



INTERNSHIP REPORT

E-Shop

(E-commerce web app)

Aaron Arjun de Sousa

2062

Ecommerce Website - (E-Shop)



Completed by
Aaron Arjun de Sousa
2062

for the partial fulfillment of
MCA Degree for Semester VI
Discipline of Computer Science and Technology,
Goa Business School,
Goa University

At

AFour Technologies Private Limited
Unit No. 701, 7th floor, Sunteck Kanaka Corporate Park, Patta, Panaji, Goa 403001

Under the guidance of

Gaurish Abhisheki
(Associate Director Of Engineering, at AFour Technologies Pvt. Ltd.)

&

Robinson Pires
(Technical Project Manager, at AFour Technologies Pvt. Ltd.)

GST NO-27AAGCA5712Q1ZA


GOA UNIVERSITY



GOA BUSINESS SCHOOL

CERTIFICATE OF EVALUATION

This is to certify that Mr. **Aaron Arjun de Sousa** has successfully completed his internship at AFour Technologies Private Limited, Unit No. 701, 7th floor, Sunteck Kanaka Corporate Park, Patto, Panaji, Goa 403001, in partial fulfillment of the award of the degree in Master of Computer Application.

 15/6/2023

Examiner 1

(Iyoti D. Pawar)

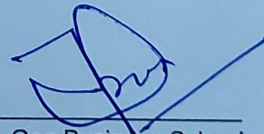


Examiner 2

[Kiran Kulkarni]

Place: Goa University

Date: Thursday, 15th June 2023



Dean, Goa Business School

Acknowledgment

I would like to take this opportunity to express my heartfelt gratitude to all the individuals who have supported and guided me during my internship at AFour Technologies. Their mentorship, encouragement, and expertise have been invaluable in shaping my learning experience and professional growth, as well as in the creation of this internship report.

First and foremost, I would like to extend my deepest appreciation to Gaurish Abhiseki and Robinson Pires, my mentors at AFour Technologies. Their guidance, knowledge, and continuous support have been instrumental in my development as a professional. Their commitment to my growth and their willingness to share their expertise have provided me with a strong foundation.

I would also like to thank my team members at AFour Technologies, Suraj Pandey and Yasin Honnolli, for their collaboration, camaraderie, and contributions throughout the project. Working together as a team has been an enriching experience, and their expertise, dedication, and teamwork have greatly contributed to the progress and success of our project.

I am grateful to AFour Technologies for providing me with this valuable internship opportunity. The exposure to real-world projects and the practical experience gained during my time here have been invaluable for my professional development. The support and encouragement from the entire team at AFour Technologies have fostered a collaborative work environment where ideas are shared and challenges are overcome together.

Furthermore, I would like to extend my gratitude to Goa University for their support and for providing me with the academic foundation that has prepared me for this internship. The knowledge and skills acquired during my studies at the university have played a significant role in my ability to contribute effectively to the project.

Finally, I would like to express my deepest gratitude to my family and friends for their unwavering support, understanding, and encouragement throughout my internship. Their belief in my abilities and their constant motivation have been a driving force behind my dedication and perseverance.

In conclusion, I am immensely grateful for the support and opportunities provided by all the aforementioned individuals and organizations. This internship has been a transformative experience, and I am confident that the skills and knowledge gained will have a lasting impact on my personal and professional journey, as well as in the completion of this internship report.



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Robinson Pires
(Technical Project Manager, at AFour Technologies Pvt. Ltd.)

Date: 26 May 2023

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Mr. Aaron Arjun Desousa**, student of Master of Computer Applications (MCA) of Goa University, Goa, is currently undergoing his final semester project (Semester VI) at our organization, **AFour Technologies Pvt. Ltd.**, since March 23 and will complete by August 23.

During his tenure so far, he met the expectations of his team lead/mentor/guide and was regular and sincere.

This certificate is being issued on his request to be submitted with the project report at Goa University.

The final internship completion certificate will be provided on completing his internship.

For AFour Technologies Pvt. Ltd.

CHADHA
NEHA
RAVISH

Digitally signed by CHADHA NEHA RAVISH
DN: cn=CHADHA NEHA RAVISH, o=AFour Technologies Pvt. Ltd., email=chadha.neha@afourtech.com, c=IN
Reason: I am the signer of this document.
PDF GENERATED BY AFour Technologies Pvt. Ltd.
Date: 2023.05.26 10:00:00

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GST NO-27AAGCA5712Q1ZA

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Introduction

This internship report presents an overview of the internship experience at AFour Technologies Private Limited, located at Unit No. 701, 7th floor, Sunteck Kanaka Corporate Park, Patto, Panaji, Goa 403001. The primary objective of this internship was to gain mastery in a specific technology through hands-on experience and practical application.

During the internship period, the designation assigned to me was Internship Trainee - Fullstack Developer. I had the privilege of working alongside a talented team consisting of Suraj Pandey and Yasin Honnolli. Together, we were assigned the task of developing an e-commerce full stack website, with a specific focus on utilizing the .NET technology and React for the frontend.

The overarching goal of this internship was to acquire a comprehensive understanding of the .NET technology stack, encompassing both the front-end and back-end development aspects. By working on a real-world project, we aimed to enhance our technical skills, gain practical experience in web development, and become proficient in utilizing .NET technology and React to build robust and scalable applications.

