platform on individuals of diverse abilities. Device receptiveness across devices from Smartphones to the Tablets and Desktop computes is also a key component to make the uniformity while having the visually cool interface. Besides above mentioned efficient search functionality, personalized recommendations, and order tracking in the clear everything features of the website bring the user what they want. Routine usability testing and feedback loop are the virtues to go forward, and this in turn ensure that the online grocery app is always user-friendly and useful to its multiple and diverse user base over time.

2.5.5. Reliability Requirements

The reliability of the whole plan in is heavily rely on the reliability of the separate parts. A robust system of data backup is claimed to be the pillar of reliability of the service which ensures the operation with the latest changes and updates. Thus, the strategy will be employed by the type of container found inside the J2EE (since the implementation is J2EE based). Thus the whole system conveys the stability of container and its layer of the operating system.

2.5.6. Maintainability/Supportability Requirements

The database is commercial one for its purpose to hold the data and application server will be responsible for the site. In case of a collapse, the system will recover instead of it by restarting. Also the software is being designed by taking into account modularity to get the needed modularity for the purpose of maintainability.

2.5.7. Portability Requirements

The application is J2EE(Java 2 Enterprise Edition) based and should be compatible with all other

systems which have a native Java implementation. The end-user part is fully portable and any system using any web browser should be able to use the features of the application, including any hardware platform that is available or will be available in the future.

2.5.8. Efficiency Requirements

The efficiency is the principal factor in the development and application of our online grocery app that is meant for the user convenience; no complications should arise when using it. In terms of the user interface, we will strive for the speed and ease of navigation down to each product from an extensive catalog. To boost the efficiency, we should put into practice a speedy search technique and an user friendly filtering options, so users can find their wanted items quickly. Also, the checkout process we provide will be simplified with user- friendly interface and safe payment methods that are sure to reduce transaction time. The extension of the reliability of the delivery system to the order process is one more advantage of the system that allows users to have their goods delivered within a short period and conveniently. Continuous coding enhancements and regular performance check-ups will be performed to maximize the efficiency and existence of the app in accordance to the nature of grocery shopping which is fast-paced.

2.6. Domain Requirements

According to the domain characteristics of an online grocery application, the domain of the online grocery app comprises of a number of imperative specifications that define the range and the functionality of the application in the grocery domain. Such prerequisites involve elements like a structured product catalog with precise images and descriptions, safe and convenient payment processing, efficient management of stock and product availability, and the integration of the e-commerce firm with legitimate suppliers and logistics service providers for timely shipping and delivery of goods. The app could add smart recommendation systems which will work based on individual user likes and past purchases thus it could give customers a better personalized shopping experience.

Chapter 3

Use Case Analysis

Chapter 3: Use Case Analysis

UML use case diagram for Grocery describes the actors and their use cases. These user roles represented by UML actors interact with the grocery shop system

- Product Editor
- Customer
- Courier
- Administrator
- User

With the Product Editor are associated these use case:

- Add Product
- Deactivate Product
- Activate Product
- Edit Product
- Add Category
- Remove Category

The Customer has the following requirements on the system, represented by these use cases:

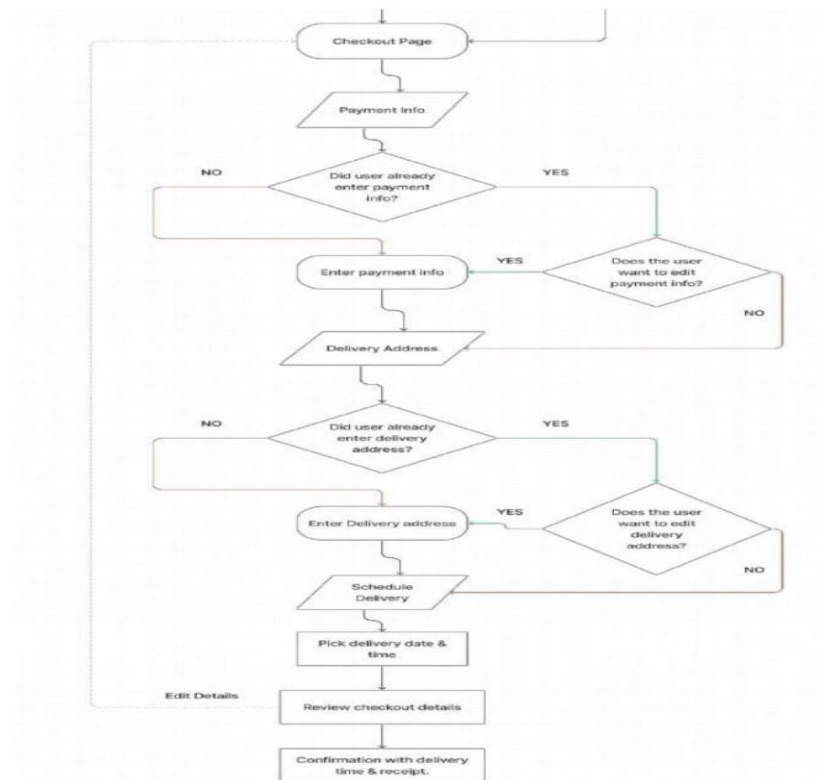
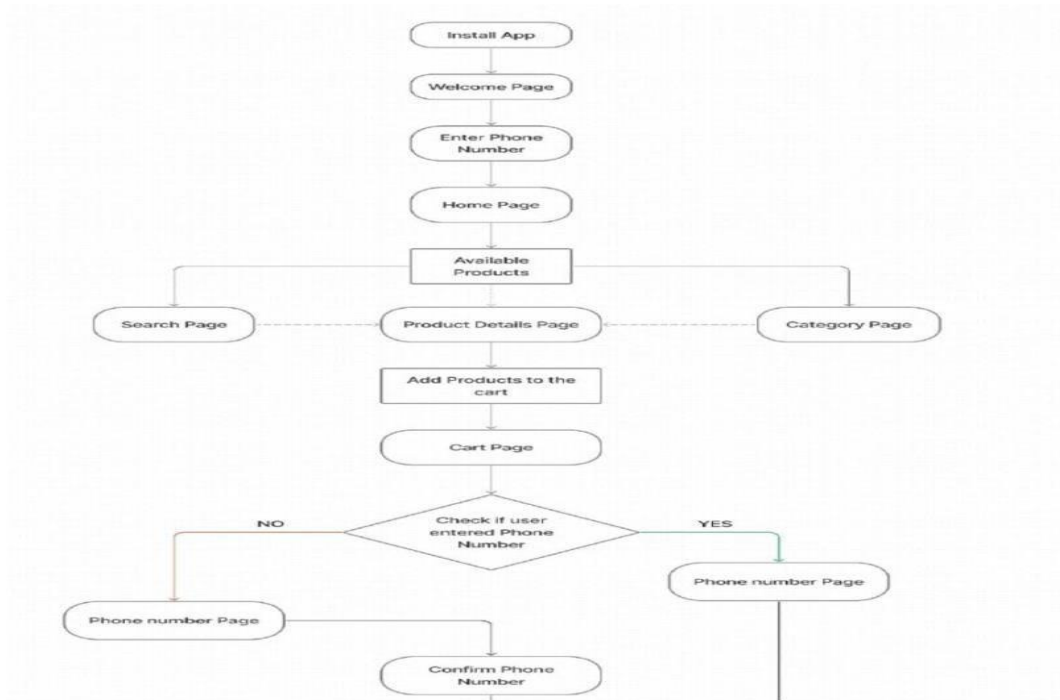
- Sign Up
- Remove item from Shopping List
- Reserve Delivery Timespan
- Confirm Shopping List
- Pay Online
- Choose Address
- Enter Note
- Add item to Shopping List
- Cancel Shopping List
- The Courier role depends on these use cases:

- Take Delivery Batch
- Deliver Order
- Receive Payment
- The Administrator can:
- Add User
- Remove User
- Every User of the grocery system can:
- Log In
- Reset Password
- Log Out

3.1. Use Case Model



3.2. Use Cases Description

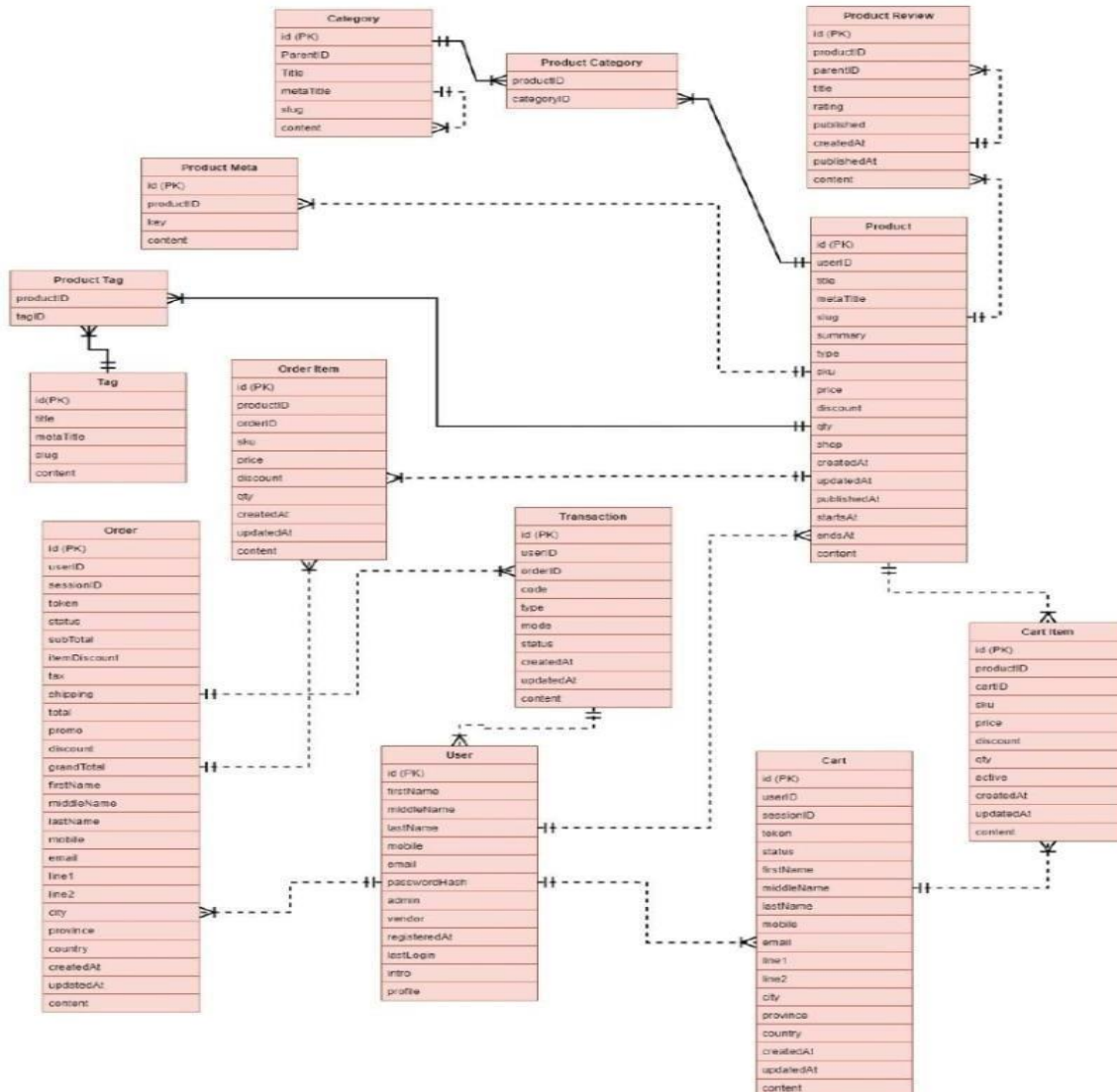


Chapter 4

System Design

Chapter 4: System Design

4.1. Architecture Diagram

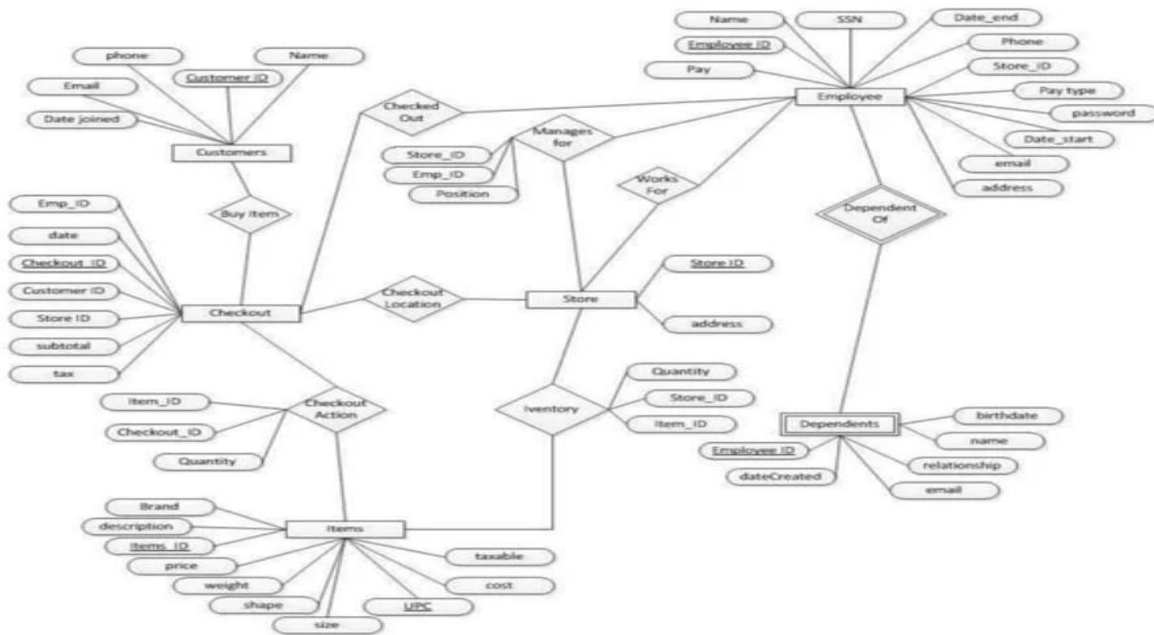


4.2. Domain Model

The important part of the online grocery ordering system is the shopping list module. The shopping lists are created by a customer, it includes the items that a customer wants to buy. It includes the following entities:

- Shopping List
- Shopping Item
