

# SHOP FOR HOME

Capstone Project

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## Abstract

This paper provides a concise overview of an e-commerce web application built using Angular for the frontend and an ASP.NET MVC backend. The application is architected around a RESTful API, supported by a Microsoft SQL (MS SQL) Server database, with Swagger utilized for comprehensive API documentation and testing.

With many physical stores closed, the primary goal of this project is to create an e-commerce website for home décor items. The objective is to develop a general-purpose online store where consumers can shop for home decorative products while remaining at home. This virtual store allows clients to browse inventory, choose items of interest, and place them in a shopping basket. At checkout, the items are shown as an order, where more details are required to finalize the purchase.

This home décor shop is aimed at vendors who want to reach the maximum cross-section of customers. The project envisages bridging the gap between the seller, the retailer, and the customer. The platform is designed to be user-friendly, 'quick to learn,' and reliable. It is intended to be a stand-alone product that does not depend on other software and is built to run in a Windows-based server environment.

## CHAPTER-1

### 1. Introduction

This document aims to give a brief description about E-Commerce web application using angular, ASP.NET MVC and MySQL. The main aim of this project is to build an E-commerce website of home decor items in the world where all the offline shops are doing business online. E-commerce is fast gaining ground as an accepted and used business paradigm.

More and more business houses are implementing web sites providing functionality for performing commercial transactions over the web. It is reasonable to say that the process of shopping on the web is becoming commonplace. The objective of this project is to develop a general-purpose e-commerce store where product like clothes can be bought from the comfort of home through the Internet.

However, for implementation purposes, this paper will deal with an online shopping for clothes. An online store is a virtual store on the Internet where customers can browse the catalogue and select products of interest. The selected items may be collected in a shopping cart. At checkout time, the items in the shopping cart will be presented as an order. At that time, more information will be needed to complete the transaction.

Usually, the customer will be asked to fill or select a billing address, a shipping address, a shipping option.

## 1.2 Problem Statement

Shop For Home is a popular store offering home décor products. Due to COVID-19, all offline shopping has stopped, and the store wants to move its operations to an online platform by creating a web application.

There are 2 users on the application:

### 1. User

### 2. Admin

**Admin Stories –**

1. Login, Logout, and Registration:

- As an admin I should be able to login, Logout and Register into the application.

2. User Management (CRUD):

- As an Admin, I should be able to create, read, update, and delete user accounts.

3. Product Management (CRUD):

- As an Admin, I should be able to create, read, update, and delete products in the catalogue.

4. Bulk Product Upload via CSV:

- As an Admin I should be able to get bulk upload option to upload a csv for products features

5. Stock Management:

- As an Admin I should be able to get the stocks.
- As an Admin I should be able to receive notification if any stock is less than 10.

6. Sales Reports:

- As an Admin, I should be able to generate sales reports for a specified duration.

7. Discount Coupons for Specific Users:

- As an Admin I should be able to set the discount coupons for the particular set of users

**User Stories –**

1. Login, Logout, and Registration:

- As an admin I should be able to login, Logout and Register into the application.

2. User Management (CRUD):

- As an Admin, I should be able to create, read, update, and delete user accounts.

3. Product Management (CRUD):

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### **1.3 Objective of the Project**

Reaching as many clients as possible at the correct moment will enhance sales and the profitability of the company. E-commerce involves the purchasing and selling of items as well as sending money or data through the internet.

The main objectives are as follows:

1. Find the best way for the customer needs
2. Make them purchase the products
3. Clarify their Queries by mailing or any Contact service
4. Deliver the products

### **1.4 Theory**

The logo creates a feel, an image, and a brand for your site. The Web is a visual medium, and an eye-catching logo is the first impression that you will send out to your visitors. A well-designed logo showcases professionalism and conveys what your site is all about.

You have the option of choosing to host your website on your own internal server if you have the necessary hardware, space, and high-speed internet access and are prepared to pay the associated costs. This is the ideal choice if you want more control over the administration of your website or have content that is not seen as appropriate by hosting providers, are prepared to operate as your own system administrator, and have the technical capacity to do so.

Be aware that this option requires a lot of time and money, and that you are solely responsible for making sure the site is operational. Windows will be the operating system for the product. The system for an online store selling home decor is a website that should function in all well-known browsers. For example, consider Microsoft Internet Explorer, Google Chrome, and Mozilla Firefox. Additionally, IE 6.0 will be compatible with it.

The majority of the functions will work with Mozilla Firefox and Opera 7.0 or later. The internet connection would be the only prerequisite for using this online product. The hardware configuration consists of a 40GB hard drive, a 15-inch colour monitor, and a keyboard with 122 keys. Keyboards and mice are the two most essential input and output devices.

## CHAPTER-2

### SHOP FOR HOME

#### 2.1 INTRODUCTION

E-commerce brings convenience for customers as they do not have to leave home and only need to browse website online, especially for buying the products which are not sold in nearby shops. It could help customers buy wider range of products and save customers' time. Consumers also gain power through online shopping. They are able to research products and compare prices among retailers. Also, online shopping often provides sales promotion or discounts code, thus it is more price effective for customers.

Moreover, e-commerce provides products' detailed information; even the in-store staff cannot offer such detailed explanation. Customers can also review and track the order history online. E-commerce technologies cut transaction costs by allowing both manufacturers and consumers to skip through the intermediaries. This is achieved through extending the search area best price deals and by group purchase. The success of e-commerce in urban and regional levels depend on how the local firms and consumers have adopted to e-commerce.

However, e-commerce lacks human interaction for customers, especially who prefer face-to-face connection. Customers are also concerned with the security of online transactions and tend to remain loyal to well-known retailers. In recent years, clothing retailers such as Tommy Hilfiger have started adding Virtual Fit platforms to their e-commerce sites to reduce the risk of customers buying the wrong sized clothes, although these vary greatly in their fit for purpose.

When the customer regrets the purchase of a product, it involves returning goods and 20 refunding process. This process is inconvenient as customers need to pack and post the goods. If the products are expensive, large or fragile, it refers to safety issues.

## 2.2 FEATURES

### 1. Multiple Payment Options

Shopping cart abandonment is often a big issue for online retailers. To improve your chance of sealing the deal in the final checkout process on your website, be sure to make the purchasing stage as easy as possible for your customers by offering multiple online payment methods in the shopping cart. In addition to offering debit and credit card options, consider adding options for payment providers like PayPal or Stripe. You could also add plugins that have a buy now, pay later functionality to encourage customers to press the “purchase” button.

### 2. Discount to Customers

Then feel that they’re getting a good deal and being treated differently from other customers. Offer personalized deals, offers, and other user features to give them this type of attractive, customized experience. Offer user accounts where customers can access loyalty pricing offers, their personalized Wishlist, and account history. You can also use an ecommerce platform automated emailing system to send targeted special offers to loyal customers.

### 3. Customer Services

A big part of a successful customer experience is providing helpful, accessible customer service. According to Microsoft, 90% of Americans consider customer service an important feature when deciding whether or not to purchase from a company. Include a 24/7 customer service chatbot as one of your ecommerce website features to address customer needs at any time. Plugins like Zendesk or Live Person make it easy for you to add this feature to your website for a small fee.

### 4. Best Reliability

In the modern marketplace, ecommerce consumers are increasingly reliant on their mobile devices. According to Sale Cycle, mobile devices were used in 56% of all online purchases in 2020. In other words, most customers want to browse online stores on their phones.

## 2.3 PERFORMANCE AND SCALABILITY

### Performance:

For increasing the traffic on your website, you have to give special attention to the performance in the non-functional requirements documentation. The focus should be on loading the e-commerce store as fast as possible regardless of the number of integrations and traffic on your website. You can set up the speed benchmark, maximum SKUs which you want to add, or any other performance indicator best for your business. Don't consider the 3rd party system delivery time, because the developers will not have control over the 3rd party API calls.

The operational costs for maintenance are the tricky part of planning a business budget. Thriving the website maintenance from the initial development means cutting the time & cost to determine and resolve the faults of the system in the future. Well, it sounds sad but there is no way to avoid issues in the future and you have to look for a website development company that can maintain your website.