Furthermore, the internship provided an opportunity to apply theoretical knowledge acquired during academic studies in a professional setting. By working closely with experienced mentors and industry professionals, we sought to bridge the gap between classroom learning and practical implementation.

Upon completion of the internship, the following objectives and goals were set:

1. Demonstrate proficiency in utilizing .NET technology and React for web application development.
2. Acquire a comprehensive understanding of full-stack development, encompassing both front-end (React) and back-end (.NET) technologies.
3. Gain hands-on experience in building an e-commerce website from scratch, considering user experience, security, and scalability.
4. Develop effective problem-solving and debugging skills, essential for troubleshooting and maintaining web applications.
5. Enhance teamwork and collaboration abilities through active participation in a team-based project.
6. Strengthen communication and interpersonal skills through regular interaction with colleagues, mentors, and clients.

This internship report will provide an in-depth analysis of the experiences, challenges faced, lessons learned, and achievements attained during the internship period. It aims to reflect the growth and development that took place as a result of this valuable opportunity provided by AFour Technologies Private Limited. The report will specifically focus on the utilization of .NET technology and React for the development of the e-commerce full stack website, providing insights into the implementation details, challenges encountered, and lessons learned throughout the process.

Company Profile

AFour Technologies is a leading software engineering and consulting company that specializes in providing cutting-edge solutions to businesses across various industries. With a global presence and a strong track record of delivering high-quality software services, AFour Technologies has established itself as a trusted partner for organizations seeking innovative technology solutions.

Established with a vision to transform businesses through technology, AFour Technologies offers a comprehensive range of services tailored to meet the diverse needs of its clients. The company's core expertise lies in product engineering, enterprise software development, quality engineering, and digital transformation.

AFour Technologies employs a team of highly skilled professionals who possess in-depth knowledge of emerging technologies and industry best practices. This talented workforce is dedicated to delivering superior results and exceeding client expectations. The company fosters a culture of continuous learning and innovation, encouraging its employees to stay at the forefront of technological advancements.

With a customer-centric approach, AFour Technologies strives to understand the unique requirements and challenges faced by each client. By leveraging its technical expertise and domain knowledge, the company provides tailored solutions that address specific business needs. AFour Technologies' commitment to quality is reflected in its stringent quality assurance processes, ensuring that each deliverable meets the highest standards of excellence.

AFour Technologies has successfully collaborated with clients from diverse sectors, including healthcare, finance, e-commerce, manufacturing, and more. The company has a proven track record of delivering successful projects, ranging from small-scale applications to large-scale enterprise solutions.

As a forward-thinking organization, AFour Technologies embraces emerging technologies and encourages innovation. The company stays abreast of the latest trends and advancements in areas such as DevOps, cloud computing, Big Data, machine learning, and the Internet of Things (IoT). By leveraging these technologies, AFour Technologies helps its clients stay ahead of the competition and achieve their digital transformation goals.

In summary, AFour Technologies is a trusted partner for businesses seeking reliable software engineering and consulting services. With its skilled workforce, client-centric approach, and focus on delivering innovative solutions, the company has earned a reputation for excellence. AFour Technologies continues to strive for technological advancement, fostering long-term partnerships and driving digital transformation for its clients.

My Designation in Company

During my internship as an Internship Trainee - Fullstack Developer at AFour Technologies, I worked on a significant e-commerce website project using the .NET technology stack. My main responsibilities included:

- **Web API Development:** I developed RESTful APIs for user authentication, product management, and order processing.
- **MVC .NET Razor:** I utilized the MVC architecture pattern with Razor syntax to create dynamic web pages and handle user requests.
- **Frontend Development:** I contributed to the frontend development using React and .NET technologies, focusing on user interfaces and responsive layouts.
- **Database Management:** I utilized Entity Framework and Linq queries for efficient database management. I worked with MySQL Server, leveraging Entity Framework's features to design the database schema, create tables, and perform CRUD operations on data.

In addition to my technical roles, I actively participated in team meetings, code reviews, and troubleshooting activities to ensure effective collaboration and adherence to project timelines.

Through my internship as an Internship Trainee - Fullstack Developer, I gained hands-on experience in developing web applications, implementing APIs, and utilizing frontend technologies like MVC Razor and React. This experience enhanced my skills and prepared me for a successful career in software development.

Problem statement

Must have

1. Login page. Different roles. (Customer, Vendor, Admin etc)
2. We should land on a page where all of the available products are displayed. This is usually called the catalog view.
3. We choose a product and get sent to another page which contains even more details about the product. This is usually called the product description view.
4. After revising everything about the product we confirm that we would like to purchase it. You do this by clicking a button which contains "Add to cart".
5. There is a Cart view where we will be able to see all the items added, we can increase or decrease the quantity and process to checkout.
6. On Checkout view there will be option to add offers and by applying the offer user will get the discount on valid offer
7. There will be virtual money (Wallet) which will be allotted by the admin to every user
8. On Payment View user will be able to do payment with virtual money
9. Email should be sent out once order placed
10. Order tracking view where user will track it
11. Admin will change the order status (dispatched / in transit / reach to nearby hub delivered)
12. User should be able to search the product by name, description, category
13. Product availability should be marked within the range of pincode
14. Inventory/stock management should be provided for all the products to Admin user
15. Highlighted products should be displayed as carousel on top of landing page

Good to have have

1. Order management
 - 1.1. Monthly revenue generated
 - 1.2. Category wise order flow
 - 1.3. Get the snapshot of remaining inventory
 - 1.4. Sales reports generated for products
2. Delivery module
 - 2.1. Delivery boy should get assigned the order
 - 2.2. He should able to change the status and admin will will approve it
 - 2.3. He should able to mark order as delivered
 - 2.4. Live tracking of delivery once he changed the status as out for delivery

****Note:** You can take the reference of Amazon or Flipkart

Front End Guidelines:

- 1) Use MVC JQuery / Razor / Blazor for Front end.
Track – React in .NET
 - MVC JQuery
 - MVC Razor
 - Blazor
 - Mobile app with .NET MAUI
- 2) Use a CSS framework like Bootstrap or Material UI or equivalent.
- 3) Create reusable components.