- Custome
- Cart
- Product
- Delivery Time Span
- Offered Delivery Time Span
- Voucher
- Discount Type-the system supports discounts, the enumerations offers these options:
- Absolute and Relative
- Packaging Type-a packaging type for an order can be chosen from these enumeration values: None, Plastic Bags, Paper Bags, and Paper Box.
- Payment Type -the enumeration offers the following payment options: Online Payment In Advance, Cash, and Card.

4.3. Entity Relationship Diagram with data dictionary

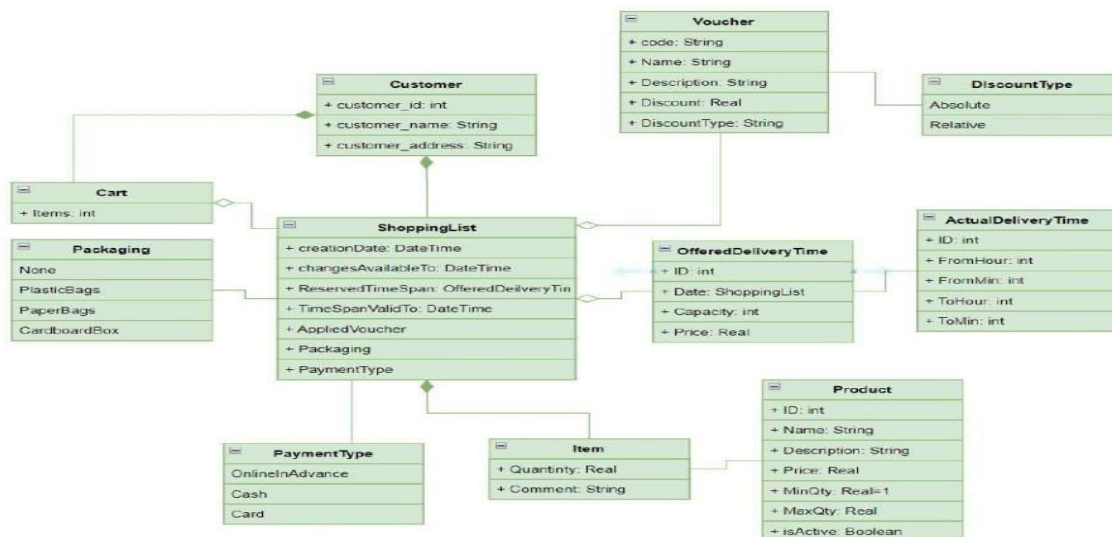


4.4. Class Diagram

Class Diagram for Shopping List

The class diagram for online grocery orders includes the following classes:

- Shopping List
- Order
- Order Item
- Courier
- Courier Batch
- Order Status
- Address

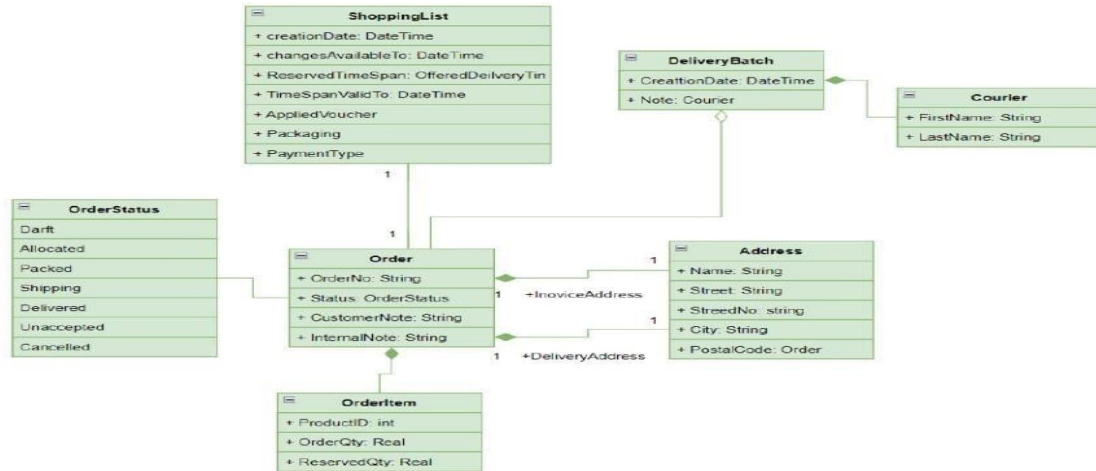


Class Diagram for Online Orders

The class diagram for online grocery orders includes the following classes:

- Shopping List
- Order
- Order Item
- Courier

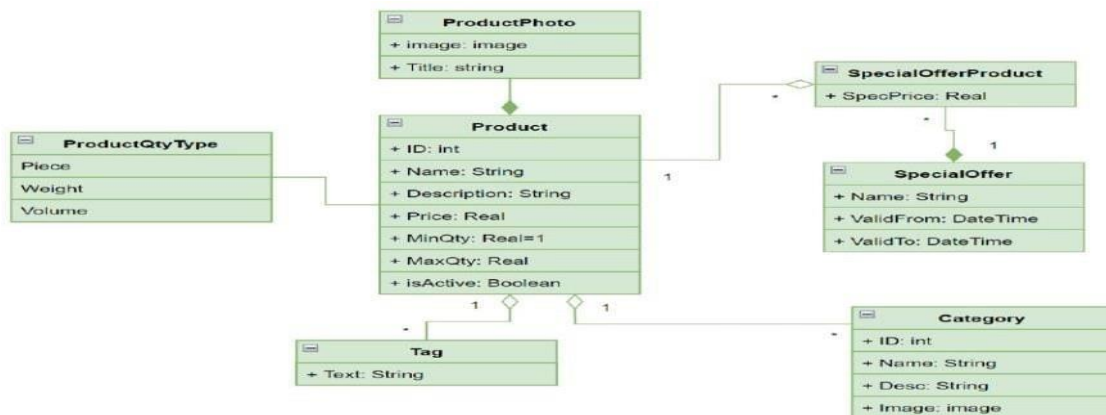
- Courier Bach
- Order Status
- Address



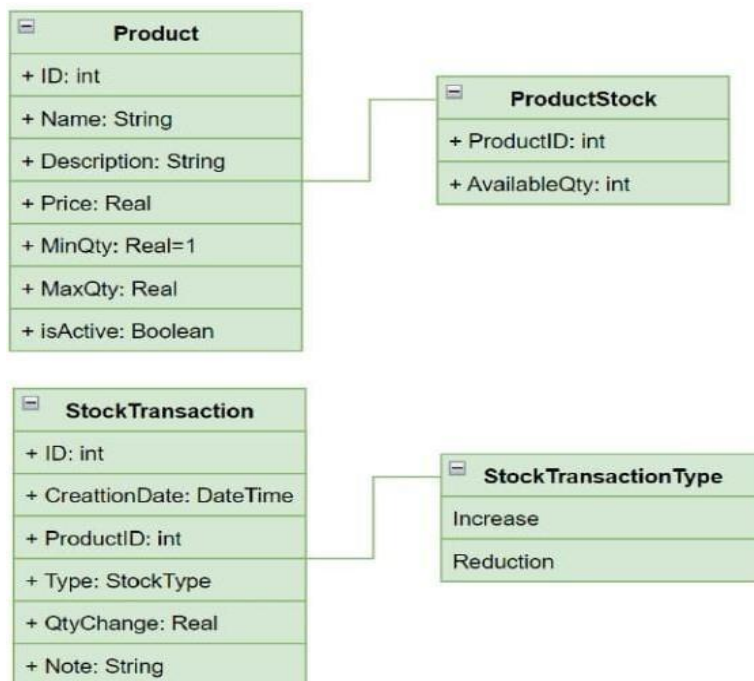
Class Diagram for Products

The UML class diagram for the product and the related objects depicts the following classes. and their relationships:

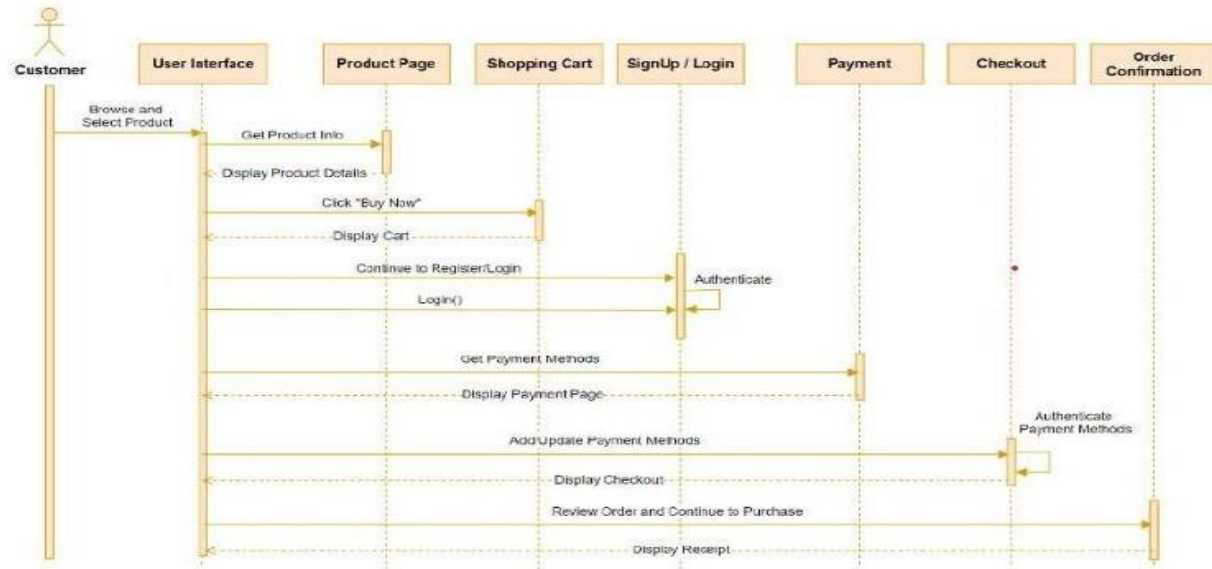
- Product
- Quantity Type-offers enumeration items for various kinds of product
- quantities: Piece, Weight, Volume
- Product Photo
- Category
- Tag
- Special Offer
- Special Offer Product



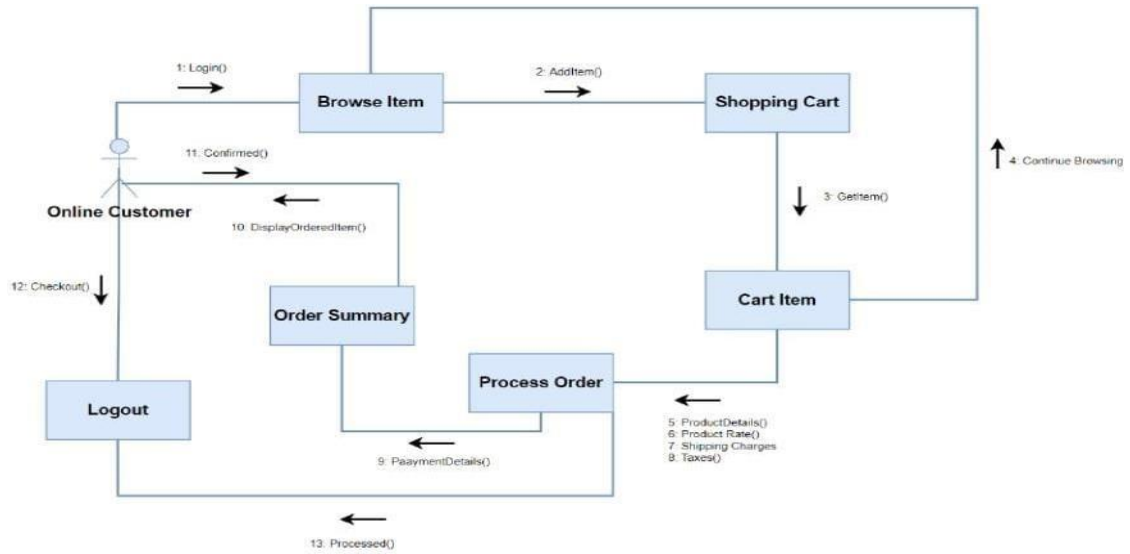
Class Diagram for Inventory



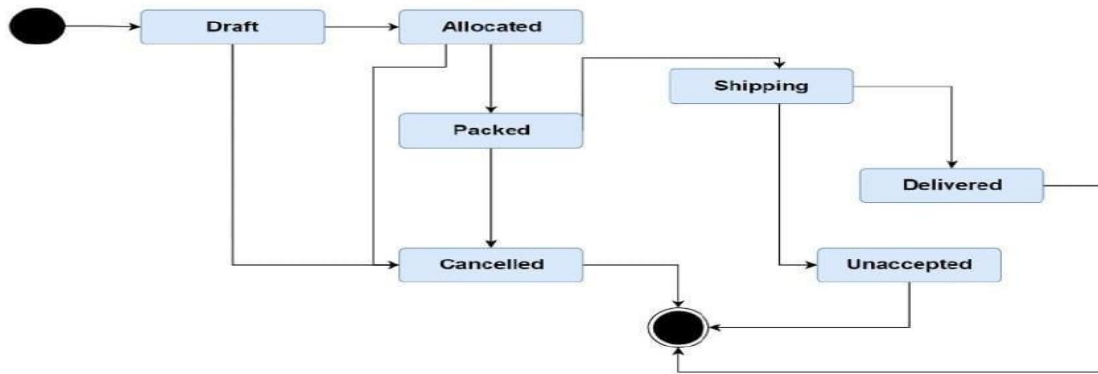
4.5. Sequence Diagram



4.6. Collaboration Diagram



4.7. State Transition Diagram



Chapter 5

Implementati on

5.1. Important Flow Control/Pseudo codes

Filter Products:

```
import React from "react";
import { CiForkAndKnife } from "react-icons/ci";

const FilterProduct = ({category , onClick , isActive}) => {
  return (
    <div onClick={onClick}>
      <div className={`text-3xl p-5 rounded-full cursor-pointer ${isActive ? "bg-red-600 text-white" : "bg-yellow-500"}`>
        <CiForkAndKnife />
      </div>
      <p className="text-center font-medium my-1 capitalize">{category}</p>
    </div>
  );
};

export default FilterProduct;
```

