Documentation File by Group 7

A report on E-Commerce website “ShopForHome”

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ABSTRACT

In today's generation, most people are using technology for leading their lives and fulfilling their daily needs. In this generation most of us use E-commerce websites for shopping for clothes, groceries, home décor and electronics .

We have developed one E-commerce web application by using **MERNstack** technology as it contains **MongoDB, Express.JS framework, React.JS library, and Node.JS platform.**

This application is fully functional with different views for user and admin and it also has integrated with a payment gateway for checkout. By using this website we can buy different types of t-shirts and we can choose different styles of t-shirts based upon customer interests. In this project, we can add different products and can delete them also.

We have developed administrative functions for the website such as create a product, create categories, Admin dashboard, Manage products, Manage categories. For customers, they can quickly add their items to the cart. Based on the items in the cart then the bill gets generated and the customer can pay by using stripe.

This project is mainly divided into two main categories: The Administrators and the Customers/Users. The store manager and the staff members operate as the administrators. They can add, edit, update products or, delete products

The User is only able to browse the online shop and add a product to the cart. The user is limited to the use of the shop.

INTRODUCTION

We all know that technology has become an essential tool for online marketing these days. If we look all over the world, most of the people are showing interest to buy things online. However, we can see that there are many small shops and grocery stores selling their things offline. With this type of selling most of us will face bad experiences. For instance, in some shops the seller has the product to sell in the offer but the buyer may not know about it, or the customer may need the product urgently then he will go to the shop, but the product is out of stock, in that case, he will face a bad experience. Moreover, in online shopping customers can select a wide range of products based upon their interests and their price. Also, one can compare prices also from one store to another by using online shopping . By encountering all the problems and weaknesses of the offline shopping system, creating an Ecommerce web application is necessary for searching and shopping in each shop. These days we have seen so many e-commerce websites are created like Flipkart, Amazon, Myntra and one can easily buy their necessary products by using these websites. By using these types of websites one can buy their products by staying in their home. Eventually, we can see the difference between the prices of products as well as if we see the cost of the product will be slightly high in offline shopping when compared to online shopping. For creating these types of E-commerce web applications MERN stack will be the best option that can help us create the most effective and powerful web applications.

PROBLEM STATEMENT

The purpose of this project is to make a web application which will be easier to find interesting Home decoration items . This E-commerce web application admin can add some categories like Sofa, Dining, Bed and Mattresses etc. which will by attracting customers. Customers also can easily search for their favorite goods. They can also buy them easily by just adding to the cart and they can increase or decrease by clicking on the "+" sign and "-" sign. After adding they can check the total amount of the thing which has been added to the cart. A successful payment gateway is enabled so payment can be done by debit card, credit card, and net banking.

E-COMMERCE

E-commerce is also known as electronic commerce, it is the process of buying and selling products through the internet, and also the transfer of money and the data to complete the process of buying or selling a product . In the early days, e-commerce was not that famous but after increasing the use of mobile phones everyone was choosing the interest in buying things online so, it became popular.

Types of E-commerce: There are mainly four types of E-commerce business models

1. B2C (Business to consumer). It is a business based upon the internet, By using this model we can sell products to the end-user.

2. B2B(Business to business) It is a business that will happen between large companies, organizations, and businesses, these days most of e-commerce falls in this category.

3. C2B(Consumer to Business) This type of E-commerce allows that the individuals can sell their goods to Companies In this type of E-commerce, individuals will assign work to complete in the given time through websites

or some electronic medium, in this type, consumers can set their price tag to their work The best example of this type of work is freelancing.

4. C2C(Consumer To Consumer) This type of E-commerce connects consumers to consumers to exchange their goods and make their money by charging transactions it will motivate buyers and consumers .

ADVANTAGES:

1. A HUGE MARKET: E-commerce will give you an option to reach customers all over the world, you can buy anything that you want to from your home. Nowadays people are used to doing shopping with their mobiles only. So, it will add an advantage for E-commerce.

2. WIDE PRODUCT VARIETY: In this large world, customers can buy different types of products from different places, we can buy electronics from Russia, shoes from japan, clothes from London and good old international products, the depth and advantage of E-commerce is uncountable.

3. TRACKING: If you order any product in e-commerce you will get the details of where the product is shipping and when it will reach you, you can cancel the product also if you don't like that product after order.

4. LESS PRICE: In E-commerce websites, we can compare the prices of products from one website to another website. In that way, we can easily know that where we will get the product for a lesser price and we will get the basic idea that how much money we can spend to buy a particular product.

5. MORE CHANCES TO "SELL": In the physical stores' merchant can not give the full information about the product, but in the E-commerce store customer can get full information about that product and he can see the reviews of another customer who bought that product previously. In this way, if the product is good it will get more chances to get that product .

DISADVANTAGES:

1. SECURITY: Even though E-commerce providing more benefits to customers. People are having fear about giving their data to website owners, so it will give security 3 International Journal for Modern Trends in Science and Technology issues when we use e-commerce websites for shopping.

2. TAX: If we want to buy a product from e-commerce we will have to pay taxes like GST, it will be different from place to place based upon your distance between you and the product, it will be high when compared to buy in physical stores.

3. DELAYING IN DELIVERY: If we order a product in e-commerce, the order may or may not reach you on time, this is one of the common problems in e-commerce, it will take time-based upon your distance between you and the organization from where you ordered.

4. TECHNOLOGY COST: To create a website will take so much amount, one needs to spend so much money on building an e-commerce website because he needs to check all the possibilities and provide a good security system to that website.

RESEARCH AND DEVELOPMENT

There are so many applications to build a web application and, in this research, we have taken MERN technologies to use for building a web application.

MERN: MERN stands for **MongoDB Expressjs Reactjs Nodejs.**

These are the four technologies that help us to construct or to build this web application.

MongoDB:

It is an open-source cross-platform program. It comes under the NoSQL

database classification. It was a document-oriented database. It uses JSON format documents with optional Schemas.

* Data Flexibility available means we can any every data in a separate file

* Large data can be distributed into several connected applications

* High speed of fetching of data possible because it only depends on indexing.

* It is a horizontally scalable database so it can handle the data and make it easy to distribute to several machines.

NodeJS:

NodeJS is a runtime javascript environment that works outside the web page. It is mainly used for server-side applications. * NodeJS is open source and it is free of cost.

* NodeJS uses asynchronous programming by default.

* NodeJS will always store the data in only JSON format.

ExpressJS:

It is a famous Library in node.js used for routing. It has some methods like a router which help to do curd operations like put, get, post, and delete request

* Robust routing

* It will focus on high performance

* It is an HTTP helper like it will redirect, catching.

ReactJS:

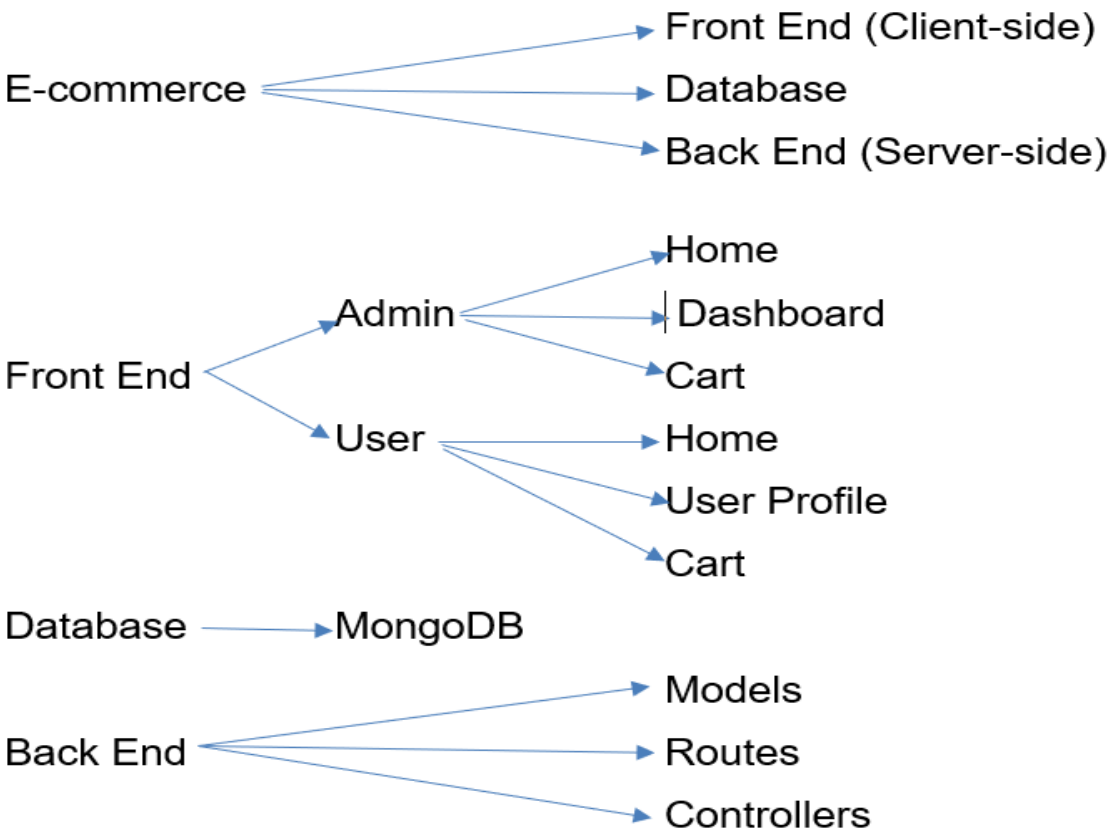
React is a library of javascript which is created by Facebook. React is mainly used as a UI which means Maximum it is used for client-side applications. There are so many libraries like React-dom, React-router-dom, and many more to help to build the frontend of any application.