- 4) Use Routing appropriately.
- 5) Learn and Use different State management techniques

Github Guidelines:

- 1) Create separate repositories for Frontend and backend
- 2) Create branches dev, master and production
- 3) You can point the production branch to deployment sites if you are using.(Optional)
- 4) Create branches based on a feature for example feature/registration, feature/dashboard

Backend Guidelines:

- 1) Use .NET REST Api for backend.
- 2) Use SQL / PostgreSQL as database
- 3) Implement Swagger documentation.
- 4) Use proper http verbs for endpoints. For ex GET,PUT,POST
- 5) Add Role based Authorization on the API endpoints.

Overview

Duration: March to June 2023

Company Information:

AFour Technologies Private Limited is located at Unit No. 701, 7th floor, Sunteck Kanaka Corporate Park, Patto, Panaji, Goa 403001. AFour Technologies operates in the software engineering and consulting industry, providing innovative solutions and services to businesses across various sectors. Their core focus is on product engineering, enterprise software development, quality engineering, and digital transformation.

Internship Objective:

The primary objective of the internship was to achieve mastery in .NET technology, Rest API's, React, and SQL databases. The internship aimed to provide hands-on experience and practical exposure to these technologies, enabling the development of skills and expertise in building robust web applications.

Role and Responsibilities:

As an Internship Trainee - Fullstack Developer, my role involved collaborating with the team to understand tasks and timelines. I was responsible for both frontend and backend development, which included working on web APIs, creating MVC applications using .NET, implementing React components, and managing MySQL databases.

Technologies and Tools Used:

The internship involved utilizing a range of technologies and tools, including:

Backend Development: .NET (Web API, MVC Razor, Blazor)

Frontend Development: React, Material UI

Databases: SQL (MySQL)

Payment Integration: Razor Pay

Email Integration: SendGrid SMTP API

Key Learnings and Achievements:

Throughout the internship, I gained valuable learnings and achieved significant milestones, including:

Developing proficiency in .NET technology, Rest API's, React, and SQL databases.

Gaining hands-on experience in building web applications using various .NET frameworks and libraries.

Implementing RESTful web APIs for seamless communication between frontend and backend components.

Designing and developing responsive and interactive user interfaces using React and Material UI.

Future Goals:

Based on the internship experience, my future goals include utilizing the knowledge and skills gained to explore mobile development in .NET. I aspire to further enhance my expertise in the field of .NET technology and pursue a career path that leverages my proficiency in fullstack web development.

In summary, the internship at AFour Technologies provided an opportunity to master .NET technology, Rest API's, React, and SQL databases. By actively contributing to frontend and backend development tasks, utilizing various tools and technologies, and achieving significant milestones, the internship enabled valuable learnings and sets the foundation for future career growth.

My contributions

During my internship at AFour Technologies, I made significant contributions to the development of the Ecommerce project. My responsibilities spanned across the frontend, backend, and database aspects, showcasing my skills in various technologies and fostering a collaborative learning environment. Here is a more detailed breakdown of my contributions:

Frontend Development with .NET MVC Razor:

I actively participated in developing the frontend application using .NET MVC Razor. This application focused on user authentication and registration, providing an intuitive and visually appealing interface for login and registration functionalities. I implemented responsive layouts, designed user-friendly forms, and integrated them with the backend APIs. This application served as the entry point for users, allowing them to securely access the Ecommerce platform.

Backend Development with .NET Web API and Entity Framework:

I actively contributed to the backend development of the Ecommerce project using .NET Web API. Collaborating closely with the team, I played a key role in designing and implementing RESTful APIs to ensure seamless communication between the frontend and backend components. In addition to user authentication, I also focused on product and category management functionalities, enhancing the overall functionality of the system. Furthermore, I utilized the power of Entity Framework and LINQ queries to efficiently interact with the SQL Server database. This allowed us to effectively manage data and perform essential CRUD (Create, Read, Update, Delete) operations. Leveraging the capabilities of Entity Framework, I designed robust models and utilized LINQ queries to retrieve and manipulate data related to users, products and categories.

Development of Admin Application with React and Material UI:

In addition to my work on the frontend and backend, I took charge of creating an Admin application tailored for administrative users. Leveraging React, a popular JavaScript library, and Material UI, a comprehensive UI component library, I developed a user-friendly and responsive web application. The Admin application aimed to streamline tasks such as product management, user management, order management. These efforts focused on providing Admin users with an intuitive interface to efficiently manage essential aspects of the Ecommerce platform.

Peer Learning Initiative:

To foster a collaborative learning environment and enhance our collective skills in both React and .NET, my team and I initiated a peer learning program. Within this initiative, I took the lead in teaching my teammates React concepts and best practices, while they reciprocated by sharing their knowledge and insights on React and Blazor. This approach not only saved

time but also allowed us to broaden our skill sets and deepen our understanding of the technologies involved.