### Scalability:

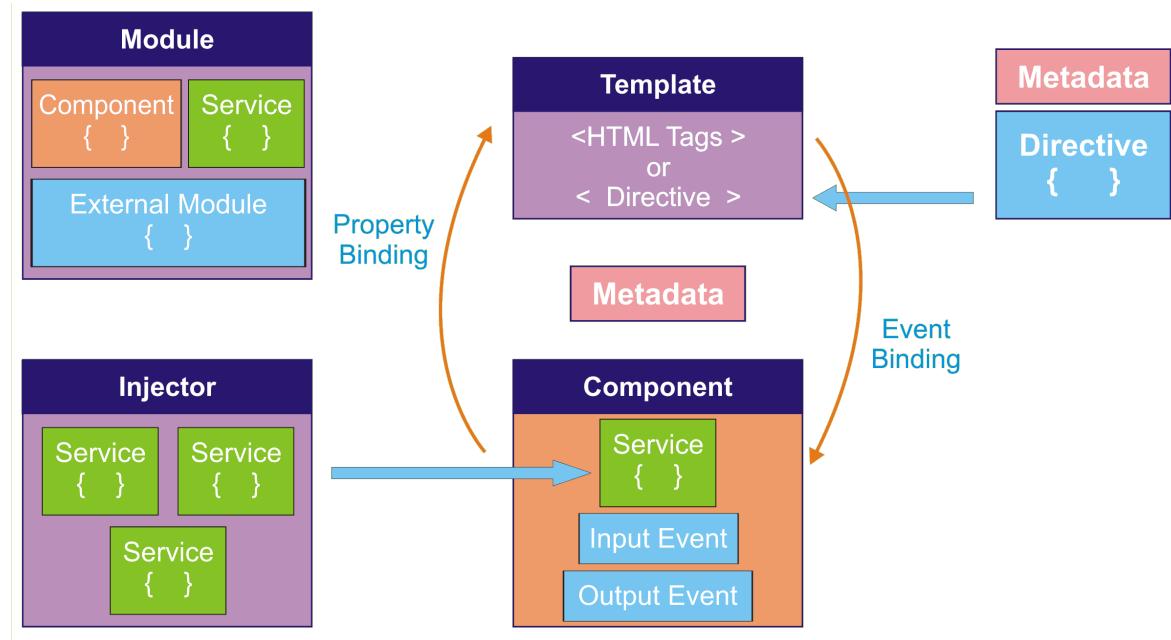
Last but not the least, you have to look for a future-proof solution considering the scalability. It will define how the website can grow and increase its features and functionality without impacting the performance of your website.

You must be able to add more memory, servers, or disc space for making more transactions on your website. On the server side, while entering new markets you may need to add localization features. Overall, this NFR accounts for painless business expansion and has both hardware and software implications.

Security comes with utmost importance if your site is dealing with monetary transactions, users financial and sensitive data. Using an SSL certificate and data privacy policy will create trust among the users for your website and convert the customers into brand advocates. It is also considered for the different admin roles by which you can control who can create, see, copy, change or delete information. Depending upon the location of your business, security also refers to compliance with customer data protection rules such as GDPR in Europe.

## 2.4 ARCHITECTURE

### 1. Angular Architecture:



**Fig.1: Angular Architecture**

There are main eight blocks of Angular.

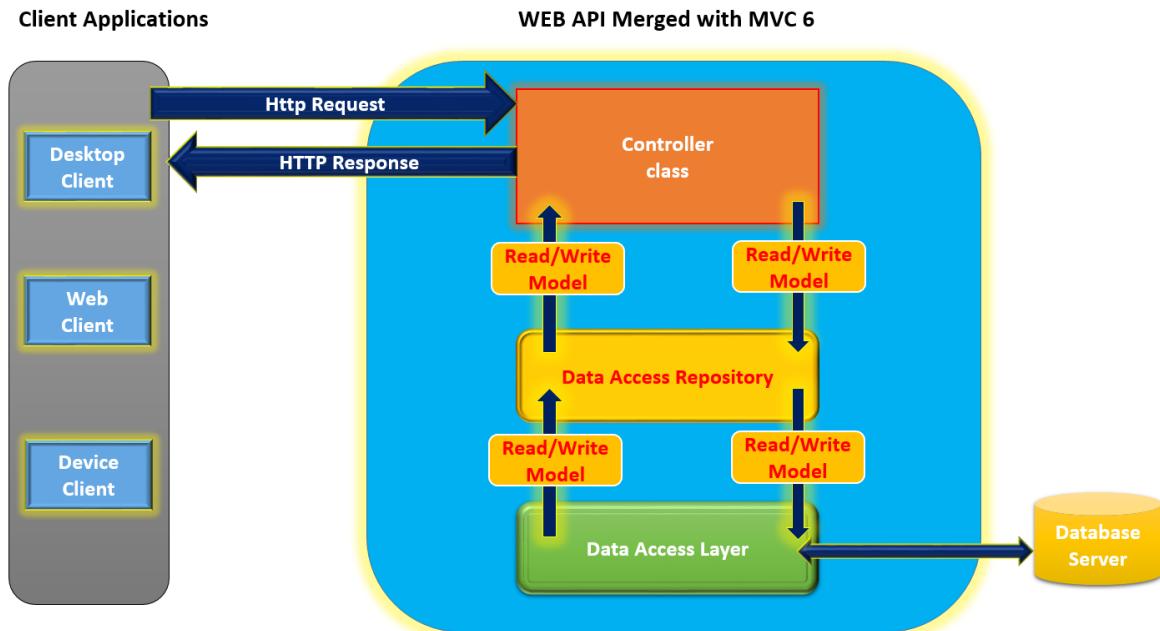
1. Module
2. Component
3. Metadata
4. Template
5. Data Binding
6. Service
7. Directive
8. Dependency

**Injection Description** The architecture of an Angular application relies on certain fundamental concepts. The basic building blocks of the Angular framework are Angular components that are organized into Ng Modules. Ng Modules collect related code into functional sets; an Angular application is defined by a set of Ng Modules

### 2. .NET Architecture:

The Client makes an HTTP request (GET, PUT, POST, etc.)

The HTTP request is forwarded to the Controller. The controller maps the request. It processes the handles and calls the server logic.



**Fig.2: .NET Architecture**

The business logic is performed in the Service layer. The .NET performs all the logic over the data of the database which is mapped to the model

1. Presentation Layer – Authentication & J Son Translation
2. Business Layer – Business Logic, Validation & Authorization
3. Persistence Layer – Storage Logic
4. Database Layer – Actual Database

## 1 Presentation Layer

The presentation layer is the top layer of the .NET architecture. It consists of Views. i.e., the front-end part of the application. It handles the HTTP requests and performs authentication. It is responsible for converting the JSON field's parameter to an Objects and vice-versa. Once it performs the authentication of the request it passes it to the next layer. i.e., the business layers.

## 2 Business Layer

The business layer contains all the business logic. It consists of services classes. It is responsible for validation and authorization.