* The rendering of the page will be much faster than others because it has virtual Dom.

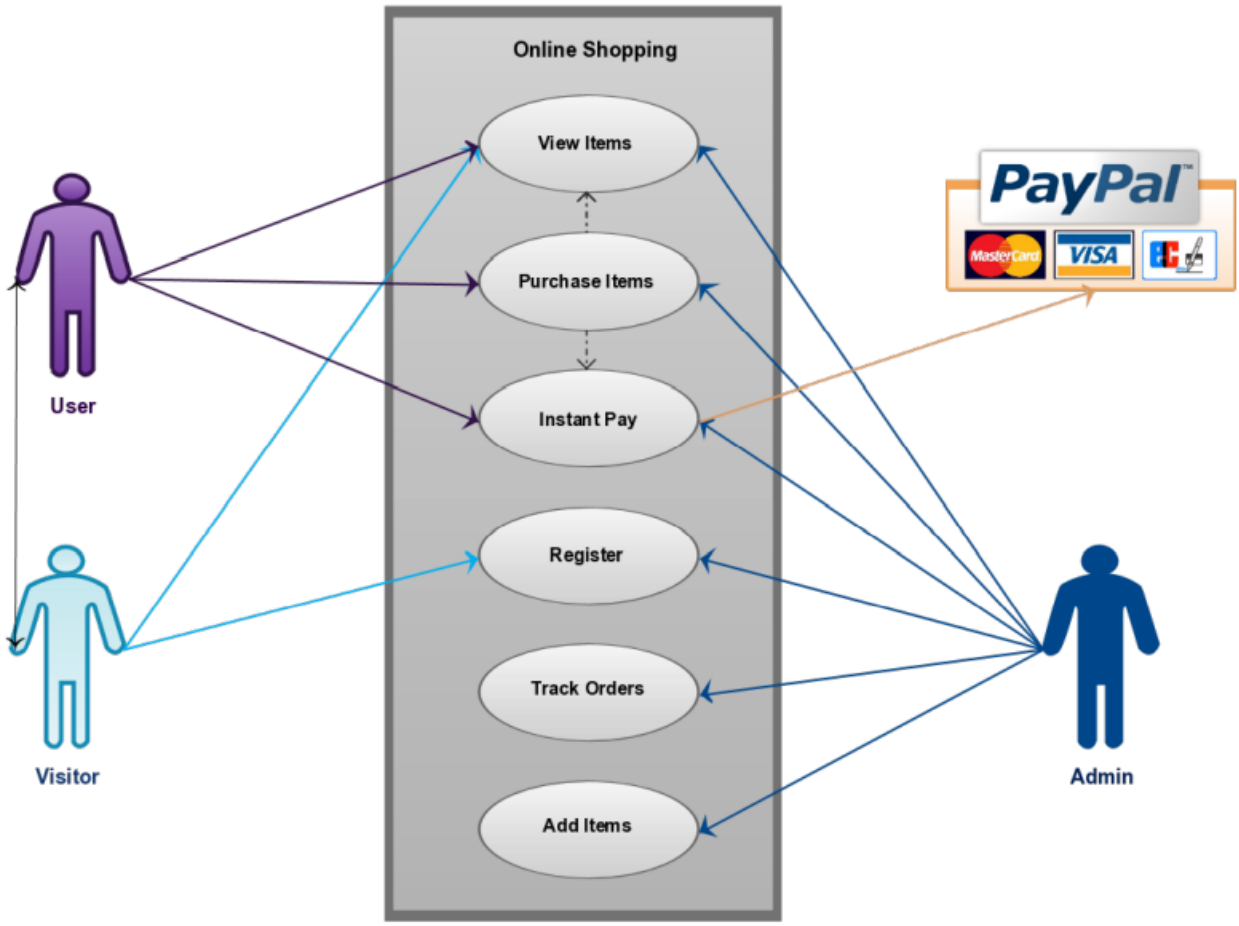
* uses a stable code.

* It has a strong community following .

WEB APPLICATION STRUCTURE:



Use Case Diagram:



OVERALL DESCRIPTION

APPLICATION AND DESCRIPTION

Overview of the Various Parts

- ➢ Any member can register and view available products.
- ➢ Only registered members can purchase multiple products regardless of quantity.
- ➢ There are two roles available: User and Admin.
- ➢ Visitors can view available products
- ➢ Users can view and purchase products.
- ➢ An Admin has some extra privilege including all privileges of visitor and user. Admin can add products, edit product information and add/remove products.
- ➢ Admin can add users, edit user information and can remove users.

Administrators Detailed Attribute

- ➢ **Admin register:** The administrator needs to register before they can have access to the core data of the shop.
- ➢ **Admin login:** The admin logs in and can view, add products, manage customers.
- ➢ **Admin Edit:** The Admin can make changes to the shop such as delete customers, add a customer or upload new products.
- ➢ **Manage Customer:** The admin has the authority to delete or add a customer
- ➢ **Bulk Upload:** The admin can upload a CSV file for products details
- ➢ **Discount Coupons:** The admin can generate random discount coupons for the users.

Customer Detailed Attribute

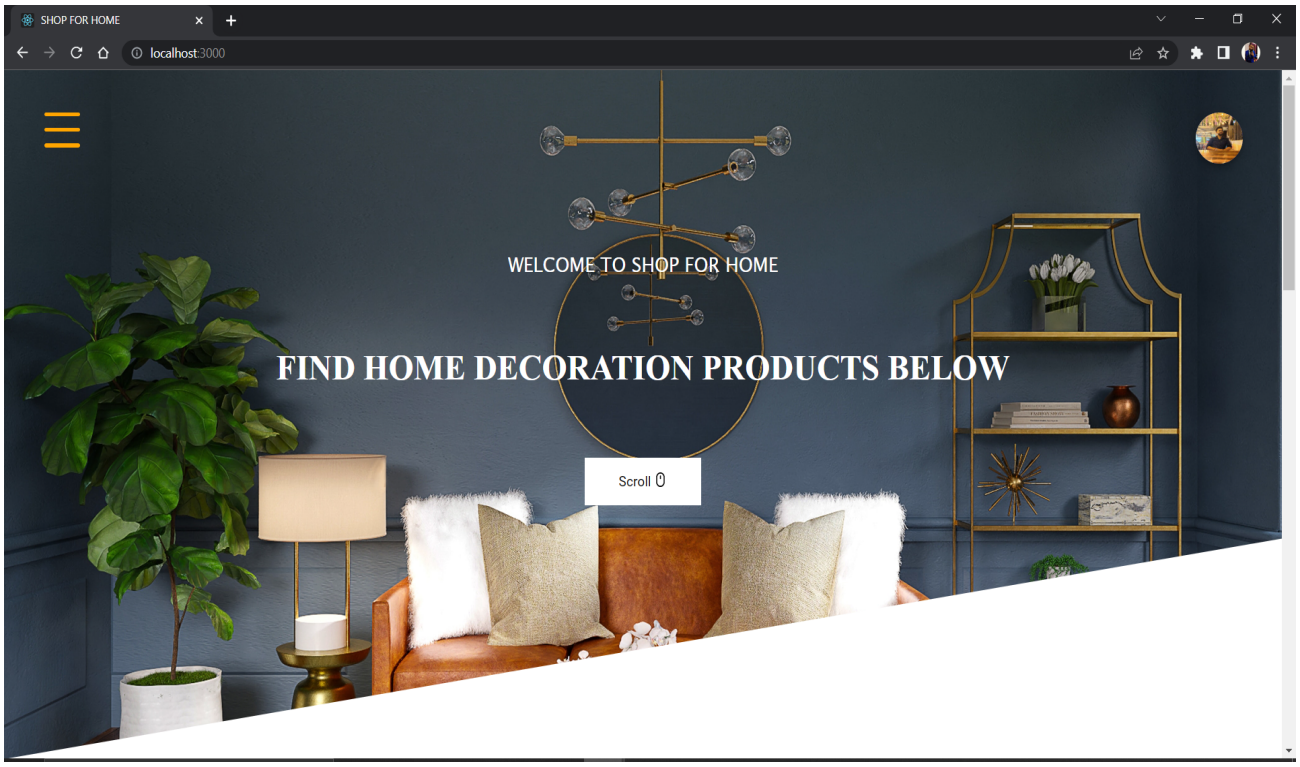
- ➢ Sign up: This refers to registering as a customer. The registered member has a lot of privileges associated with the shop when one becomes a customer.
- ➢ Login: After the user has registered, the user becomes a customer, and he or she can log in with their personal information.
- ➢ View: The customer can see all the products in the catalog and be able to look at the products and some features on the homepage.
- ➢ Update Cart: This refers to putting or removing products from a shopping cart

FRONT-END:

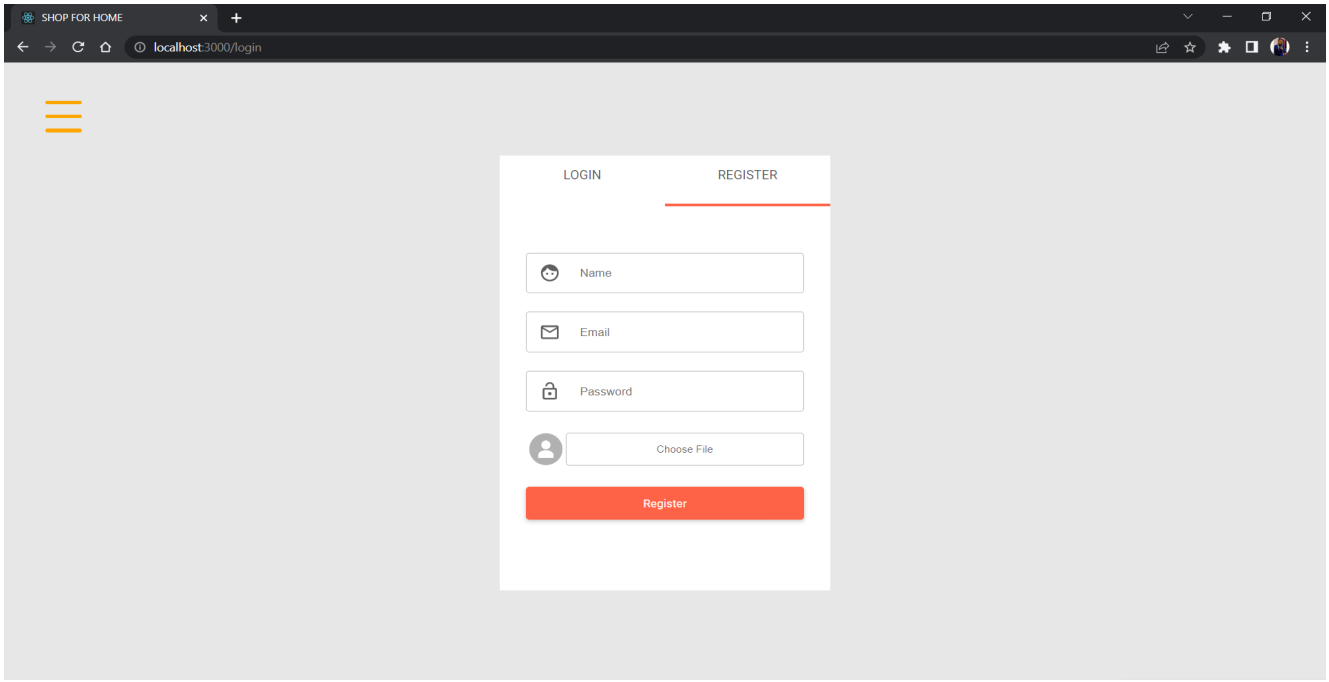
Consumer refers to customers and non-customers. These are individuals who visit the shop either to buy products or to browse. There are two categories of interfaces namely the Consumer and the Administrator interface. The administrator has higher authority over the customer in the shop. The admin can edit, replace a product and manipulate data in the shop. The customer can browse a product, add a product to the cart, change personal information, check shopping history and checkout or log out. The User, on the other hand, can only browse and add a product to cart.The homepage or interface is the index page of the shop so can be accessed when the address is typed into a browser. The webpage has images, names, prices, product categories and product brands. The webpage has a registration link, login link, cart, company contact information.

Functionality For the Users:

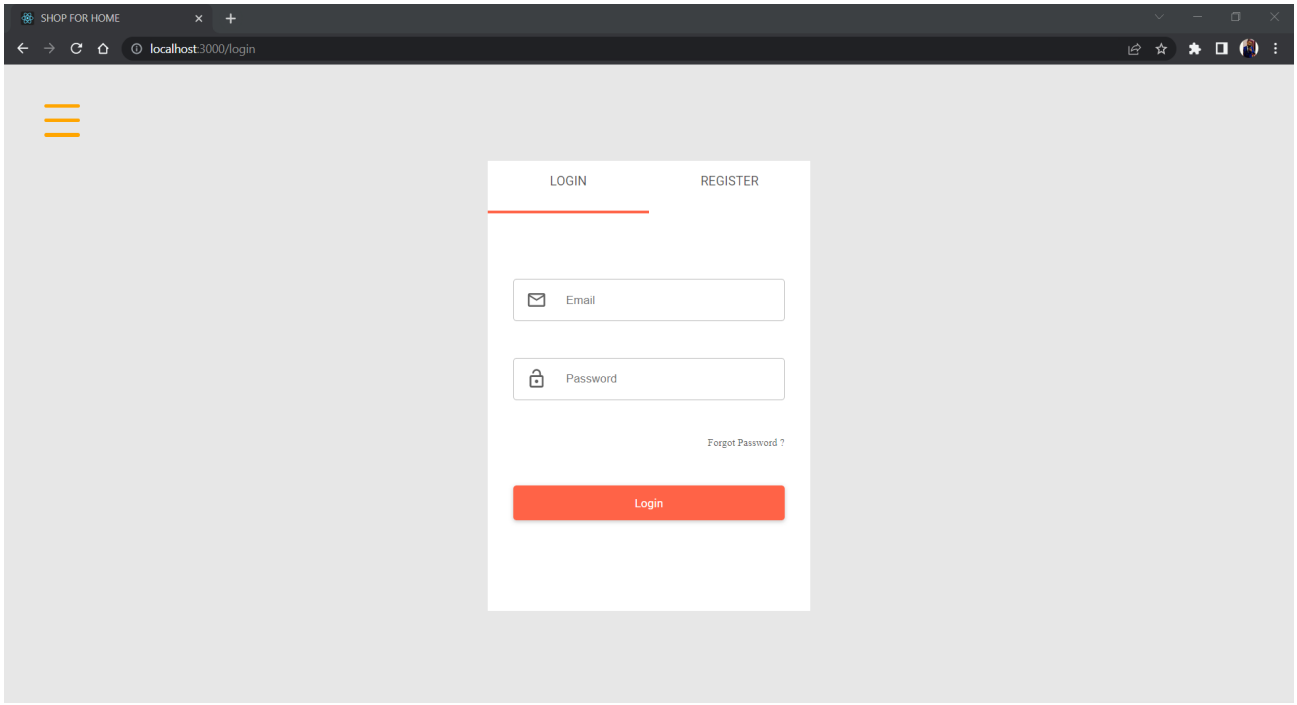
Home Page: Below is the Home of our Website which is also the landing page when the project is run.



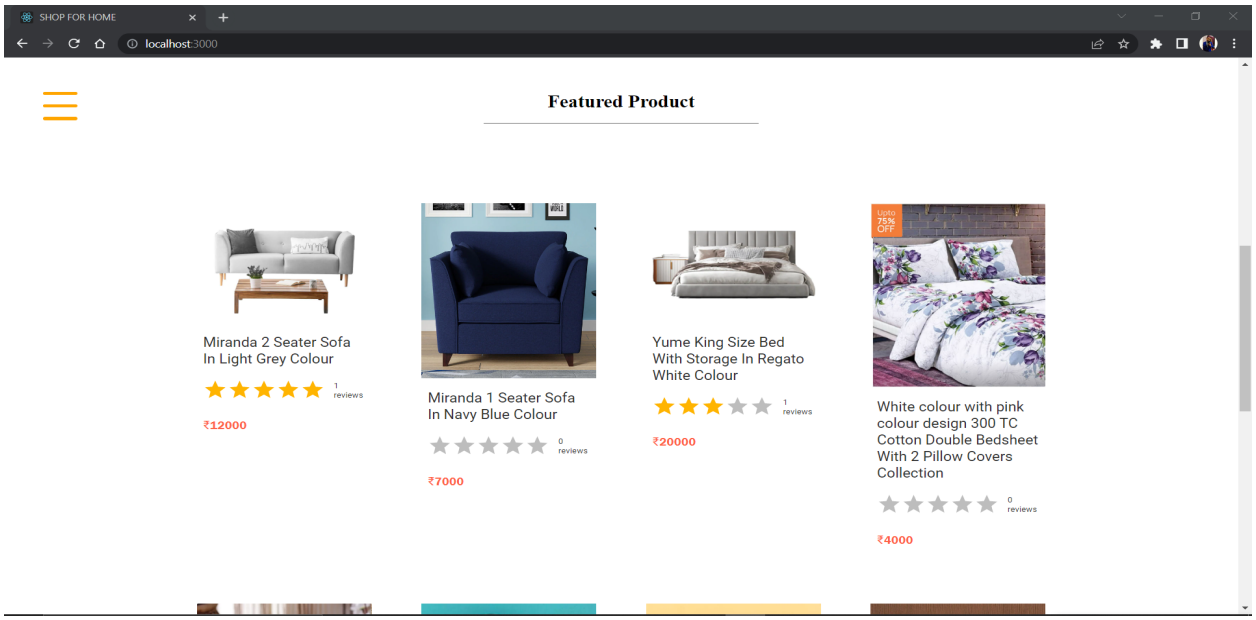
Register Page: User have to first register themselves from the register page shown below



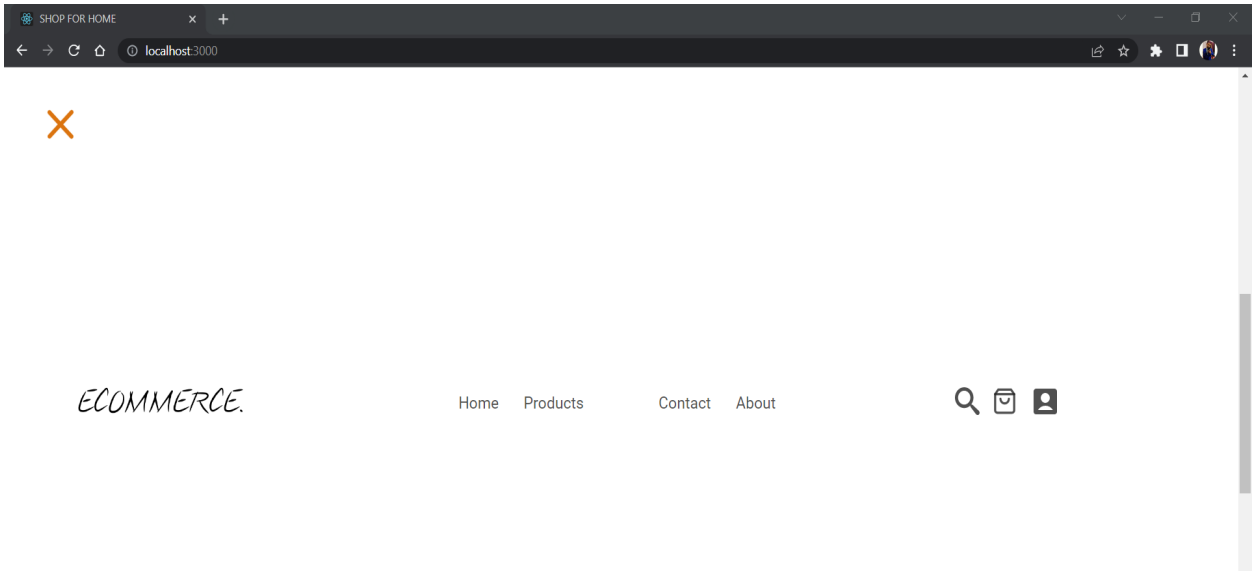
<u>Login Page</u>: If User is Register already than it will login with their email and password