Overall, my contributions to the Ecommerce project encompassed frontend development with .NET MVC Razor, backend development with .NET Web API, and database management using Entity Framework and LINQ queries. Additionally, my involvement in the peer learning initiative helped create a collaborative and knowledge-sharing environment. Through these experiences, I enhanced my technical skills, gained a deeper understanding of the software development lifecycle, and applied industry best practices. I am grateful for the opportunity to have made these contributions and to have worked alongside a talented team at AFour Technologies.

Tools and technologies used

During the development of the e-commerce project, a wide range of tools and technologies were employed to ensure efficient and effective implementation. The following tools and technologies were utilized:

1. Backend Development:
 - .NET REST API: Used for developing the backend of the e-commerce platform, providing a robust and scalable foundation for the application.
 - .NET MVC Razor: Employed to create dynamic web pages with server-side code and Razor syntax, facilitating seamless integration of frontend and backend components.
 - .NET Blazor: Utilized for building interactive and responsive user interfaces, enabling the creation of a single-page application experience.
2. Frontend Development:
 - React: Implemented for developing the frontend of the e-commerce website, providing a rich and interactive user interface.
 - Asp.NET: Used in conjunction with React for frontend development, offering a comprehensive framework for web application development.
3. Database Management:
 - SQL Database: Employed as the backend database management system to store and manage the application's data efficiently.
 - Entity Framework: Utilized as an Object-Relational Mapping (ORM) tool to facilitate database operations and simplify data access within the application.
4. Security and Authorization:
 - JSON Web Token (JWT): Utilized for implementing secure user authentication and authorization, ensuring role-based access control to API endpoints.
 - Authentication and Authorization: Leveraged to protect API endpoints and restrict access based on user roles.
5. Payment Integration:
 - Razorpay Payment Gateway: Integrated into the e-commerce platform to enable secure and seamless online payment transactions.
6. Email Communication:
 - SendGrid API: Utilized for sending invoices and bills via email, providing a reliable and efficient communication channel.
7. CSS Frameworks:
 - Bootstrap: Utilized for responsive and mobile-first web design, ensuring a consistent and visually appealing user interface.
 - Material UI: Employed to implement a modern and visually appealing design language, enhancing the user experience.

8. Development Collaboration and Version Control:

- GitHub: Utilized as a collaborative platform for code sharing, version control, and team collaboration.

9. Additional Backend Technologies:

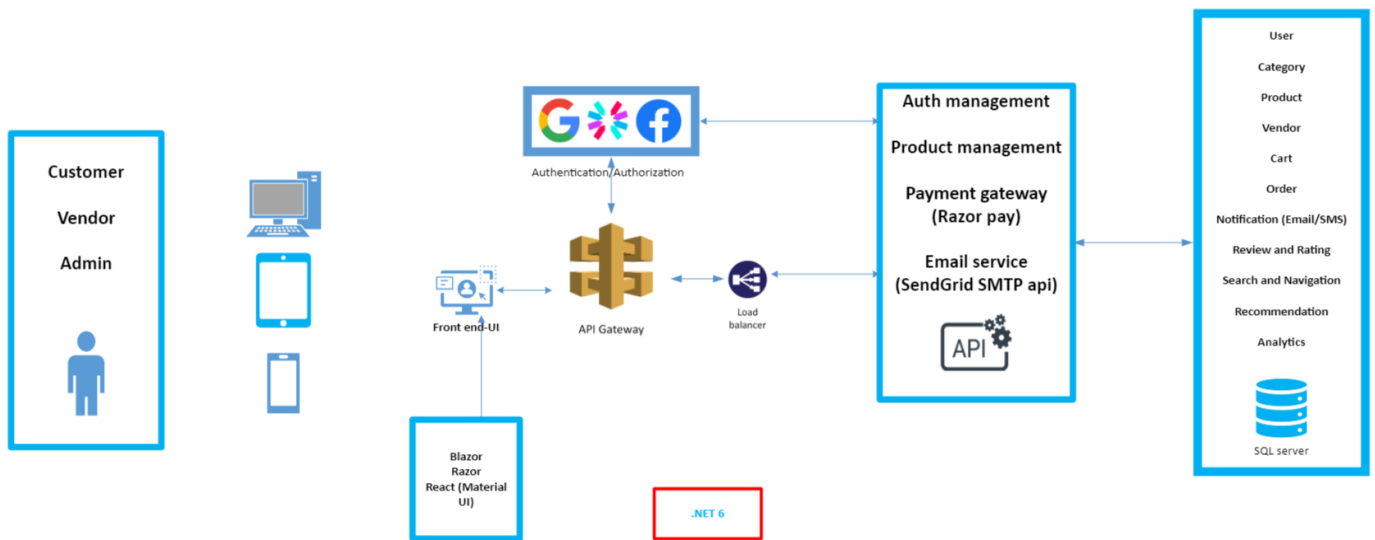
- C#: Used as the primary programming language for backend development, providing a robust and expressive language for building applications.
- Entity Framework: Employed for data access and manipulation within the backend, facilitating communication with the database.
- Filters: Utilized to implement cross-cutting concerns and perform pre and post-processing actions on API requests and responses.
- Swagger: Implemented for API documentation, allowing easy exploration and testing of API endpoints.
- Postman: Utilized for testing and validating API endpoints during development.
- Microservices: Employed as an architectural approach for designing and building scalable and modular backend services.