Add to Cart Products:

```
import React from "react";
import { TbPlus, TbMinus } from "react-icons/tb";
import { AiFillDelete } from "react-icons/ai";
import { useDispatch } from "react-redux";
import { deleteCartItem , increaseQty , decreaseQty } from "../redux/productSlice";

const CartProduct = ({ id, name, Image, category, qty, total, price }) => {
  const dispatch = useDispatch()

  return (
    <div className="bg-slate-200 p-2 flex gap-4 rounded border border-slate-300">
      <div className="p-3 bg-white rounded overflow-hidden">
        <img src={Image} className="h-28 w-40 object-cover " />
      </div>
      <div className="flex flex-col gap-1 w-full">
        <div className="flex justify-between">
          <h3 className="font-semibold text-slate-600 capitalize text-lg md:text-xl">
```

```

        {name}
      </h3>
      <div className="cursor-pointer text-slate-700 hover:text-red-500 "
onClick={()=>dispatch(deleteCartItem(id))}>
        <AiFillDelete />
      </div>
    </div>

    <p className=" text-slate-400 font-medium ">{category}</p>
    <p className=" font-bold text-base">
      <span className="text-red-500">PKR </span>
      <span>{price}</span>
    </p>
    <div className="flex justify-between">
      <div className="flex gap-3 items-center">
        <button onClick={()=>dispatch(increaseQty(id))} className="bg-slate-300 py-
1 my-2 rounded hover:bg-slate-400 p-1">
          <TbPlus />
        </button>

        <p className="font-semibold p-1">{qty}</p>

        <button
          onClick={()=>dispatch(decreaseQty(id))}
          className="bg-slate-300 py-1 my-2 rounded hover:bg-slate-400 p-1"
        >
          <TbMinus />
        </button>
      </div>
      <div className="flex items-center gap-2 font-bold text-slate-700">
        <p>Total :</p>
        <p> <span className="text-red-500">PKR </span>{total}</p>
      </div>
    </div>
  </div>
</div>
);
};

export default CartProduct;

```

Cart products menu:

```
import React from "react";
```

```

import { Link } from "react-router-dom";
import { addCartItem , increaseQty } from "../redux/productSlice";
import { useDispatch } from "react-redux";

const CardFeature = ({ Image, name, price, category, loading, id }) => {
  const dispatch = useDispatch()
  const handleAddCartProduct = (e) => {

    e.stopPropagation();
    dispatch(addCartItem({
      _id : id,
      name : name ,
      price : price ,
      category : category ,
      Image : Image
    })))

  };

  return (
    <div className="w-full min-w-[200px] max-w-[200px] bg-white hover:shadow-lg drop-
shadow-lg py-5 px-4 cursor-pointer flex flex-col ">
      {Image ? (
        <>
          <Link
            to={` /menu/${id}`}
            onClick={() => window.scrollTo({ top: "0", behavior: "smooth" })}
          >
            <div className="h-28 flex flex-col justify-center items-center">
              <img src={Image} className="h-full" />
            </div>
            <h3 className="font-semibold text-slate-600 capitalize text-lg mt-4
whitespace-nowrap overflow-hidden">
              {name}
            </h3>
            <p className=" text-slate-400 font-medium">{category}</p>
            <p className=" font-bold">
              <span className="text-red-500">PKR </span>
              <span>{price}</span>
            </p>
          </Link>
          <button
            className="bg-yellow-500 py-1 my-2 rounded hover:bg-yellow-600 w-full "
            onClick={handleAddCartProduct}
          >

```

```

        Add Cart
      </button>

    </>
  ) : (
    <div className="min-h-[150px] flex justify-center items-center">
      <p>{loading}</p>
    </div>
  )}
</div>
);
};

export default CardFeature;

```

5.2. Components, Libraries,

Libraries:

- Redux
- React Icons
- React Hooks
- React-Toolkit
- Mongoose
- Express
- Node

5.3. Tools and Techniques

Development Tools and Languages

- React Js
- React ToolKiT For animation and fonts

Chapter 6: Testing and Evaluation

6.1. Use Case Testing

1. User Registration and Login:

- Verify that users can successfully register for an account.
- Test the login process, ensuring that users can log in with correct credentials and are denied access with incorrect ones.
- Check for any password recovery mechanisms.

2. Browsing Products:

- Ensure users can browse products by category, search for specific items, and filter results.
- Test product descriptions, images, and prices for accuracy.
- Verify that users can view details such as product availability, quantity, and nutritional information.

3. Adding Items to Cart:

- Confirm that users can add items to their cart from product listings or product detail pages.
- Test various scenarios like adding multiple quantities, adding items with different variants (sizes, flavors), and adding items with discounts or promotions.

4. Updating the Cart:

Customers can add or remove items from their shopping cart. This feature allows them to manage their selections effectively.

5. Filtering Products:

Customers should be able to filter products based on criteria such as category, price range, or dietary preferences.

