

**A PROJECT REPORT ON  
ShopEase an ecommerce website**

**Submitted in Fulfillment of  
Requirements for Completion of Semester 5 in  
Bachelor of Computer Application (BCA)**

**Year 2025**

**To**

**JUNAGADH KELAVNI MANDAL(JKM) COLLEGE  
Junagadh**

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## PREFACE

There is a wide difference between theory and practical. If one has only theoretical background of any subject, one would not succeed in own aim therefore it is necessary for any person to have adequate practical knowledge of the concerned subject. As I know BCA is a course based on "Information Technology" and it is totally practical field. With only theoretical knowledge one can't be succeeded or one can't be on the peak position.

In the course of BCA designed by the "Bhakta Kavi Narsinh Mehta University" they have taken full care of these things and designed the course in such a manor with which student can get theoretical and practical both type of knowledge perfectly. According to the rules & regulation of "Web Development". I have a subject named "SHOPEASE". In which we have to create a web project of any institute or industry.

As a BCA student, I have gathered general information about an e-commerce. Then I decided to develop the site for online ecommerce website for a business. In this site you can order product easily which you need.

In this project report I have covered all the information, which is required for the web project of BCA student. I have tried as my best present this project report in such a way that it makes easy to understand the project work

## ACKNOWLEDGEMENT

I am thankful to all, who have helped me in preparing this project. I am very much happy to present this "Project Report". Before you, expecting that you will acknowledgement it. It is a matter of great pleasure for me that I had an opportunity to express my view on the same.

As a part of my academic study as the student of 5th semester of BCA I am required to undergone training software project an institute or industry in order to obtain practical knowledge and broaden me regarding the same.

At first, I would like to express my humble thanks & gratitude to the who has provided me such a great, Co-operative & progressive environment.

Secondly at this moment, I would like to express my deepest sense of gratitude to my professor as well as project guides dr. Neha K. Shah and who have contributed their precious time for the purpose of giving me the correct information with special interest & guidance throughout my project work.

I am also thankful to my classmate and few others who helped me directly or indirectly in solving problem & in making my software project more efficient & good working.

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## 1. Project Profile

### 1.1 Requirement Details

❖ Title : ShopEase

❖ Hardware Requirement:

- RAM : 4GB or above
- ROM : 256GB or above
- CPU : Inter Core i3 or above

❖ Tools Used:

- Frontend : HTML, CSS, JS
- Backend : Java Spring
- Database : MySql
- OS : Windows 11
- Designing : Figma
- Api Testing : Postman

❖ Software Requirement:

- MySQL Database
- Any Morden Browser
- Code Editor: IntelliJ IDEA or similar

## 1.2 Introduction and Objective of Project

### INTRODUCTION

The **ShopEase** system is designed and built to make it easier for businesses to sell and manage their products online, while also giving customers a simple and friendly way to shop. On the business side, ShopEase helps store owners keep track of products, handle orders, manage customers, and take care of users and other important details. On the customer side, it provides an easy-to-use interface where people can browse through different items, find what they like, and purchase them without much hassle.

ShopEase is a **multi-user system**, meaning it supports different kinds of users like admins, customers, and possibly even staff, each with their own roles and functions. The system is built in a way that makes day-to-day tasks smoother and more efficient for everyone involved.

From a technical side, the system is developed using **Java Spring framework (along with its sub-projects)** and **MySQL** as the backend database. For the frontend, it uses standard **HTML, CSS, and JavaScript** to keep things simple but effective. Together, these technologies make the system reliable, flexible, and easy to maintain.

The main idea behind ShopEase is to create a platform that's not only useful for businesses but also enjoyable and straightforward for customers. It brings both sides together into one place, so sellers can manage their work easily and buyers can shop without any confusion.

## OBJECTIVES OF SHOPEASE

Earlier people had only one way of buying products and that is to go to the physical shop and find the product you want. You may have to go through many shops in order to find the product you want but, now as we are evolving shopping methods are changing now, we are all working in corporate sector or private sector. So, we don't get enough time to spend finding product we want. So, buying product online is the right way because you can find the product you want in just few clicks and order it directly.

Secondly, people have to face various problems with the traditional way of shopping because it requires more time, and the roads are full of people and after going to many shops they get what they want. Seeing these problems, many start-ups started online shops, e-shops to provide more convenience to consumers and sell products online easily.

### **Specific Objectives: -**

1. Make shopping easy give customers a simple and user-friendly interface for browse, search and buy products online.
2. Sell products 24/7 lets business reach customer anytime, without being limited to time.
3. Showcase products clearly Provide detailed descriptions, images, and prices so buyers can make better decisions.
4. Smooth checkout process Make payment and order placement quick, secure.
5. Improve customer experience Offer features like search filters, like, order tracking, and account management.
6. Manage business operations showing product, orders, user info
7. Allows Businesses to connect with a wider customer range.

### 1.3 Advantages of ShopEase

#### 1. Convenience for Customers: -

Customers can easily search, find, and order products. Customers can find best offers on the product that they like. They can compare a wide range of products and order the one that they like. Also, there is no time limit for customers. Customer can see products at any time according to their convenience.

#### 2. Wider Market Reach: -

A local business can reach to hundreds or thousands of customers that they may never reach locally. This helps small scale businesses to grow faster

#### 3. Lower Operating Cost: -

In order to sell products online a business don't require a physical shop. This is very helpful for small scale businesses that want to save money on rent, electricity, staff, and other expenses.

#### 4. Product Variety and Price: -

In online shops like shop ease customer can get a wide range of product and products categories. Customer can easily compare wide range of product with their price and reviews

#### 5. Faster Transactions: -

Customer can easily login to a site and find the product that they like and order them. They can even pay for that product online through upi, or credit/debit card or they can choice to Cash on delivery. And seller can relay to orders easily.

#### 6. Scalability: -

Adding more products or serving more customers online is easier than doing that physically. The system can grow as per the requirements.

#### **1.4 Goal of the System: -**

The main goal of this application is to provide clean and easy UI/UX to customer so they can buy products easily and so by doing this maximize the profit of the business. However, some common goals for our application is following: -

##### **1. Convenience: -**

To provide customers with a convenient way to purchase Products from the comfort of their homes. eliminating the need for physical shopping

##### **2. Quality: -**

To offer high-quality, fresh products that meets or exceeds customer expectations.

##### **3. Variety: -**

To provide a wide variety of products and variety of category, like men, women, children, electronic, home and etc.

##### **4. Accessibility: -**

Providing product to customers regardless of the where they live.

##### **5. Time Saving: -**

To help customers save time by offering easy-to-navigate websites or apps, efficient delivery services, and convenient payment options.

##### **6. Community Engagement: -**

To engage with the local community and support local farmers or growers, if applicable.

**7. Customer Satisfaction: -**

To build a loyal customer base by ensuring a positive shopping experience, excellent customer service, and addressing customer feedback.

**8. Sustainability: -**

To operate in an environmentally sustainable manner, such as reducing food waste and minimizing the carbon footprint of deliveries.

**9. Profitability: -**

To generate revenue and achieve profitability, ensuring the long-term sustainability of the business.

**10. Market Expansion: -**

To expand the market reach by attracting new customers and possibly entering new geographic regions.

**11. Adaptation: -**

To stay competitive by adapting to changing market trends and customer preferences, such as offering seasonal produce or specialty items.

## 2. System Analysis:

System analysis is a structured and systematic process of studying and understanding complex systems in order to identify their components, interrelationships, and functions. This analysis aims to gather information, evaluate the system's performance, and provide recommendations for improvement or optimization. It is a crucial step in various fields, including computer science, business, engineering, and social sciences.

### 2.1 Requirement Analysis: -

Requirement and specification are very important components in the development of any project. Requirement analysis is the first step in the system design process, where a user's requirements should be clarified and documented to generate the corresponding specifications. While it is a common tendency for designers anxious about starting the design and implementation discussing requirements with the customer is vital in the construction of safety - critical systems.

For activities in the first stage has significant impact on the downstream results in the system life cycle. For example, errors developer during the requirement and specifications stage may lead to errors in the design stage. This leads not only on more time wasted but also the possibility of other requirement add specification therefore, it is necessary that the requirements are specified correctly to generate clear and accurate specifications. Attributes are characteristics desired by the client and while 2 projects can have similar functions, they can have completely different attributes. After all the attributes have been clarified and attached to functions, we must determine the constraints on each of the attributes. Preferences, while is a desirable but optional condition placed on an attribute, can also be defined in addition its constraints. Finally, we must determine what the client's expectations are, this will largely determine the success of the project.

## 2.2 Feasibility Study Analysis: -

Conducting a feasibility study for an online ecommerce website is essential to access whether the business idea is viable and worth pursuing. A well-executed feasibility study can help you make informed decisions and secure funding if needed. Here are the key aspects to consider in your feasibility study:

### 1. Market Feasibility: -

#### A) Market Research:

Analyze the demand for different products and their price according to your target region. You may also consider factors like population demographics, average income levels and consumer preferences.

#### B) Competitive Analysis:

Identify existing online and offline competitors in the market. Assess their strengths and weaknesses, pricing strategies, and market share.

#### C) Trends and Growth Potential:

Study industry trends, including the increasing demand for products and their requirement in an area. Evaluate the potential for growth in this market.

#### D) Market Size:

Estimate the potential market size and your expected market share based on your research.

## **2. Technical Feasibility: -**

### **A) Technology Stack Availability**

The system can be built using Java Spring framework for backend, MySQL for the database, and HTML, CSS, JavaScript for frontend. These technologies are widely available, reliable, and well-supported.

### **B) Infrastructure Requirements:**

Hosting can be done on cloud servers (AWS, Azure, etc.) or on-premise servers. E-commerce doesn't need extremely high-end infrastructure at the start; it can scale as users grow.

### **C) Development Tools & Resources:**

Plenty of free and paid development tools, libraries, and frameworks are available. Skilled developers (like me) for Java Spring, database management, and frontend are also easy to find.

### **D) Security & Payment Integration:**

Secure protocols (HTTPS/SSL) can be implemented.

### **E) Scalability & Performance**

The system can start small and later scale up by adding load balancers, caching, or database optimizations. Modern frameworks support high traffic and large product.

## **3. Economic Feasibility: -**

Economic feasibility checks whether the cost of developing and running the e-commerce website is justified compared to the expected benefits. Costs include website development, hosting, domain, payment gateway setup, maintenance, and marketing. Benefits include wider

market reach, 24/7 product availability, reduced operational costs (less staff, no physical shop rent), and higher sales.

#### **4. Operational Feasibility: -**

Operational feasibility checks whether the system will work smoothly in real-life and if users will actually use it.

1. The website offers a user-friendly interface for customers to browse, search, and buy products easily.
2. Admins can manage products, orders, and users without needing deep technical knowledge.
3. Features like order tracking, secure payments, and customer accounts make the system practical and reliable.
4. Since both customers and admins can perform their tasks without difficulty, the system is operationally feasible.