10. Relational Database Management System (RDBMS):

- Tables, Relations, Indexes, Views, Triggers: Utilized to design and manage the database schema, ensuring efficient storage and retrieval of data.

In summary, the e-commerce project involved the use of various tools and technologies, including .NET REST API, .NET MVC Razor, .NET Blazor, React, SQL Database, JWT Token, Razorpay Payment Gateway, SendGrid API, Bootstrap, Material UI, C#, ADO.NET, Entity Framework, GitHub, and more. These tools and technologies were carefully selected to ensure the development of a robust, secure, and user-friendly e-commerce platform.

Architecture diagram



The architecture diagram of the e-commerce website developed using .NET 6 Frontend Technologies:

Razor: Used for server-side rendering and generating dynamic HTML pages.

React: Employed for building responsive and interactive user interfaces, utilizing Material Design components.

Blazor: Used as the main application, providing a single-page application (SPA) experience for the users.

Backend Technologies:

C# .NET API: Backend code developed in C# .NET, shared between the Blazor application and the React admin/vendor sections.

User Roles:

Customer: Represents regular users of the e-commerce website.

Vendor: Refers to users who are registered as vendors on the platform.

Admin: Denotes the administrators responsible for managing the website.

Device Compatibility:

The website is designed to be compatible with various devices, including mobiles, tablets, and PCs, ensuring a seamless user experience across different screen sizes.

API Gateway:

Utilized for handling JWT token-based authentication, allowing users to securely access protected resources.

Future enhancement: Integration of Google and Facebook login for a wider range of authentication options.

Load Balancer:

Implemented to distribute incoming network traffic across multiple servers, ensuring high availability and scalability of the application.

Core Functionalities:

Authentication Management APIs: Developed for user registration, login, and role-based authorization.

Product Management APIs: Facilitate CRUD operations for managing products, including retrieval, addition, and modification.

Payment Gateway: Integrated with Razorpay to offer multiple payment options for customers.

Future enhancement: Cash on Delivery (COD) option to be implemented.

Email Service: Utilizing SendGrid SMTP API to send invoices via email immediately after successful order placement and payment.

Database Management:

SQL Server Management Studio: Used to store various data related to users, including roles, names, emails, addresses, and more.

Category: Contains hierarchical information about product categories, facilitating organized product management.

Vendor: Stores details specific to vendors, such as addresses and pin codes.

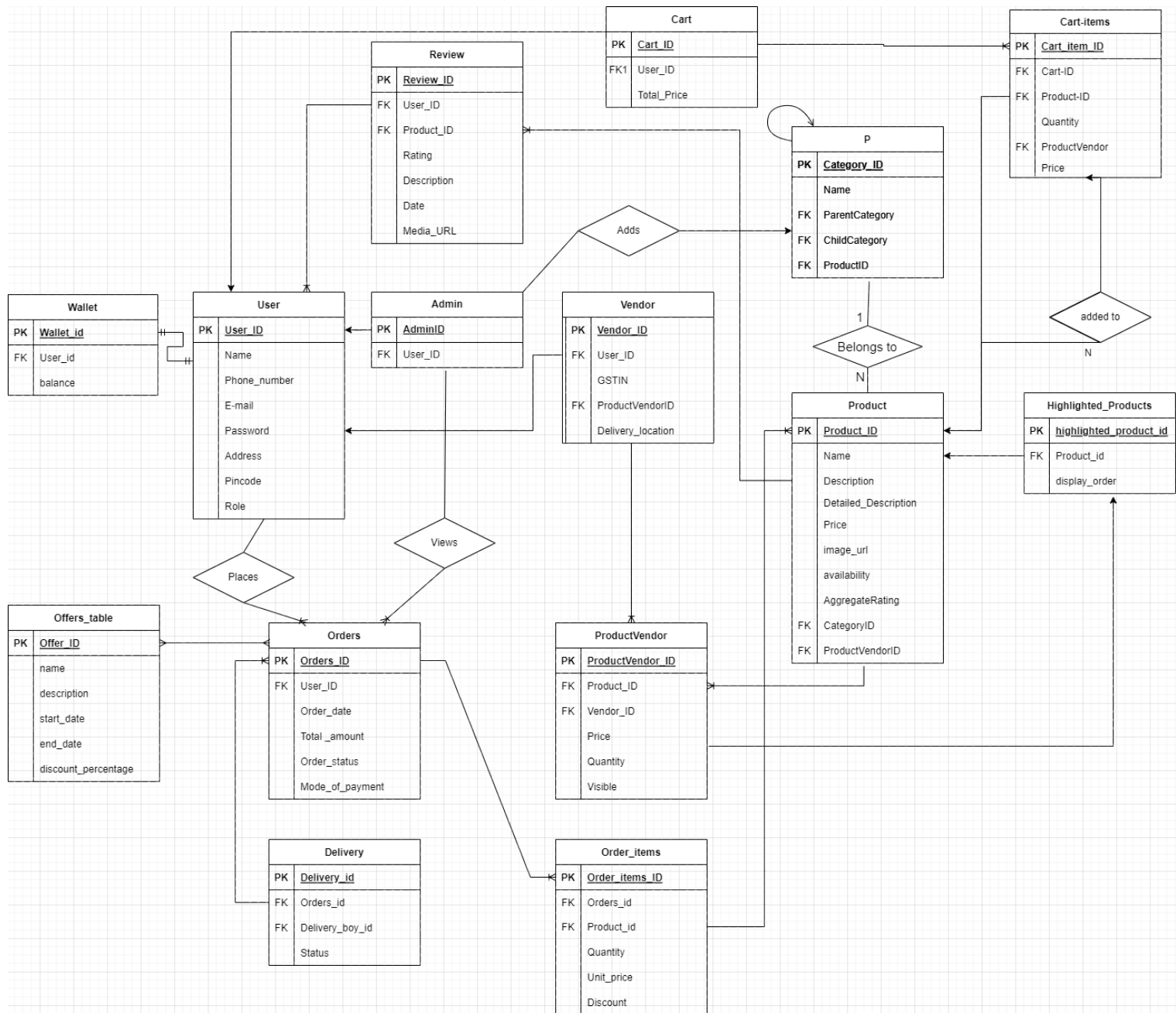
Order: Maintains order details for future reference, including information necessary for refunds, exchanges, and other operations.