Featured Products: In this the products which are main highlight

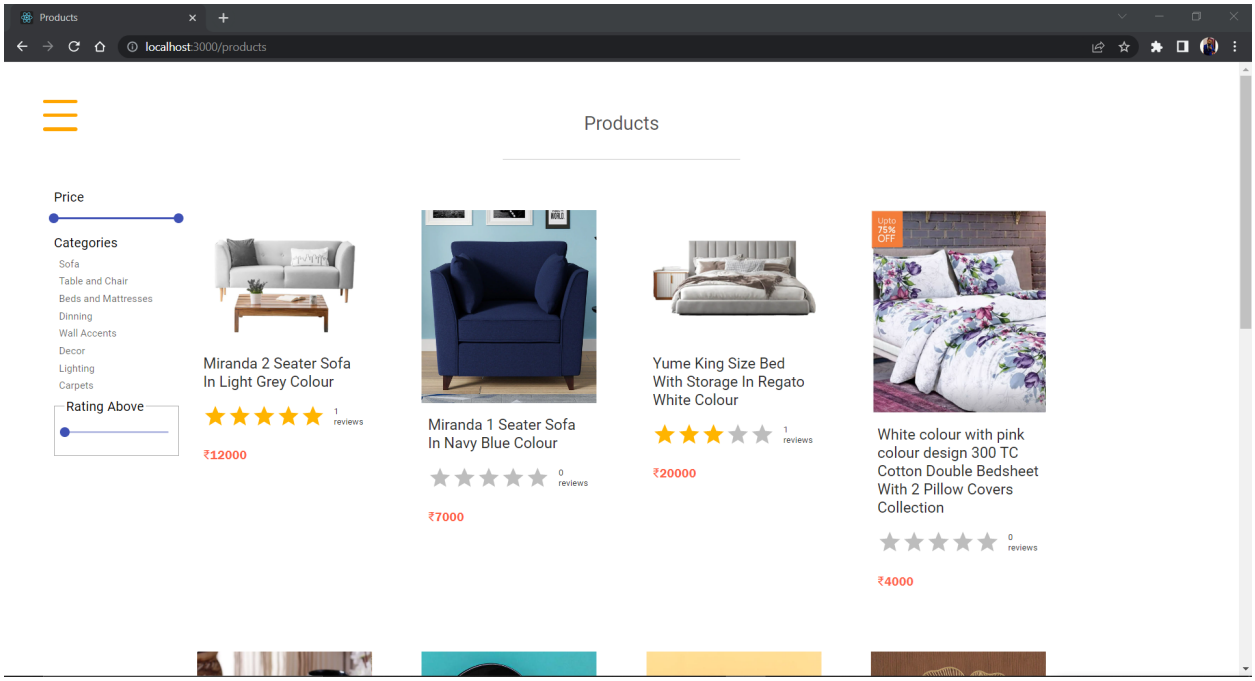


Navbar: You can use Navbar for rendering in products,home ,about pages etc.

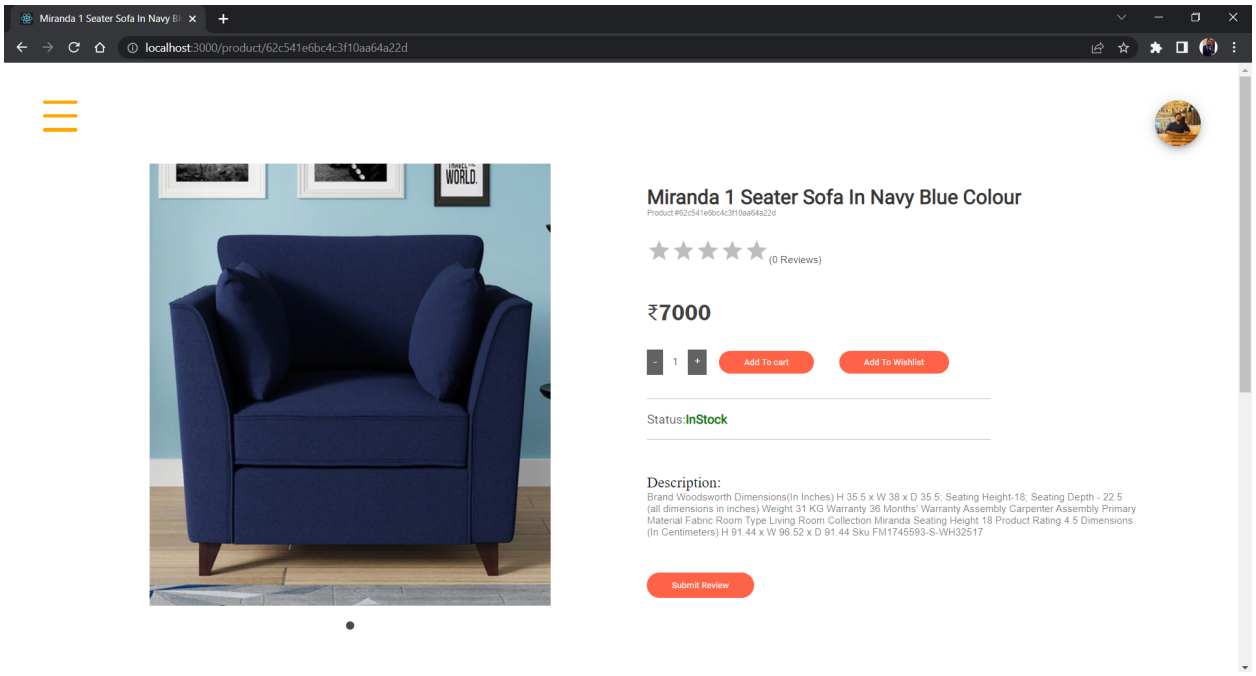


Footer:

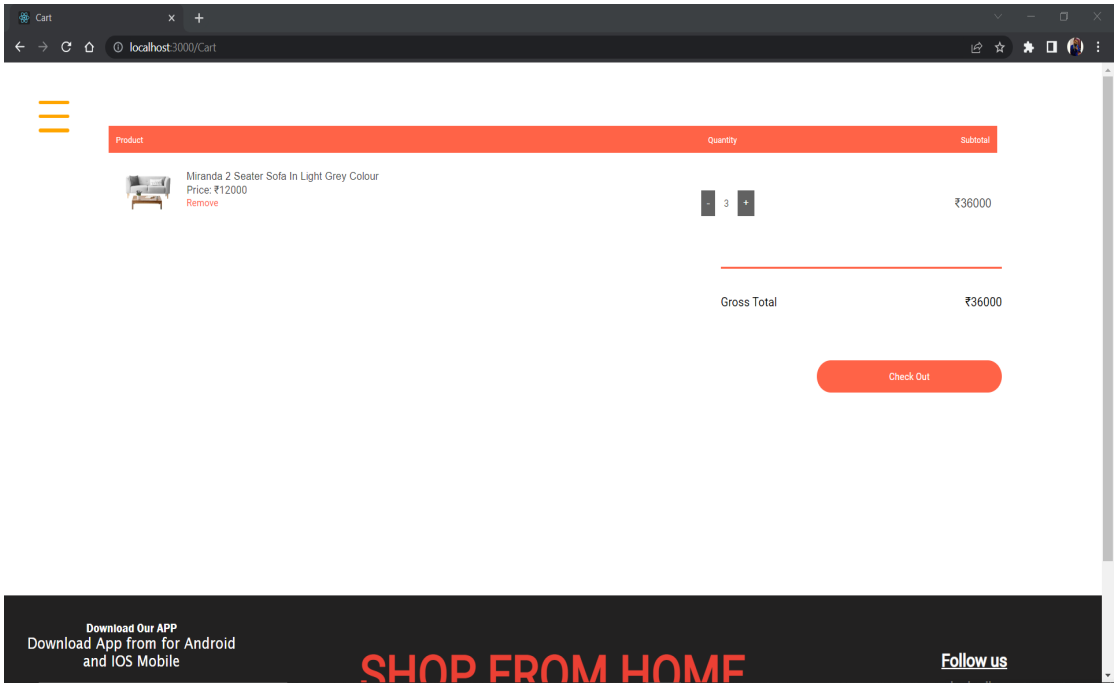
Products and Filters: In this All products are shown and in left hand side their is filters so user can filter according to their need like by rating, price and categories.



