

UCS503- Software Engineering Lab

ShopLine – An Ecommerce Website

UCS503 Software Engineering Project Report End-Semester Evaluation

Submitted by:

(102003627) Sarthak Narang

(102003646) Vishvam Salwan

BE Third Year, COE

Submitted to:

Mr. Sumit Kumar

(Lab Instructor)



**THAPAR INSTITUTE
OF ENGINEERING & TECHNOLOGY
(Deemed to be University)**

Computer Science and Engineering Department

TIET, Patiala

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1. Project Selection Phase

1.1 Software Bid

UCS 503- Software Engineering Lab

Group: 3CO19

Dated: 26/8/2022

Team Name: MERNTEC

Team ID (will be assigned by Instructor): 1

Please enter the names of your Preferred Team Members:

- You are required to form **a two to four person teams**
- Choose your team members wisely. You will not be allowed to change teams.

Name	Roll No	Project Experience	Programming Language used	Signature
Sarthak Narang	102003627	Portfolio website	HTML/CSS/Javascript	
Vishvam Salwan	102003646	Hostel Management System	SQL	

Programming Language / Environment Experience

List the languages you are most comfortable developing in, **as a team**, in your order of preference. Many of the projects involve Java or C/C++ programming.

1. Java
2. Python
3. SQL
4. HTML/JavaScript

Choices of Projects:

Please select **4 projects** your team would like to work on, by order of preference: [*Write at-least one paragraph for each choice (motivation, reason for choice, feasibility analysis, etc.)*]

First Choice	ShopLine (E-Commerce Shopping Platform) (<i>We intend to help digitalize the shops and propose building a website that will unite all the vendors in these COVID times.</i>)
Second Choice	Restaurant Management System (<i>We Intend to help keeping record of food orders and reviews so that restaurant can improve its service accordingly</i>)
Third Choice	Hostel Cleaning System (<i>We intend to help keeping record of the cleaning of rooms in hostels.</i>)
Fourth Choice	Books Exchange System (<i>For keeping records in Libraries , a book exchange system is mandatory so that we can keep track of the exchanges done.</i>)

Additional Remarks/ Inputs

Through our project, we intend to help digitalize the shops in order to help them achieve a better profit margin as well as to make the students' lives a bit less hectic.

1.2 Project Overview:

Most of the students face the issue of losing access to a marketplace like COS during lockdowns and early in-time in hostels and are starved for basic necessities. The vendors, as well, are faced with the issue of decreased sales and food wastage. This made some of the vendors on our campus go into online mode, but that couldn't create an impact either. Through our project, we intend to help digitalise the shops in order to help them achieve a better profit margin as well as to make the students' lives a bit less hectic. We propose building a website that will unite all the vendors on our campus and will bring them on a unified platform where students can order things from anywhere on the campus directly to their hostels without worrying about hostel in-times and COVID regulations. Moreover, the project's use can also be extended to sellers and buyers outside the campus.

The business-to-consumer aspect of product commerce (e-commerce) is the most visible business use of the World Wide Web. The primary goal of an e-commerce site is to sell goods online. This project deals with developing an e-commerce website for Online Product Sale. It provides the user with a catalogue of different product available for purchase in the store. In order to facilitate online purchase a shopping cart is provided to the user. In order to develop an e-commerce website, a number of Technologies must be studied and understood. This is a project with the objective to develop a basic website where a consumer is provided with a shopping cart application and also to know about the technologies used to develop such an application. This document will discuss each of the underlying technologies to create and implement an e-commerce website.

Functional Requirements:

- Console - Fully featured shopping cart with top products carousel and product searching feature
- Authentication - Login feature for admin and user profiles.
- Admin product management – Admin can edit the products and their stocks that are being sold.
- Admin user management – Admin can manage the users and see their data.
- Others- Checkout process (shipping, payment method, etc.) and Credit card integration and product review system.

Non-Functional Requirements:

- Safety Requirements - Safe payment system and the interaction system should be secure.
- Security Requirements - A safe database for storing user account credentials
- Performance Requirements - Application must be lightweight and fast.
- Software Quality Attributes - Good quality of framework.
- Software Reliability
- Software Scalability

Feasibility Report

Schedule feasibility:

Our project will take approximately 3 months for whole execution and implementation. Our project time management is divided in 4 parts for the project:

- UI designs
- Frontend
- Backend
- Integration

Firstly, we will make UI designs for our model. Then according to the task assigned, team will work on respective things, the coding part for model will take more time and working with databases. As per the schedule of individual team member they will work on different time.

Technical feasibility:

An eCommerce platform built with the MERN stack & Redux. This app will include authentication, profiles, products catalogue, shopping cart etc. Users can make purchases, review products, rate them. The main technologies and tools that are associated with it are:

- React , router , bootstrap
- Redux with Hooks
- Node JS
- Express
- MongoDB

Legal feasibility:

Our project uses freely available development tools (limited use), and provide the system as an open source system. Only the High-End usage requirement and Maintenance cost will be charged from more demanding customers. The libraries used are free open source libraries. We can deploy a MongoDB database in the cloud with just a few clicks. With best-in-class automation and proven practices that guarantee high availability, elastic scalability, and optimal performance, MongoDB is the easiest way to try out the database for free on.

Operational feasibility:

The product will be highly user friendly and easy to use. The website will include authentication, profiles, products catalogue, shopping cart etc. Users can make purchases, review products, rate them. Authenticated admin users can modify products catalogue, mark paid orders to delivery, give admin rights regular users. Each feature will have dedicated buttons that will perform the required task. The product will be operationally feasible, easily maintainable and highly scalable.

Economic Feasibility:

Being a Web-Application, VS-Code will take up the role of text editors and git will be used as our version control. The system will follow the freeware software standard. No cost will be charged to the potential customers. At the initial stage, the potential market space will be the local universities and our university. From these, it's clear that the project is financially feasible.

Cultural feasibility:

The project will help sellers reach out to customers more efficiently. So it will be beneficial for both the seller and customers during the pandemic times as the project will provide the ease of shopping from the comfort of the customers. Moreover, the project will be a way to prevent the spread of the disease as it will pave the way for contactless shopping. Hence it will not only be culturally acceptable, but also be culturally appreciable.

Gantt Chart and WBS

A Gantt chart is a project management tool assisting in the planning and scheduling of projects of all sizes, although they are particularly useful for simplifying complex projects. So here we have made a time schedule which will be followed in making the project.

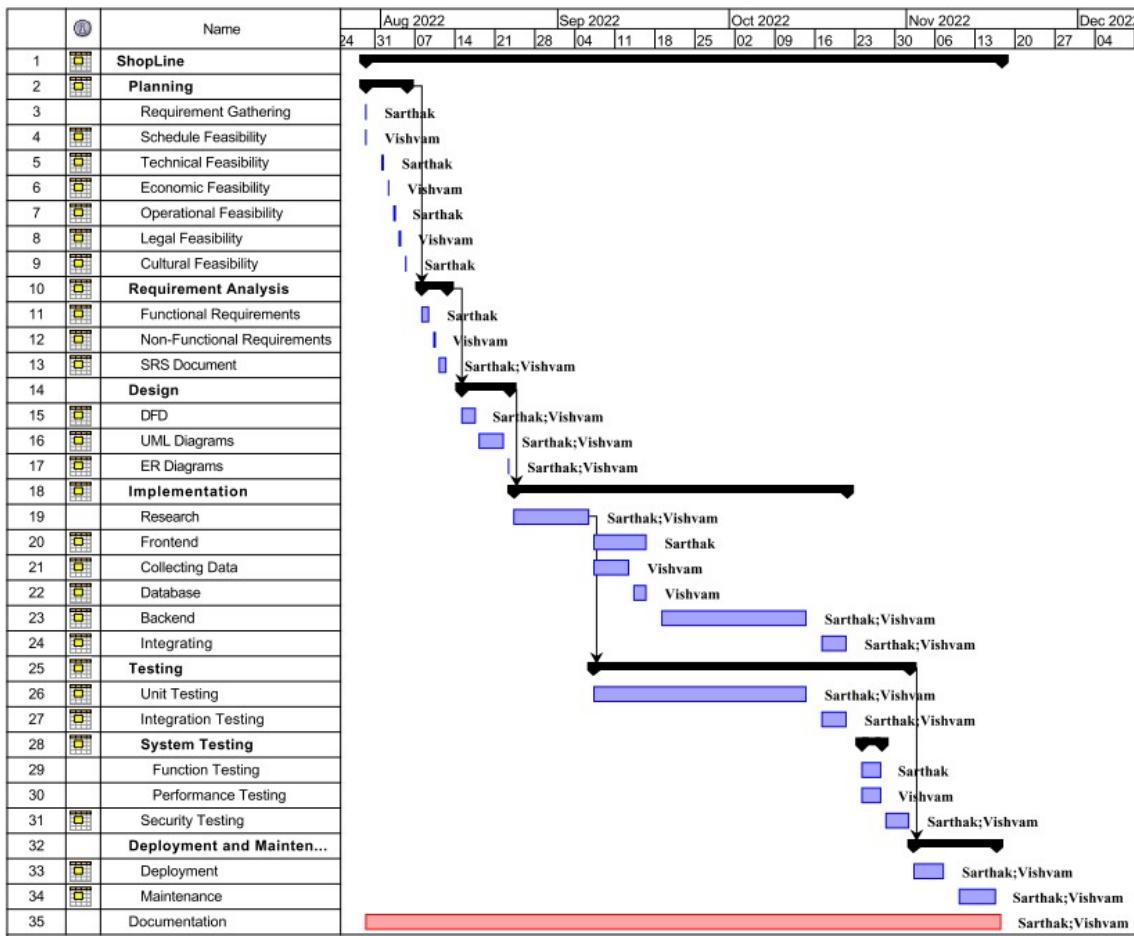
Software Used : ProjectLibre

Project: ShopLine Schedule

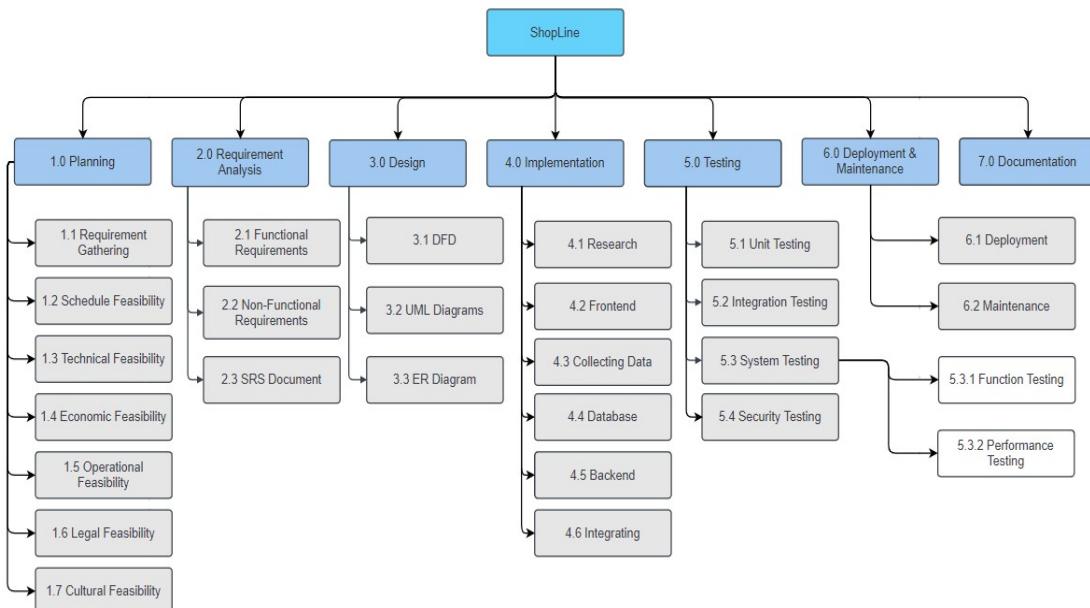
		Name	Duration	Start	Finish	Resource Names
1		ShopLine	80 days?	7/29/22 8:00 AM	11/17/22 5:00 PM	
2		Planning	6 days?	7/29/22 8:00 AM	8/5/22 5:00 PM	
3		Requirement Gathering	1 day?	7/29/22 8:00 AM	7/29/22 5:00 PM	Sarthak
4		Schedule Feasibility	1 day?	7/29/22 8:00 AM	7/29/22 5:00 PM	Vishvam
5		Technical Feasibility	1 day?	8/1/22 8:00 AM	8/1/22 5:00 PM	Sarthak
6		Economic Feasibility	1 day?	8/2/22 8:00 AM	8/2/22 5:00 PM	Vishvam
7		Operational Feasibility	1 day?	8/3/22 8:00 AM	8/3/22 5:00 PM	Sarthak
8		Legal Feasibility	1 day?	8/4/22 8:00 AM	8/4/22 5:00 PM	Vishvam
9		Cultural Feasibility	1 day?	8/5/22 8:00 AM	8/5/22 5:00 PM	Sarthak
10		Requirement Analysis	5 days?	8/8/22 8:00 AM	8/12/22 5:00 PM	
11		Functional Requirements	2 days?	8/8/22 8:00 AM	8/9/22 5:00 PM	Sarthak
12		Non-Functional Requirements	1 day?	8/10/22 8:00 AM	8/10/22 5:00 PM	Vishvam
13		SRS Document	2 days	8/11/22 8:00 AM	8/12/22 5:00 PM	Sarthak;Vishvam
14		Design	7 days	8/15/22 8:00 AM	8/23/22 5:00 PM	
15		DFD	3 days	8/15/22 8:00 AM	8/17/22 5:00 PM	Sarthak;Vishvam
16		UML Diagrams	3 days	8/18/22 8:00 AM	8/22/22 5:00 PM	Sarthak;Vishvam
17		ER Diagrams	1 day	8/23/22 8:00 AM	8/23/22 5:00 PM	Sarthak;Vishvam
18		Implementation	43 days?	8/24/22 8:00 AM	10/21/22 5:00 PM	
19		Research	10 days	8/24/22 8:00 AM	9/6/22 5:00 PM	Sarthak;Vishvam
20		Frontend	8 days	9/7/22 8:00 AM	9/16/22 5:00 PM	Sarthak
21		Collecting Data	5 days?	9/7/22 8:00 AM	9/13/22 5:00 PM	Vishvam
22		Database	3 days?	9/14/22 8:00 AM	9/16/22 5:00 PM	Vishvam
23		Backend	20 days	9/19/22 8:00 AM	10/14/22 5:00 PM	Sarthak;Vishvam
24		Integrating	5 days	10/17/22 8:00 AM	10/21/22 5:00 PM	Sarthak;Vishvam
25		Testing	40 days	9/7/22 8:00 AM	11/1/22 5:00 PM	
26		Unit Testing	28 days	9/7/22 8:00 AM	10/14/22 5:00 PM	Sarthak;Vishvam
27		Integration Testing	5 days	10/17/22 8:00 AM	10/21/22 5:00 PM	Sarthak;Vishvam
28		System Testing	4 days	10/24/22 8:00 AM	10/27/22 5:00 PM	
29		Function Testing	4 days	10/24/22 8:00 AM	10/27/22 5:00 PM	Sarthak
30		Performance Testing	4 days	10/24/22 8:00 AM	10/27/22 5:00 PM	Vishvam
31		Security Testing	3 days	10/28/22 8:00 AM	11/1/22 5:00 PM	Sarthak;Vishvam
32		Deployment and Maintenance	11 days	11/2/22 8:00 AM	11/16/22 5:00 PM	
33		Deployment	4 days	11/2/22 8:00 AM	11/7/22 5:00 PM	Sarthak;Vishvam
34		Maintenance	5 days	11/10/22 8:00 AM	11/16/22 5:00 PM	Sarthak;Vishvam
35		Documentation	80 days?	7/29/22 8:00 AM	11/17/22 5:00 PM	Sarthak;Vishvam