#### **5. Marketing and Sales Feasibility: -**

##### **a. Marketing Strategy:**

Develop a marketing plan to attract and retain customers.  
Consider digital marketing, social media, and partnerships

##### **b. Customer Acquisition:**

Estimate the cost of acquiring customers and the time it will take to build a customer base.

##### **c. Sales Channels:**

Determine how you will reach customers, whether through your website, mobile apps, or third-party platforms.

In conclusion, a feasibility study for an online e-store (ecommerce site) involves a comprehensive analysis of market, technical, financial, legal, operational, and

marketing aspects. The findings from this study will help you make an informed decision about the viability of your business idea and provide a solid foundation for planning and implementation.

## 2.3 Functional and Non-Functional Requirements: -

### 1. Functional Requirements

about the functions and core operations of your e store that enable a user to take action on the website. They can be feature implemented as a single website feature and form the Basic of the whole software development process

#### 1. User Registration and Authentication:

- Users should be able to create accounts.
- Users should be able to log in using email/username and password or social media accounts.

#### 2. Product Catalog

- Display a list of available products.
- Allow users to browse products by category, price, and brand.
- Show product details including name, description, price, and availability.

#### 3. Shopping Cart:

- Users should be able to add products to the shopping cart.
- Allow users to modify the quantity of items in the cart.
- Calculate and display the total cost of items in the cart.

#### 4. Checkout and Payment:

- Provide a secure checkout process
- Accept various payment methods (credit/debit cards, digital wallets, etc.).
- Allow users to input shipping and billing information.

- Send email confirmation after a successful purchase.

**5. Search and Filter:**

- Implement a search bar for users to find specific products.
- Offer filters for sorting products by price, type, and other attributes.

**6. User Reviews and Ratings:**

- Allow users to leave reviews and ratings for products.
- Display average ratings and individual reviews on product pages.

**7. User account Management:**

- Enable users to update their profile information.
- Provide a feature for users to reset their passwords.

**8. Inventory Management:**

- Automatically update product availability when items are purchased.
- Notify administrators when stock levels are low.

**9. Admin Panel:**

- Allow administrators to manage products, categories, and user accounts.
- Provide data analytics and reporting tools for administrators.

**10. Order Tracking:**

- Enable users to track the status of their orders.
- Send order status notifications via email or SMS

**11. Support and Contact:**

- Offer a contact form or chat support for user inquiries.
- Provide an FAQ section to answer common questions.

**2. Non-Functional Requirements**

Non-functional requirements are the how of your website. Named quality attributes of a system, they form user experience and imply some global, abstract expectations requirements of online shopping system may derive from a sum of functional requirements for e-commerce website and are implemented as a sum of web features.

**1. Performance:**

- The website should load quickly, even with a large number of products.
- Response times for interactions (e.g., adding items to the cart) should be fast.

**2. Scalability:**

- The system should be able to handle increased traffic during peak times (e.g. holidays).

**3. Security:**

- Use encryption to protect user data and payment information.
- Implement secure authentication mechanisms.
- Regularly update and patch software to protect against security vulnerabilities.

**4. Reliability:**

- Ensure the system is available 24/7 with minimal downtime.
- Implement data backup and recovery procedures.

## **5. Usability:**

- Design an Intuitive and user-friendly interface
- Ensure accessibility for users with disabilities.

## **6. Compatibility:**

- The website should be compatible with various browsers and devices (desktop, mobile, tablet).

## **7. Data Privacy:**

- Comply with data protection regulations (e.g., GDPR) regarding user data handling.

## **8. Load Handling:**

- Test the system's ability to handle a large number of concurrent users.

## **9. Payment Gateway Integration:**

- Ensure secure and reliable payment processing.

## **10. Feedback and Improvement:**

- Collect user feedback and use it for continuous improvement.

## **11. SEO Optimization**

- Optimize the website for search engines to improve visibility

## **12. Hosting and infrastructure**

- Choose a reliable hosting provider and infrastructure that can support the expected traffic.

## 2.4 Software and Hardware Requirements:

### 1. Software Requirements

- Java Spring: -

Java **Spring Framework** is one of the most popular frameworks for building Java applications. It makes development easier by providing tools and features for things like managing data, connecting to databases, building web apps, handling security, and much more.

The main idea of Spring is to reduce the complexity of writing Java applications by giving developers ready-made solutions instead of writing everything from scratch.

Spring helps developers create web applications, APIs, microservices, and even enterprise-level software in an easy and efficient way. It is open-source and has grown into a **complete ecosystem** with many sub-projects.

#### **Core Features of Spring: -**

- **Inversion of Control (IoC)** – Helps manage object creation and dependencies automatically.
- **Dependency Injection (DI)** – Makes the code loosely coupled, easier to test, and maintain.
- **Aspect-Oriented Programming (AOP)** – Useful for handling cross-cutting concerns like logging or security.
- **Lightweight & Flexible** – You only use the parts you need, not the whole framework.

- MySql: -

For PHP development, Dreamweaver only supports the MySQL database system. Other database systems such as Microsoft Access or Oracle are not supported. MySQL is open-source software you can download for free from the Internet for non-commercial use. It also assumes a MySQL database is set up

on your local computer or on a system to which you have network or FTP access. MySQL is popular for web applications and acts as the database component of the LAMP, MAMP, and WAMP platforms (Linux/Mac/Windows-Apache-MySQL-PHP/Perl/Python), and for open-source bug tracking tools like Bugzilla. Its popularity for use with web applications is closely tied to the popularity of PHP and Ruby on Rails, which are often combined with MySQL.

PHP and MySQL are essential components for running popular content management systems such as Joomla, e107, Word Press, and Drupal. Wikipedia runs on Media Wiki software, which is written in PHP and uses a MySQL. MySQL (pronounced/"my S-Q-L") is a multithreaded, multi-user SQL database management system (DBMS) which has more than 11 million installations. The basic program runs as a server providing multi-user access to a number of databases.

Originally financed in a similar fashion to the JBoss model, MySQL was owned and sponsored by a single for-profit firm, the Swedish company MySQL AB, now a subsidiary of Sun Microsystems, which holds the copyright to most of the codebase. The project's source code is available under terms of the GNU General Public License, as well as under a variety of proprietary agreements.

- **Java Script:** -

#### **JavaScript Origins:**

JavaScript was released by Netscape and Sun Microsystems in 1995.

However, JavaScript is not the same thing as Ia

- it is a programming language
- It is an interpreted language.
- It is object-based programming.
- is widely used and supported.

- It is accessible to the beginner

### **Uses of JavaScript:**

Use it to add multimedia elements with JavaScript you can show, hide, change, resize images, and create image rollovers You can create scrolling text across the status bar.

Create pages dynamically Based on the user's choices, the date, or other external data, JavaScript can produce pages that are customized to the user.

- **HTML:** -

HTML is the standard markup language for creating web pages and CSS and JavaScript it forms and of cornerstone technologies for the www. Web browsers receive HTML documents from a web server from local storage and render them into multimedia web pages, HTML describes the structure of a web page semantically and originally included rules for the appearance of the document

Hyper Text Markup Language (HTML) can embed programs written in a scripting-languages such as JavaScript which affect the behavior and content of web pages. Inclusion of CSS defines the look and layout of content The World Wide Web consortium (W3C), maintainer of both the HTML and the CSS standards, has encouraged the use of CSS over explicit presentational HTML since 1997

- **CSS:** -

Cascading Style Sheets (CSS) is a Style sheet language used for describing the presentation of a document written in a markup language. Although most often used to set the visual style of web pages and user interfaces written in HTML and XHTML, the

language can be applied to any XML document, including plain XML, SVG and XUL, and is applicable to rendering in speech, or on other media. Along with HTML and JavaScript, CSS is a cornerstone technology used by most websites to create visually engaging web pages, user interfaces for web applications, and user interfaces for many mobile applications

CSS is designed primarily to enable the separation of presentation and content, including aspects such as the layout, colors, and fonts.

## **2. Hardware Requirements: -**

Hardware Requirements for running this project are as following:

- ❖ **Operating System** : Windows 11 or above.
- ❖ **Processor** : Inter core i3 or above.
- ❖ **RAM** : 2GB or above.
- ❖ **Hard Disk** : 256GB or above.

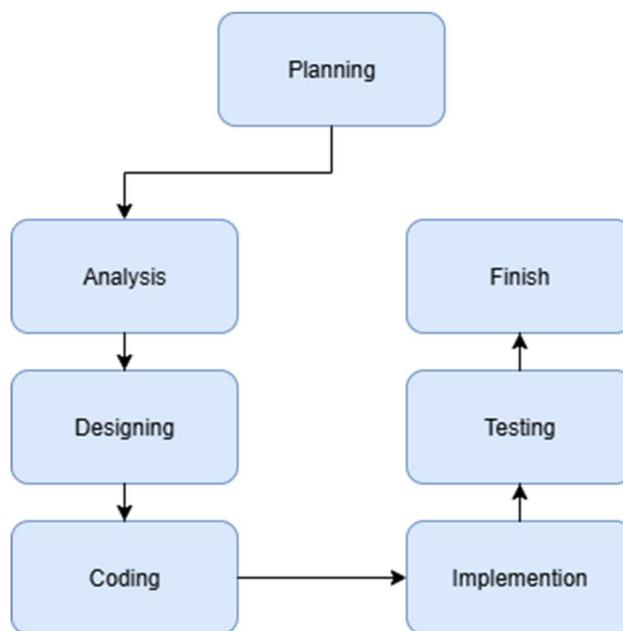
## 2.5 Project Planning:

No	Task Name	Start	Finish	Duration
1	Planning	01/07/2025	20/07/2025	20 days
2	Analysis	21/07/2025	30/07/2025	10 days
3	Designing	01/08/2025	10/08/2025	10 days
4	Coding	11/08/2025	20/08/2025	10 days
5	Implementation	21/08/2025	20/09/2025	30 days
6	Testing	21/09/2025	25/09/2025	5 days

## 2.6 Project Scheduling:

### PERT Chart:

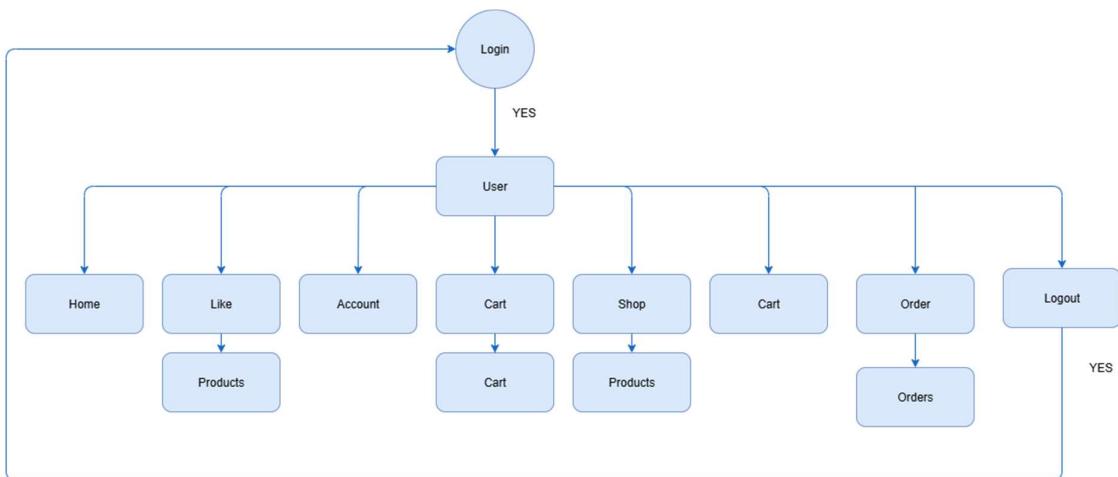
This chart represents the development of our system date wise.