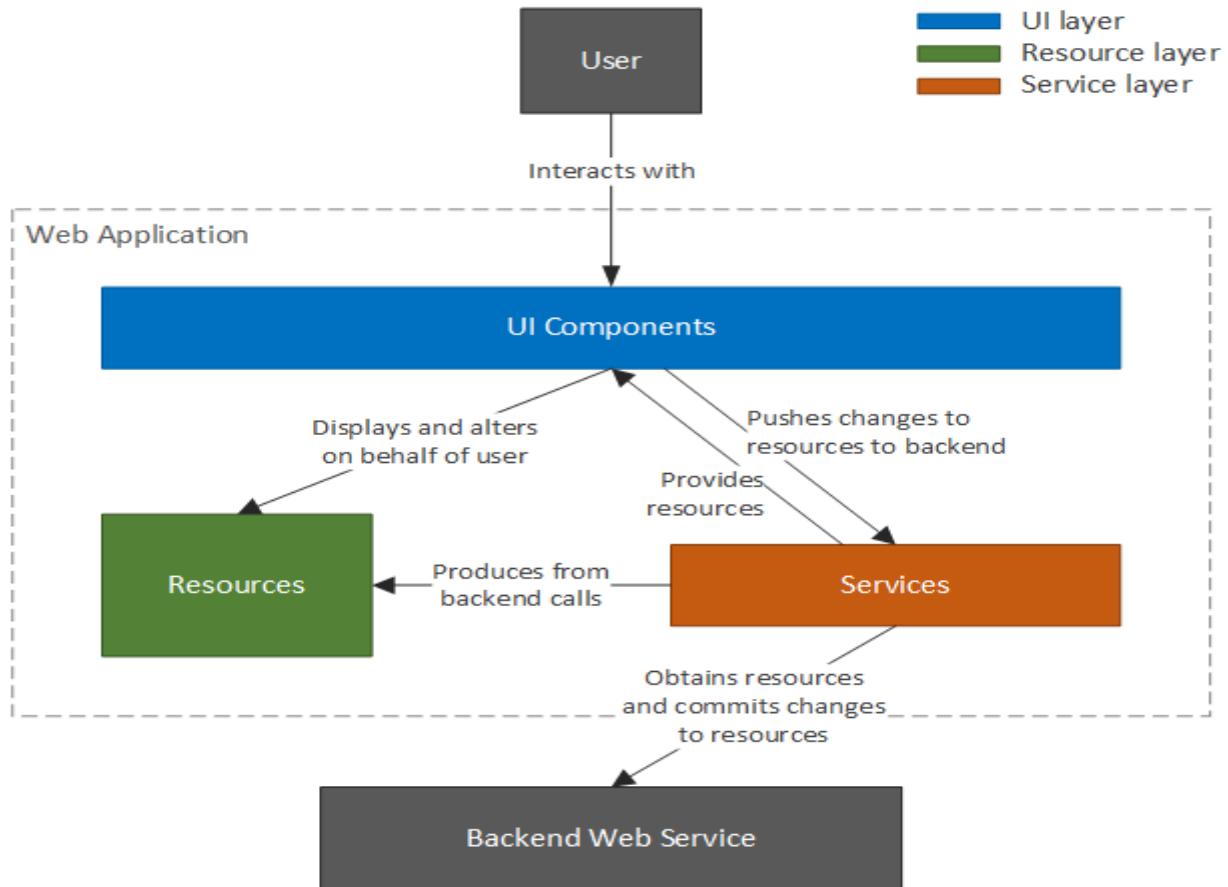
## 3 Persistence Layer

The persistence layer contains all the database storage logic. It is responsible for converting business objects to the database row and vice-versa.

#### 4 Database Layer

The database layer contains all the databases like My SQL. This layer can contain multiple databases. It is responsible for performing CRUD operations.

### 3 Project Architecture



**API Gateway.**

The API gateway is the entry point for clients. Instead of calling services directly, clients call the API gateway, which forwards the call to the appropriate services on the backend.

Advantages of using an API gateway include:

- It decouples clients from service. Services can be versioned or refactored without needing to update all of the clients.
- Services can use messaging protocols that are not web friendly, such as AMQP.
- The API Gateway can perform other crosscutting functions such as authentication, logging, SSL termination, and load balancing.
- Out-of-the-box policies, like forth rootling, caching, transformation, or validation.

## Shop Microservice

Shop Microservice contains business logic and functionalities related to product view page, Cart, Checkout and User login Features. It connects to ecommerce DB(MySQL). This service runs with port number 8080 in this application.

## 2.5 DATABASE

The Database is responsible for total storing information in it, The main operations retrieving data, insertion deletion and updating all these of important points will be takes place in the database.

Tables are created for all entities.

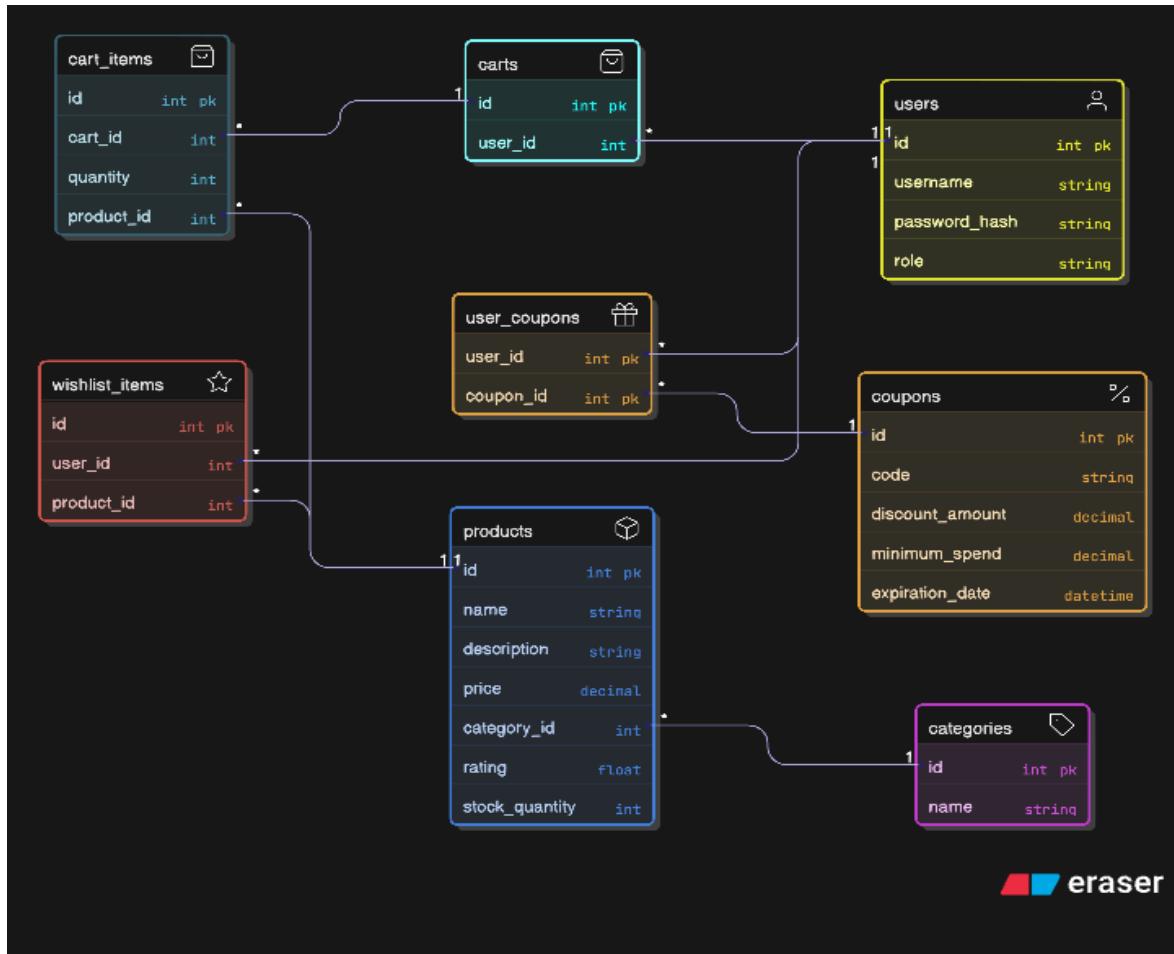
Entities in the Database include:

1. Cart
2. Cartitems
3. Category
4. Coupons
5. Product
6. User
7. User Coupon
8. Wishlistitem

The total information regarding products, users information, admin information every login credentials were stored in the data base.

## Schema:

## SHOP FOR HOME



## CHAPTER-3

## REQUIREMENTS AND RESULTS

### 3.1 SYSTEM REQUIREMENTS

**1 SOFTWARE REQUIREMENTS:** The practical necessities or the general description files consist of the product angle and features, running gadget and working environment, images necessities, layout constraints and consumer documentation. Mapping performance requirements and constraints provides an overview of the project in terms of strengths and weaknesses, and where these issues can be addressed.

**IDE-** eclipse, Visual studio code, MySQL

**TECHNOLOGIES-** .NET, Angular, MySQL

**LANGUAGES-** Java, Html, CSS, JavaScript& type script

**OPERATINGSYSTEM -** windows 7/10/11, Linux & mac os

### 2 HARDWARE REQUIREMENTS:

The minimum hardware requirements are highly dependent on the specific software developed by the specific Enthought Python/VS Code user.

Applications that need to store large arrays/objects in memory require more RAM, and applications that need to perform many calculations or operations faster require a faster processor.