6. Searching Products:

A robust search functionality helps customers find specific items quickly.

6.1. Equivalence partitioning

1. User Registration:

Valid partitions: Age 18-120, valid email formats, valid password formats.

Invalid partitions: Age < 18 or > 120, invalid email formats, invalid password formats.

2. Login Credentials:

Valid partitions: Correct username and password combinations.

Invalid partitions: Incorrect username, incorrect password, empty fields.

3. Search Functionality:

Valid partitions: Keywords that match existing products.

Invalid partitions: Keywords that don't match any products, special characters, empty search queries.

4. Adding Items to Cart:

Valid partitions: Available products, sufficient stock.

Invalid partitions: Out-of-stock products, expired products, products with quantity limits exceeded.

6.2. Boundary value analysis

1. User Accounts:

Minimum Username Length: Test with usernames that are the minimum allowed length (e.g., 1 character) and one character below the minimum.

Invalid Characters: Test usernames with special characters or symbols that might not be allowed.

2. Product Selection:

Quantity: Test adding zero items, one item, the maximum allowed quantity for a product, and one quantity above the maximum.

Weight-Based Products: Test with weights slightly below the minimum purchasable amount (e.g., 0.9 lbs for a 1 lb minimum) and slightly above the maximum allowed (e.g., 1.1 lbs for a 1 lb maximum).

3. Delivery Slots:

Minimum Order Lead Time: Test placing an order for the soonest available delivery slot and one slot before the minimum lead time.

Maximum Order Lead Time: Test placing an order for the furthest available delivery slot and one slot after the maximum lead time.

4. Payment Processing:

Minimum Order Amount: Try placing an order below the minimum required amount.

Maximum Order Amount: Test with an order exceeding the maximum allowed purchase value (if applicable).

Invalid Payment Information: Test with incorrect credit card numbers, expired dates, and insufficient funds scenarios (if possible in a test environment)

5. Address Validation:

Incomplete Address: Test with missing information like zip code or apartment number.

Invalid Address: Test with nonsensical addresses or addresses outside the delivery zone.

6.3. Data flow testing

1. Follow Data Pathways:

- Track how information moves through the system, like user registration, product listings, checkout, and order processing.

2. Check Data Accuracy:

- Ensure that data is processed correctly at each step, like validating user details and product information.

3. Maintain Data Integrity:

- Make sure data stays consistent and reliable as it travels through the system, from user accounts to orders.

4. Secure Data Transfer:

- Keep sensitive data safe during transmission, like user passwords and payment details.

5. Handle Many Users:

- Test how the system copes with lots of users accessing and updating data simultaneously.

6. Prevent Data Loss:

- Guard against losing or corrupting data at any point in the system.

7. Avoid Security Risks:

- Look out for common security threats, such as hacking attempts or data breaches.

8. Show Data Clearly:

- Confirm that data appears correctly on the website or app for users to see, like product details and order summaries.

9. Test for Exceptions:

- Check how the system responds to unusual situations, like invalid user input or network problems.

10. Follow Regulations:

- Ensure that data handling practices meet legal requirements, like protecting user privacy and payment information.

6.4. Unit testing

1. User Authentication Unit Testing:

- Test login/logout functions and session management.
- Verify correct validation of user credentials and token generation.

2. Product Management Unit Testing:

- Test adding, updating, and deleting products in the inventory.
- Ensure accurate database operations for product management.

3. Shopping Cart Unit Testing:

- Test adding, updating quantities, and removing items from the cart.
- Verify accurate calculations for total price and quantities.

4. Order Management Unit Testing:

- Test order creation, modification, and cancellation processes.
- Ensure proper association with users and products, and correct status updates.

5. Payment Processing Unit Testing:

- Test payment gateway integration and processing.
- Verify accurate and secure payment transactions, with proper error handling.

6. Delivery Management Unit Testing:

- Test delivery slot management and address validation.
- Ensure correct display of delivery options and validation of addresses.

7. Coupon and Discount Unit Testing:

- Test applying coupons and discounts to orders.
- Verify accurate calculation and application of discounts.

8. User Profile Unit Testing:

- Test updating user profiles and password changes.
- Ensure proper validation and database updates for user information.

9. Search Functionality Unit Testing:

- Test search filters, sorting, and result accuracy.
- Verify correct functionality of search features.

10. Error Handling Unit Testing:

- Test handling of errors and displaying appropriate error messages.
- Ensure graceful handling of edge cases and invalid inputs.

6.5. Integration testing

1. User Registration and Authentication:

- Ensure seamless flow of user data from registration to authentication.
- Verify users can log in successfully after registration.

2. Product Management and Inventory:

- Check that product information accurately reflects inventory updates.
- Verify real-time display of product availability

3. Shopping Cart and Checkout Process:

- Confirm items added to the cart transfer correctly to the checkout.
- Ensure accurate order processing during checkout.

8. User Profile and Account Management:

- Confirm changes to user profiles are reflected across the system.
- Verify accurate updates to account settings.

9. Search Functionality Integration:

- Ensure search queries return accurate results based on product availability.
- Verify integration with product databases for up-to-date information.

10. Error Handling and Exception Integration:

- Test proper handling and display of errors to users.
- Ensure smooth user experience even in exceptional cases.

6.6. Performance testing

1. Load Testing:

- Test how well the system handles expected user loads.
- Determine response times and system behavior under normal usage

2. Stress Testing:

- Push the system beyond its limits to assess its maximum capacity.
- Identify breaking points and observe system behavior under extreme loads

3. Volume Testing:

- Evaluate system performance with large amounts of data.
- Test database performance and scalability as data volume increases.

4. Scalability Testing:

- Assess how the system scales with increased resources.
- Test horizontal and vertical scaling capabilities to accommodate growing demand.