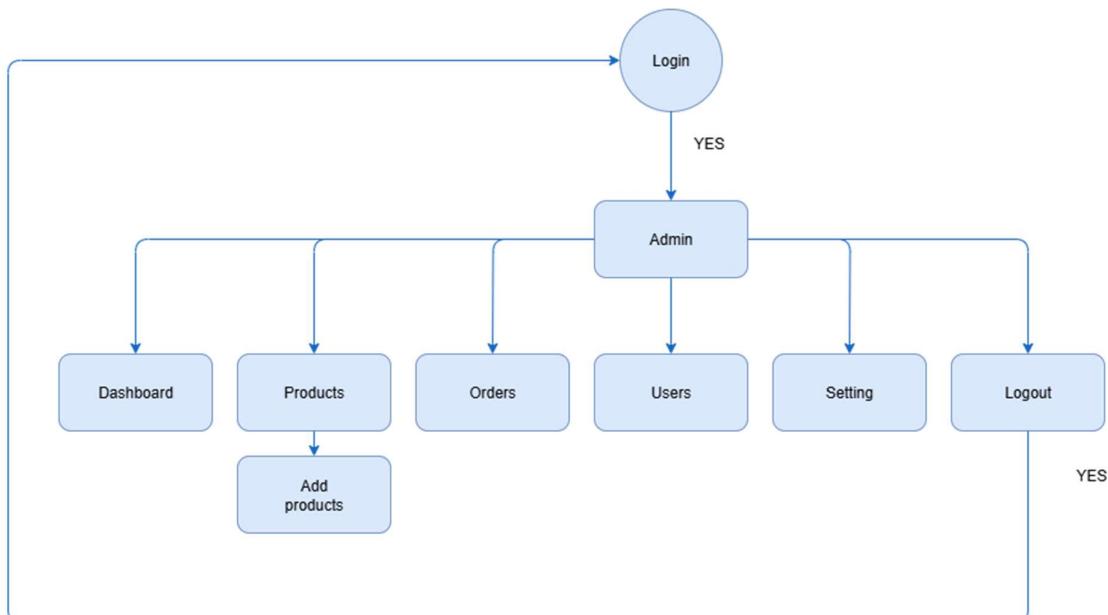
### 3. System Design:

#### 3.1 System Flow Diagram:

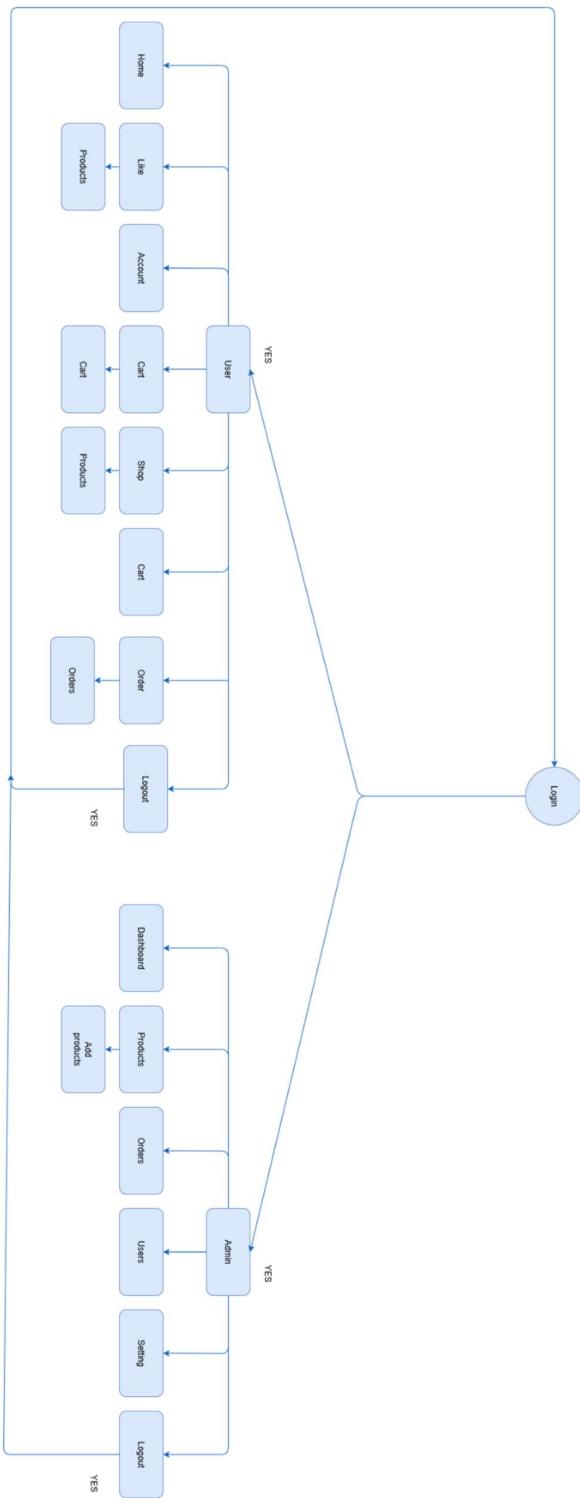
##### 3.1.1 User Dataflow diagram:



##### 3.1.2 Admin Dataflow diagram:

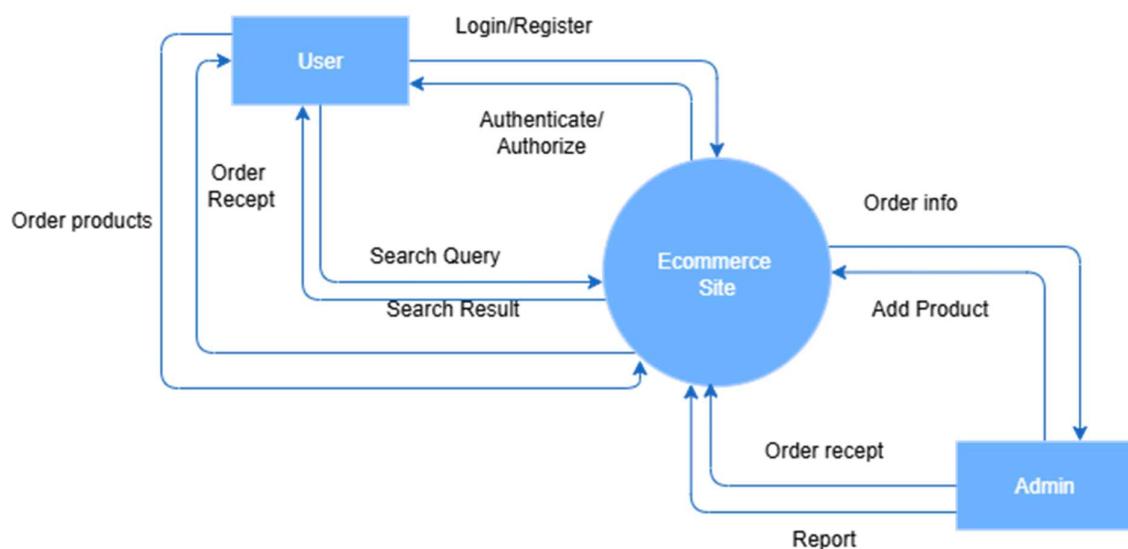


### 3.1.3 System Dataflow diagram:

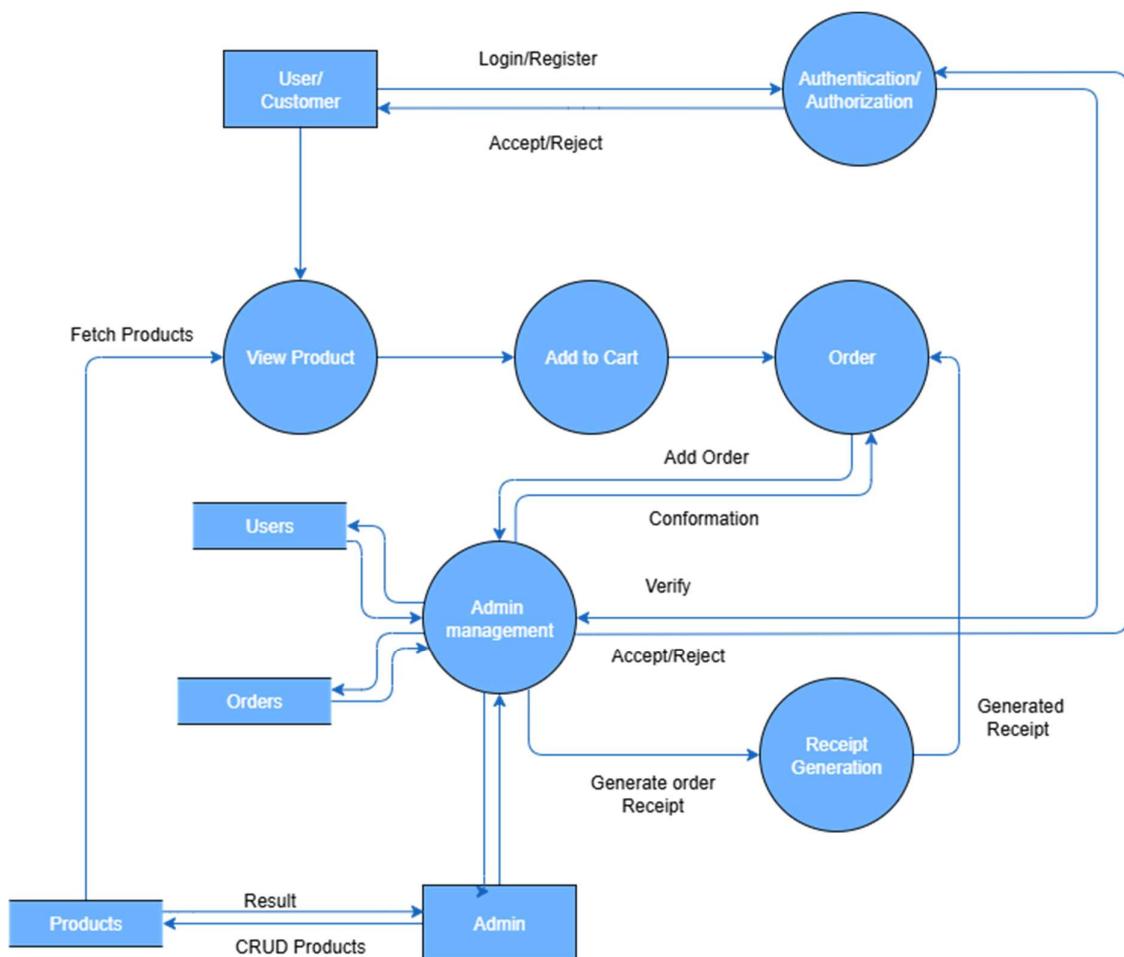


## 3.2 Data Flow Diagram:

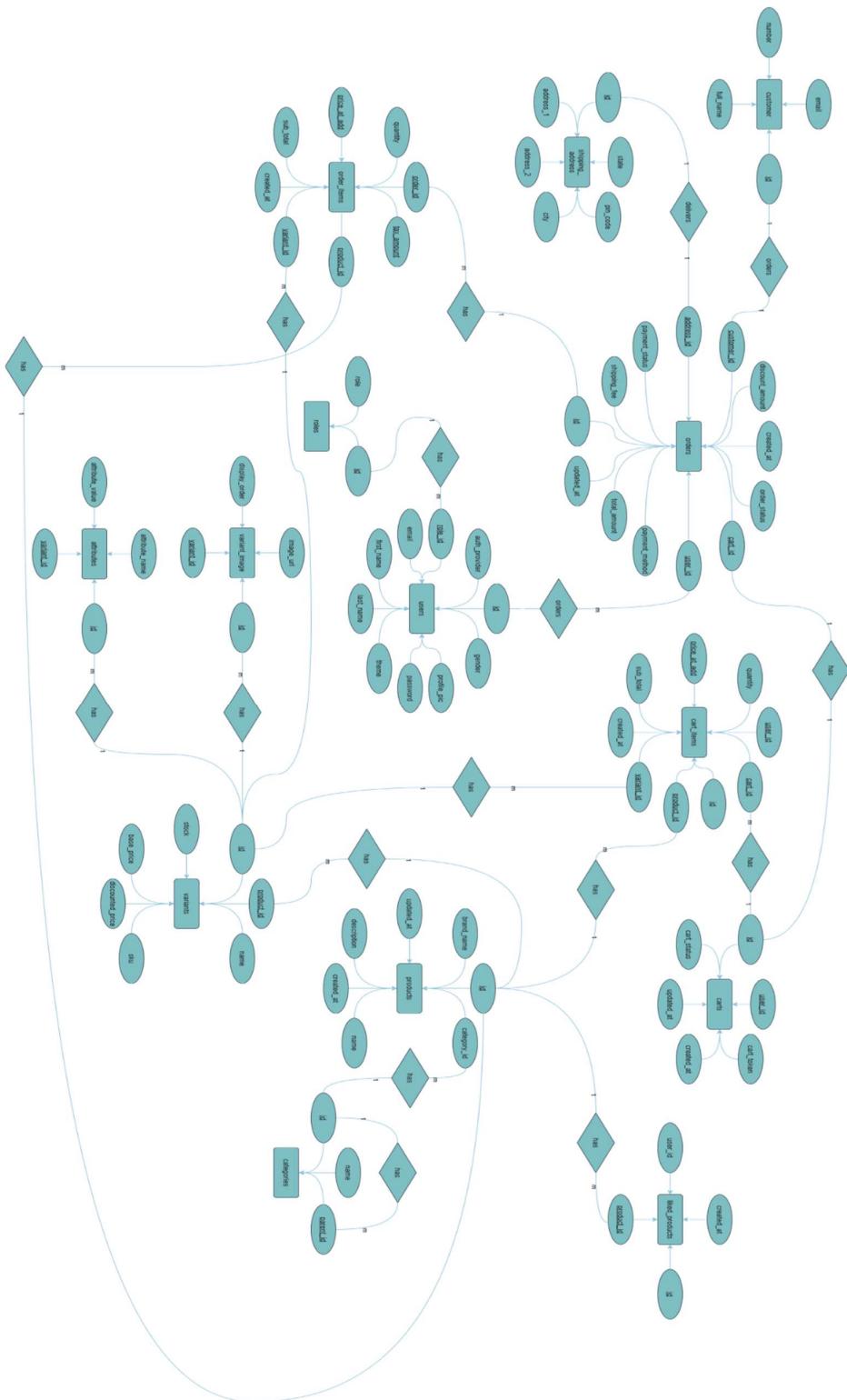
### 3.2.1 DFD Level 0



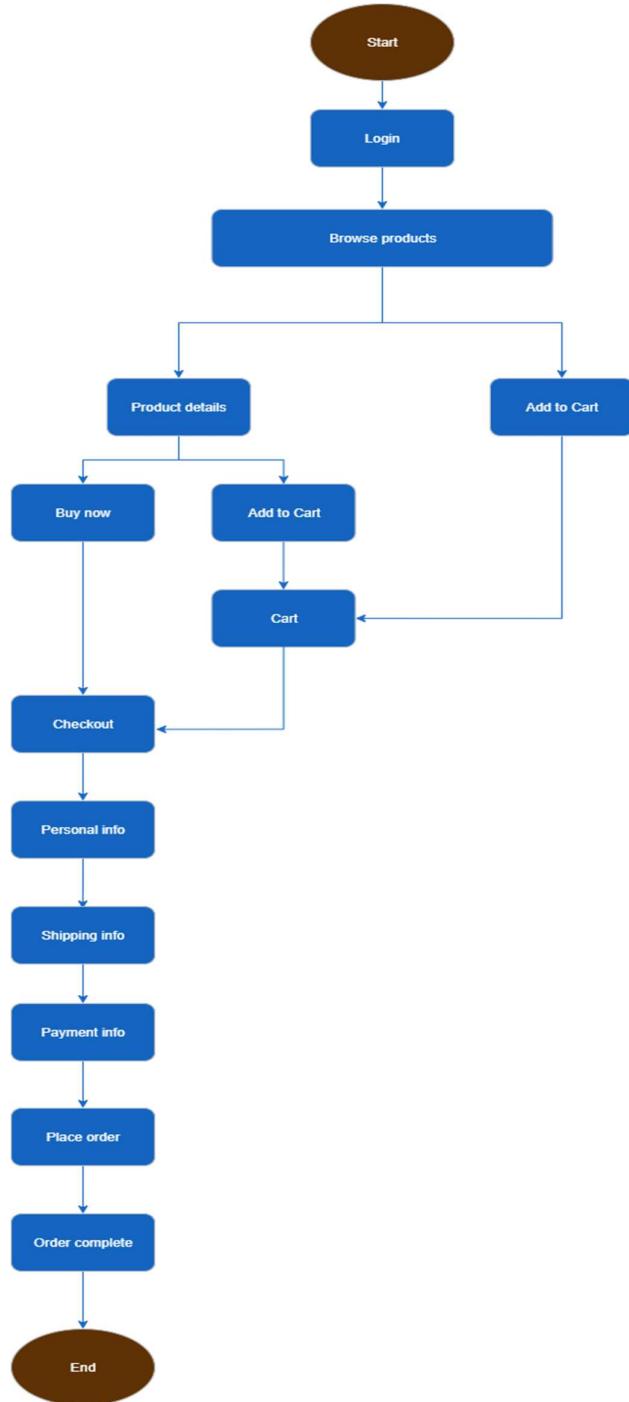
### 3.2.2 DFD Level 1



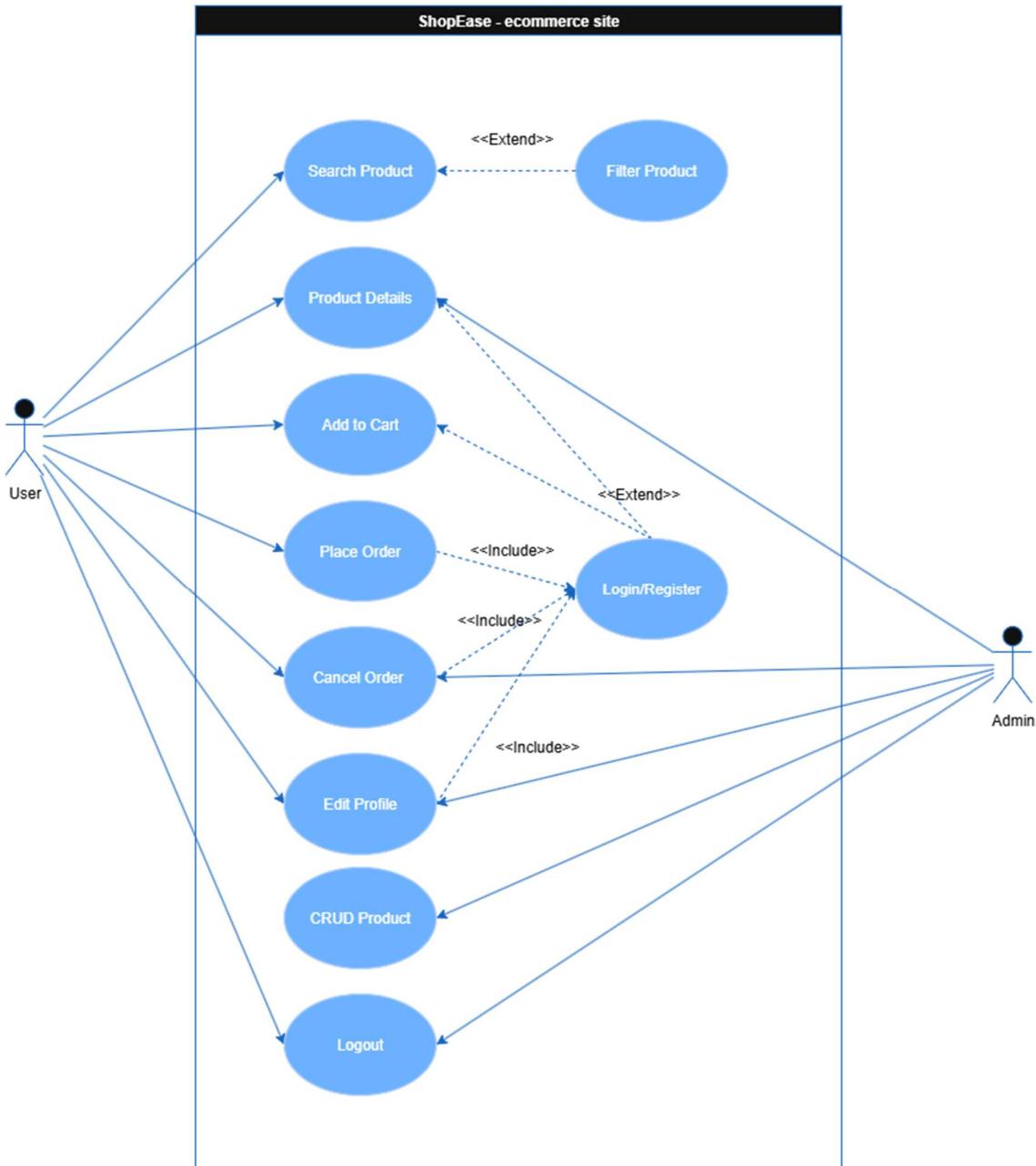
### 3.3 ER Diagram:



### 3.4 Activity Diagram:



### 3.5 Use Case Diagram:



## 3.6 Gantt Diagram:



## 4. Database Design:

### 4.1 Table Details:

#### 4.1.1 User: -

⇒ Stores website user data.