**RAM**-Prefer 4 GB or above

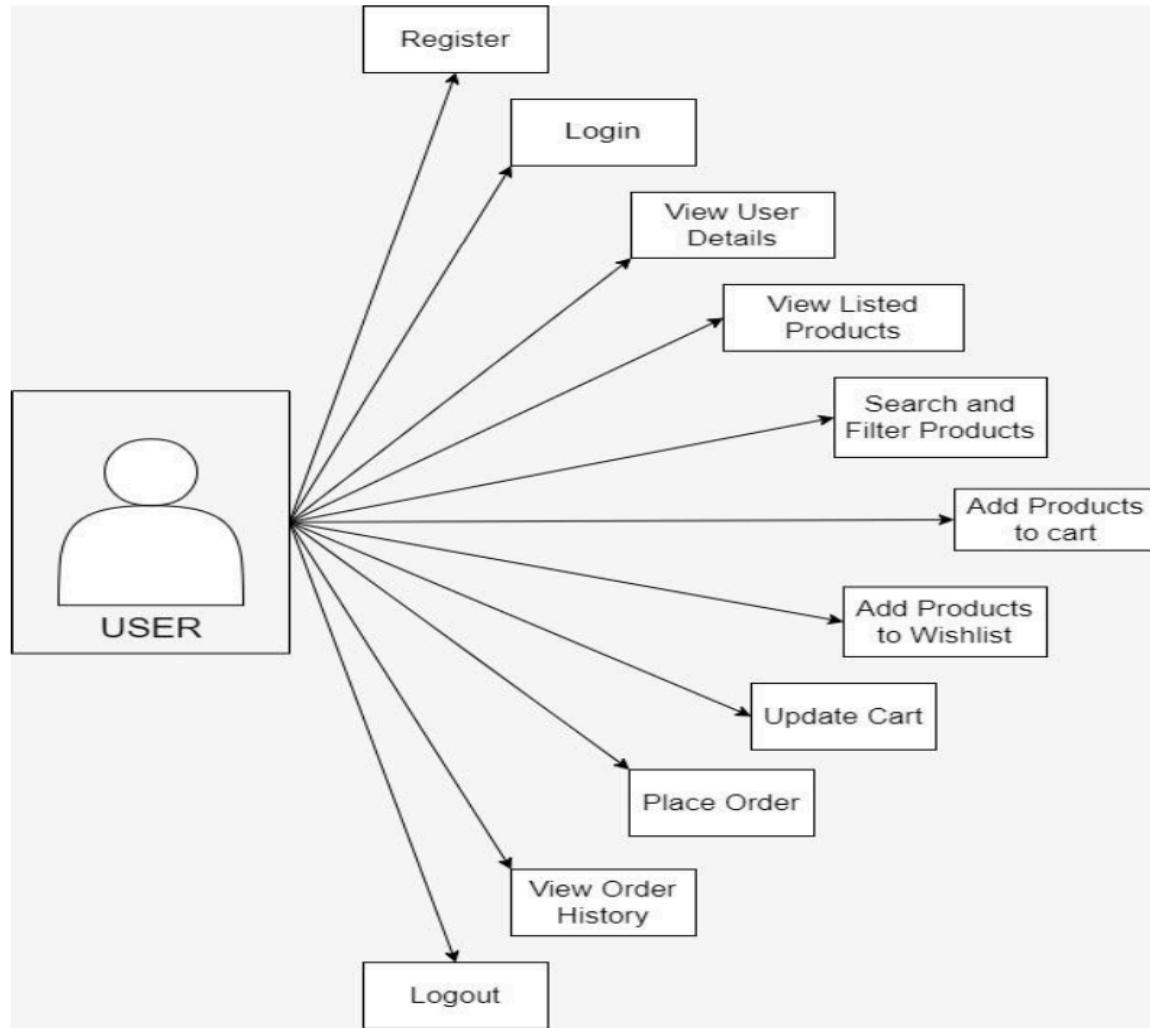
**PROCESSOR**-Intel or AMD dual core x86 processor

**HARDDISC** - 500 MB of free disk space or more

### 3.2. CASE DIAGRAMS

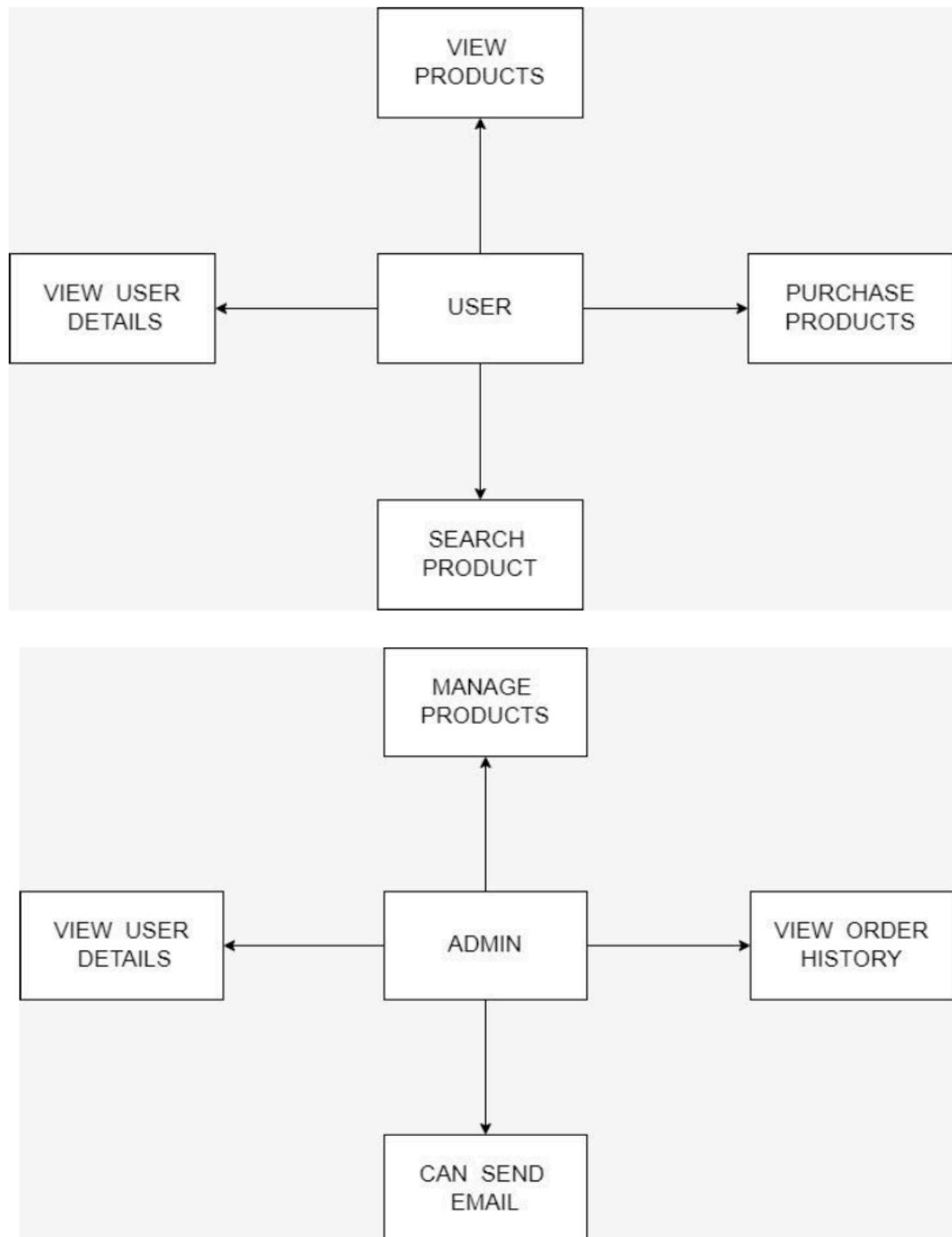
In the Unified Modeling Language (UML), a use case diagram is a specific kind of behavioral diagram that results from and is defined by a use-casestudy. Its objective is to offer a graphical picture of a system's functionality in terms of actors, their objectives (expressed as use cases), and any relationships among those use cases.