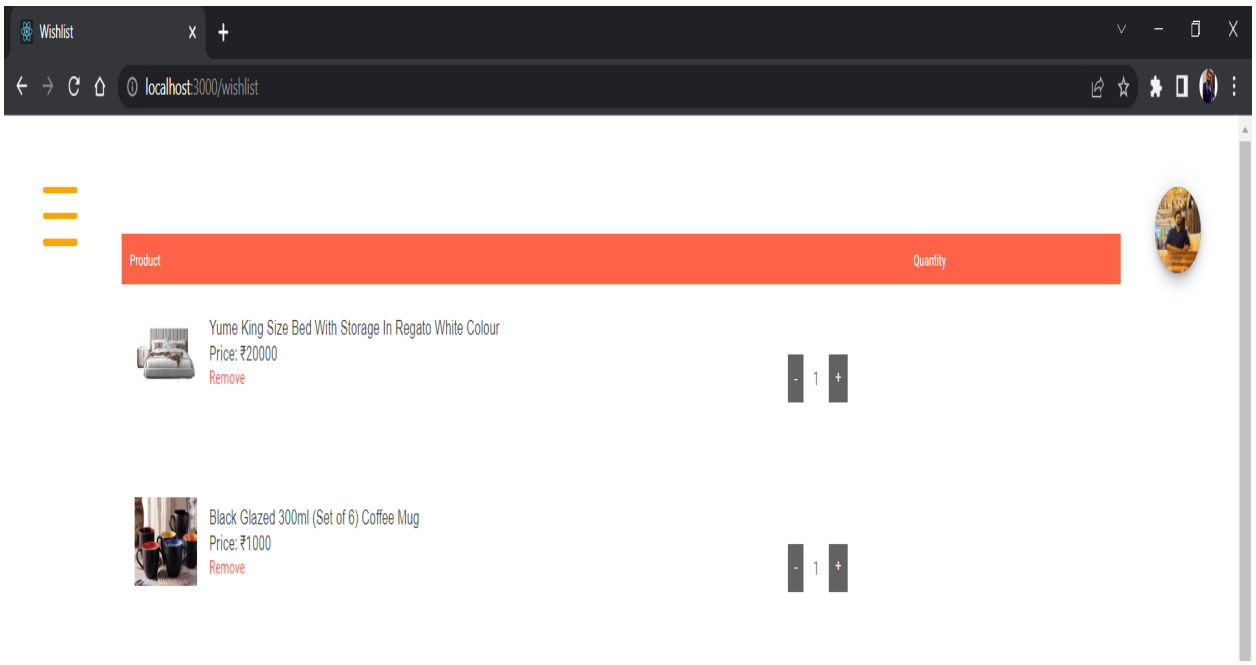
Product Details: User can see product details by clicking on particular product and they can review the product also and see the reviews of other users also.



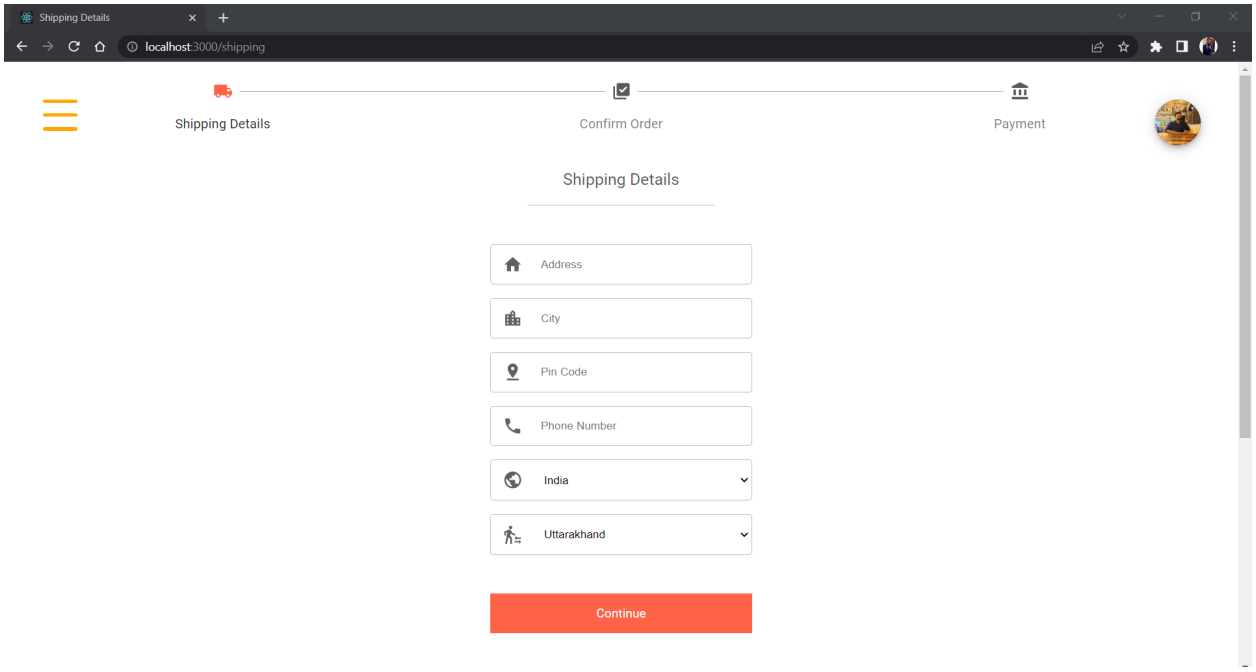
Cart: From the product page users can add their favorite products to the cart for further process.



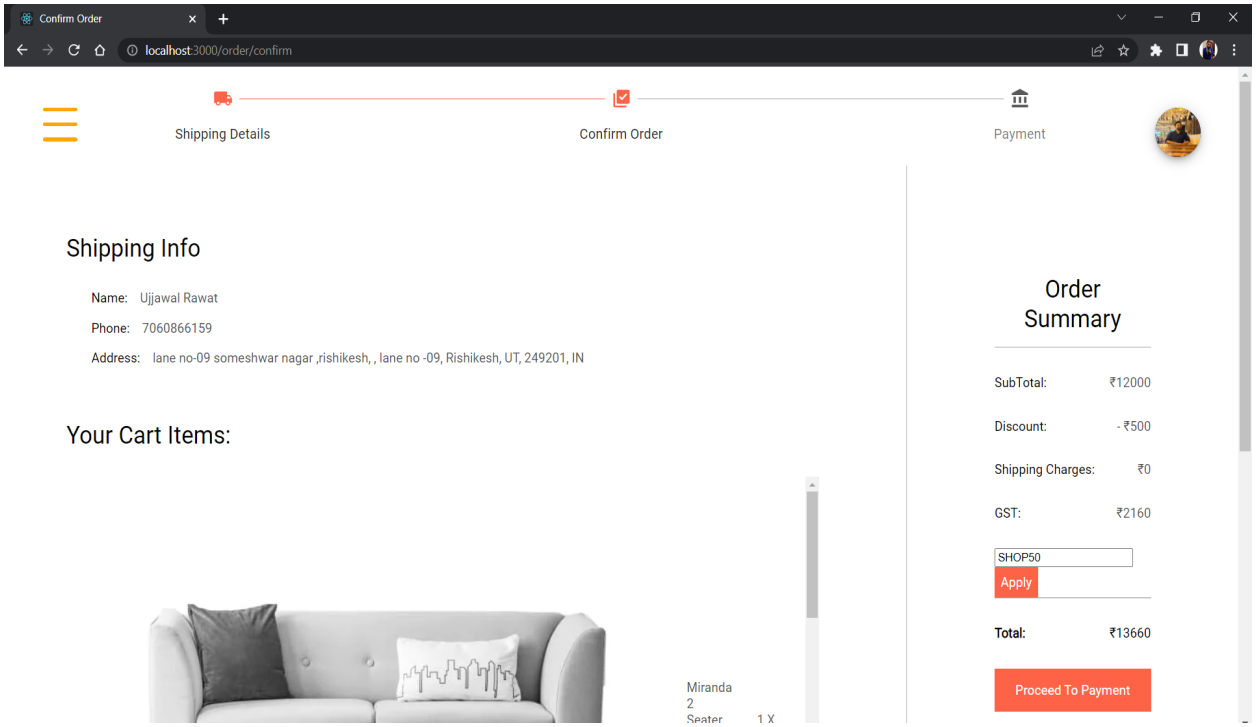
Wishlist: User can add and see their favorite products in the wishlist.



Checkout: In checkout user will fill their shipping address and confirm the order then fill the payment details so the product is order.