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
1	user_id 📜	int(11)		No	None		AUTO_INCREMENT	
2	auth_provider	varchar(255)	utf8mb4_general_ci	Yes	NULL			
3	email	varchar(255)	utf8mb4_general_ci	No	None			
4	first_name	varchar(255)	utf8mb4_general_ci	Yes	NULL			
5	gender	varchar(255)	utf8mb4_general_ci	Yes	NULL			
6	last_name	varchar(255)	utf8mb4_general_ci	Yes	NULL			
7	password	varchar(255)	utf8mb4_general_ci	Yes	NULL			
8	profile_pic	varchar(255)	utf8mb4_general_ci	Yes	NULL			
9	role_id 🔑	bigint(20)		Yes	NULL			
10	theme_preference	enum('DARK', 'LIGHT', 'SYSTEM')	utf8mb4_general_ci	Yes	NULL			

#### 4.1.2 Cart: -

⇒ Stores Cart items, cart status and user id.

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
1	id 📜	bigint(20)		No	None		AUTO_INCREMENT	
2	cart_status	enum('ABANDONED', 'ACTIVE', 'CONVERTED')	utf8mb4_general_ci	Yes	NULL			
3	cart_token	varchar(255)	utf8mb4_general_ci	Yes	NULL			
4	created_at	datetime(6)		No	None			
5	updated_at	datetime(6)		Yes	NULL			
6	user_id 📜	int(11)		Yes	NULL			

#### 4.1.3 cart items: -

⇒ This table stores cart item info like product id, variant id, price, quantity, sub-total.

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
1	<b>id</b>	bigint(20)			No	None		AUTO_INCREMENT
2	<b>added_at</b>	datetime(6)			No	None		
3	<b>price_at_addition</b>	decimal(38,2)			No	None		
4	<b>quantity</b>	int(11)			No	None		
5	<b>sub_total</b>	decimal(38,2)			No	None		
6	<b>cart_id</b>	bigint(20)			No	None		
7	<b>variant_id</b>	bigint(20)			No	None		
8	<b>product_id</b>	bigint(20)			No	None		

#### 4.1.4 Categories: -

⇒ Stores categories of product. Categories can have self-parent foreign key.

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
1	<b>category_id</b>	bigint(20)			No	None		AUTO_INCREMENT
2	<b>name</b>	varchar(255)	utf8mb4_general_ci		Yes	NULL		
3	<b>parent_category_id</b>	bigint(20)			Yes	NULL		

#### 4.1.5 Products: -

⇒ this table contains all info about products.

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
1	<b>product_id</b>	bigint(20)			No	None		AUTO_INCREMENT
2	<b>brand_name</b>	varchar(255)	utf8mb4_general_ci		Yes	NULL		
3	<b>created_at</b>	datetime(6)			Yes	NULL		
4	<b>description</b>	text	utf8mb4_general_ci		Yes	NULL		
5	<b>name</b>	varchar(255)	utf8mb4_general_ci		Yes	NULL		
6	<b>updated_at</b>	datetime(6)			Yes	NULL		
7	<b>category_id</b>	bigint(20)			No	None		

#### 4.1.6 product\_variants: -

⇒ each product also has at least one variant.

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
1	variant_id 🍔	bigint(20)		No	None			AUTO_INCREMENT
2	base_price	decimal(10,2)		Yes	NULL			
3	discounted_price	decimal(10,2)		No	None			
4	name	varchar(255)	utf8mb4_general_ci	Yes	NULL			
5	sku	varchar(255)	utf8mb4_general_ci	Yes	NULL			
6	stock	bigint(20)		No	None			
7	product_id 🔑	bigint(20)		No	None			

#### 4.1.7 variant\_images: -

⇒ This table contain info about variant images.

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
1	image_id 🍔	bigint(20)		No	None			AUTO_INCREMENT
2	display_order	int(11)		No	None			
3	img_url	varchar(255)	utf8mb4_general_ci	No	None			
4	variant_id 🔑	bigint(20)		Yes	NULL			

#### 4.1.8 variant\_attributes: -

⇒ each product can have attribute like color,size,etc.

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
1	id 🍔	bigint(20)		No	None			AUTO_INCREMENT
2	attribute_name	varchar(255)	utf8mb4_general_ci	No	None			
3	attribute_value	varchar(255)	utf8mb4_general_ci	No	None			
4	variant_id 🔑	bigint(20)		Yes	NULL			

#### 4.1.9 role: -

⇒ this table contains info about user roles.

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
1	role_id 🍔	bigint(20)		No	None			AUTO_INCREMENT
2	role	varchar(255)	utf8mb4_general_ci	No	None			

#### 4.1.10 liked\_products: -

⇒ liked product info will stored in this table.

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
1	<b>id</b>	bigint(20)			No	None		AUTO_INCREMENT
2	<b>created_at</b>	datetime(6)			Yes	NULL		
3	<b>product_id</b>	bigint(20)			No	None		
4	<b>user_id</b>	int(11)			No	None		

#### 4.1.11 Orders: -

⇒ All order related info will be stored in this table.

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
1	<b>order_id</b>	bigint(20)			No	None		AUTO_INCREMENT
2	<b>created_at</b>	datetime(6)			Yes	NULL		
3	<b>discounted_amount</b>	decimal(10,2)			Yes	NULL		
4	<b>order_status</b>	enum('CANCELLED', 'DELIVERED', 'PAID', 'PENDING')	utf8mb4_general_ci		Yes	NULL		
5	<b>payment_method</b>	enum('CARD', 'COD', 'UPI', 'WALLET')	utf8mb4_general_ci		Yes	NULL		
6	<b>payment_status</b>	enum('FAILED', 'PAID', 'PENDING', 'REFUNDED')	utf8mb4_general_ci		Yes	NULL		
7	<b>shipping_fee</b>	decimal(10,2)			Yes	NULL		
8	<b>total_amount</b>	decimal(38,2)			Yes	NULL		
9	<b>updated_at</b>	datetime(6)			Yes	NULL		
10	<b>cart_id</b>	bigint(20)			No	None		
11	<b>customer_id</b>	bigint(20)			No	None		
12	<b>shipping_address_id</b>	bigint(20)			No	None		
13	<b>user_id</b>	int(11)			No	None		

#### 4.1.12 order\_items: -

⇒ order item table contain info about order item like product and variant info.

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
1	order_item_id	bigint(20)			No	None		AUTO_INCREMENT
2	price	decimal(10,2)			Yes	NULL		
3	quantity	int(11)			No	None		
4	sub_total	decimal(10,2)			Yes	NULL		
5	tax_amount	decimal(10,2)			Yes	NULL		
6	order_id	bigint(20)			Yes	NULL		
7	variant_id	bigint(20)			Yes	NULL		
8	product_id	bigint(20)			Yes	NULL		

#### 4.1.13 Customers: -

⇒ This is order customer table this contain info about customers.

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
1	id	bigint(20)			No	None		AUTO_INCREMENT
2	email	varchar(255)	utf8mb4_general_ci		No	None		
3	full_name	varchar(255)	utf8mb4_general_ci		No	None		
4	mobile_number	varchar(255)	utf8mb4_general_ci		No	None		

#### 4.1.14 shipping\_address: -

⇒ this table is about order shipping address.

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra
1	id	bigint(20)			No	None		AUTO_INCREMENT
2	address_line_one	varchar(255)	utf8mb4_general_ci		No	None		
3	address_line_two	varchar(255)	utf8mb4_general_ci		Yes	NULL		
4	city	varchar(255)	utf8mb4_general_ci		No	None		
5	pin_code	varchar(255)	utf8mb4_general_ci		No	None		
6	state	varchar(255)	utf8mb4_general_ci		No	None		

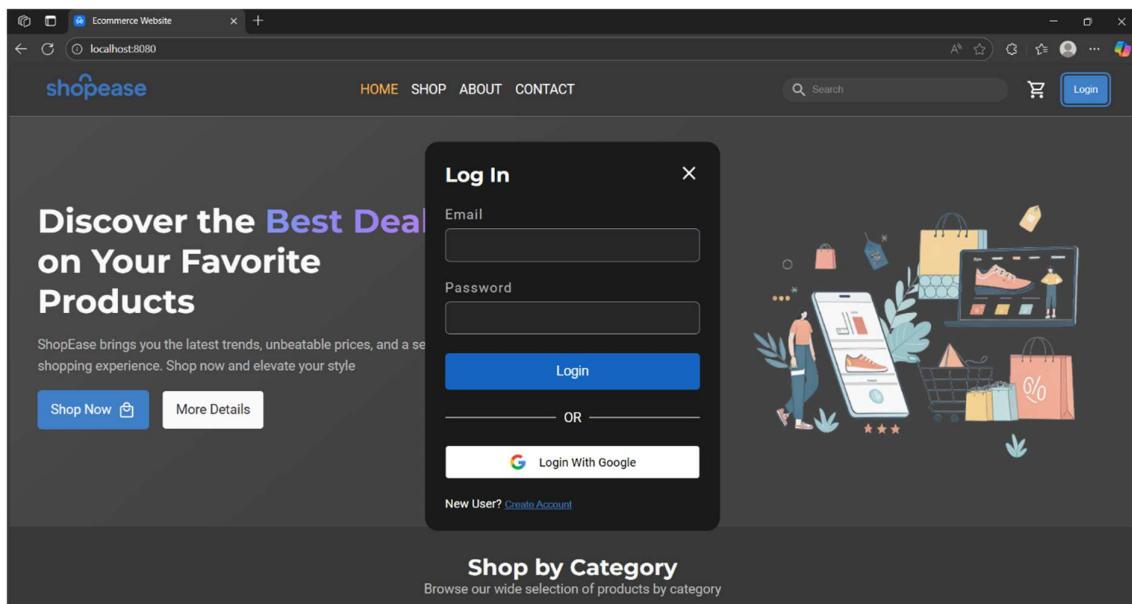
## 5. System Design and Coding:

### 5.1 Form Designing:

#### 5.1.1 User and Admin Login:

This is User login view user can either login with email & password or using google.