Notifications: Enables sending email/SMS notifications to users, such as order status updates, review and rating requests, and recommendations.

Analytics: Provides insights into user behavior, search patterns, and navigation patterns, allowing for data-driven decision-making.

Overall, this architecture ensures a robust and scalable e-commerce website with well-defined functionalities, efficient data management, and enhanced user experiences.

Database diagram



The database schema consists of several tables that store information related to users, vendors, products, categories, orders, carts, deliveries, offers, reviews, and wallets. Here is a brief description of each table:

1. User Table:

- Stores user information such as name, phone number, email, address, and password.

2. Vendor Table:

- Contains vendor-specific information, including a foreign key reference to the User table, GSTIN, and delivery pincode.

3. Admin Table:

- Represents the admin users of the system and references the User table.

4. Product Vendor Table:

- Associates vendors with their respective products, including information such as price, quantity, and listing visibility.

5. Product Table:

- Stores details about the products available in the Ecommerce platform, including name, description, category (foreign key reference to the Category table), image, base price, detailed description, and availability.

6. Category Table:

- Represents different categories for the products and includes information such as name, description, and references to parent and child categories.

7. Order Table:

- Stores order-related information such as the user who placed the order (foreign key reference to the User table), order date, order status, mode of payment, and total amount.

8. Order Items Table:

- Associates products with the corresponding orders, including information about the quantity, unit price, and discounts applied.

9. Cart Items Table:

- Represents the items added to the user's cart and includes information about the product, quantity, unit price, product vendor (foreign key reference to the Product Vendor table), and the cart it belongs to (foreign key reference to the Cart table).

10. Cart Table:

- Stores information about the user's cart, including a reference to the user, the cart items associated with it, and the total amount.

11. Delivery Table:

- Represents the deliveries made for orders and includes information about the order (foreign key reference to the Order table), delivery status, and the delivery person (foreign key reference to the User table).

12. Offers Table:

- Stores information about promotional offers available in the Ecommerce platform, including the name, description, start date, end date, and discount percentage.

13. Review Table:

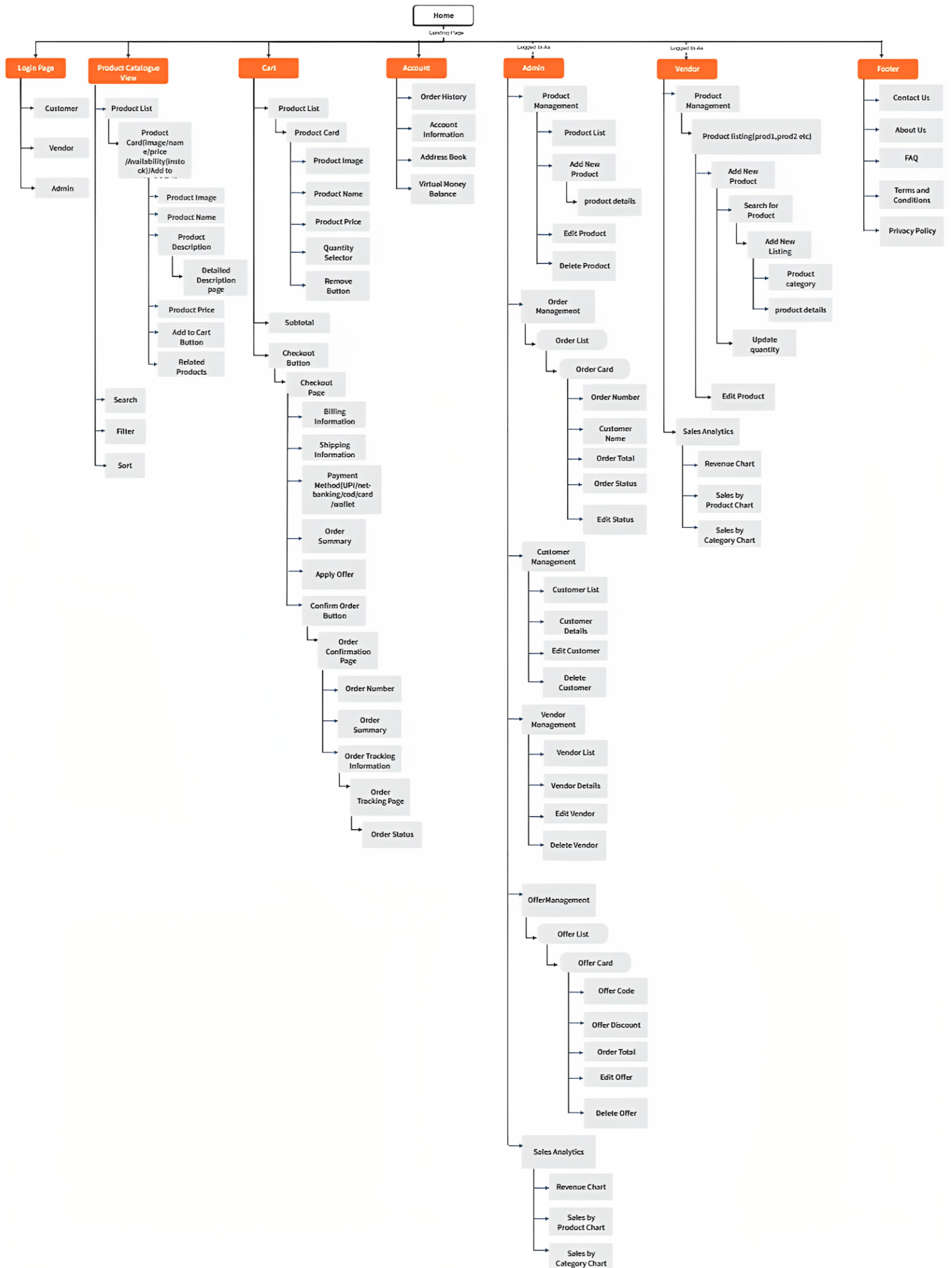
- Associates user reviews with specific products, including information about the user (foreign key reference to the User table), product (foreign key reference to the Product table), rating, review text, date, and media (such as images or videos).