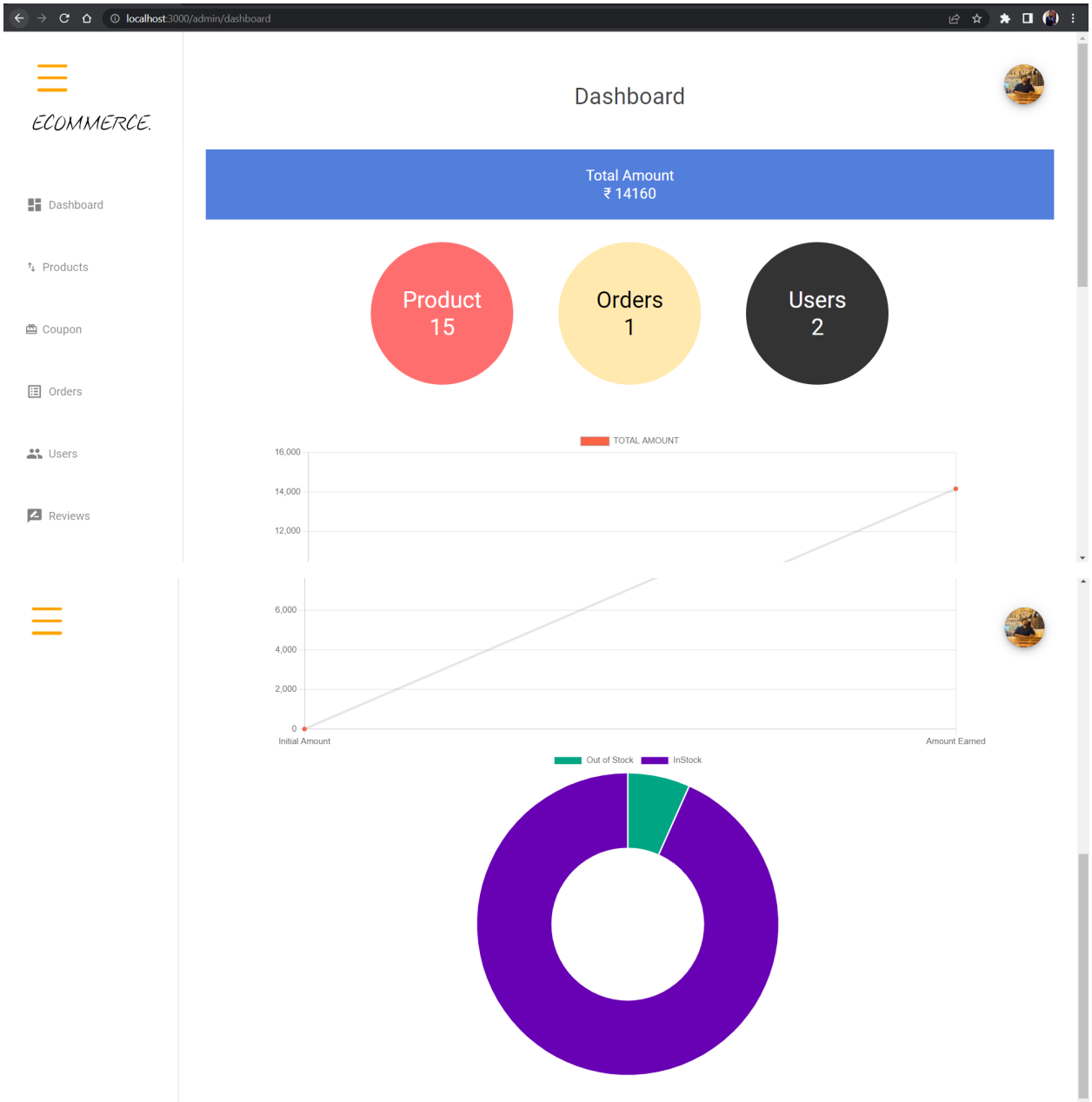


Discount coupon: User can add the coupon for discount.

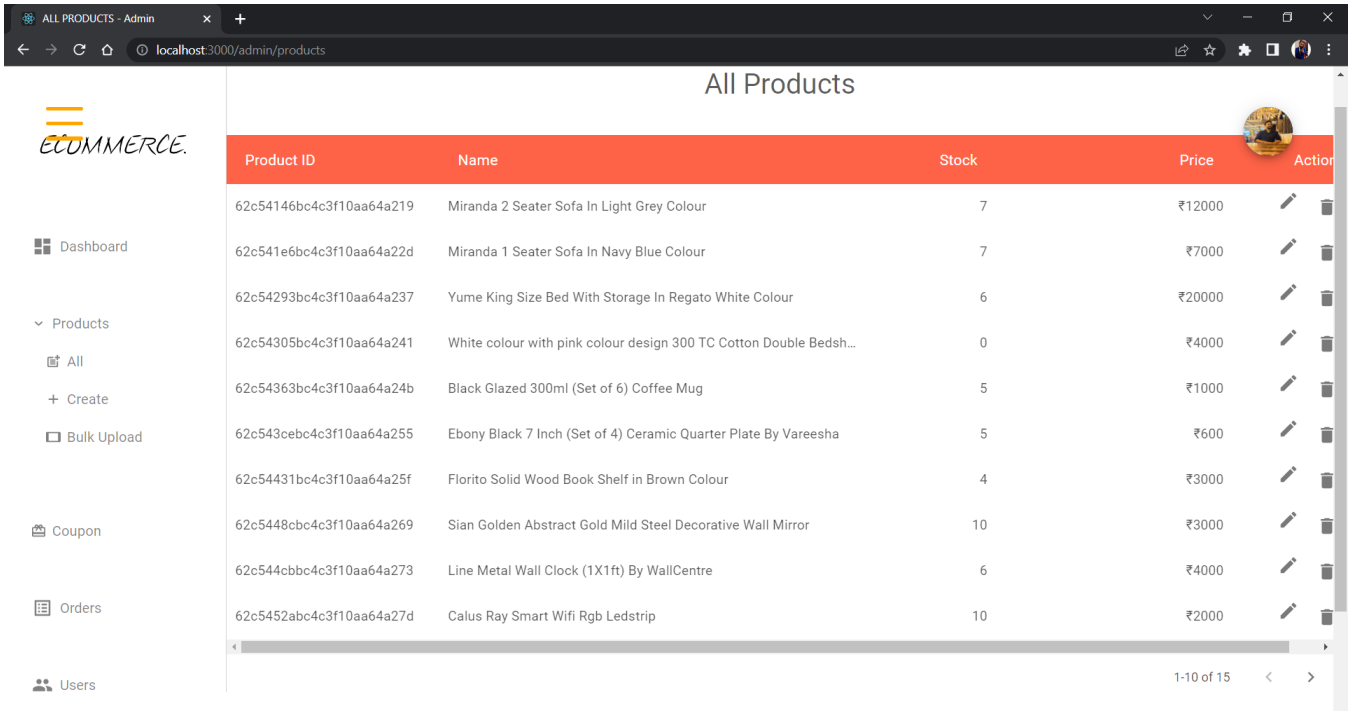


Admin functionalities:-

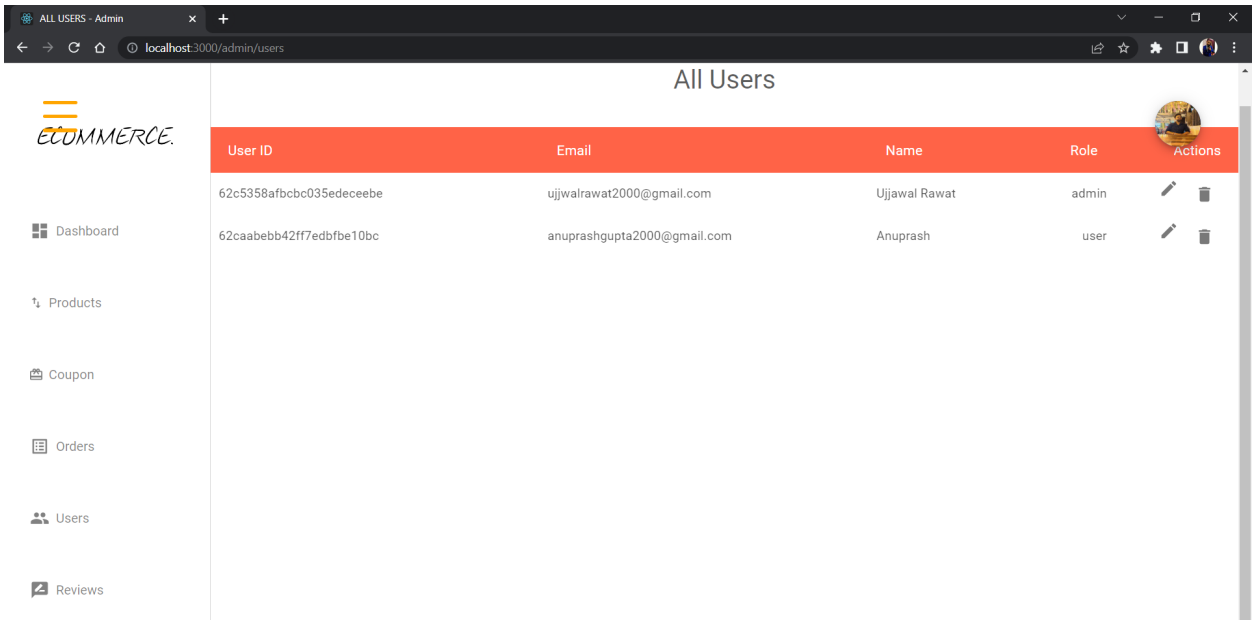
Admin Dashboard: In admin dashboard , admin has full control for the stocks and sales report and also the CRUD operation to products and user. And also admin can upload bulk product and can create coupons which user will apply at the time of payment.