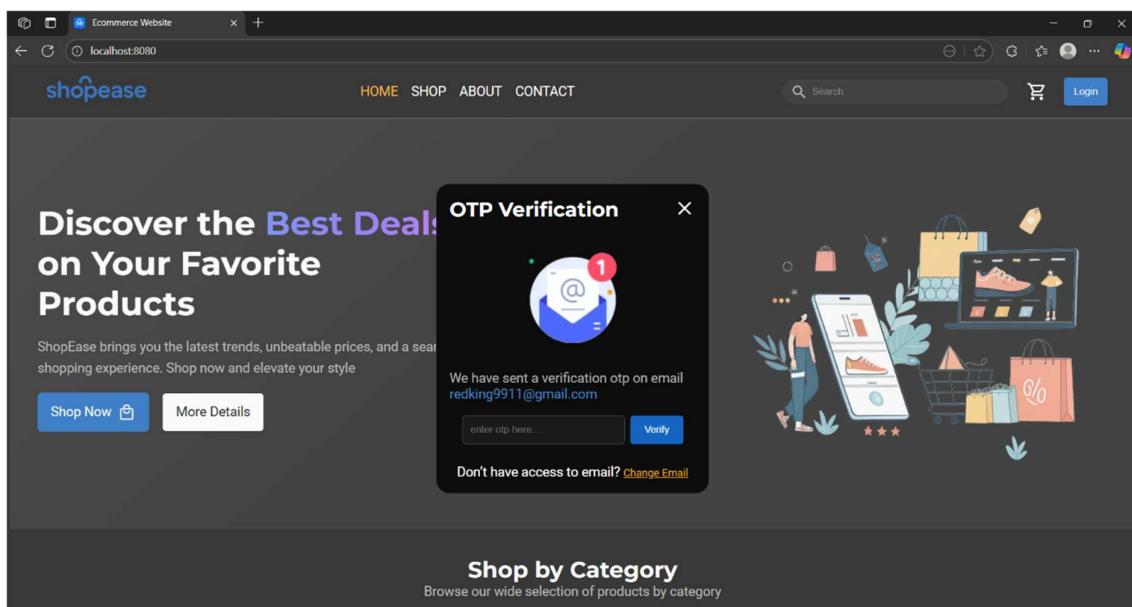
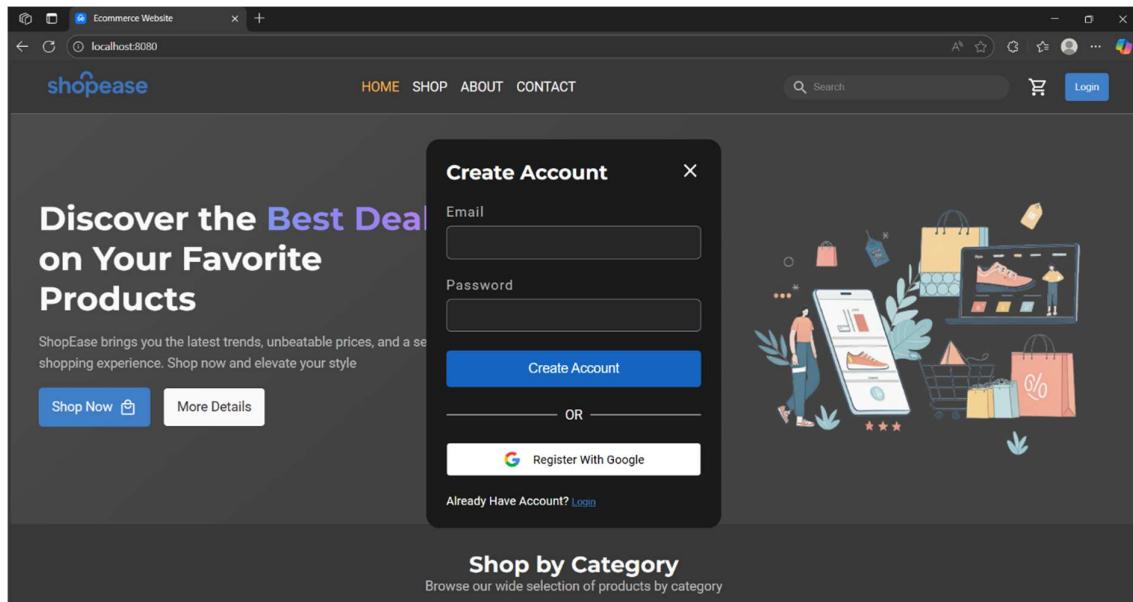
User can directly login with google. And user is allowed to login with both google and email & password. For e.g. first-time user can login with google and then next time login using email & password.



#### 5.1.2 User and Admin Registration

This is user registration view user can register using either email & password or using google.

If user register using email and password then an OTP will be sent to the given email and user had to enter that OTP input and verify that.



## 5.1.3 Home page: -

⇒ this is the first page user see when open website

The screenshot displays the homepage of the ShopEase e-commerce platform. At the top, there's a navigation bar with links to HOME, SHOP, ABOUT, CONTACT, and DASHBOARD. A search bar and a shopping cart icon are also present. The main header features the text "Discover the Best Deals on Your Favorite Products". Below this, a sub-header says "Shop by Category" with a note to "Browse our wide selection of products by category". There are six categories represented by icons: Men, Women, Electronic, Home, Beauty, and Childrens. The "Featured Products" section shows four identical items: "Snickers Off-White 2024" by NIKE, priced at \$40.00 (原价 \$60.00), with a 5-star rating from 5k reviews. Each product card includes an "Add To cart" button. A "Special Sale Up to 50% Off" banner is visible, stating "Limited time discounts across a wide range of categories. Don't miss out!" with a "Shop Now" button and a decorative sale icon. The "Best Sellers" section shows five more "Snickers Off-White 2024" items, each with a 5-star rating from 5k reviews and an "Add To cart" button. At the bottom, there are footer sections for "ShopEase" (described as a one-stop destination for shopping needs), "Quick Links" (Home, Shop, About us, Contact), "Customer Service" (My Account, Order Tracking, Wishlist, FAQ), and "Contact Us" (Address: 123 My St, Gujarat, 362245, India; Phone: +1 (555) 123-4567; Email: valagautam220@gmail.com).

## 5.1.4 Shop Page:

⇒ This is the shop page. In this page user can search and filter product. User can directly add product to cart from here.

The screenshot shows the Shopease shop page. At the top, there's a navigation bar with links for HOME, SHOP (which is highlighted in orange), ABOUT, CONTACT, and DASHBOARD. A search bar and a shopping cart icon are also at the top. Below the navigation, a breadcrumb trail shows 'Home / Shop'. The main section is titled 'All Products' and contains a sub-instruction: 'Check each product page for other buying options. Price and other details may vary based on product size and color.' There are two products displayed: a 'tshirt' (MYO, ₹1000) and an 'hp laptop' (MYO, ₹50000). Each product card includes an 'Add to Cart' button. On the left, there's a 'Filters' button. On the right, there's a 'sorted by' dropdown with a 'sort' button. At the bottom, there are navigation buttons for 'Previous', '1', and 'Next'.

**ShopEase**  
Your one-stop destination for all your shopping needs. Quality products at competitive prices.

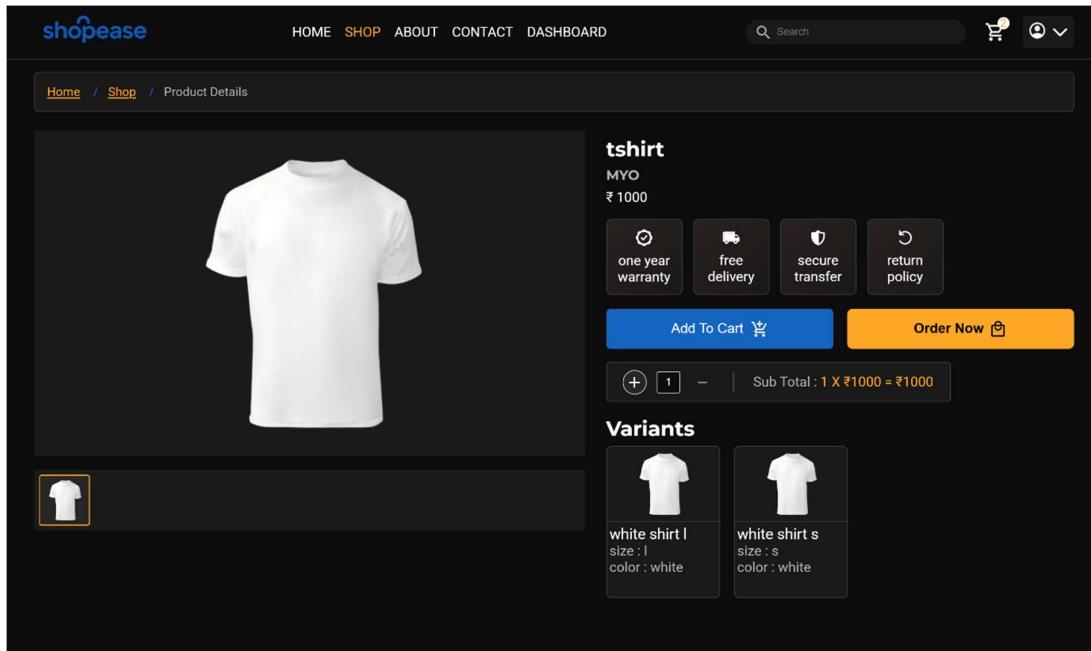
**Quick Links**  
Home  
Shop  
About us  
Contact