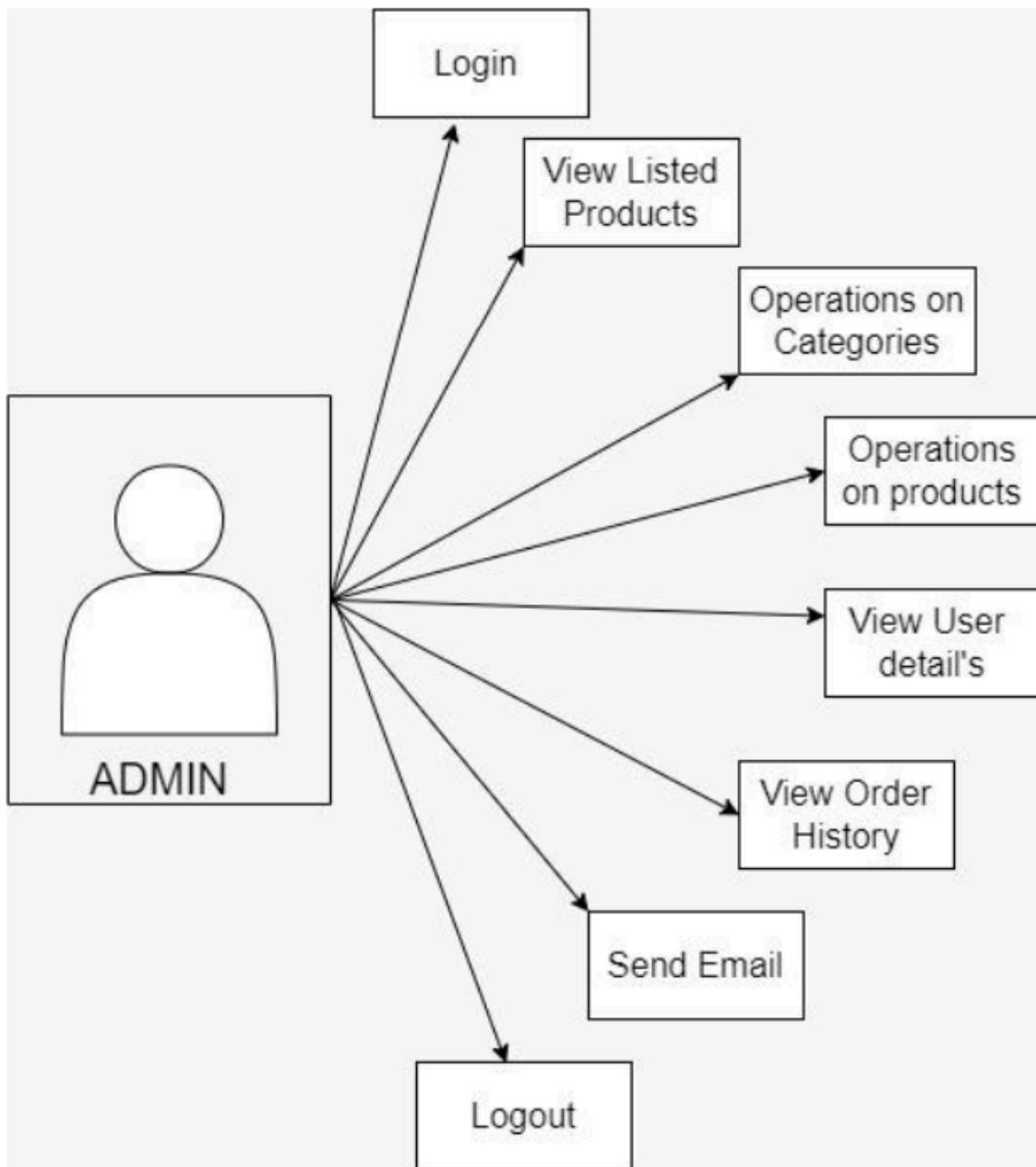
## User Operations



## SHOP FOR HOME

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### 3.3 IMPLEMENTATION

We will implement a simple e-commerce application. We'll develop an API using .NET and a client application that will consume the API using Angular. Basically, the user will be able to add/remove products from a product list to/from a shopping cart and to place an order.

### TECHNOLOGY USED

In below I would like to explain which technologies are used in this project. It's helpful for understand the project layouts & overview of documentation.

## **BACK-END**

1. .Net MVC
2. MySQL

## **FRONT-END**

1. Angular
2. Bootstrap

## **IMPLEMENTATION STEPS**

First you need to start back-end server, after that execute client side. Follow below steps to run this application on your system.

1. First Install .NET, Vs code, MySQL
2. From your local FrontEnd code path -> open cmdEg -> {local path}\ecommerce shop\frontend
3. Run this command -- code .
4. Run Npm install from vs code terminal
5. Run ng serve
6. After the successful compiling you got this link in terminal localhost/4200.
7. Open this link in google chrome

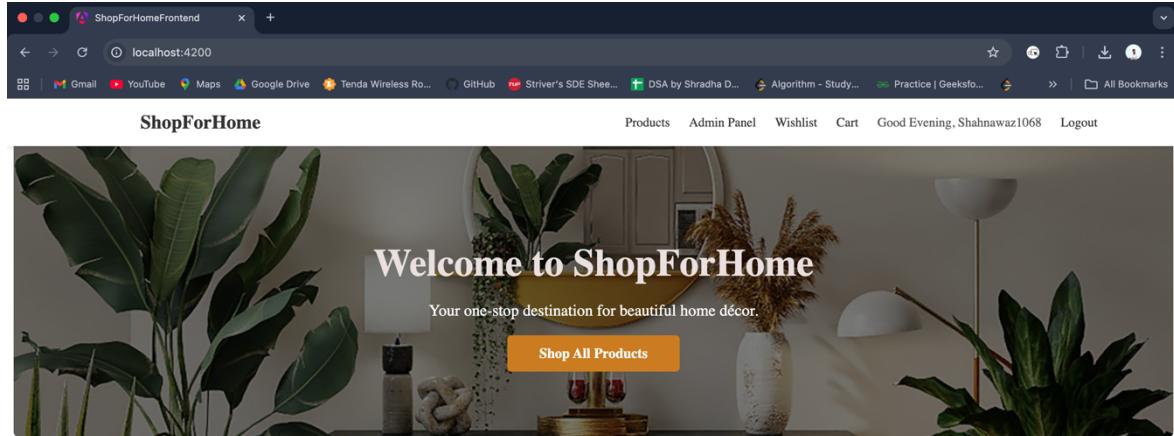
## Database

1. Install Mysql workbench
2. Open that Mysql
3. Open this query editor and You can run the query from sql file.
4. Run the query.