(please refer to the next page to see the adjoined gantt chart and WBS)

Gantt Chart:



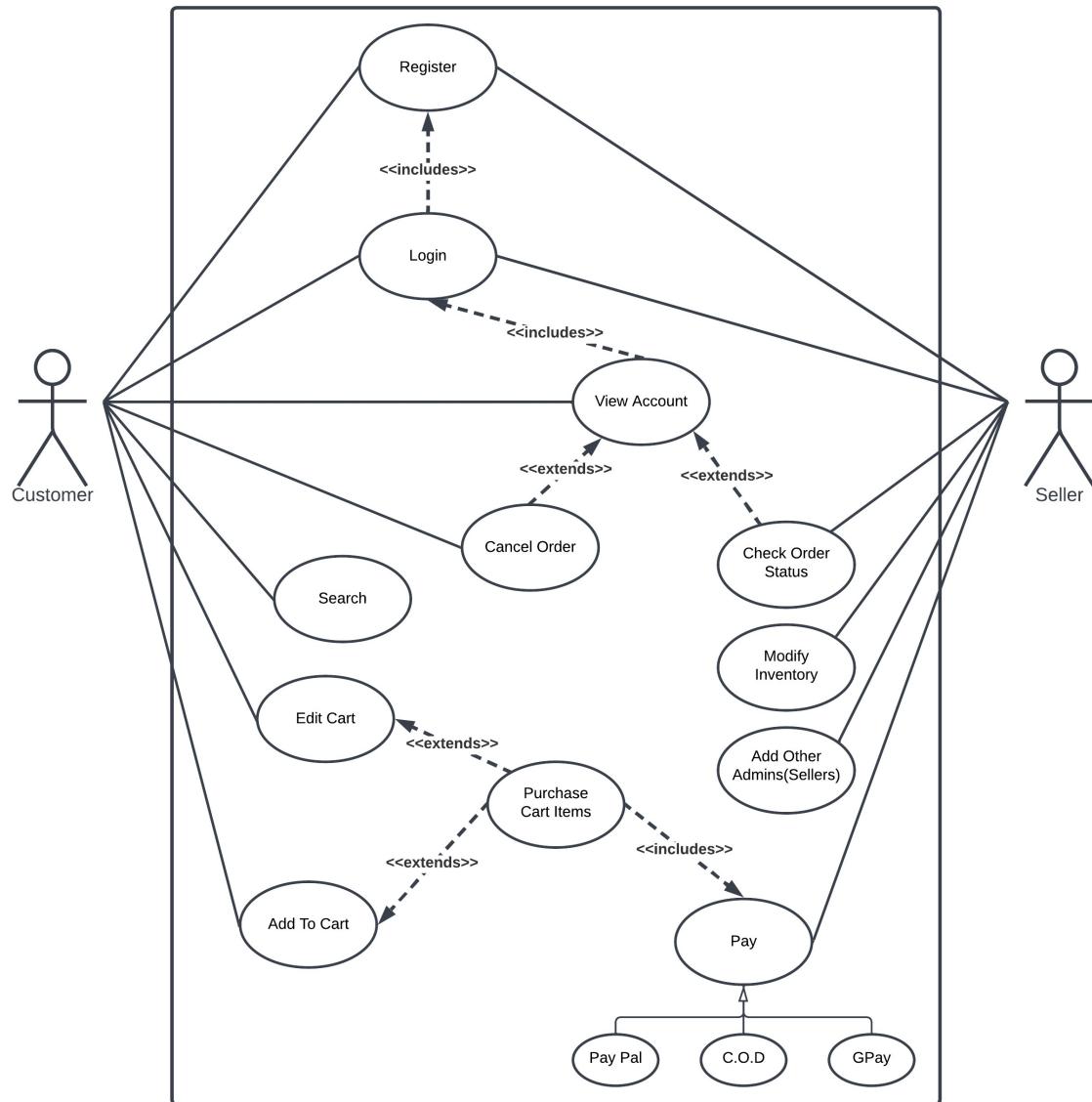
Work Breakdown Structure :



2. Analysis Phase

2.1 Use-Cases

2.1.1 Use-Case Diagram



2.1.2 Use Case Templates

1. Use Case Title:	Register
2. Abbreviated Title:	Register
3. Use Case ID:	1
4. Actors:	Customer
5. Description:	New users can register themselves as customers using the Register feature by providing valid login credentials and more personal information and other required details.
5.1. Pre Conditions:	1. Customer ID should be unique.
5.2. Task Sequence:	1. Click on Sign Up/Register button 2. Fill out all the columns with relevant info. 3. Click on Submit button.
5.3. Post Conditions:	1. Customer can now login into his/her account with the registered
6. Modification History:	Date: 12-Sep-2022.
7. Author:	Sarthak

1. Use Case Title:	Login
2. Abbreviated Title:	Login
3. Use Case ID:	2
4. Actors:	Customer
5. Description:	Customers who have already registered can login into their accounts and place orders or maintain carts.
5.1. Pre Conditions:	1. Customer should have a registered account.
5.2. Task Sequence:	1. Go to the login page. 2. Enter your credentials. 3. Click on login button.
5.3. Post Conditions:	1. Customer will be logged into their account if credentials are valid. 2. Error message will be displayed if customer has entered wrong credentials.
6. Modification History:	Date: 12-Sep-2022.
7. Author:	Vishvam

1. Use Case Title:	View Profile
2. Abbreviated Title:	View Profile
3. Use Case ID:	3
4. Actors:	Customer
5. Description: View Profile feature allows the customer to view their personal details, past orders, payment Info , etc.	
5.1. Pre Conditions: 1. Customer must be logged in to his/her account.	
5.2. Task Sequence: 1. Login into your account. 2. Click on View Profile button.	
5.3. Post Conditions: 1. Customer profile page will be displayed.	
6. Modification History: Date: 12-Sep-2022.	
7. Author: Sarthak	

1. Use Case Title:	Search
2. Abbreviated Title:	Search
3. Use Case ID:	4
4. Actors:	Customer
5. Description: With this search facility, customer can specify any search criteria to apply to products and find the products he/she needs.	
5.1. Pre Conditions: 1. Customers must have access to the site.	
5.2. Task Sequence: 1. Search Bar will be shown on the screen. 2. Type the name or part of the category of the product you want to search for. 3. Click on the search button and you will get desired results.	
5.3. Post Conditions: 1. Customers can view desired results. 2. Customers can go for another search.	
6. Modification History: Date: 12-Sep-2022.	
7. Author: Sarthak	

1. Use Case Title:	Edit Cart
2. Abbreviated Title:	Edit Cart
3. Use Case ID:	5
4. Actors:	Customer
5. Description:	Edit Cart can allow the customer to modify the quantity of items in the cart or to remove the items from the cart.
5.1. Pre Conditions:	1. Customers must be logged in.
5.2. Task Sequence:	1. Click on the cart button to land on the edit cart page. 2. Customers can then use the designated buttons like remove from cart, or the quantity button to edit craft
5.3. Post Conditions:	1. Customers can purchase the items in the cart. 2. Customers can continue shopping for more items.
6. Modification History:	Date: 12-Sep-2022.
7. Author:	Vishvam

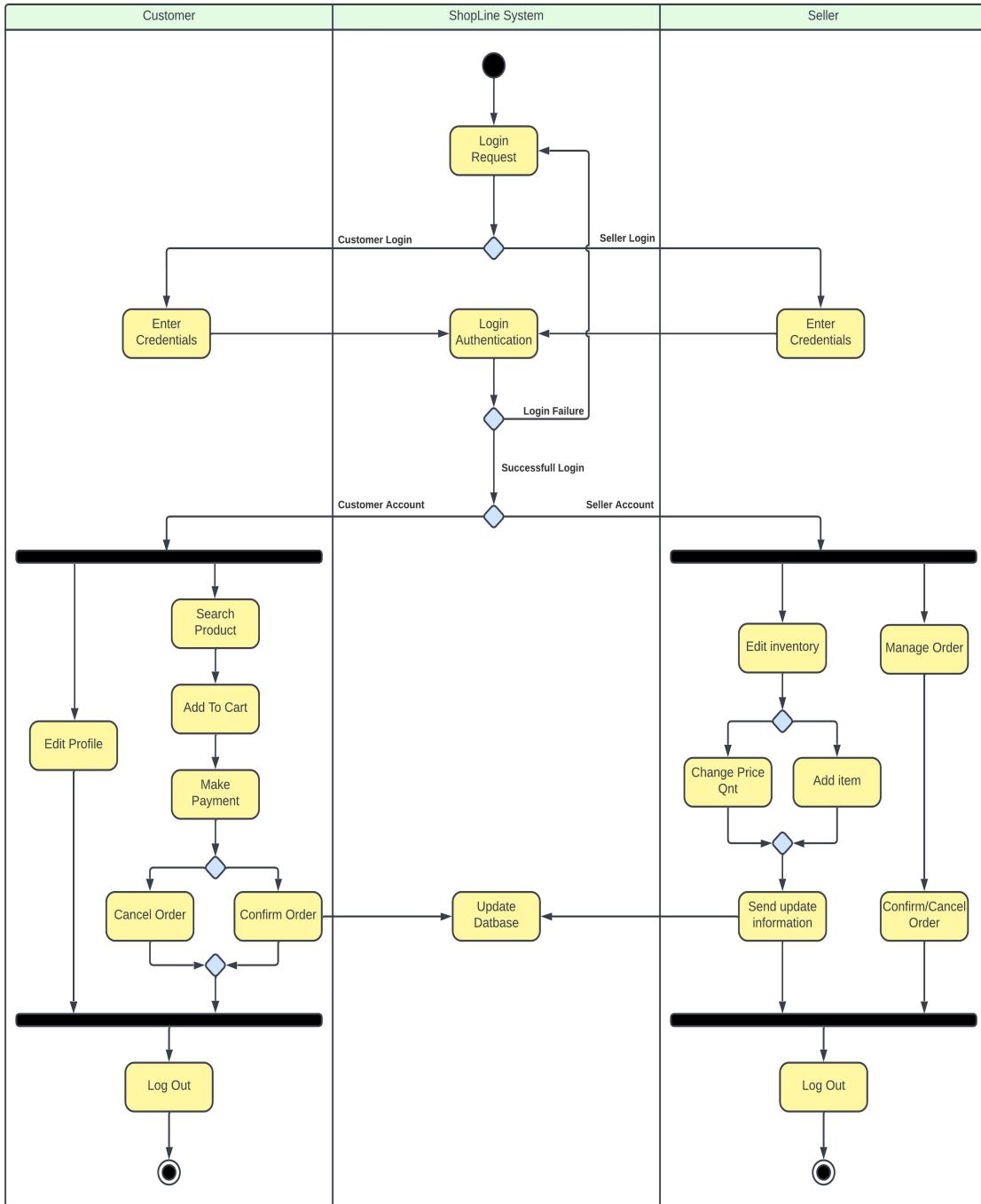
1. Use Case Title:	Add to cart
2. Abbreviated Title:	Add to cart
3. Use Case ID:	6
4. Actors:	Customer
5. Description:	When a customer finds the product they want, they can add the product to the shopping cart. The system stores and tracks the information about products.
5.1. Pre Conditions:	1. Customer should be registered and logged in.
5.2. Task Sequence:	1. Customer enter the product to be searched. 2. The system searches the product in the database. 3. If customer find their product they can add it to cart
5.3. Post Conditions:	1. Customer can now proceed to payment. 2. Customer can also remove the product from cart
6. Modification History:	Date: 12-Sep-2022.
7. Author:	Sarthak