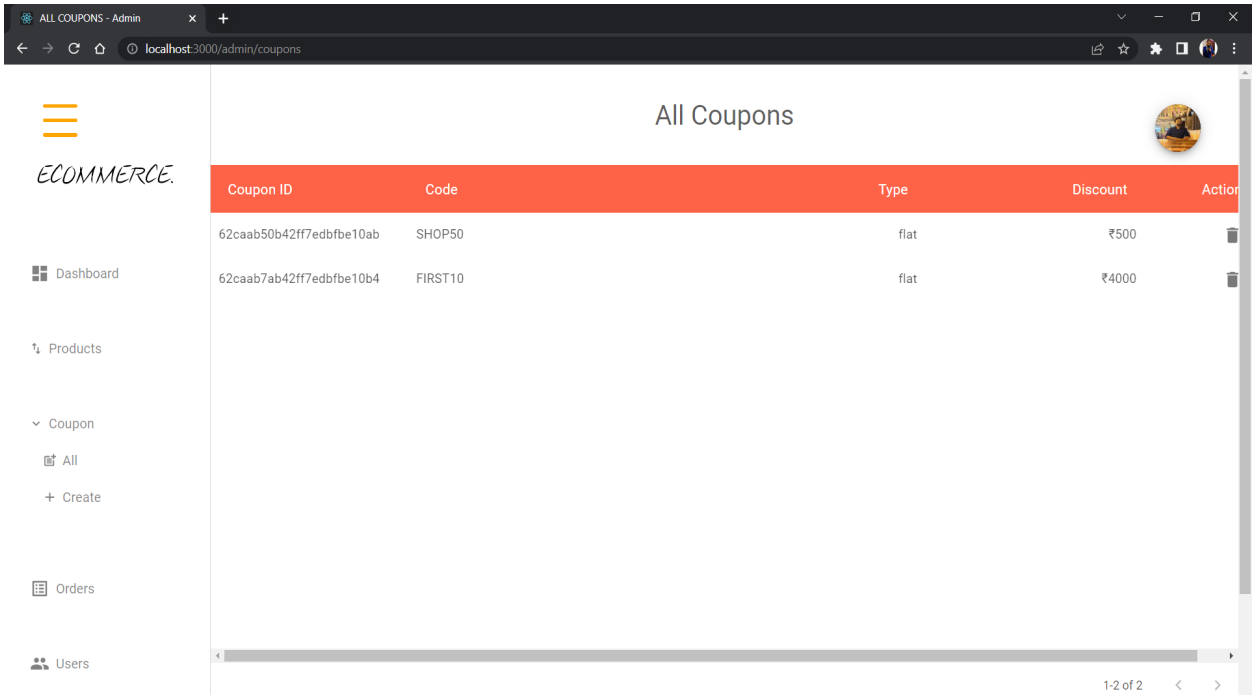
CRUD IN PRODUCTS BY ADMIN



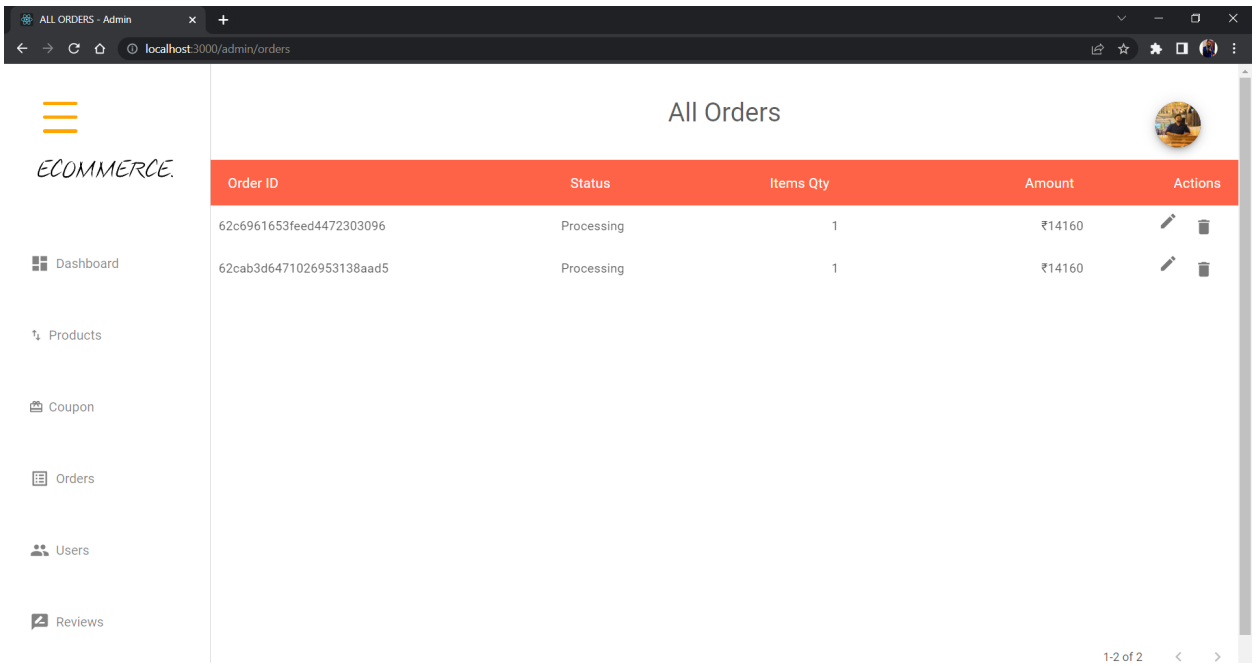
CRUD USERS BY ADMIN:



MANAGE COUPEN BY ADMIN:



MANAGE ORDERS BY ADMIN: Admin Can manage the orders like by setup the status of the order like shipped and deliver.



BACKEND:

Models:

Here we define the structure of the data that should in the database. By using some models which help to store the data in the database like mongoose, it is one of the famous libraries in NodeJS. Creating the schemas by mongoose with can mentions the names and type of the data.

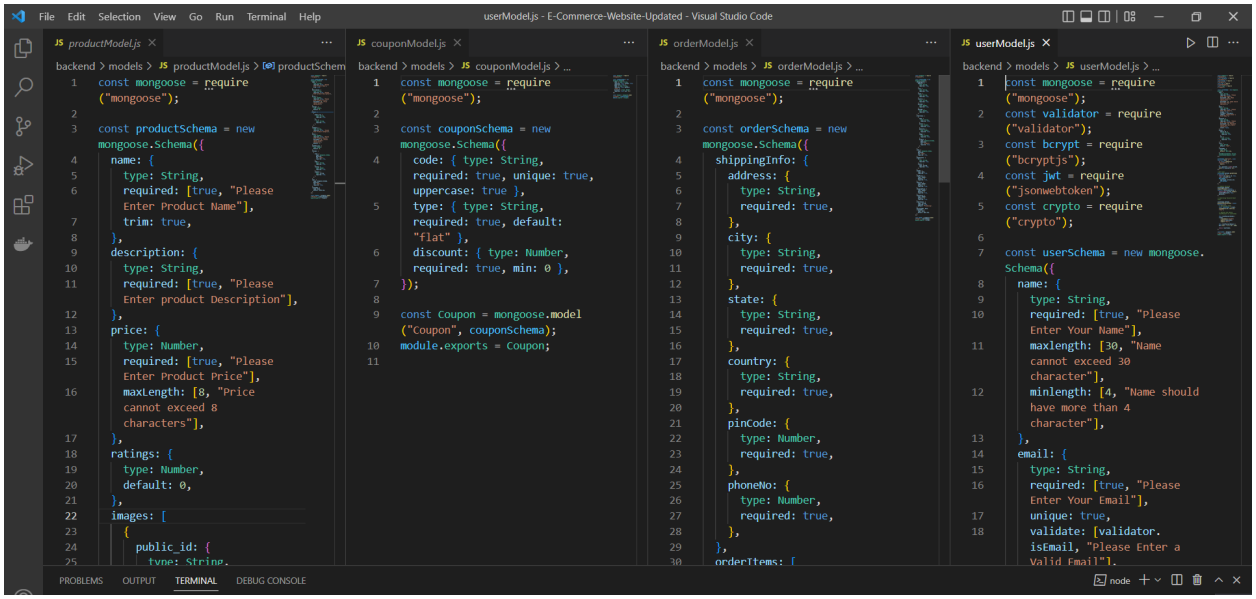
Here we are showing the four models for our database:-

a). productModel.js

b). orderModel.js

c). userModel.js

d). couponModel.js

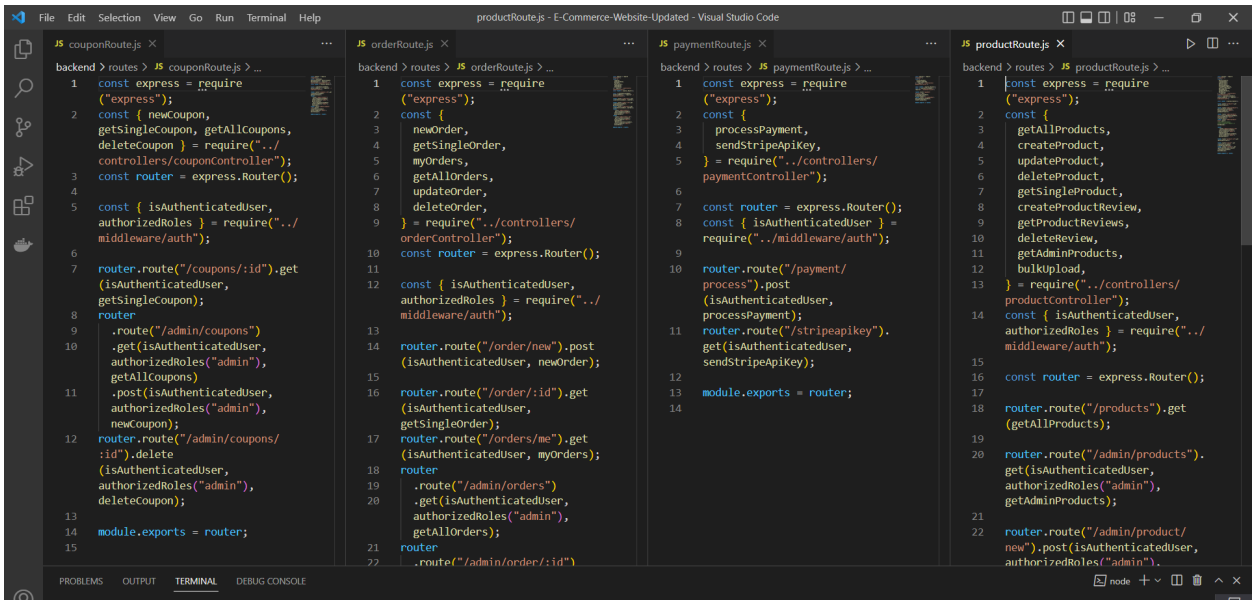


Routers:

All the work related to the routing of the pages was done here. ExpressJS is a popular library for routing. CRUD operations and routing-related code are saved in this folder.