14. Wallet Table:

- Stores information about user wallets, including the user (foreign key reference to the User table) and the wallet amount.

This database schema facilitates efficient data management and supports the functionality of the Ecommerce web app, enabling user registration, product management, order processing, cart management, delivery tracking, promotions, and user reviews.

Sitemap



Screenshots

Login / Registration app

Registration

Registration Page - Ecommerce

Register with

Or

Enter a Username

Enter a valid Email Address

Enter password

Enter Phone Number

Enter Street Name

Enter City

Enter State

Enter Pincode

Role:

☒ Customer ☐ Vendor

Sign Up

27°C Partly cloudy

ENG IN 08:42 PM 04-06-2023

Login

Home Page - Ecommerce

Sign in with

Or

Enter a valid Email Address

Enter password

[Forgot password?](#)

Login

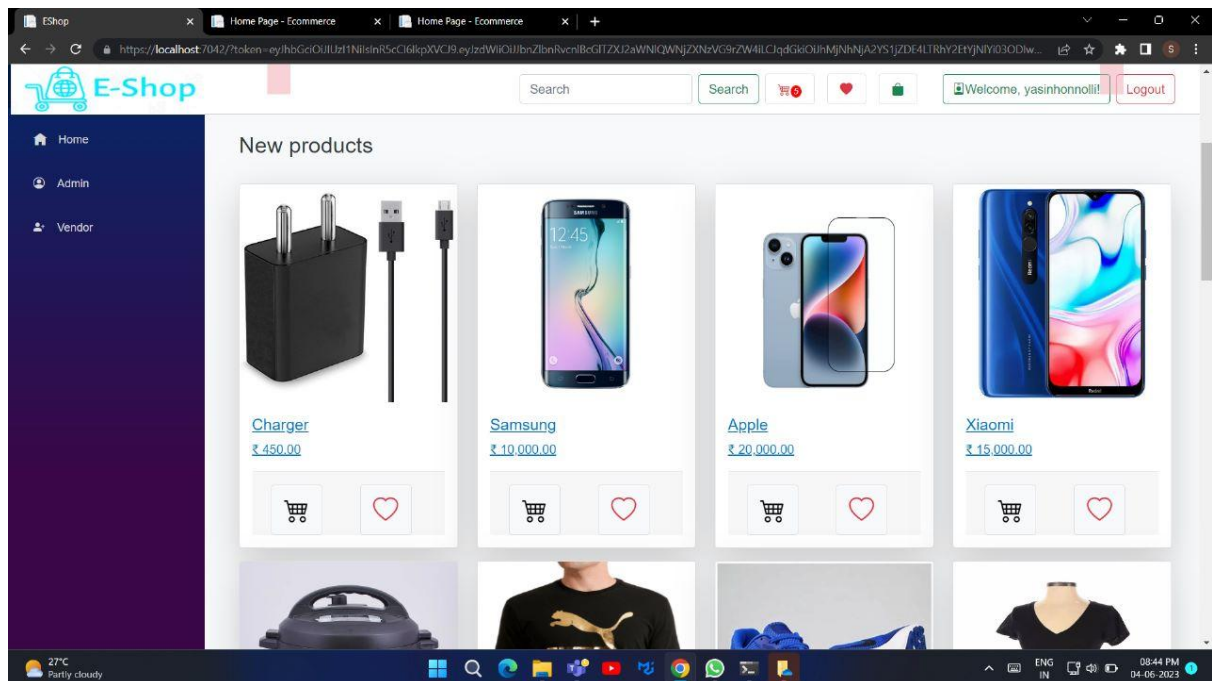
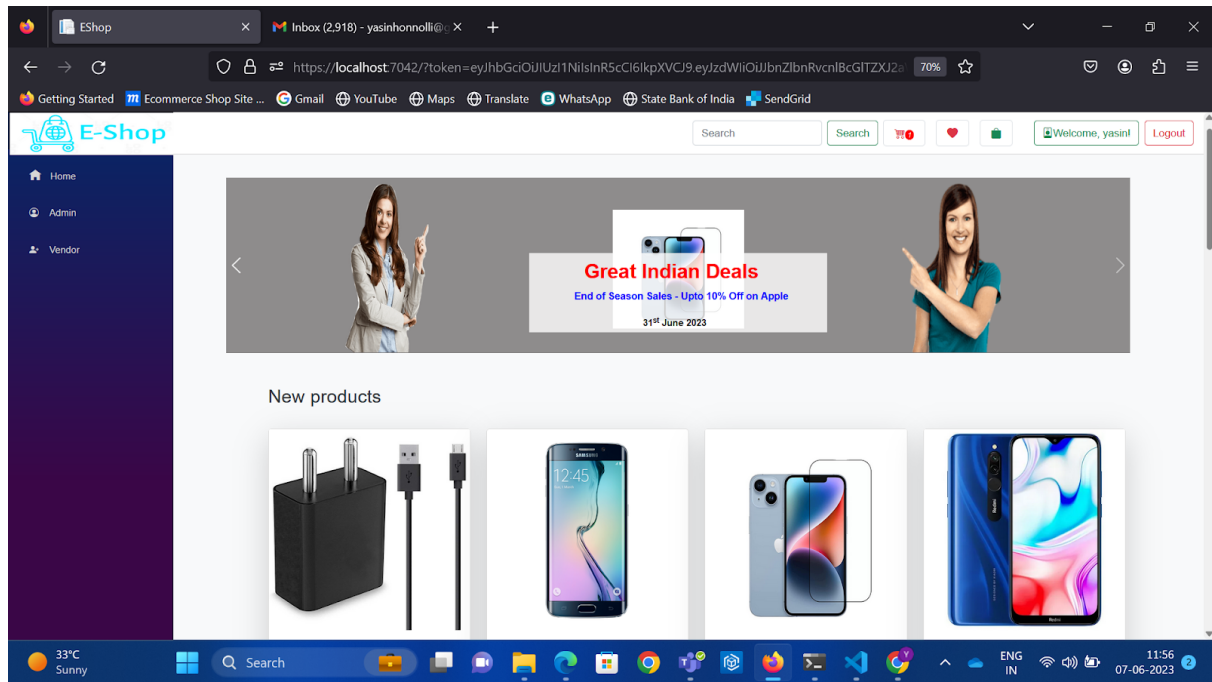
Don't have an account? [Register](#)