## **3.4. Result**

## SHOP FOR HOME

### USER FUNCTIONALITIES



### FEATURED PRODUCTS



Fig: Homepage

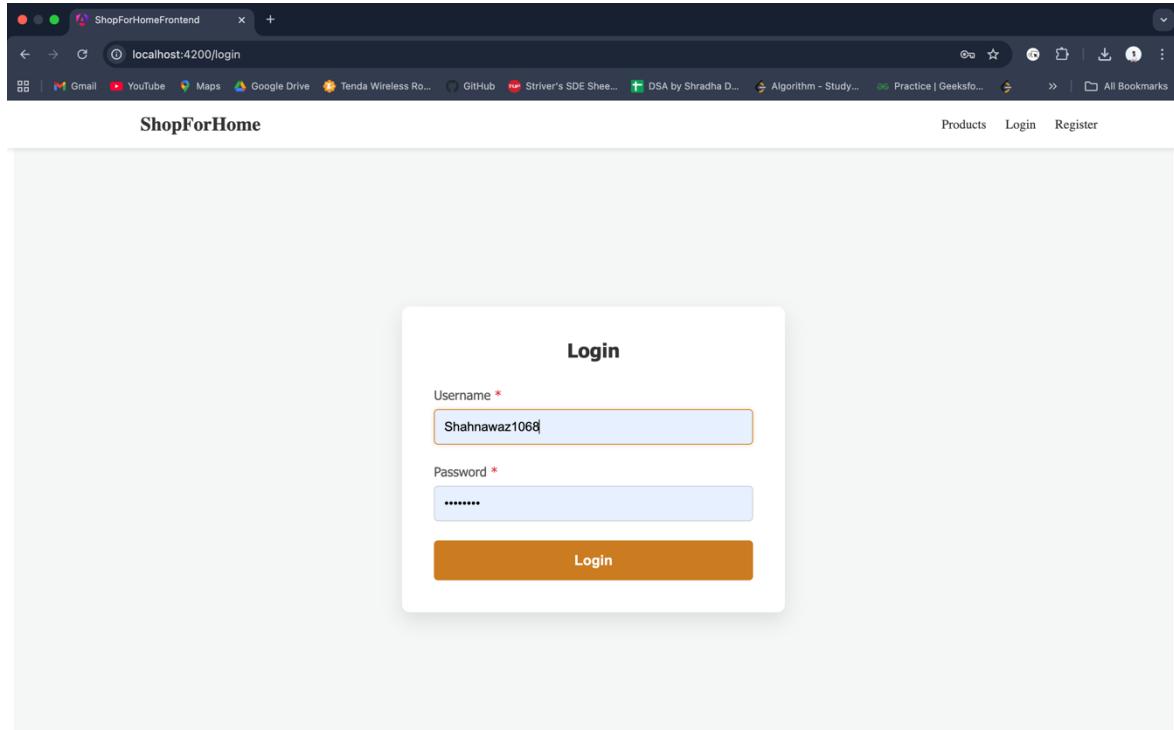


Fig: Login Page

## SHOP FOR HOME

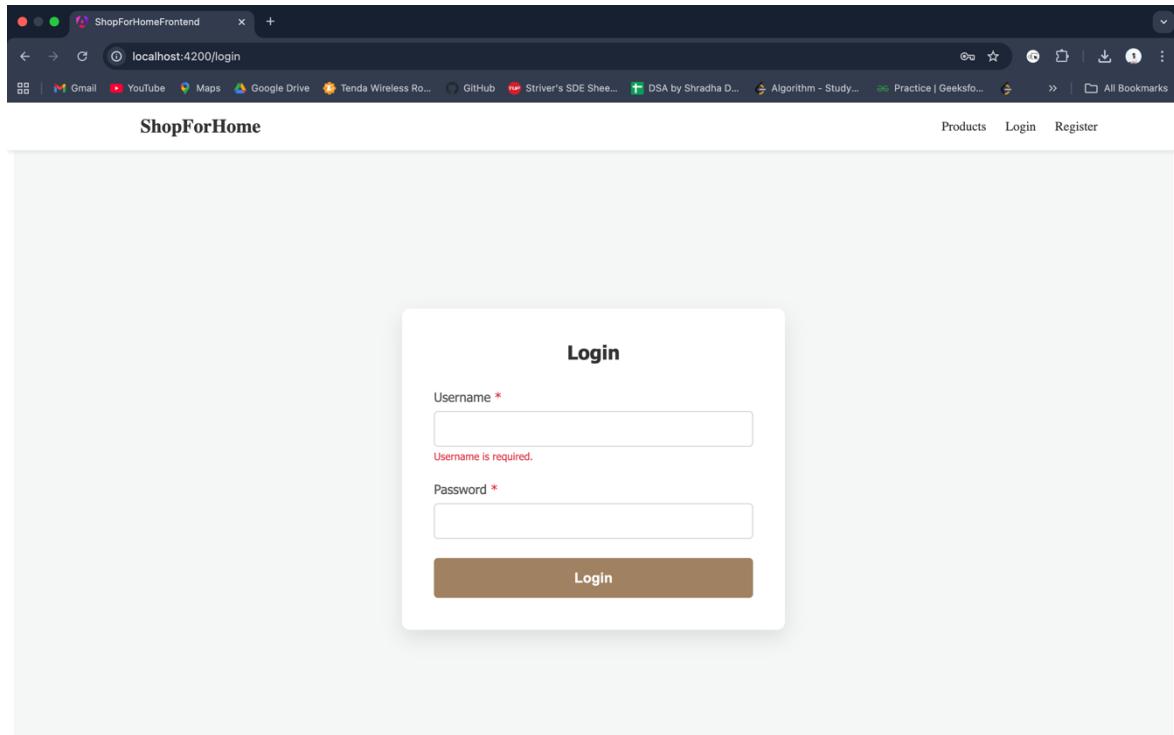


Fig: Login Validation