1. Use Case Title:	Pay
2. Abbreviated Title:	Pay
3. Use Case ID:	7
4. Actors:	Customer
5. Description:	
Using this facility customer can move to checkout and can proceed to payment by selecting one of the payment options.	
5.1. Pre Conditions:	
Customer should be logged in and have product in cart for payment.	
5.2. Task Sequence:	
<ol style="list-style-type: none"> 1. Customer have to select a payment option. 2. Now they have to verify their details. 3. Confirm their payment. 	
5.3. Post Conditions:	
<ol style="list-style-type: none"> 1. If payment was successful then inform the seller. 2. If payment was not successful, inform customer about it and ask them for payment. 	
6. Modification History: Date: 12-Sep-2022.	
7. Author: Vishvam	

1. Use Case Title:	Purchase Items
2. Abbreviated Title:	Purchase Items
3. Use Case ID:	8
4. Actors:	Customer
5. Description:	
This facility gives customers the facility of selecting a product and adding them to cart and confirming the order and moving towards payment.	
5.1. Pre Conditions:	
Customers should be logged in so that they can add to cart the desired product or can pay for it.	
5.2. Task Sequence:	
<ol style="list-style-type: none"> 1. Customer have to search for their product 2. If they can see the desired product then they have to add the product in cart or can pay 	
5.3. Post Conditions:	
<ol style="list-style-type: none"> 1. Customer are allowed to add products to the cart. 2. They can proceed to payment after adding it to the cart. 	
6. Modification History: Date: 12-Sep-2022.	
7. Author: Sarthak	

1. Use Case Title:	View pending orders
2. Abbreviated Title:	View pending orders
3. Use Case ID:	9
4. Actors:	Seller
5. Description:	This facility provides sellers with the feature of viewing their pending orders that need to be delivered to the respective customers
5.1. Pre Conditions:	1. Seller must be logged in to their dashboard.
5.2. Task Sequence:	1. Seller will go to their dashboard. 2. Then they can see their orders which are pending
5.3. Post Conditions:	1. After seeing their pending order if any they have to see their inventory and update it accordingly.
6. Modification History:	Date: 12-Sep-2022.
7. Author:	Vishvam

2.2 Swimlane Diagram

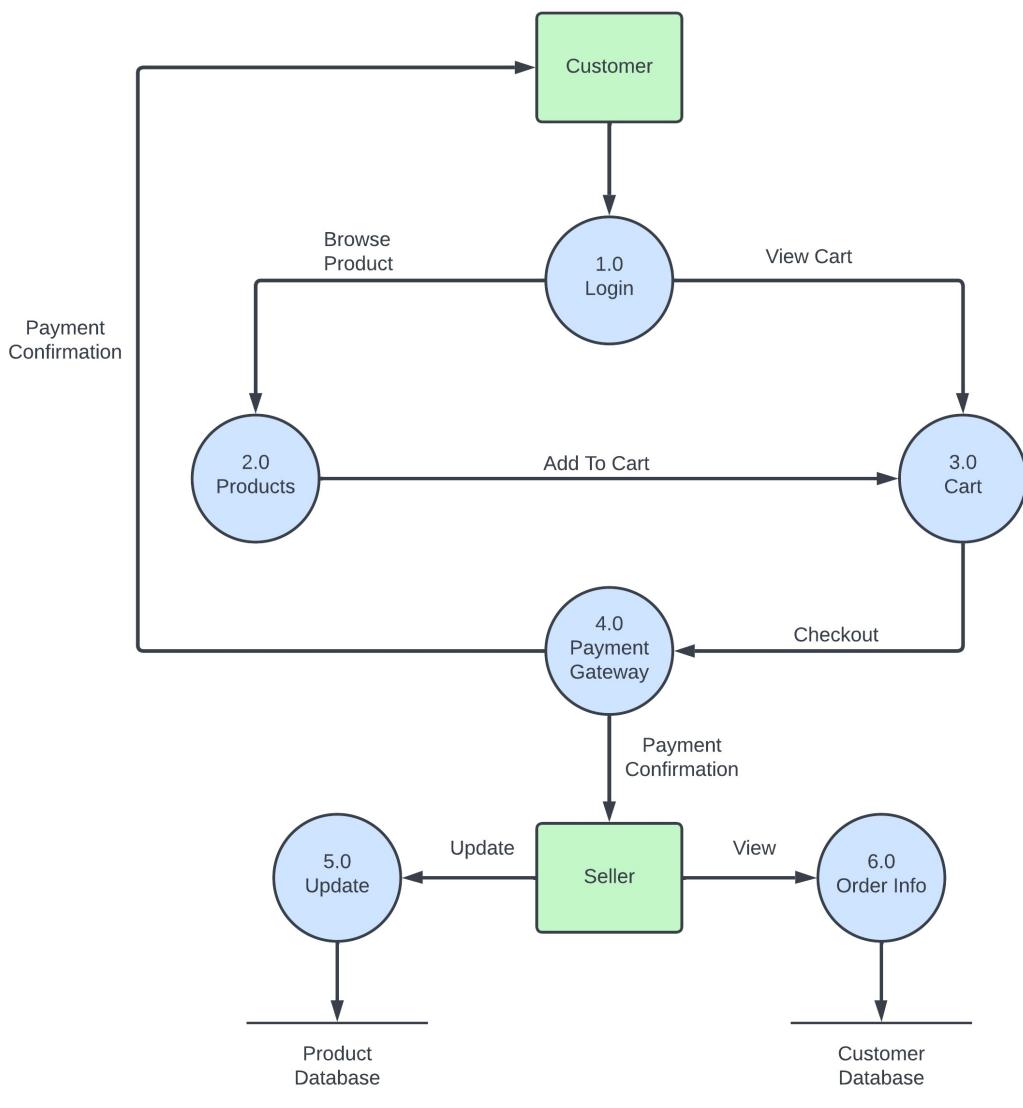


2.3 Data Flow Diagrams

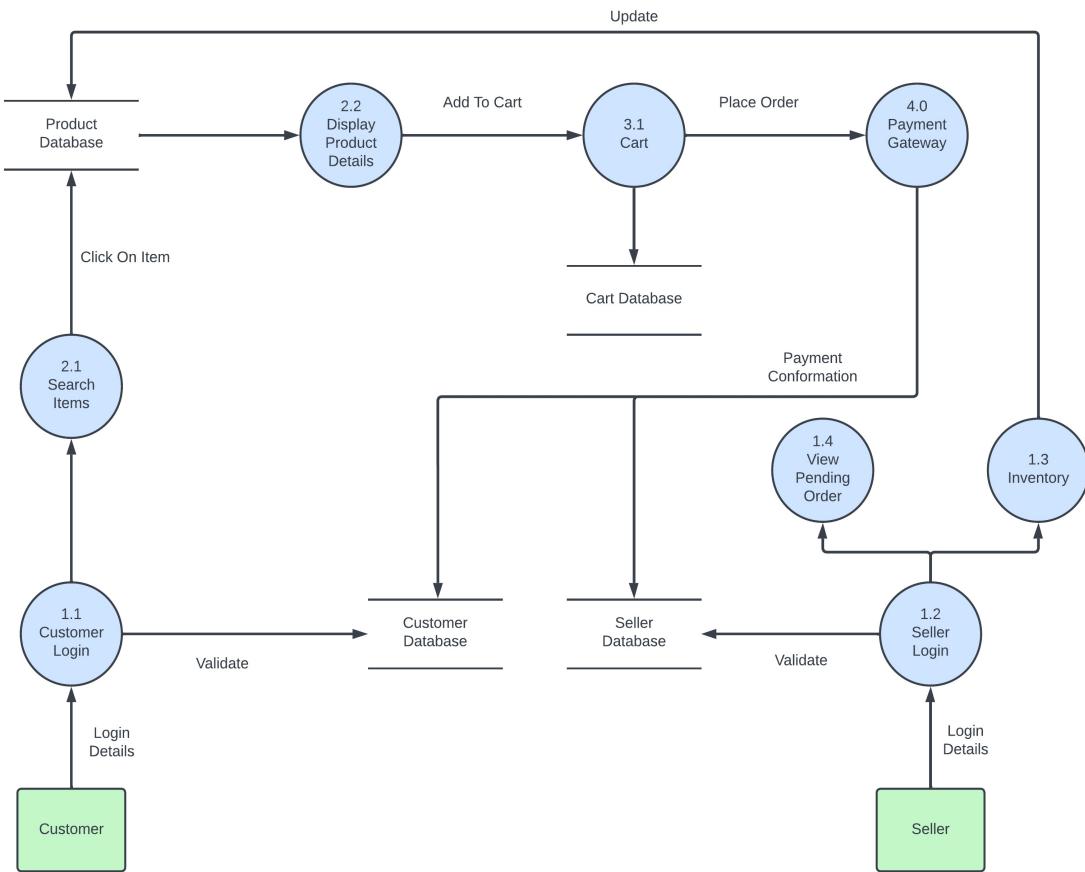
2.3.1 DFD Level 0



2.3.2 DFD Level 1



2.3.3 DFD Level 2:



2.4 Software Requirement Specification (SRS) Document in IEEE Format

Software Requirements Specification Document

Version 1.0

ShopLine - An Ecommerce Website

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1. Introduction

1.1 Purpose of this Document

The purpose of this SRS document is to provide a detailed overview of our software product, its parameters, and its goals. This document describes the project's target audience, user interface, hardware, and software requirements. It defines how our client, team, and audience see the product and its functionality. The document has been formatted in such a way that the deliverables are divided into smaller components thereby, describing the functions, goals and tasks that the system can perform.

1.2 Scope of the Development Project

The goal is to design software for an eCommerce platform. We plan for constant improvement, both in terms of features and the scope of this project. Moreover, the project will cover the following aspects determining its scope during the entire phase of software development.

- Secure registration and profile management facilities for Customers
- Adequate searching mechanisms for easy and quick access to particular products.
- Creating a Shopping cart so that customers can shop 'n' no. of items and checkout finally with the entire shopping carts. Customers can add or delete items in the cart.
- Shop employees are responsible for internal affairs like processing orders, assure home delivery, getting customer's delivery-time feedback, updating order's status and answering client's queries online.
- Review mechanism, so that customers can give feedback for the product or service which they have purchased. Also rating facility will be provided of individual products by customers.
- Adequate payment mechanism and gateway for online payments.
- Adding More Payment modes in future.

1.3 Definitions, abbreviations and acronyms

SNo.	Term	Description
1.	ShopLine	The name of the website.
2.	Customer	A person that is user of the system but has created a account. ^[1]
3.	Inventory	An object that holds items available for purchase by the customer. ^[2]
4.	Item	An individual entity in the inventory which has several descriptive attributes. ^[3]
5.	Checkout	A user interface element that allows user to inform the system that he/she has selected a particular item. ^[4]
6.	Button	A user interface element that allow a user to click and inform the system to take an action. ^[5]
7.	Acct(Account)	Tells detailed information of sellers and customers to website and to them also. ^[6]
8.	Quantity	Tells the no of items available or no of items selected by customer. ^[7]
9.	Search	To search different item on screen. ^[8]
10.	User	The person who operate the software product.