**Customer Service**  
My Account  
Order Tracking  
Wishlist  
FAQ

**Contact Us**  
123 My St, Gujarat, 362245, India  
+1 (555) 123-4567  
valagautam220@gmail.com

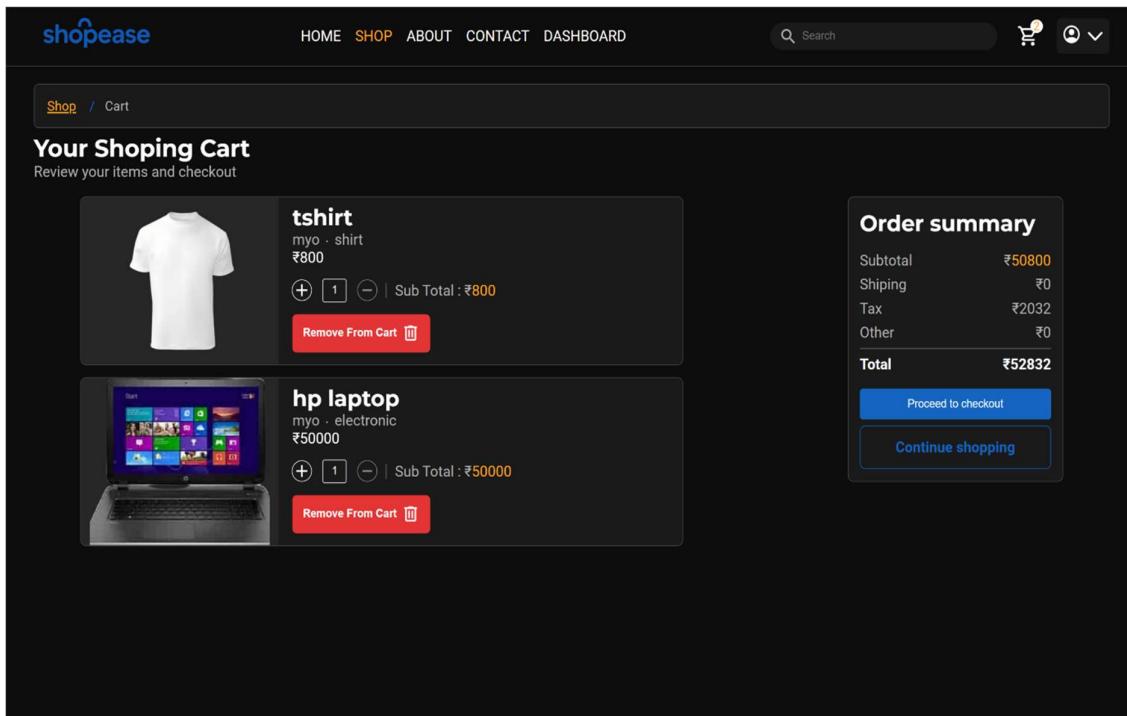
## 5.1.5 Product Details Page:

- ⇒ This is details page here user can get more details about the product and add product to cart or order it.
- ⇒ User can also select quantity and product variant.



## 5.1.6 Cart Page: -

⇒ After adding product to cart user can see their product added to cart in this page from this page user can remove product from cart or change quantity. After that user can go to checkout page.



### 5.1.7 Checkout Page: -

⇒ After selecting products user can place order from this page. User have to fill basic information like personal info, shipping info and payment info.

shopease
HOME
SHOP
ABOUT
CONTACT
DASHBOARD

 Search

### Checkout

**Personal Information**

**Full Name**  

First and Last name

**Phone Number**  

+91 1234567890

**Shipping Information**

**Address Line 1**  

Street Address

**Address Line 2**  

Street Address

**State**  

State

**City**  

City

**Pin Code**  

Pin Code

**Shipping Option**

- Standard Shipping (5-7 days) Free
- Express Shipping (2-3 days) ₹120.00
- Overnight Shipping (1 day) ₹250.00

**Payment Option**

- Cash on Delivery
- UPI
- Credit/Debit Card
- Net Banking

**Order Summary**

	<b>tshirt</b>	₹800	Quantity : 1	Total : ₹800
	<b>hp laptop</b>	₹50000	Quantity : 1	Total : ₹50000
SubTotal				₹ 50800
Shipping				₹0.00
Tax				₹5080
<b>Total</b>				<b>₹ 55880</b>

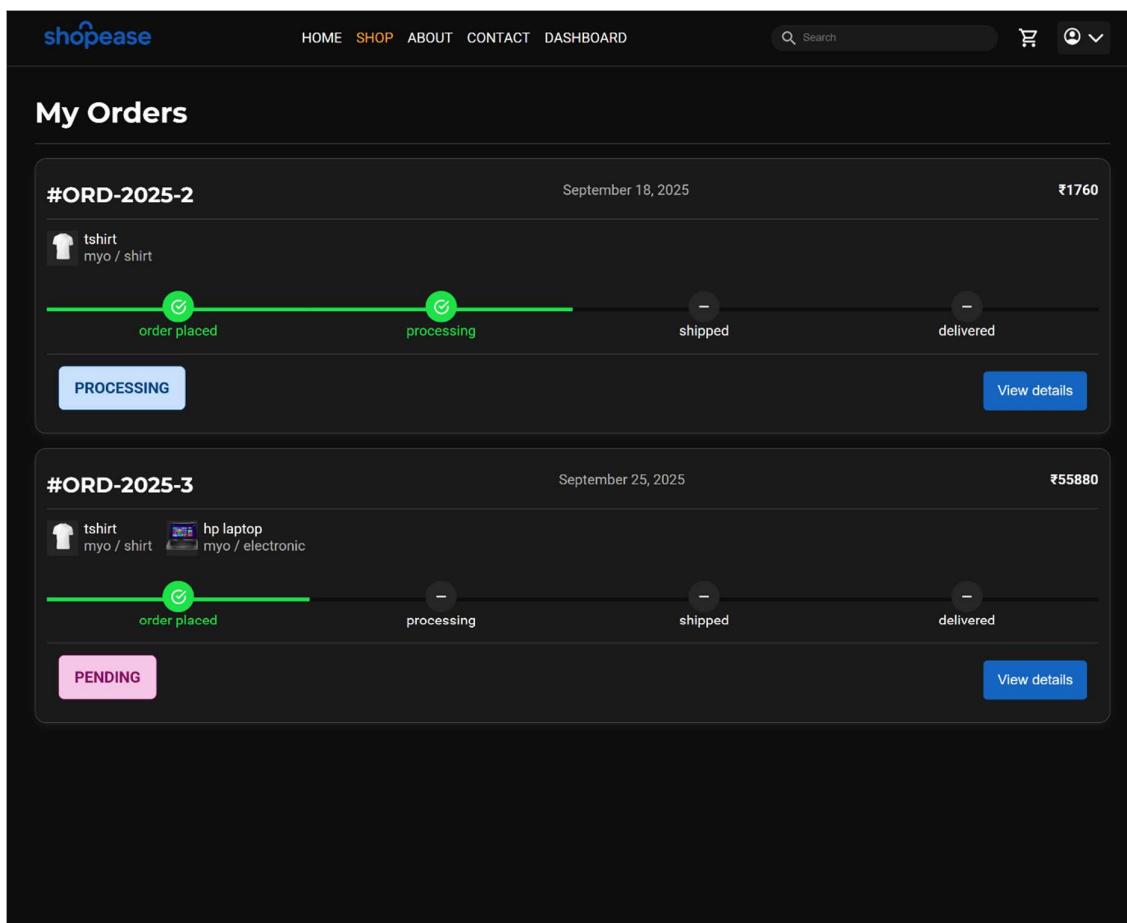
I agree to the Terms and Conditions

Page | 44

Vala Gautam

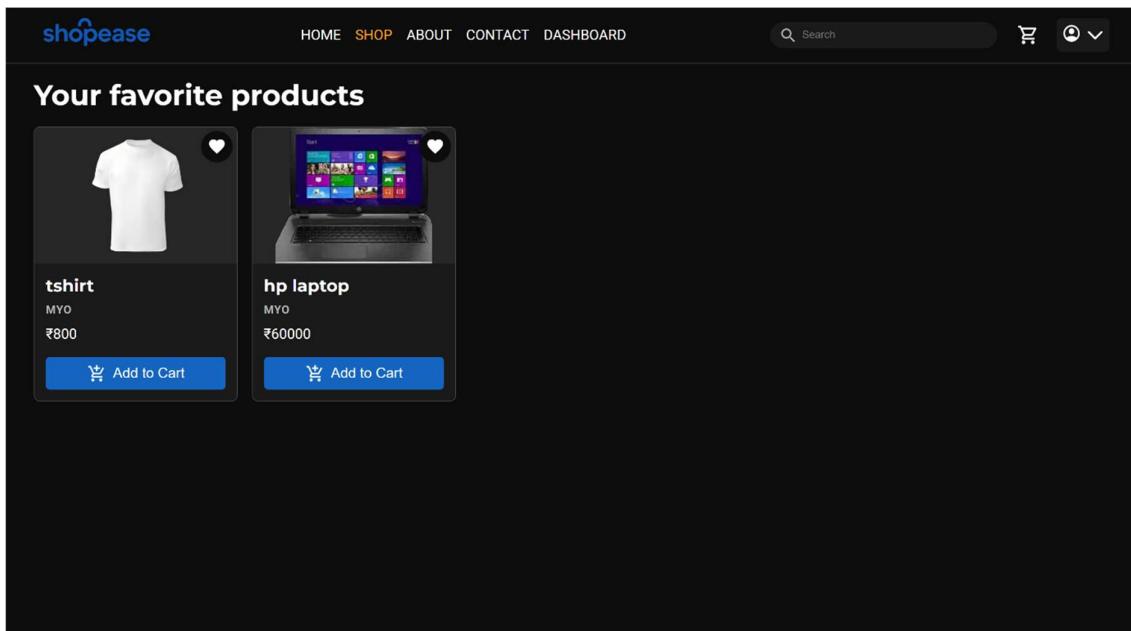
## 5.1.8 Orders Page: -

⇒ After placing order User can track their orders from this page. User can also get more info by clicking on view details.



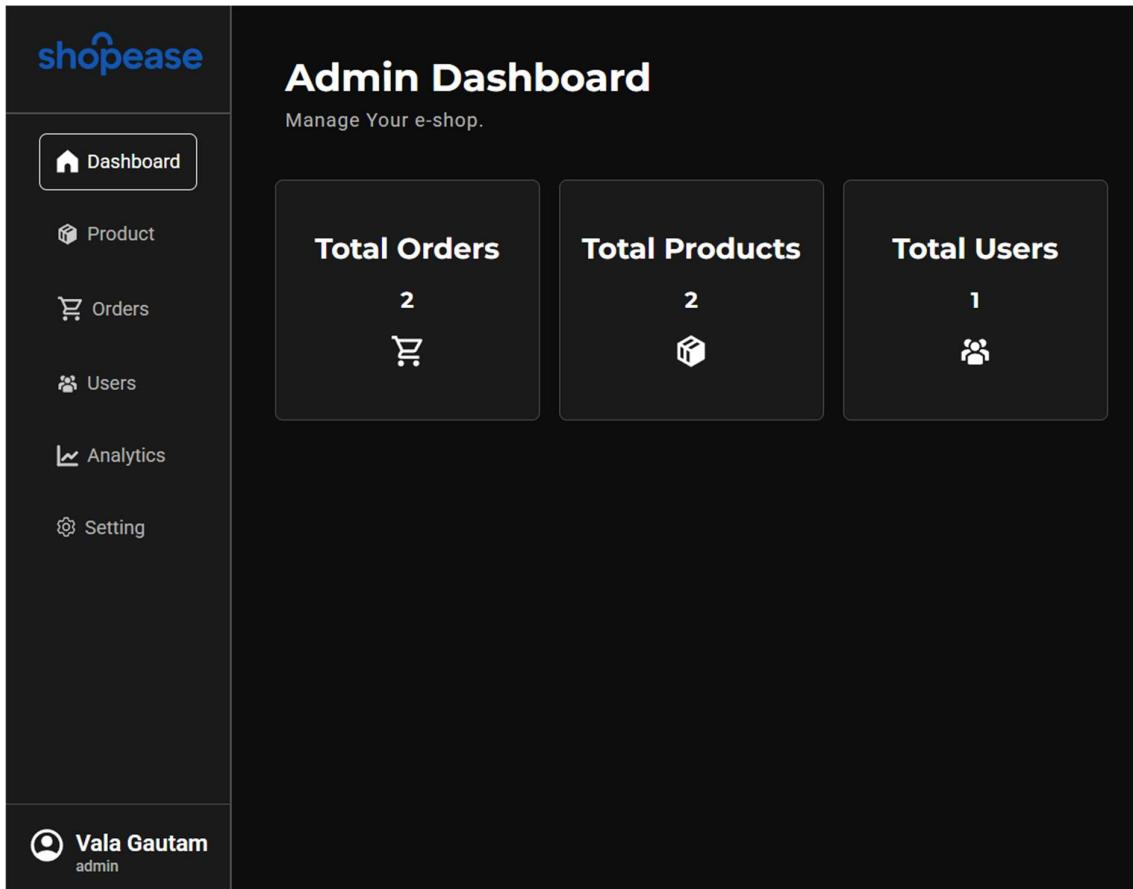
## 5.1.9 Favorite Products Page: -

⇒ User can like products. All liked product can be seen in this page.