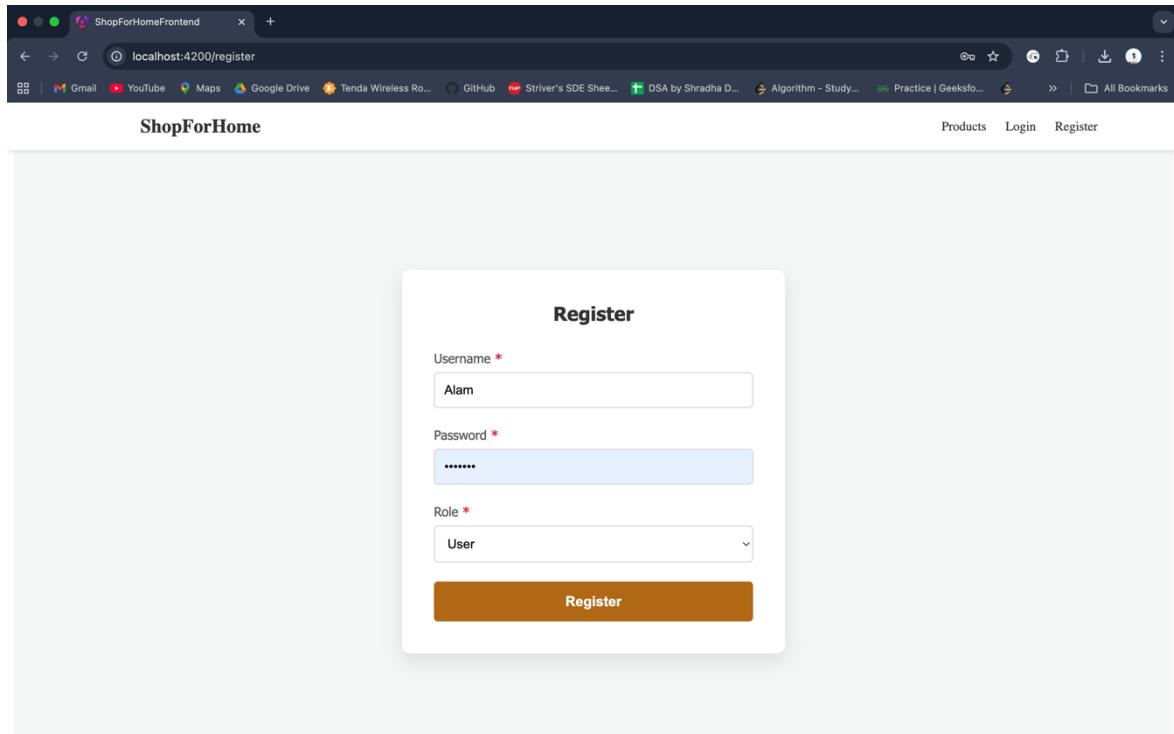


Fig: Registration Page

## SHOP FOR HOME

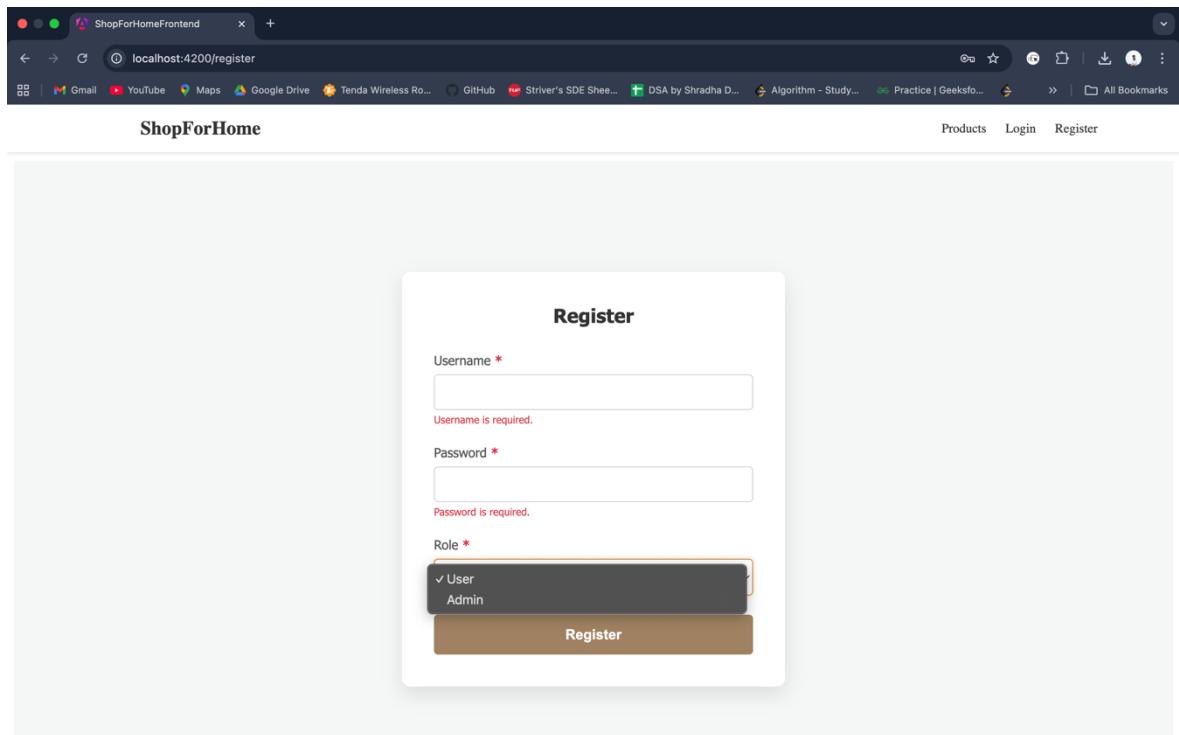


Fig: Registration Validation

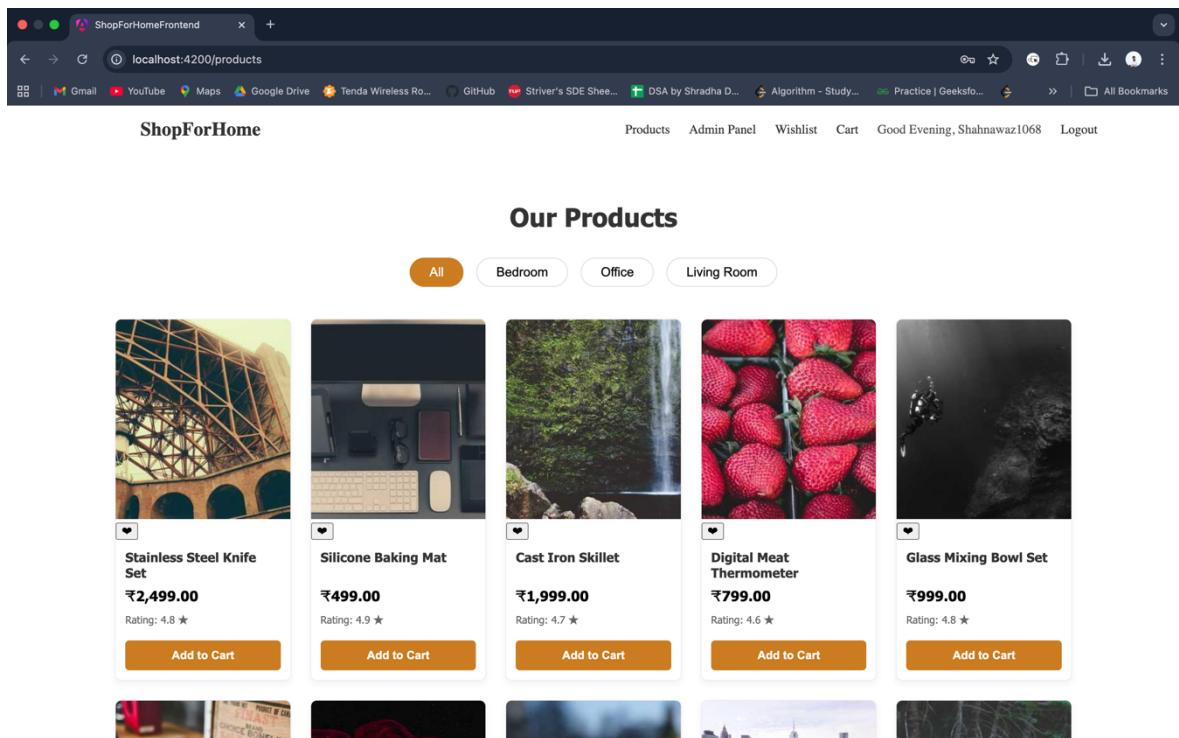


Fig: Product Page [with filter]