1.4 References

1. Customer definition link: - <https://economictimes.indiatimes.com/definition/customer>
2. Inventory definition link: - <https://www.investopedia.com/terms/i/inventory.asp>
3. Item definition link: - <https://www.merriam-webster.com/dictionary/item>
4. Checkout definition link: - <https://www.front-commerce.com/what-is-a-modern-e-commerce-checkout/>
5. Button definition link : - <https://www.merriam-webster.com/dictionary/button>
6. Account definition link: - <https://www.merriam-webster.com/dictionary/button>
7. Quantiy definition link: - <https://www.dictionary.com/browse/quantity>
8. Search definition link: - <https://www.collinsdictionary.com/dictionary/english/search>
9. Format study link:- <https://www.geeksforgeeks.org/software-engineering/#sr>
10. Idea finding link: - <https://www.upgrad.com/blog/software-development-project-ideas-topics-for-beginners/>
11. Basic information about project link:- <https://www.cse.msu.edu/~chengb/RE-491/Papers/SRS-BECS-2007.pdf>
12. Basic info about diagrams used :-
<https://aakashtechsupportdocs.readthedocs.io/en/latest/functionalreq.html>
13. Learning gantt chart link:- https://en.wikipedia.org/wiki/Gantt_chart
14. Flowchart study :- <https://www.edrawsoft.com/template-e-commerce-flowchart.html>
15. Other information: - <https://www.javatpoint.com/software-requirement-specifications>

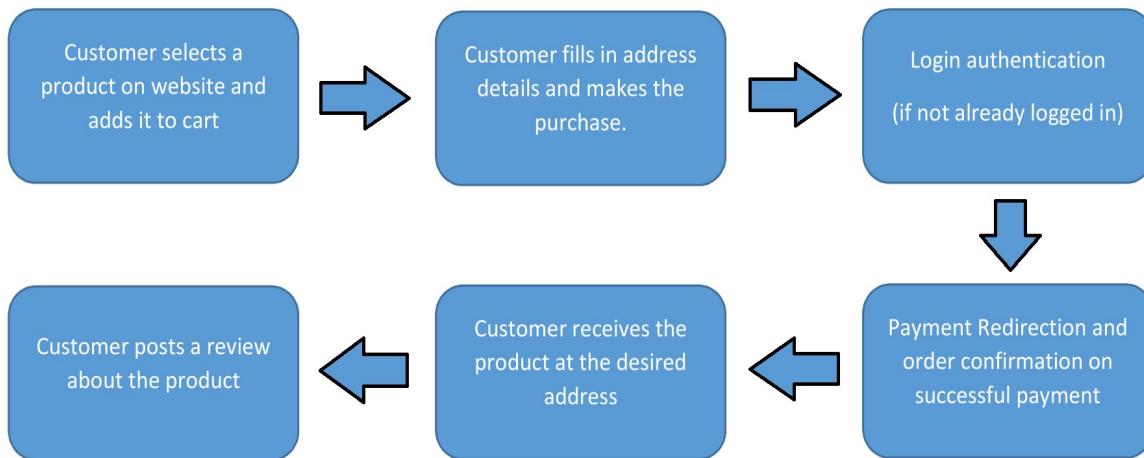
1.5 Overview

The remaining sections of this document provide a general description, including characteristics of the users of this project, the product's hardware, and the functional and data requirements of the product. General description of the project is discussed in section 2 of this document. Section 2 gives the functional requirements, data requirements and constraints and assumptions made while designing the multi-utility system. It also gives the user viewpoint of product use. Section 3 gives the specific requirements of the product. Section 3.0 also discusses the external interface requirements and gives detailed description of functional requirements.

2. Overall Description

2.1 Product Perspective

The project can be considered a small scale version of a personal ecommerce website which can be further integrated as per the requirements of the market. The main objective behind our vision of developing this product are the challenges faced during this pandemic. Along with this it will also increase the selling efficiency of the local shops and bring the sellers from the nooks and corners of the country available at a single platform which can be easily accessed by any customer just by registering themselves on the web portal. It has been designed with regard to the stakeholder's (here, the sellers and customers) interests and goals. This project gives a procedural approach of how a customer can get the prices and availability of desired products. Then the customer can purchase the product from the site and give its review after receiving as described by the following workflow.



2.2 Product Functions

The product should be able to have the following features:

1. Login Authentication – The website will contain a login authentication system which will redirect a customer to login before purchasing any product while proceeding to checkout before payment.
2. Product Searching - Website will also contain a search bar for searching different products desirable by the customer.
3. Product Cart -The website will contain fully functional cart section where the customers can add their products using the Add to Cart function.
4. Separate Controls - Login feature for admin and user profiles with different set of controls given to them. Admins will be able to add / remove the products being sold on the website and they will be able to see the registered customer's details.

5. Order Record Management – The website will store the order records in the database and these records will be visible only to the admin. The records will contain shipping addresses and the payment status of respective orders.
6. Payment system – The website will contain a fully functional and an integrated payment system via credit card (PayPal) for the customers to pay for the products that they have purchased.
7. Review System –The website will have a function such that only logged in customers will be allowed to write reviews for the products. It will give a sign in option if they are not logged in.
8. Others – Availability of product. Selection of quantity of product while purchasing.

2.3 User Characteristics:

The goal is to design software for an ecommerce website's users. These user types are listed below as follows:

1. Customers
2. Admin (Seller)

As one can see from the list, each user should have a different set of controls available to them while using the website. Our goal is to develop software that should be easy to use for all types of users. Thus while designing the software one can assume that each user type has the following characteristics:

- The customer is computer-literate and has little or no difficulty in using browser for making purchases of the desired products.
- The customer should know how to use online modes of payment like PayPal.
- Admin is a computer-literate and knows how to list new products on the website and manage the order data.

2.4 User Documentation:

This software provides security. The login form prevents the system from being misused by unauthorized users. Only an authorized operator will be granted rights to modify as per requirements. This software is also reliable and fault-tolerant. The system developed is designed to handle invalid inputs. Since reliability is a major area of concern the system as a backup to avoid data loss. The user should know the programming language very well that is used to develop software.

Document Conventions:

As the development team is responsible for the SRS document, no ambiguity arises from its usage.

- Entire document is justified
- Convention for the main title:
 - Font Face: Times New Roman
 - Font Style: Bold
 - Font Size: 16
- Convention for subtitle:
 - Font Face: Times New Roman
 - Font Style: Bold ○ Font Size: 14
- Convention for body:
 - Font Face: Times New Roman
 - ○ Font Style: Normal
 - Font Size: 11

2.5 General Constraints, Assumptions and Dependencies

The following list presents the constraints, assumptions, dependencies or guidelines that are imposed upon implementation of the Ecommerce website:

Constraints:

Operating Environment:

- | | |
|---------------------|-------------------------------------|
| • Operating System: | Windows |
| • Front-End: | HTML, CSS, JavaScript, React, Redux |
| • Back-End: | MongoDB, ExpressJS, NodeJS |
| • Ram: | 2GB |
| • Hard Disk: | 50 GB |

Assumptions:

- 1) The coding should be error free.
- 2) The system should be user friendly so that it is easy to use for the users.
- 3) The system should have more capacity and provide fast access to the database.
- 4) The system should provide search facility and support quick transactions.
- 5) The ShopLine system is running twenty-four hours a day.
- 6) Users may access from any computer that has internet browsing capabilities and an internet connection.
- 7) User must have their correct usernames and passwords to enter into their online accounts and do actions.

Dependencies:

- 1) The specific hardware and software due to which the product will be run.
- 2) On the basis of listing requirements and specification the project will be developed and run.
- 3) The end users (admin) should have proper understanding to the product.
- 4) The system should have the general report store.
- 5) The information of all users must be stored in a database that is accessible by the ShopLine system.

3. Specific Requirements

This section contains the functional and Non-functional requirements of this project in detail.

3.1 External Interface Requirements

- The product requires very limited graphics usage.
- Sound is not an essential feature but it can be considered for future variants of the system.
- Two console / interfaces required. One for admin and one for customers.

The two consoles will provide separate controls to the two different types of users as follows:

Customer controls-

- Browse available sellers and their products and services
- Place order for the available items (within delivery service hours)
- Add descriptive reviews for the products and store
- Access purchase history
- Maintain a shopping cart

Seller/admin controls-

- Maintain an inventory of the products and services offered by the store
- Accept or deny the order requests received
- Make changes in the price of their products and services
- Change the order delivery service hours

3.2 Detailed Description of Functional Requirements

Table 3 shows a template that is being used to describe functional requirements for three types of users: student, staff, student cum staff as one can easily deduce the functional requirements for other user types with this template.

Table 3: Template for describing functional requirements

Purpose	A description of the functional requirements and its reasons.
Inputs	What are the inputs; in what form will they arrive; from what sources can the inputs come; what are the legal domains of each input.
Processing	Describes the outcome rather than the implementation; includes any validity checks on the data, exact timing of operation (if needed), how to handle unexpected or abnormal situations.
Outputs	The form, shape, destination and volume of output; output timing; range of parameters in the output; unit of measure of the output; process by which output is stored or destroyed; process for handling error message produced as output.

3.2.1 Detailed Description of Product Search Function

Purpose	A searching tool for customers to search for different products.
Inputs	The user will enter the product name or a part of the name in the search box given in the console.
Processing	The website will refine the products against the search query and will process the result that should be displayed.
Outputs	The website will display the searched products.

3.2.2 Detailed Description of Add-to-Cart Function

Purpose	A fully functional cart feature where users can add products that they want to purchase. The users can also select the desired quantity of the products.
Inputs	The customer will press the add to cart button on the desired product's page to add it into a virtual cart.
Processing	Website will create a virtual cart space and will add the selected products in it. The website will append new products if there are items already waiting in the cart.
Outputs	The cart is created and now the customer can proceed making the purchase by selecting the proceed-to-checkout option.

3.2.3 Detailed Description of User Registration Function

Purpose	Authentication of users and registering them with ShopLine.
Inputs	Users are required to register themselves by creating an account on the site giving their email and creating a password.
Processing	A login info will be generated and an account will be created on the site and the credentials will be saved in the database.
Outputs	Along with the successful account creating , the user will be logged in with the newly registered credentials.

3.2.4 Detailed Description of Login Authentication Function

Purpose	The website will ask users to login before making a purchase and also before writing a review for the product.
Inputs	User must enter his/her login credentials to authenticate himself/herself on the website.
Processing	The website will look up for the given credentials in the site's database and will find a match.
Outputs	User will be logged in in case of a successful authentication. In case of a unsuccessful login attempt , the user will be asked to enter credentials again.

3.2.5 Detailed Description of Product Inventory Function

Purpose	A product catalogue that will be maintained by admin so that the product availability can be regularly updated.
Inputs	Admin can add / remove / edit the products that are to be listed on site.
Processing	The website processes the changes done by the admins and updates it into the database.
Outputs	The changes reflect and the catalogue on the website gets updated.

3.2.6 Detailed Description of Product Review Function

Purpose	To rate products and write reviews for them.
Inputs	Customer rates the product and writes review about it.
Processing	The website checks if the user is signed in or not and then it allows the user to write reviews about different products.
Outputs	The reviews and ratings are updated and are reflected on the respective product pages.

3.2.7 Detailed Description of Payment Redirection Function

Purpose	A payment redirection when a customer wants to make payment for the product after selecting the payment mode.
Inputs	Customer proceeds to checkout after signing in and selecting the product.
Processing	Website redirects the payment info to selected mode using respective APIs in a safe environment.
Outputs	The payment can now be done safely and quickly.

3.2.8 Detailed Description of Order Data Function

Purpose	To store and monitor/check the status of a placed order.
Inputs	A successful purchase of a listed product will initiate this function.
Processing	An order ID will be generated and the website will process the information and create a data entry in orders section.
Outputs	The website will save the order information into the database so that it can be monitored by the Admins.

3.3 Performance Requirements

The system should be available 365/24/7 days and the performance should not be degraded with the increase in the number of users.

Safety Requirements

The database may get crushed at any certain time due to virus or operating system failure. Therefore it is required to take the database backup so that the database is not lost. Proper UPS/ Inverter facility should be there in case of power supply failure

Security Requirements:

- The security of each user is provided with a login id and password.
- System will use secured database.
- Normal users can just read information but they cannot give reviews and change anything.
- System will have different types of users and every user has access/control constraints.

3.4 Quality Attributes:

- **Consistent uptime**

This system will be able to stay up and running at least 98% of the time. Any downtime would be due to maintenance or upgrades. This downtime also includes any potential failures/crashes.

- **Load and Concurrency**

The system must be able to serve at least two thousand users concurrently without crashing.

- **Familiar Interface**

The new system will have an interface that shares some of the feels of the old system so that users who are familiar with the old system will not have trouble adjusting to the new system.

3.5 Other Requirements:

None as of now.