## 5.1.10 Admin Dashboard: -

- ⇒ This is admin dashboard only admin can visit this page.
- ⇒ From this page admin can get basic info like orders, products, users info.



### 5.1.11 Admin Products: -

⇒ Admin can add,view,delete, update product from here.

The screenshot shows the 'Product Management' section of the shopease admin dashboard. On the left sidebar, there are navigation links: Dashboard, Product (which is selected and highlighted in blue), Orders, Users, Analytics, and Setting. The main area has a title 'Product Management' and a subtitle 'Manage your products efficiently.' Below this is a search bar with placeholder 'Search products...' and three filter dropdowns: 'Filter by category', 'Filter by price', and 'Filter by stock'. A large table lists products with columns: PRODUCT, CATEGORY, BRAND, and ACTIONS. The first two rows are collapsed. The third row shows 'Name: Hp 15s Laptop', 'SKU: H-15s-W', 'Stock: -1', 'Base Price: \$50000', 'Discounted Price: \$50000', 'Attributes: Color: White', and 'Actions' with edit and delete icons. The fourth row shows 'Name: Hp 15s Laptop', 'SKU: H-15s-S', 'Stock: 50', 'Base Price: \$60000', 'Discounted Price: \$60000', 'Attributes: Color: Silver', and 'Actions' with edit and delete icons. At the bottom right of the table is a 'Load More' button.

### 5.1.12 Admin Product Add(Basic Info): -

⇒ Add basic info about product.

The screenshot shows the 'Add Product' form for Step 1: Basic Information. The top navigation bar includes a back button '← Go To Products'. The form has three steps: 1. Basic Info (selected), 2. Variants, and 3. Images. The 'Basic Info' step contains fields: Product Name (female shoes), Product Description (New Nike Female Pink shoes), Select Category (female), Add New (button), Select Brand (other), and Nike. At the bottom are 'Previous' and 'Next' buttons, along with 'Save as draft' and 'Next' buttons.

### 5.1.13 Admin Products Add(Variant info):

⇒ Add variant info. Like name, price, stock.

Variant Name	Attributes(name:value)	SKU	Base-Price	Discounted-Price	Stock	Action
nike pink female shoes	color: pink size: m	n-p-s-m	50000	50000	50	<span style="color: red;">Delete</span>
nike pink female shoes	color: pink size: l	n-p-s-l	45000	45000	50	<span style="color: red;">Delete</span>

[+ Add Variant](#)

[← Previous](#) [Save as draft](#) [Next →](#)

### 5.1.14 Admin Products Add(Images):

- ⇒ Add images for each variant.
- ⇒ Can also add default image for all product.
- ⇒ Only images are supported not video.

[← Go To Products](#)

### Add Product

Step :1 Basic Information

1 Basic Info      2 Variants      3 Images

Default >  
 n-p-s-m >  
 n-p-s-l >

**Images for Default(optional)**

Drag and drop images here or click to upload

[Upload Images](#)



[← Previous](#) [Save as draft](#) [submit →](#)

### 5.1.15 Admin Orders: -

⇒ Admin can view, delete or update order from this page.

**shopease**

[Dashboard](#) [Product](#) [Orders](#) [Users](#) [Analytics](#) [Setting](#)

**Order Management**  
Manage orders efficiently.

Search Orders... [Filter by Status](#)

order id	customer name	Date	total	order status	payment status	Action
#ORD-2	vala gautam	September 18, 2025	₹1760	PROCESSING	PENDING	 
#ORD-3	vala gautam	September 25, 2025	₹55880	PENDING	PENDING	 

Vala Gautam admin

### 5.1.16 Admin Users: -

- ⇒ This page display all user of webiste.
- ⇒ Admin can remove user or modify users roles.

The screenshot shows the 'User Management' section of the shopease platform. On the left is a dark sidebar with navigation links: Dashboard, Product, Orders, **Users**, Analytics, and Setting. The 'Users' link is highlighted with a blue border. At the bottom of the sidebar is a user profile for 'Vala Gautam' with the role 'admin'. The main area has a dark header with the title 'User Management' and the subtitle 'Manage user efficiently.' Below the header is a search bar with placeholder text 'Search Users...' and a dropdown menu labeled 'Filter by role'. A table lists one user entry:

email	first name	last name	role	action
valagautam220@gmail.com	Vala	Gautam	admin	

## 6. Project Testing and Implementation:

### 6.1 Project Testing:

Testing is a process to show the corrections of the program. Testing is needed to show completeness, to improve the quality of the software and to provide the maintenance aid. Some testing standards are therefore necessary reduce the testing costs and operation time. Testing software extends throughout the coding phase and it represents the ultimate review of configurations, design and coding. Based on the way the software reacts to these testing. We can decide whether the configuration that has been built is study or not. All components of an application are tested, as the failure to do so many results in a series of bugs after the software is put to use.

Since so much lays on the website, it is critical that it undergoes thorough testing. E-commerce sites are website to. So they undergo all the typical test types

- Functional Testing
- Usability Testing
- Security Testing
- Performance Testing
- Database Testing

Below, we listed important segment and test cases for our website:

#### ➤ Home page:

Home pages of retail sites are busy. They have a lot going on. Almost all of them have a products image.

#### ➤ Product details page:

Once a user finds a product either through browsing or by clicking on it from the home page, the user will be taken to the product information page.

## 6.2 Testing Strategy:

There are types of testing that we implement. They are as follows:

While deciding on the focus of testing activities, study project priorities. For example, for an on-line system, pay more attention to response time. Spend more time on the features used frequently. Decide on the effort required for testing based on the usage of the system. If the system is to be used by a large number of users, evaluate the impact on users due to a system failure before deciding on the effort.

This creates two problems.

- Time delay between the cause and appearance of the problem.
- The effect of the system errors on files and records within the system.

The purpose of the system testing is to consider all the likely variations to which it will be subjected and push the systems to limits.

The testing process focuses on the logical intervals of the software ensuring that all statements have been tested and on functional intervals is conducting tests to uncover errors and ensure that defined

input will produce actual results that agree with the required results. Program level testing, module level testing integrated and carried out.

There are two major type of testing they are:

- White Box Testing
- Black Box Testing.

### 6.3 White Box Testing:

White box sometimes called "Glass box testing" is a test case design uses the control structure Of the procedural design to drive test case. Using white box testing methods, the following tests where made on the system

- All independent paths within a module have been exercised once. In our system, ensuring that case was selected and executed checked all case structures. The bugs that were prevailing in some part of the code where fixed
- All logical decisions were checked for the truth and falsity of the values

### 6.4 Black Box Testing:

Black box testing focuses on the functional requirements of the software. This is black box testing enables the software engineering to derive a set of input conditions that will fully exercise all functional requirements for a program. Black box testing is not an alternative to white box testing rather it is complementary approach that is likely to uncover a different class of errors that white box methods like.

- Interface errors.
- Performance in data structure.
- Performance errors.
- Initializing and termination errors.

➤ **User:**

<b>Modules/ Functionality To be tested</b>	<b>Input</b>	<b>Output</b>	<b>Test condition</b>	<b>Result</b>
Login	Enter user email and password Or via google	Loggin into home page of user	An Error message should be displayed if any of the fields are incorrect or empty, email and password should match	Pass
Logout	Click on logout button then a conformation page	Logout the current user	By clicking to logout and then conformatio button user will be logout from website	Pass
Order Product	Click on buy now button	Move to cart page also product will be added to cart	User can only click on buy now button if product is in stock other wise button will be disabled	Pass
Add to Cart	Click on add to cart button	Product will be added to cart with selected quantity	User can only click on add to cart button if product is in stock	Pass
Check out	Click on checkout button located in cart page	User will be redirected to checkout page with products added in cart	User can only click on checkout button if there is atleast one product in cart	Pass

Place order	Click on place order button in order page	If every thing is ok then order will be placed and a success alert will be shown	User had to fill all the necessary information in order form. If any field is empty user cannot submit the form	Pass
-------------	---	--	---	------

➤ Admin:

Modules/ Functionality To be tested	Input	Output	Test condition	Result
Login	Enter user email and password Or via google	Loggin into home page of user	An Error message should be displayed if any of the fields are incorrect or empty, email and password should match	Pass
Logout	Click on logout button then a conformation page	Logout the current user	By clicking to logout and then conformatio button user will be logout from website	Pass
Cancle Order	Click on cancle button	Cancle customers order	Admin Can only cancle product if product is not deliverd	Pass
Add Product	Click on add Product button	Product will be added to To Products table	Admin can only add product if all field are not empty	Pass

update Product	Click on edit Product button	Admin can edit product.edited changes will reflect.	Admin can only change allowd fileds. And all fields must not be empty	Pass
Delete Product	Click on delete product	If admin delete the product, product will be removed forever.	Product only get deleted if it not in someonces inventory	Pass

## 7. Bibliography

### 7.1 Bibliography info

A bibliography is a list of sources that you have referred to, cited, or consulted when creating a piece of academic work, research paper, book, or article. It allows readers to track down the sources you used and gives credit to the original authors.

- [www.tutorialspoint.com](http://www.tutorialspoint.com) : I have use this website to learn about java and advance java concepts
- [www.tpointtech.com](http://www.tpointtech.com) : I have use this website to learn about spring and spring boot framework
- [www.geeksforgeeks.org](http://www.geeksforgeeks.org) : I have use this website to learn about various charts, and project terminology used in this report
- Our curiculam book & pdf : I have also used book and pdf used in bca sem-5 and previous semster pdfs.
- Youtube for learning spring.