## SHOP FOR HOME

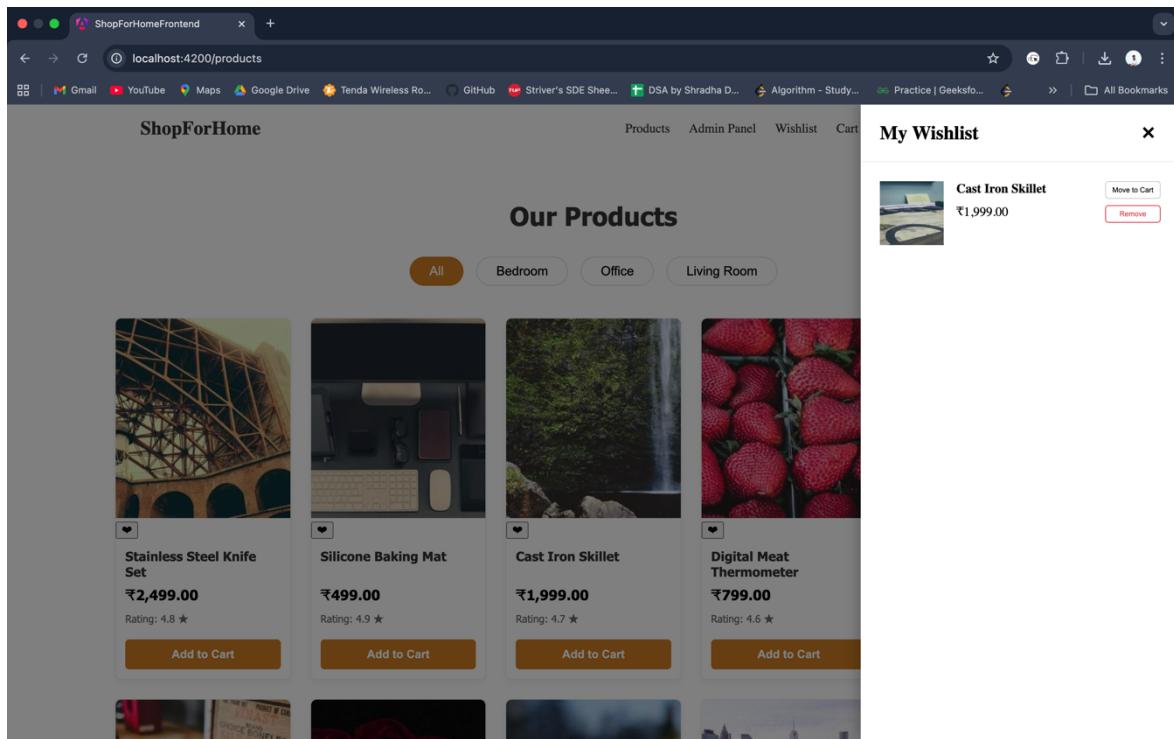


Fig: My Wishlist

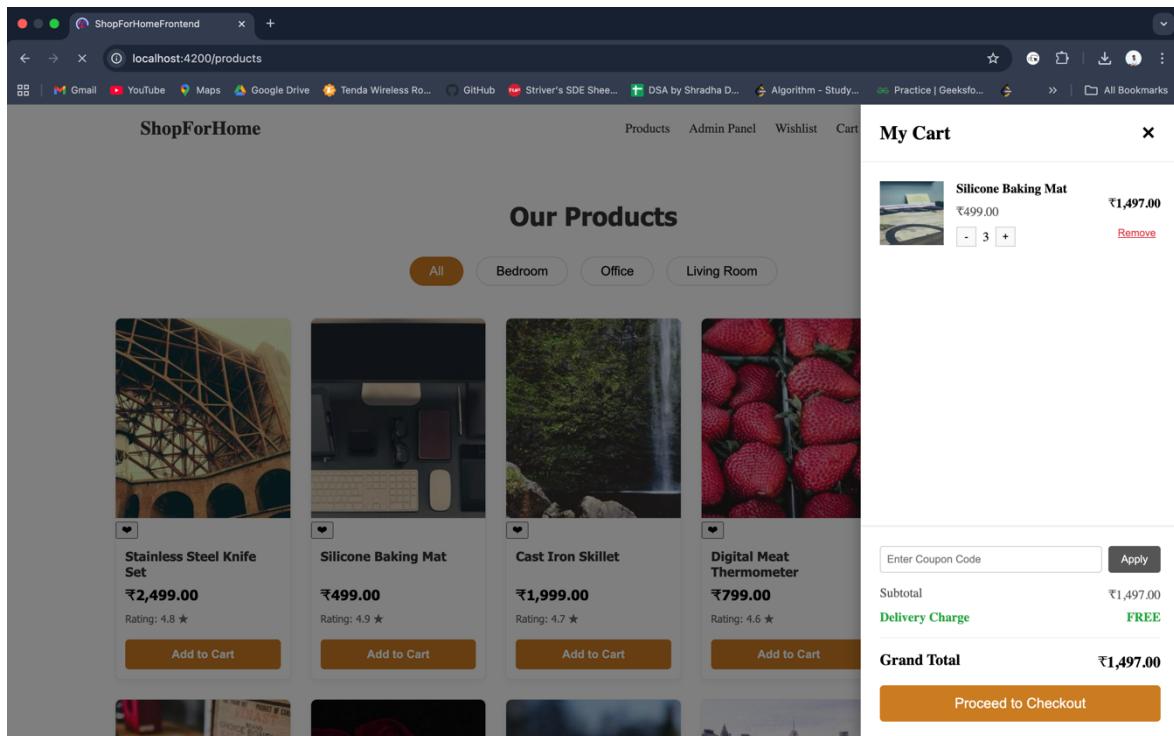


Fig: My Cart

## SHOP FOR HOME

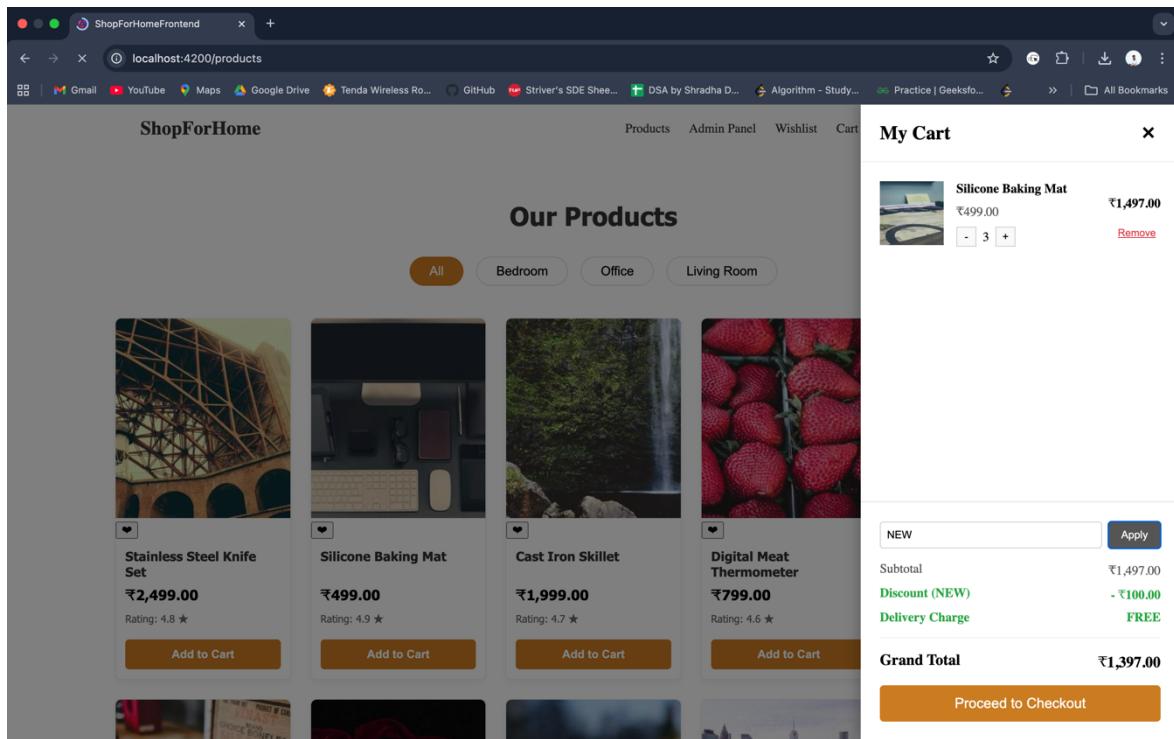


Fig: Coupon Applied

The screenshot shows a web browser window for 'ShopForHomeFrontend' at 'localhost:4200/admin/users'. The left sidebar, titled 'Admin Panel', has a 'User Management' tab selected, along with 'Product Management', 'Stock Management', 'Sales Reports', and 'Discount Coupons'. The main content area is titled 'User Management' and displays a table of users:

Email / Username	Role	Actions
Shahnawaz1068	Admin	<button>Edit</button> <button>Delete</button>
Ali	User	<button>Edit</button> <button>Delete</button>
Shah	Admin	<button>Edit</button> <button>Delete</button>

A red 'Add New User' button is located in the top right corner of the user table. The status bar at the bottom left shows 'localhost:4200/admin'.

Fig: Admin Dashboard [User Management]

## SHOP FOR HOME

The screenshot shows the 'Product Management' section of the admin panel. On the left, a sidebar lists 'User Management', 'Product Management' (which is selected and highlighted in orange), 'Stock Management', 'Sales Reports', and 'Discount Coupons'. The main area has a title 'Product Management' with buttons for 'Manage Categories' and 'Add New Product'. Below this is a 'Bulk Upload Products' section with a dropdown for category selection, a file input for CSV upload, and a 'Upload CSV' button. A table lists seven products with columns for ID, Name, Price, Stock, and Actions (Edit and Delete buttons). The products listed are:

ID	Name	Price	Stock	Actions
1	Stainless Steel Knife Set	₹2,499.00	60	<button>Edit</button> <button>Delete</button>
2	Silicone Baking Mat	₹499.00	150	<button>Edit</button> <button>Delete</button>
3	Cast Iron Skillet	₹1,999.00	45	<button>Edit</button> <button>Delete</button>
4	Digital Meat Thermometer	₹799.00	110	<button>Edit</button> <button>Delete</button>
5	Glass Mixing Bowl Set	₹999.00	80	<button>Edit</button> <button>Delete</button>
6	Electric Hand Mixer	₹1,499.00	75	<button>Edit</button> <button>Delete</button>
7	Air Fryer Liners	₹299.00	300	<button>Edit</button> <button>Delete</button>

Fig: Admin Product management

The screenshot shows the 'Add New Product' dialog box overlaid on the product management page. The dialog has fields for 'Product Name' (empty), 'Description' (empty), 'Price (₹)' (empty), 'Rating (0-5)' (set to 0), 'Stock Quantity' (empty), and 'Category' (set to Bedroom). At the bottom are 'Cancel' and 'Save' buttons. In the background, the product list is visible.

Fig: Admin Add new product

## SHOP FOR HOME

The screenshot shows the Admin Panel of the ShopForHomeFrontend. On the left, there's a sidebar with 'User Management' selected. The main area is titled 'User Management' and shows a list of users: Shahnawaz1068, Ali, and Shah. A modal window titled 'Edit User' is open for the user 'Shahnawaz1068'. It contains fields for 'Email / Username' (Shahnawaz1068), 'Password' (Leave blank to keep current), and 'Role' (Admin). At the bottom of the modal are 'Cancel' and 'Save' buttons.

Fig: Edit User

The screenshot shows the Admin Panel of the ShopForHomeFrontend. On the left, there's a sidebar with 'Discount Coupons' selected. The main area is titled 'Discount Coupons' and shows a form for 'Create New Coupon'. It includes fields for 'Coupon Code', 'Discount Amount (₹)', 'Minimum Spend (₹)', and 'Expiration Date'. Below the form is a 'Create Coupon' button. The background shows a list of coupons with 'Assign' and 'Delete' buttons.

Fig: Coupon Creation

## SHOP FOR HOME

The screenshot shows a web browser window for 'ShopForHomeFrontend' at 'localhost:4200/admin/reports'. The left sidebar, titled 'Admin Panel', has a 'Sales Reports' button highlighted in orange. The main area is titled 'Sales Reports' and displays a date range from '08/09/2025' to '10/09/2025'. A 'Generate Report' button is present. Below the date range, a summary states 'Report for Sep 8, 2025 to Sep 10, 2025'. Two large boxes show 'Total Sales' as ₹150,000.00 and 'Total Orders' as 42.

**Sales Reports**

Start Date: 08/09/2025

End Date: 10/09/2025

Generate Report

Report for Sep 8, 2025 to Sep 10, 2025

Total Sales: ₹150,000.00

Total Orders: 42

Fig: Sales Report

## **CHAPTER-4**

## **CONCLUSION**

### **4.1 Conclusion**

E-Commerce has undeniably become an important part of our society. The successful companies of the future will be those that take E-Commerce seriously, dedicating sufficient resources to its development. E-Commerce is not an IT issue but a whole business undertaking.

Companies that use it as a reason for completely re-designing their business processes are likely to reap the greatest benefits. Moreover, E-Commerce is a helpful technology that gives the consumer access to business and companies all over the world.

### **4.2 Future Scope**

The e-commerce industry saw major traction in 2020. Technology innovation, easy scalability, increased internet penetration and changed user habits due to COVID-19 let the industry improve experiences and compete against brick-and-mortar shops.

Engaging customers directly is top priority for brands, and in this era of widespread awareness and cutthroat competition, the only way to survive is to stay ahead of the curve, identify lagging areas and capture evolving trends at the onset.