4. Change History

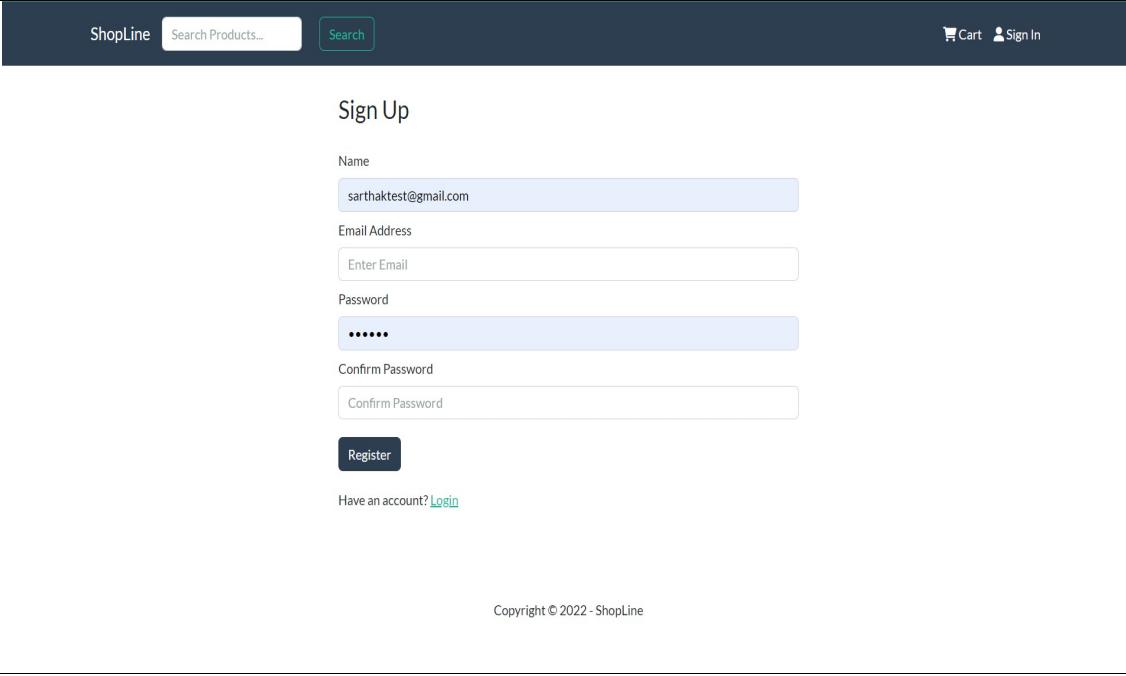
SNo.	Modifications
1.	Version 1.0 – An Initial Release

5. Document Approvers

SRS for ShopLine – An Ecommerce Website is approved by:

Designation Date:

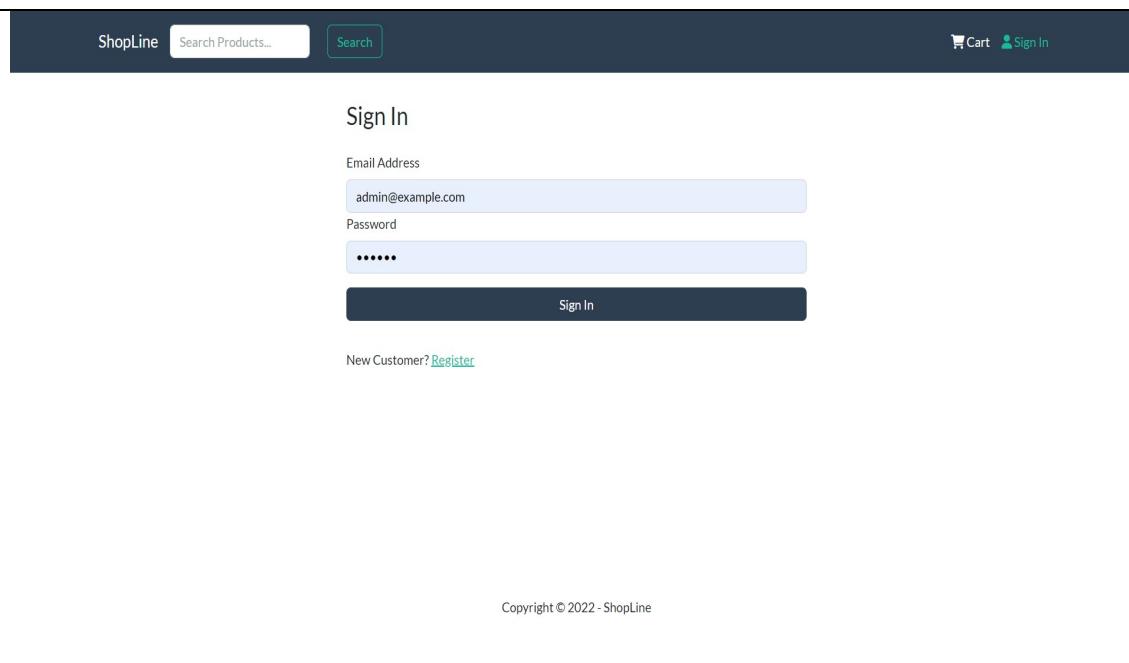
2.5 User Case Stories

#001	Title :Customer/Seller Register
As a [New User], I want to [Sign Up], So that I can [Access Subscriber Services]	
 A screenshot of the ShopLine sign-up page. At the top, there's a dark header with the ShopLine logo, a search bar containing "Search Products...", and a "Search" button. To the right are "Cart" and "Sign In" links. Below the header, the page title "Sign Up" is centered. The form consists of five input fields: "Name" (with "sarthaktest@gmail.com" entered), "Email Address" (with "Enter Email" placeholder), "Password" (with "*****" placeholder), "Confirm Password" (empty), and a "Register" button. Below the form is a link "Have an account? Login ". At the bottom of the page, the copyright notice "Copyright © 2022 - ShopLine" is visible.	
Acceptance Criteria: <ol style="list-style-type: none">Success – New user get register in the Database and get logged in to websiteFailure – display message:<ol style="list-style-type: none">“Email address is wrong format”“Incorrect Password, Please try again”“Invalid contact number”“Password doesn’t match”	

#002

Title :Customer/Seller Login

As a [Registered Customer/Seller], I want to **Sign-In**, So that I can explore **website**



The screenshot shows the ShopLine sign-in page. At the top, there is a dark header with the ShopLine logo, a search bar containing "Search Products...", and a "Search" button. To the right of the search bar are "Cart" and "Sign In" links. Below the header, the main content area has a light background. It features a "Sign In" heading, followed by two input fields: "Email Address" containing "admin@example.com" and "Password" containing "*****". Below these fields is a "Sign In" button. At the bottom left, there is a link for "New Customer? [Register](#)". The footer contains the copyright notice "Copyright © 2022 - ShopLine".

Acceptance Criteria:

1. Success –

- a. User enter correct email and password.
- b. User clicked sign –in button.
- c. User does not clicked forget Password
- d. User does not clicked exit
- e. User has already registered its account

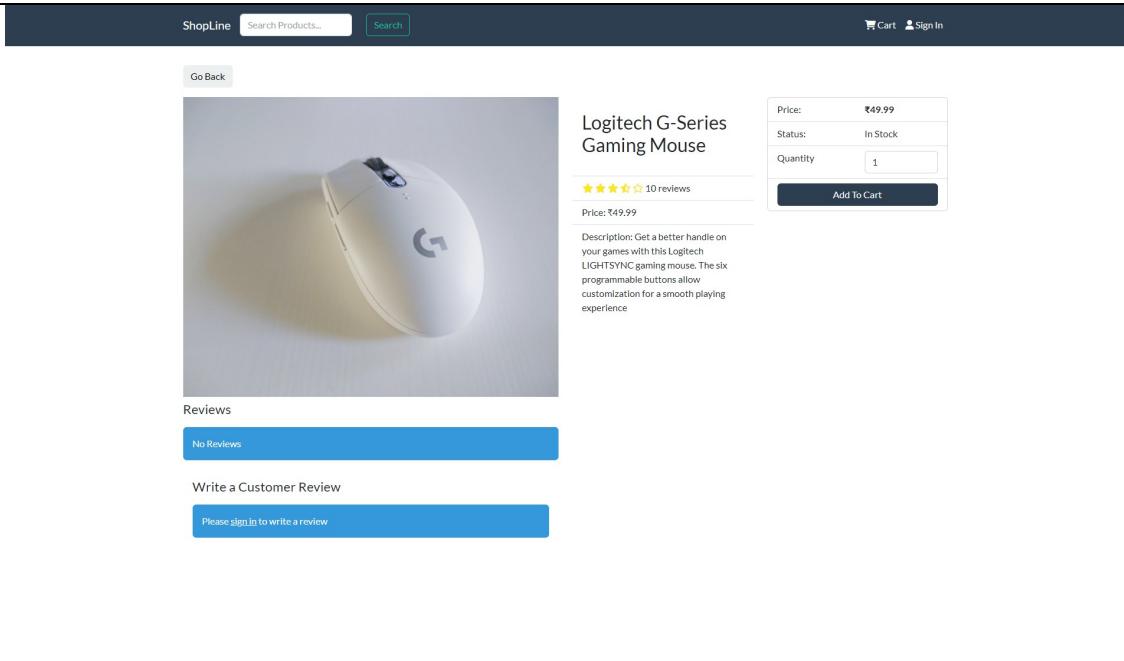
2. Failure –

- a. User doesn't enter correct email and password.
- b. User clicked exit button.
- c. User has not registered its account.

#003

Title : Add to Cart

As a [Registered Customer], I want to [add products to cart], So that I can make [purchase]



Acceptance Criteria:

- 1. Success –** Registered user can
 - a. Add different products to cart.
 - b. Search Product is available in product database
 - c. Search Product is in stock
- 2. Failure –**
 - a. Search Product is not available in product database
 - b. Search Product is not in stock

#004

Title : Edit Cart

As a [Registered user], I want to [edit cart], So that I can [add or remove] products

The screenshot shows a shopping cart page from ShopLine. At the top, there is a navigation bar with the ShopLine logo, a search bar containing "Search Products...", and a "Search" button. To the right of the search bar is a "Cart" icon and the user's name, "Sarthak". Below the navigation bar, the page title "Shopping Cart" is displayed. The main content area shows a single item in the cart: "Logitech G-Series Gaming Mouse" with a price of ₹49.99. The quantity is set to 1, with a "Decrease" button to the left and a "Delete" button to the right. To the right of the item details, a summary box displays "Subtotal (1) items" and "₹49.99", followed by a "Proceed To Checkout" button. At the bottom of the page, a copyright notice reads "Copyright © 2022 - ShopLine".

Acceptance Criteria:

- 1. Success –** Registered user can
 - a. Edit different products in cart.
- 2. Failure –**
 - a. Product unavailable

#005

Title : Place Order

User Story: As a [Registered Customer], I want to [pay] for my purchase, So that my order is [confirmed/Purchased]

The screenshot shows the ShopLine Place Order interface. At the top, there's a navigation bar with 'ShopLine', a search bar ('Search Products...'), a 'Search' button, a cart icon ('Cart'), and a user profile ('Sarthak'). Below the navigation, there are tabs for 'Sign In', 'Shipping', 'Payment', and 'Place Order'. The 'Shipping' tab is active, displaying the address: 'Cen 989 near bai ji ki kutia , nangli ashram , anant nagar, 141401. Khanna punjab, Khanna, 141401, India'. The 'Payment Method' section shows 'Method: GPay'. The 'Order Items' section lists a single item: 'Logitech G-Series Gaming Mouse' with a small thumbnail image. To the right, an 'Order Summary' table provides a breakdown of costs:

Order Summary	
Items	₹49.99
Shipping	₹50.00
Tax	₹7.50
Total	₹107.49

A large 'Place Order' button is prominently displayed at the bottom of the summary table.