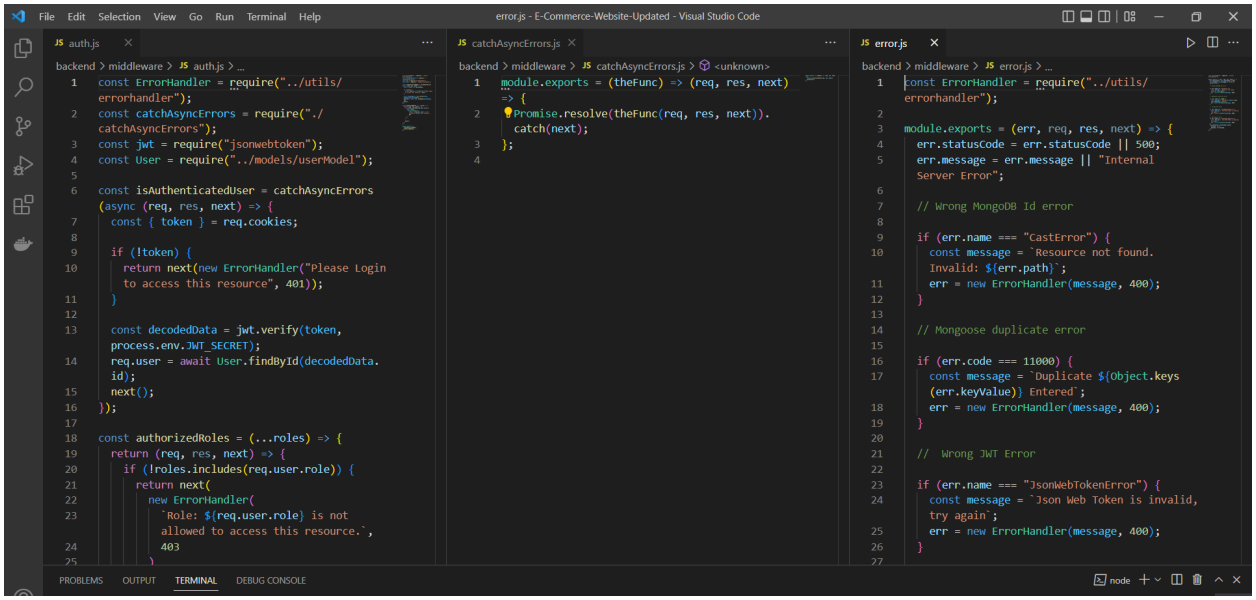
Here we are showing the four routesfor our database:-

a). productRoute.js
b). orderRoute.js
c). userRoute.js
d). paymentRoutesl.js

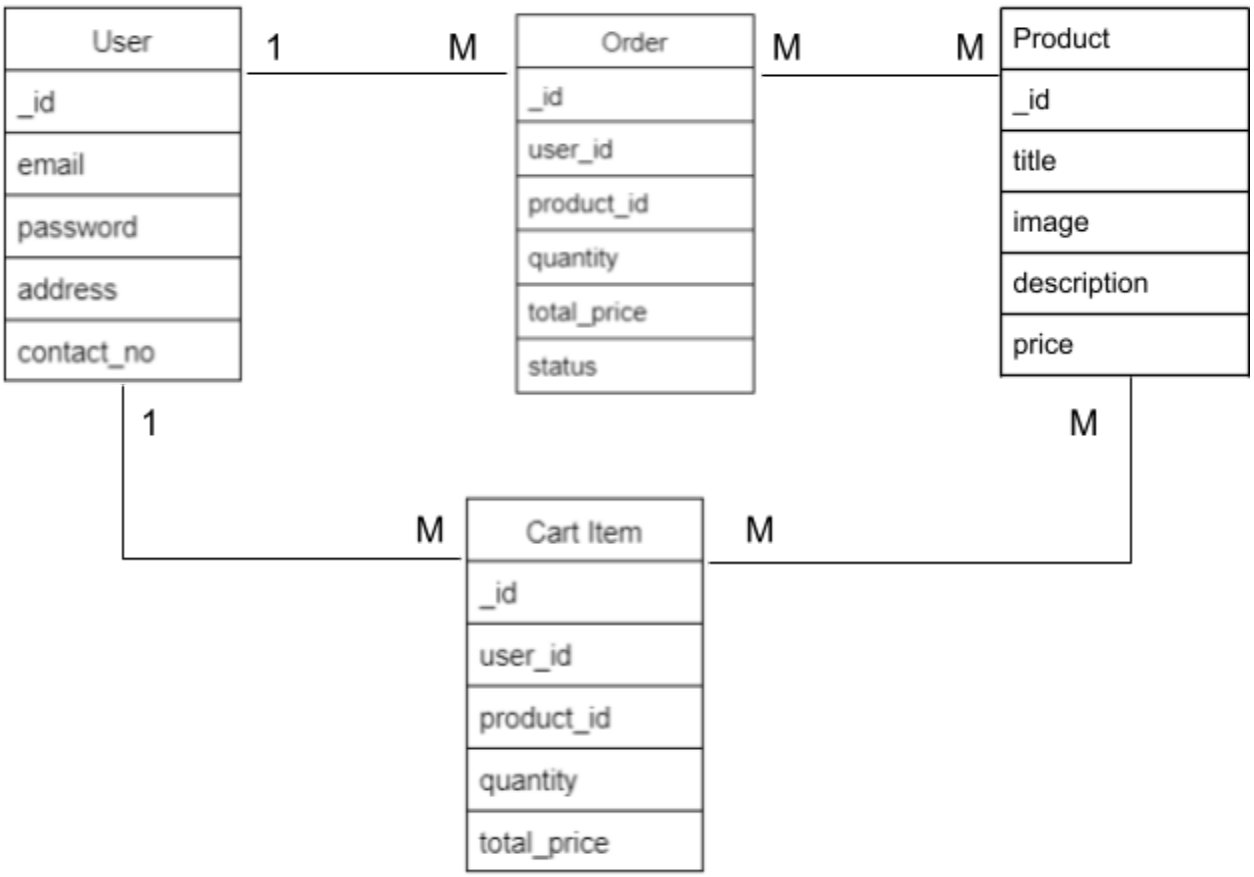


Controllers:

In controllers, the definitions of the functions which are declared in the routing will be stored and also the codes of the middleware are stored in this folder. In the controller phase, the function definitions of the functions which are declared in the Routers will be done. We are having some middleware defined here.


File Edit Selection View Go Run Terminal Help
error.js - E-Commerce-Website-Updated - Visual Studio Code
auth.js
backend > middleware > auth.js > ...
const ErrorHandler = require("../utils/errorhandler");
const catchAsyncErrors = require("./catchAsyncErrors");
const jwt = require("jsonwebtoken");
const User = require("../models/userModel");
const isAuthenticatedUser = catchAsyncErrors(async (req, res, next) => {
const { token } = req.cookies;
if (!token) {
return next(new ErrorHandler("Please Login to access this resource", 401));
}
const decodedData = jwt.verify(token, process.env.JWT_SECRET);
req.user = await User.findById(decodedData.id);
next();
});
const authorizedRoles = (...roles) => {
return (req, res, next) => {
if (!roles.includes(req.user.role)) {
return next(
new ErrorHandler(
`Role: ${req.user.role} is not allowed to access this resource.`,
403
catchAsyncErrors.js
backend > middleware > catchAsyncErrors.js > <unknown>
module.exports = (theFunc) => (req, res, next) => {
Promise.resolve(theFunc(req, res, next)).
catch(next);
};
error.js
backend > middleware > error.js > ...
const ErrorHandler = require("../utils/errorhandler");
module.exports = (err, req, res, next) => {
err.statusCode = err.statusCode || 500;
err.message = err.message || "Internal Server Error";
// Wrong MongoDB Id error
if (err.name === "CastError") {
const message = `Resource not found. Invalid: ${err.path}`;
err = new ErrorHandler(message, 400);
}
// Mongoose duplicate error
if (err.code === 11000) {
const message = `Duplicate ${Object.keys(err.keyValue)} Entered`;
err = new ErrorHandler(message, 400);
}
// Wrong JWT Error
if (err.name === "JsonWebTokenError") {
const message = `Json Web Token is invalid, try again`;
err = new ErrorHandler(message, 400);
}
PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE
node

ER- Diagram


User
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M
Product
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description
price
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Cart Item
_id
user_id
product_id
quantity
total_price

Microservices

An e-commerce company that has a microservices-based architecture can build and deploy whatever it wants, whenever it wants and as much as it wants, unconstrained by fixed deployments

It can deliver code within a service independently, without impacting other pieces, and without restarting the entire platform. Adding and testing new site features becomes easy.

Characteristics of microservice architecture

1. Flexibility
2. Scalability
3. Agility
4. Cost efficiency

GITHUB REPOSITORY

Here, we are providing the link of our GitHub repository -

https://github.com/capstoneProjectTeam-group-7

CONCLUSION

The main theme is to build an e-commerce HOME-decoration selling web application with all three i.e., Front end, back end, and database. This web application is a fully fledged working web application right from the login authentication, admin authorization, add items to cart,wishlist, and payment gateway. It can be used by any home-decor industry on either a small scale or a larger scale. The web application is easy for them to access and without any effort categories can be created and products can be added by them. It will be very attractive for the customer to see the products by sitting at home or office. It will be very helpful for the small-scale industries without selling to wholesalers, large retails mediators they can directly sell to the customer by saving money for both.