5. Endurance Testing:

- Evaluate system stability over prolonged periods under sustained load.
- Monitor for performance degradation and resource leaks over time.

6. Peak Load Testing:

- Test system performance during peak usage periods.
- Assess how well the system handles sudden spikes in traffic.

7. Concurrency Testing:

- Evaluate system performance with multiple users performing actions simultaneously.
- Test critical functionalities under concurrent user scenarios.

8. Response Time Testing:

- Measure the time taken for the system to respond to user actions.
- Set benchmarks for acceptable response times based on user expectations.

9. Resource Utilization Testing:

- Monitor system resource usage during testing.
- Identify and address resource bottlenecks for optimized performance.

10. Geographical Load Testing:

- Assess system performance from different geographic locations.
- Test network latency and response times for users across regions.

6.7. Stress Testing

1. Simulate High Traffic:

- Increase user load to levels beyond normal peak traffic.

2. Generate Heavy Workloads:

- Create scenarios with intense activity, such as rapid cart additions and multiple checkouts.

3. Push Resource Limits:

- Maximize system resources like CPU and memory to test system performance under strain.

4. Test Scalability:

- Assess how the system scales up with additional resources to handle increased demand.

5. Monitor Response Times:

- Measure how quickly the system responds to user actions under stress.

6. Evaluate Error Handling:

- Introduce errors to see how the system handles unexpected situations.

7. Observe System Stability:

- Watch for system crashes or performance degradation under stress conditions.

8. Assess Recovery Mechanisms:

- Test how well the system recovers after stress events, restoring service and data integrity.

9. Analyze Performance Metrics:

- Collect data on system performance to identify bottlenecks and areas for improvement.

10. Iterate and Optimize:

- Use insights from stress testing to optimize system architecture and code efficiency for better performance under stress in the future.

Chapter 7

Summary, Conclusion and Future Enhancements

Chapter 7: Summary, Conclusion & Future Enhancements

7.1. Project Summary

Our Online Grocery Store is a virtually advanced way that redefine purchasing of groceries in a different manner. Nowadays, in the race of fast track, convenience is the key, and this is what our cool app brings. Intuitive user interface created a situation where customers can just pick their products and decide to wait till they deliver or pick them personally. The app's crucial functions include seeing where products are in real time to ensure they are available, recommending items that are suitable for each purchaser to make shopping customized, and processing orders safely online. Furthermore, in order to maintain a seamless journey for the users, we provide various types of discounts, loyalty programs and incentives so that our customers will reap the benefits with every purchase they make. Our Grocery Application is one such solution as the market potential is large and has primarily grown due to the fact that more and more people are shopping online with the expectation to find the convenience and time saving approaches. Beyond the competitive landscape, we are ready to challenge the stiff competition through innovation, partnership with local grocery channels for store-level delivery, and continuous improvement. A vast growth potential is evident if we succeed to cover a larger spatial area, include more product categories and building strategic alliances with other organizations. Through the employing of directed marketing operations, we aim to involve an extensive amount of users and to position ourselves as a pace-setting market product. Briefly, our Grocery App will meet customers who want to buy food and in the course of time become their assistant in life matters by offering convenience, personalization, and savings. The focus on customer satisfaction as well as ongoing improvements to enhance our business lies at the core of our strategy for future growth in the vibrant and challenging online grocery market.

7.2. Achievements and Improvements

Achievements:

The utmost feature of our online grocery portal is bringing ease and comfort to the customers to

search for products by using AI Module or scanning an Ai with the help of image of the product the Ai will be scanned and shall try to find in the database if it exists in the database then it will pop up if it is in the data base otherwise errors shall be displayed.

7.3. Critical Review

Strengths: Modern online grocery stores serve with unmatched ease, accessibility and an array of goods which cover all customer's needs even the most exotic. They also provide convenience and guidance as they recommend specific products. Weaknesses: Among the difficulties are delivery discrepancies, the problems in the quality control and, in addition, the missing elements of the sensory experience. Tactical and cost issues are also on the list. Opportunities: Extension into fresh markets, technology improvements in delivery services, and environmental sustainability are the fields where this industry can grow. Threats: Competition, supply chain interferences, data privacy problems, regulatory changes, and general consumer concerns of shifting behaviors pose a significant risk.

7.4. Future Enhancements/Recommendations

In future we will enhance our project more and further with new technologies and updated Ai modules. We expect that we Provide Different customer services With The help of Ai Modules

Appendices

Appendix A: User Manual

In this part of our project application documentation, users of app are guided thoroughly about the project that has been developed, and more specifically on how to use the system more clearly, concisely and easily.

Appendix A: Project Overview

This is a web based application using the Machine Learning Tensor FLOW Keras And VGG16 Model used to search the item by photo Using Camera and can easily find the item on the store

A.1. How to Interact/use our Application

Simply You should register yourself in our web app and then sign up then you have your own account by which you can easily buy and order the products and pay bills

A.1.1. Different aspects of our project's application

On the other Hand we discuss above that we are using AI model by which you can easily search items by using camera of your phone and computer it can helps you to find items in the store according to the relevant photo if there was an product available then they pop up and show the item then you can easily buy.

A.1.1.1. Where the data for our project's app comes from?

Our Data will come from Our Database which we were used in our App data will store in MongoDB about the products and your sign up data also store in MongoDB database.

Appendix B: Administrator Manual

This section of the appendix is clearly defining the roles the admins have in the project and how they can use these functionalities apart from the other users of the applications.

B.1. User Management

B.1.1. User Roles and Permissions

In the side of the Admin roles and permission the admin of the project will only have the role to add new products in the store and have there Email by which that admin have to login to admin dashboard.

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Reference and Bibliography

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