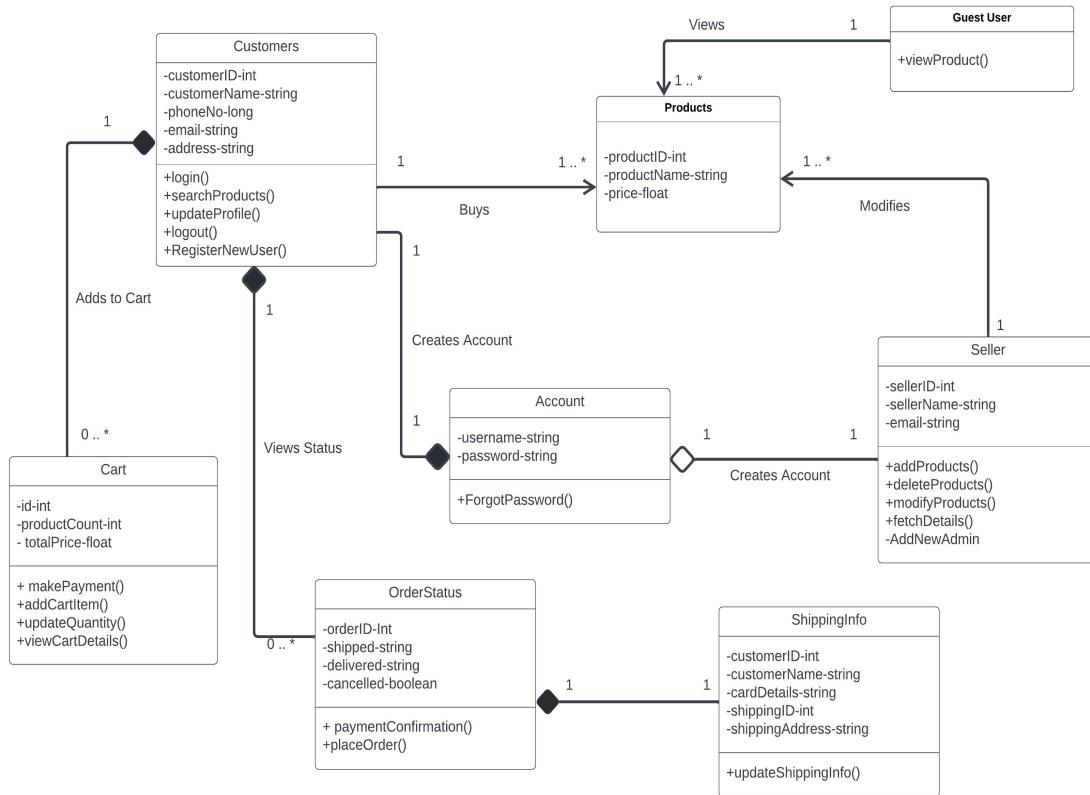
Acceptance Criteria:

- 1. Success – Registered user can**
 - a. There should be at least 1 element in cart.
 - b. Customer should have chosen a payment option.
 - c. Customer should have filled address details
- 2. Failure –**
 - a. User logout
 - b. There is no element in cart.
 - c. Customer have not chosen any payment option
 - d. Customer has not filled payment details right.

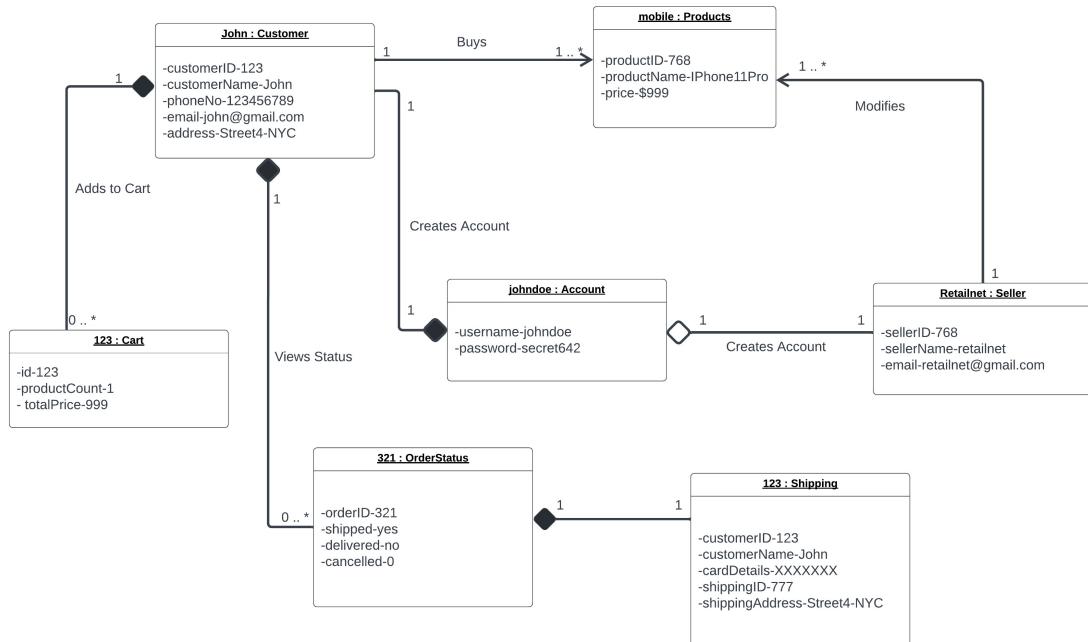
3. Design Phase

3.1 Class Diagram & Object Diagram

Class Diagram:

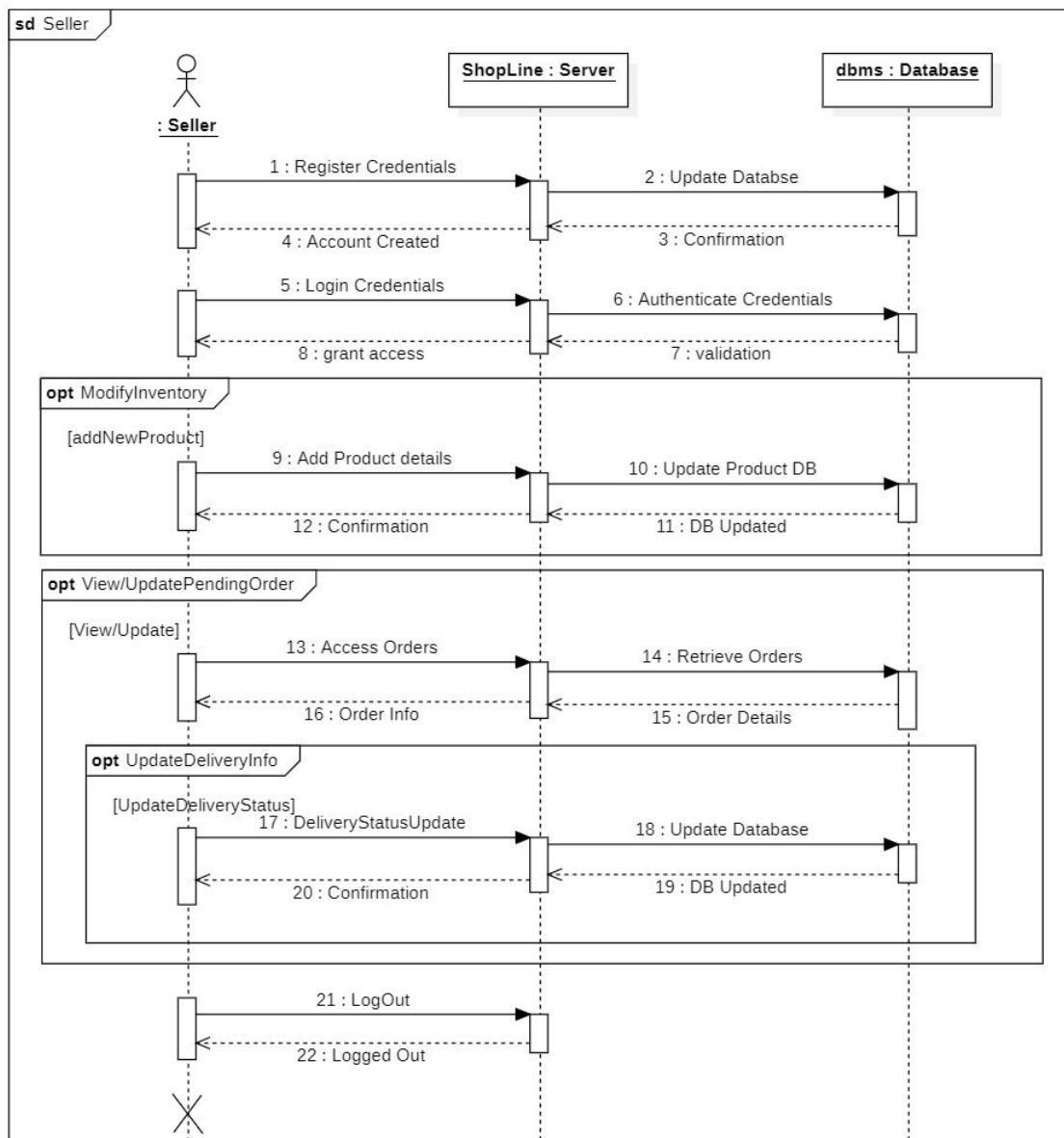


Object Diagram:

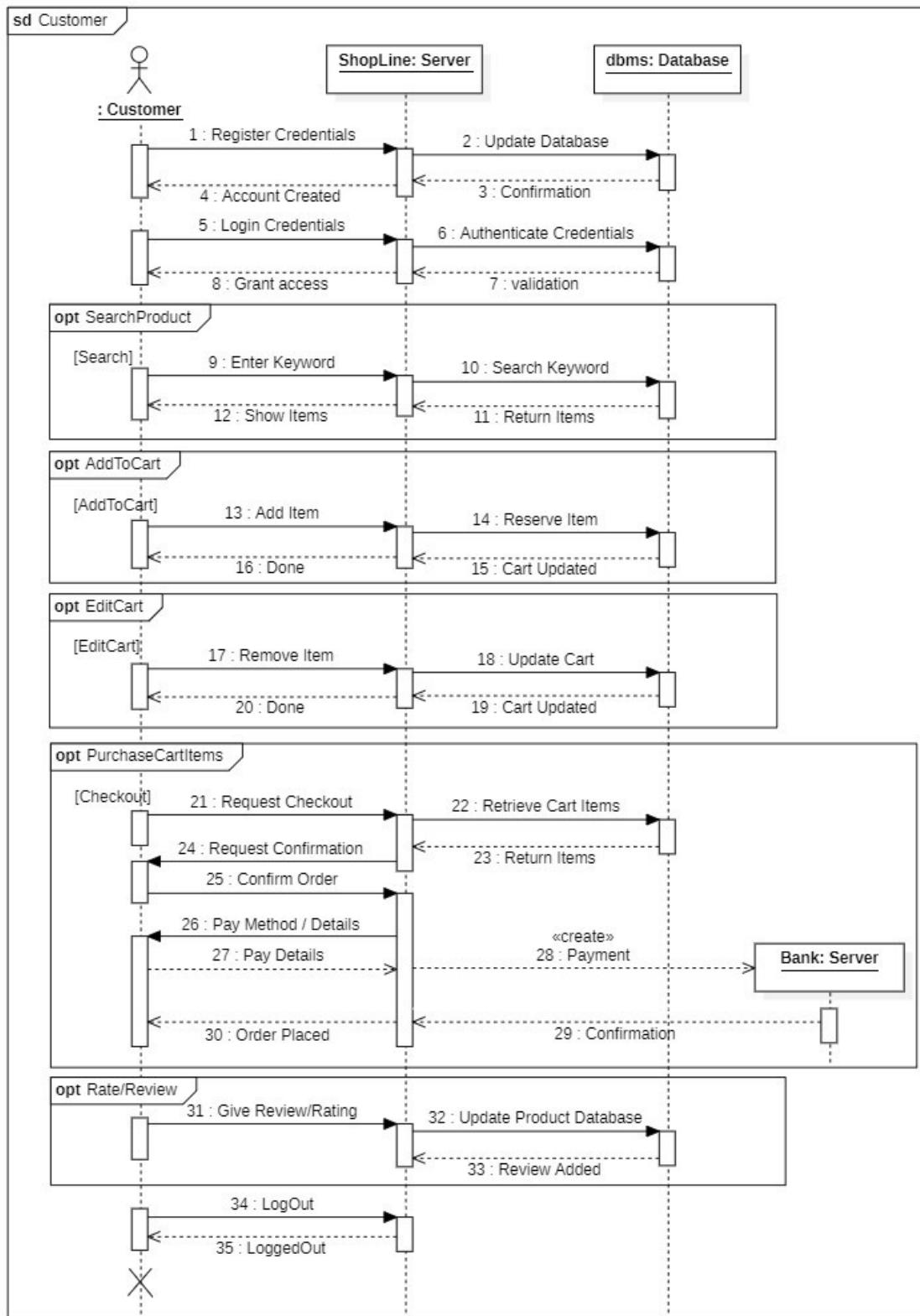


3.2 Sequence Diagrams

Seller Sequence Diagram:

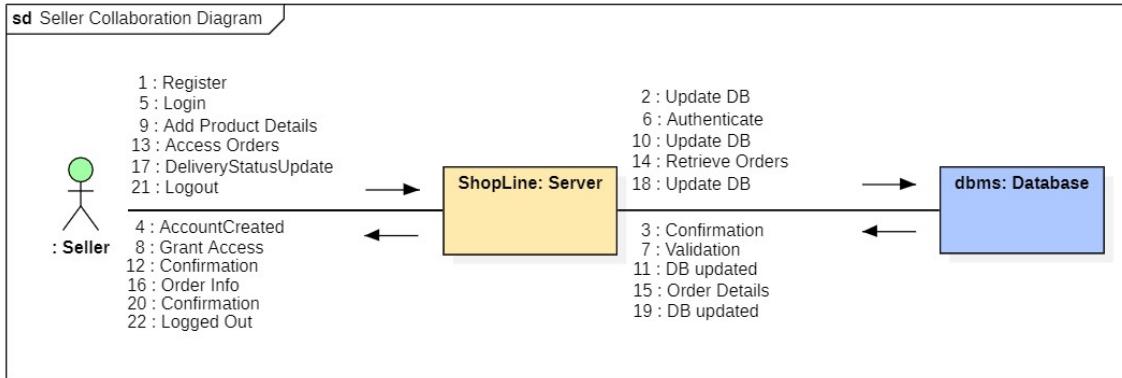


Customer Sequence Diagram:

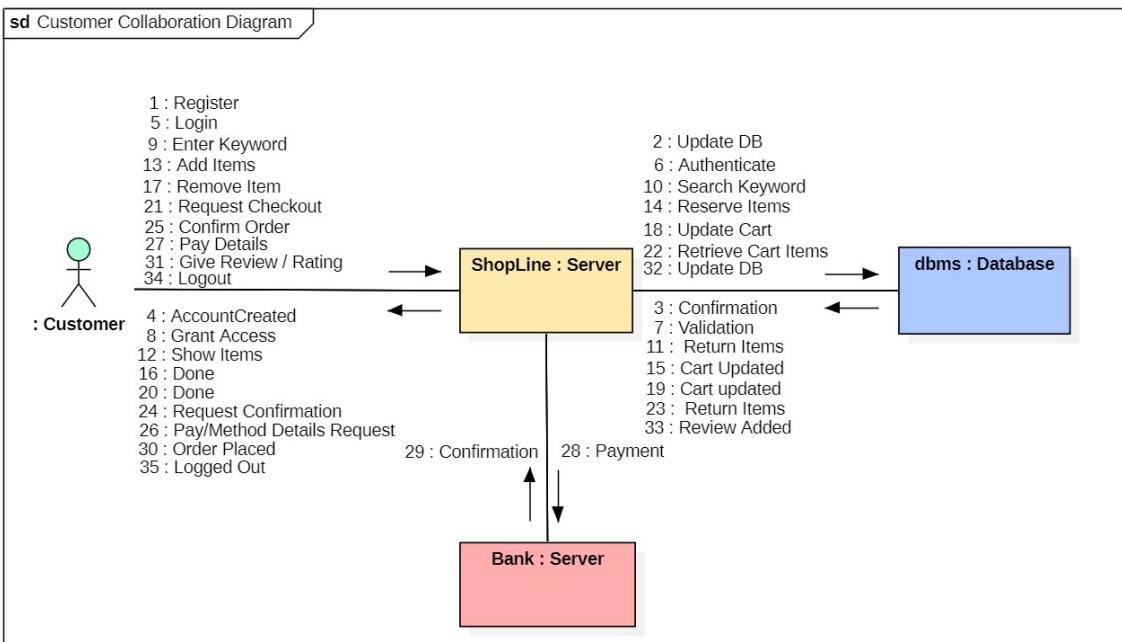


3.3 Collaboration Diagrams

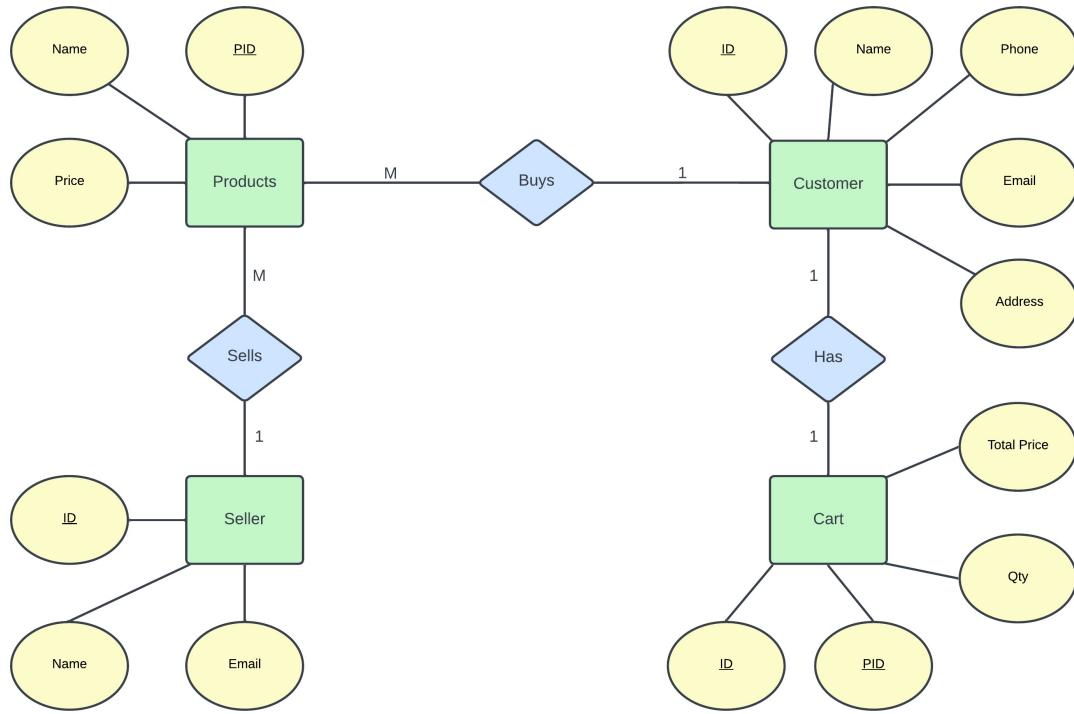
Seller Sequence Diagram:



Customer Sequence Diagram:

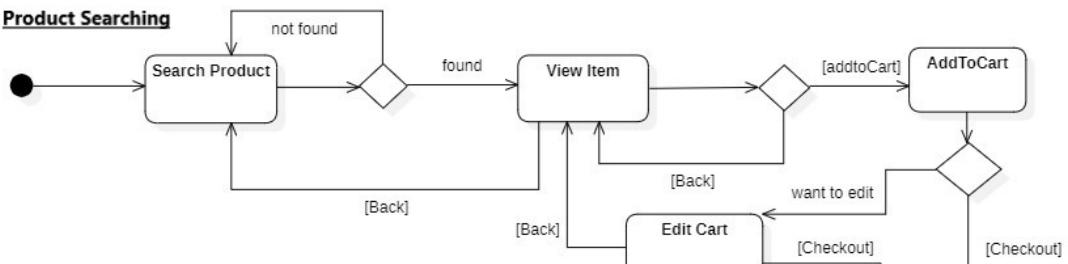


3.4 Database Design - ER Diagram

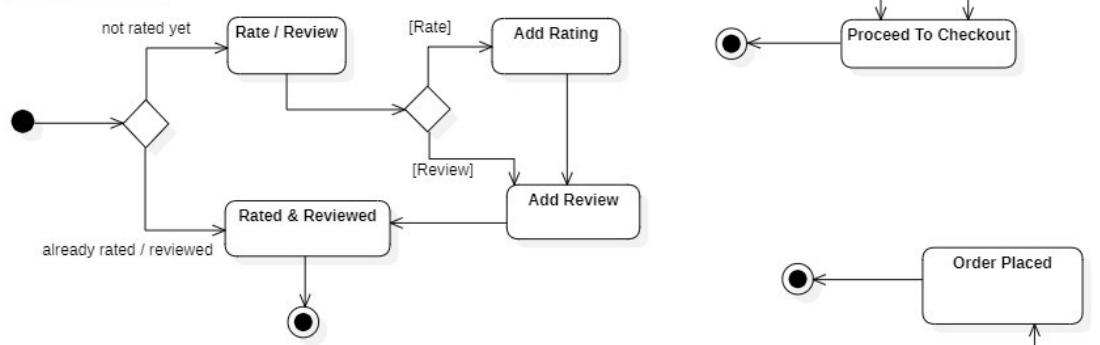


3.5 State Chart Diagrams

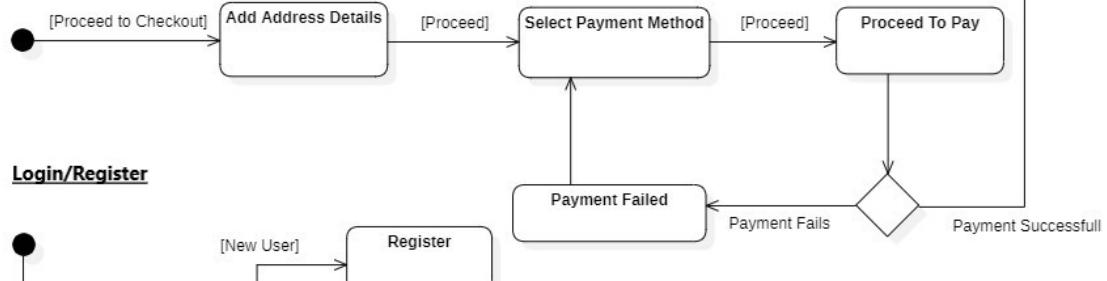
Product Searching



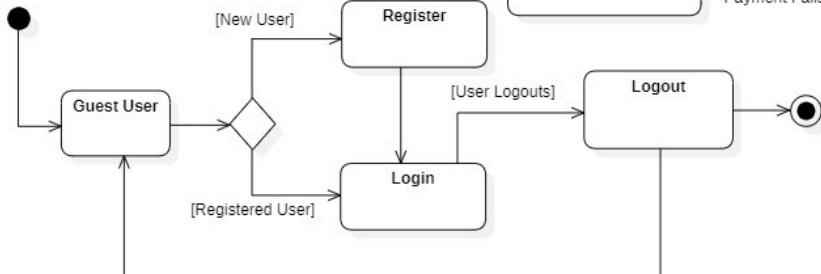
Rating & Review



Checkout

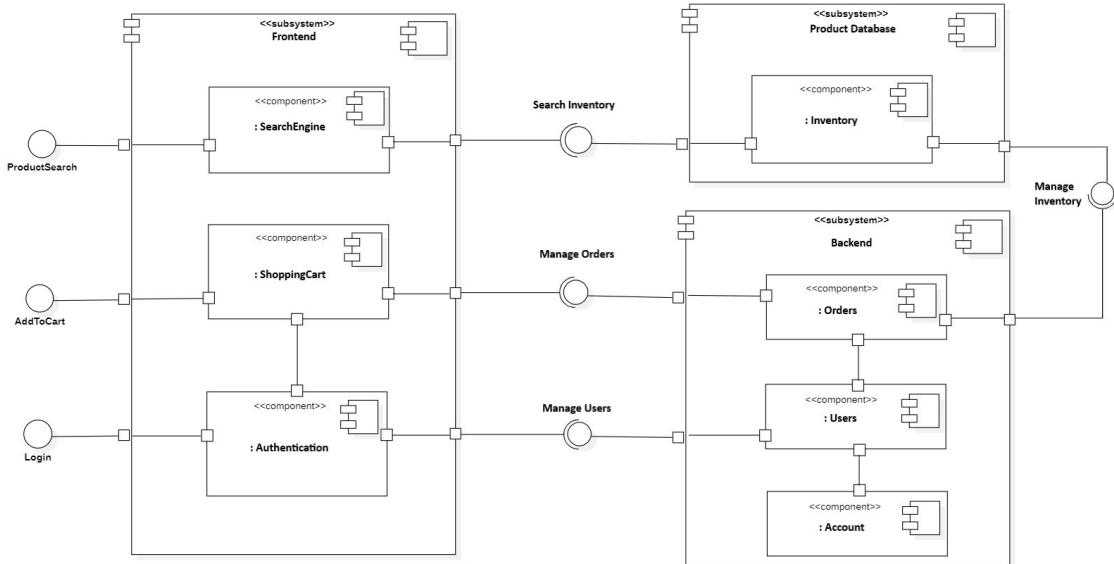


Login/Register

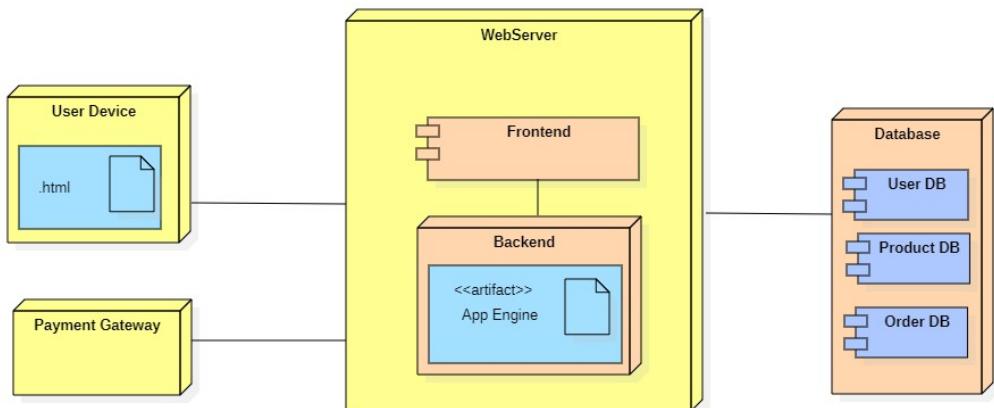


4. Implementation

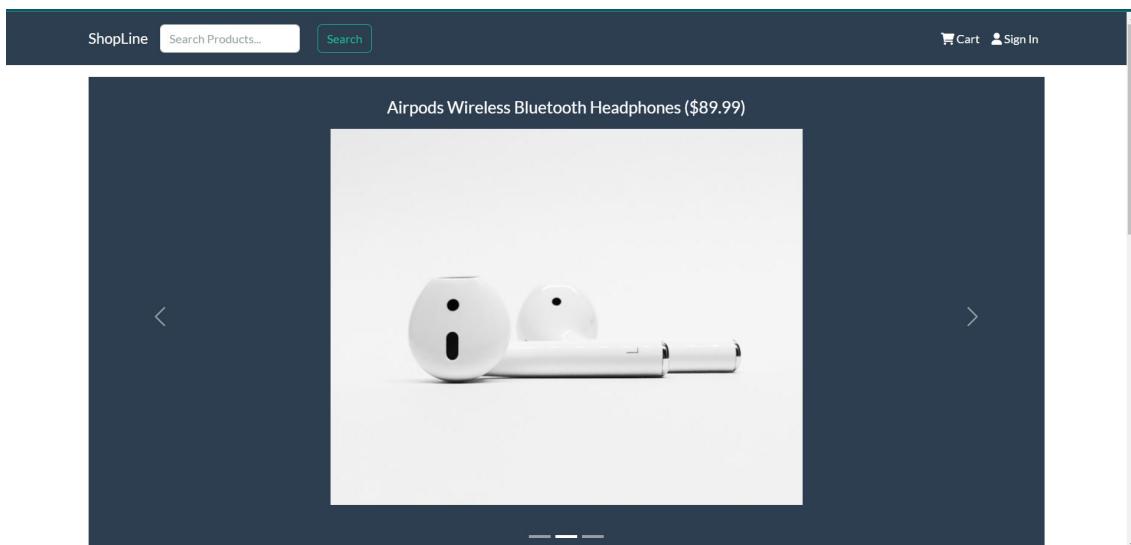
4.1 Component Diagram



4.2 Deployment Diagram



4.3 Screenshots of Working Project



A screenshot of a product page for a 'Logitech G-Series Gaming Mouse'. The page includes a large image of the white mouse, its price (\$49.99), and a quantity selector set to 1. It also shows a rating of 10 reviews and a button to 'Add To Cart'. Below the main product image, there's a section for reviews with a 'No Reviews' button and a 'Write a Customer Review' link, which includes a 'Please sign in to write a review' message.

A screenshot of a 'Sign In' page. It features fields for 'Email Address' containing 'admin@example.com' and 'Password' containing '*****'. A 'Sign In' button is at the bottom. Below the form, there's a link for 'New Customer? [Register](#)'.

ShopLine Cart Sarthak ▾

Shopping Cart

	Logitech G-Series Gaming Mouse	₹49.99	<input type="text" value="1"/>	<input type="button" value="Delete"/>	Subtotal (1) items	₹49.99
						<input type="button" value="Proceed To Checkout"/>

Copyright © 2022 - ShopLine

ShopLine Cart  Sign In

Sign Up

Name

Email Address

Password

Confirm Password

Have an account? [Login](#)

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ShopLine Cart Sarthak ▾

[Sign In](#) [Shipping](#) [Payment](#) [Place Order](#)

Shipping

Address

City

Postal Code

Country

Copyright © 2022 - ShopLine

ShopLine

Cart Sarthak ▾

[Sign In](#) [Shipping](#) [Payment](#) [Place Order](#)

Payment Method

Select Method

- GPay
- Cash On Delivery
- Credit Card / PayPal

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ShopLine

Cart Sarthak ▾

[Sign In](#) [Shipping](#) [Payment](#) [Place Order](#)

Shipping

Address: Cen 989 near bai ji ki kutia , nangli ashram , anant nagar, 141401. Khanna punjab, Khanna, 141401, India

Payment Method

Method: GPay

Order Items



[Logitech G-Series Gaming Mouse](#)

1 x ₹49.99 = ₹49.99

Order Summary

Items	₹49.99
Shipping	₹50.00
Tax	₹7.50
Total	₹107.49

Copyright © 2022 - ShopLine

Order 638597d616527756cfa3f935

Order Summary

Items	₹49.99
Shipping	₹50.00
Tax	₹7.50
Total	₹107.49

Shipping

Name: Sarthak

Email: sarthaktest@gmail.com

Address: Cen 989 near bai ji ki kutia , nangli ashram , anant nagar, 141401. Khanna punjab, Khanna, 141401, India

Not Delivered

Payment Method

Method: GPay

Paid on 2022-11-29T05:25:44.358Z

Order Items



[Logitech G-Series Gaming Mouse](#)

1 x ₹49.99 = ₹49.99

Copyright © 2022 - ShopLine

5. Testing

5.1 Cyclomatic Complexity

From the State Chart Diagram , Cyclomatic Complexity can be calculated as

No. edges in chart – No. of Nodes in the chart +2 . Or we can say it is equal to total No. of regions made by the chart.

Hence Cyclomatic Complexities are

Product Search : 6

Rating & Review : 3

Checkout : 2

Login : 3

5.2 Test Cases

Test Case #: 01	Test Case Name: Authentication	Page: 1 of 1
System: ShopLine	Subsystem: ShopLine	
Designed by: Sarthak, Vishvam	Design Date: 25 / 11 / 2022	
Executed by: Sarthak, Vishvam	Execution Date: 27 / 11 / 2022	
Short Description: Register & Login		

Pre-conditions:

1. Website is Running
2. Webpage is visible
3. User is in Guest mode

Step	Action	Expected System Response	Pass/ Fail	Comment
1.	Click Sign In from Navigation Bar	Sign In page loads up		
2.	Click Register	Registration page loads up		
3.	Fill Details and click Register	User Account gets created and user gets logged in automatically		

Post-conditions:

User is Redirected to Home Page after getting logged in.

Test Case #: 02	Test Case Name: Login	Page: 1 of 1
System: ShopLine	Subsystem: ShopLine	
Designed by: Sarthak , Vishvam	Design Date: 25 / 11 / 2022	
Executed by: Sarthak , Vishvam	Execution Date: 27 / 11 / 2022	
Short Description: Login with old User		

Pre-conditions:

1. Website is Running
2. Webpage is visible
3. User is in Guest mode

Step	Action	Expected System Response	Pass/ Fail	Comment
1.	Click Sign In from Navigation Bar	Sign In page loads up		
2.	Fill Details and click Sign In	User gets logged in		

Post-conditions:

User is Redirected to Home Page after getting logged in.

Test Case #: 03	Test Case Name: Search & View	Page: 1 of 1
System: ShopLine	Subsystem: ShopLine	
Designed by: Sarthak , Vishvam	Design Date: 25 / 11 / 2022	
Executed by: Sarthak , Vishvam	Execution Date: 27 / 11 / 2022	
Short Description: Search & View Product		

Pre-conditions:

1. User is in either Guest Mode or Logged In Mode
2. Search bar is visible and accessible
3. User must know complete name or keyword for the product or its brand.

Step	Action	Expected System Response	Pass/ Fail	Comment
1.	Search for some product	Website searcher the product in the database and returns matching entries		
2.	Click on the listed product (if found)	Product View and Description opens up		

Post-conditions:

User is able to view the product page (if product is there in the database).

Test Case #: 04	Test Case Name: Add & Edit Cart Page: 1 of 1
System: ShopLine	Subsystem: ShopLine
Designed by: Sarthak , Vishvam	Design Date: 25 / 11 / 2022
Executed by: Sarthak , Vishvam	Execution Date: 27 / 11 / 2022
Short Description: Cart Functionality	

Pre-conditions:

1. User is in either Guest Mode or Logged In Mode
2. Desired Product Page is visible
3. Product is in Stock

Step	Action	Expected System Response	Pass/ Fail	Comment
1.	Click on Add to Cart	Product Gets added to cart and website redirects to Cart View		
2.	Edit Quantity or add New Product	Cart gets updated respectively		

Post-conditions:

User is redirected to Cart View Page and is able to see Proceed to Checkout Button

Test Case #: 05	Test Case Name: Order & Payment	Page: 1 of 1
System: ShopLine	Subsystem: ShopLine	
Designed by: Sarthak , Vishvam	Design Date: 25 / 11 / 2022	
Executed by: Sarthak , Vishvam	Execution Date: 27 / 11 / 2022	
Short Description: Complete the Order		

Pre-conditions:

1. User is Signed In
2. User has products in the Cart
3. User has address and payment details ready

Step	Action	Expected System Response	Pass/ Fail	Comment
1.	Click on Proceed To Checkout in Cart View Page	Website requests address details from user		
2.	Fill Details and click Continue	Details gets saved and user is redirected to select payment method page		
3.	Select Payment Method	Order Summary page loads up		
4.	Click on Place Order and Make Payment	Order Gets Placed		

Post-conditions:

User is redirected to Order Summary Page and delivery status can be seen for the order

5.3 Test Report

Test Case #: 01	Test Case Name: Authentication	Page: 1 of 1
System: ShopLine	Subsystem: ShopLine	
Designed by: Sarthak, Vishvam	Design Date: 25 / 11 / 2022	
Executed by: Sarthak, Vishvam	Execution Date: 27 / 11 / 2022	
Short Description: Register & Login		

Pre-conditions:

1. Website is Running
2. Webpage is visible
3. User is in Guest mode

Step	Action	Expected System Response	Pass/ Fail	Comment
1.	Click Sign In from Navigation Bar	Sign In page loads up	Pass	
2.	Click Register	Registration page loads up	Pass	
3.	Fill Details and click Register	User Account gets created and user gets logged in automatically	Pass	

Post-conditions:

User is Redirected to Home Page after getting logged in.

Test Case #: 02	Test Case Name: Login	Page: 1 of 1
System: ShopLine	Subsystem: ShopLine	
Designed by: Sarthak , Vishvam	Design Date: 25 / 11 / 2022	
Executed by: Sarthak , Vishvam	Execution Date: 27 / 11 / 2022	
Short Description: Login with old User		

Pre-conditions:

1. Website is Running
2. Webpage is visible
3. User is in Guest mode

Step	Action	Expected System Response	Pass/ Fail	Comment
1.	Click Sign In from Navigation Bar	Sign In page loads up	Pass	
2.	Fill Details and click Sign In	User gets logged in	Pass	

Post-conditions:

User is Redirected to Home Page after getting logged in.

Test Case #: 03	Test Case Name: Search & View Page: 1 of 1
System: ShopLine	Subsystem: ShopLine
Designed by: Sarthak , Vishvam	Design Date: 25 / 11 / 2022
Executed by: Sarthak , Vishvam	Execution Date: 27 / 11 / 2022
Short Description: Search & View Product	

Pre-conditions:

1. User is in either Guest Mode or Logged In Mode
2. Search bar is visible and accessible
3. User must know complete name or keyword for the product or its brand.

Step	Action	Expected System Response	Pass/ Fail	Comment
1.	Search for some product	Website searcher the product in the database and returns matching entries	Pass	
2.	Click on the listed product (if found)	Product View and Description opens up	Pass	

Post-conditions:

User is able to view the product page (if product is there in the database).

Test Case #: 04	Test Case Name: Add & Edit Cart Page: 1 of 1
System: ShopLine	Subsystem: ShopLine
Designed by: Sarthak , Vishvam	Design Date: 25 / 11 / 2022
Executed by: Sarthak , Vishvam	Execution Date: 27 / 11 / 2022
Short Description: Cart Functionality	

Pre-conditions:

1. User is in either Guest Mode or Logged In Mode
2. Desired Product Page is visible
3. Product is in Stock

Step	Action	Expected System Response	Pass/ Fail	Comment
1.	Click on Add to Cart	Product Gets added to cart and website redirects to Cart View	Pass	
2.	Edit Quantity or add New Product	Cart gets updated respectively	Pass	

Post-conditions:

User is redirected to Cart View Page and is able to see Proceed to Checkout Button

Test Case #: 05	Test Case Name: Order & Payment	Page: 1 of 1
System: ShopLine	Subsystem: ShopLine	
Designed by: Sarthak , Vishvam	Design Date: 25 / 11 / 2022	
Executed by: Sarthak , Vishvam	Execution Date: 27 / 11 / 2022	
Short Description: Complete the Order		

Pre-conditions:

1. User is Signed In
2. User has products in the Cart
3. User has address and payment details ready

Step	Action	Expected System Response	Pass/ Fail	Comment
1.	Click on Proceed To Checkout in Cart View Page	Website requests address details from user	Pass	
2.	Fill Details and click Continue	Details gets saved and user is redirected to select payment method page	Pass	
3.	Select Payment Method	Order Summary page loads up	Pass	
4.	Click on Place Order and Make Payment	Order Gets Placed	Pass	

Post-conditions:

User is redirected to Order Summary Page and delivery status can be seen for the order