27°C Partly cloudy

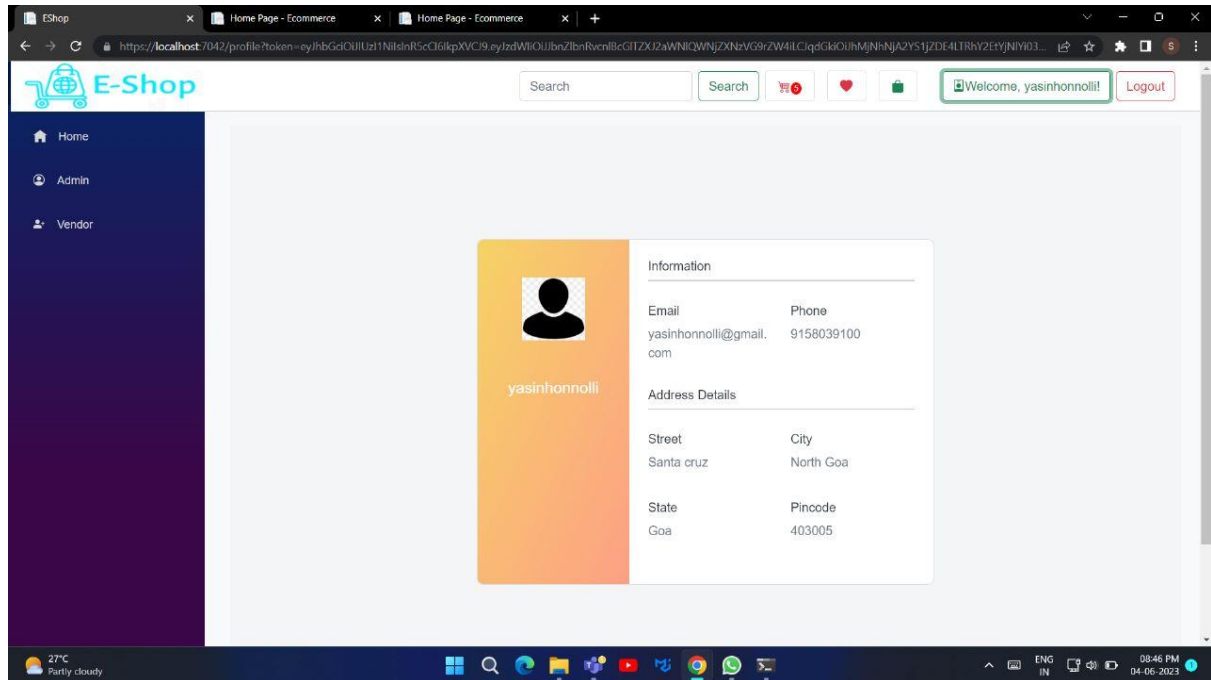
ENG IN 08:42 PM 04-06-2023

Customer site

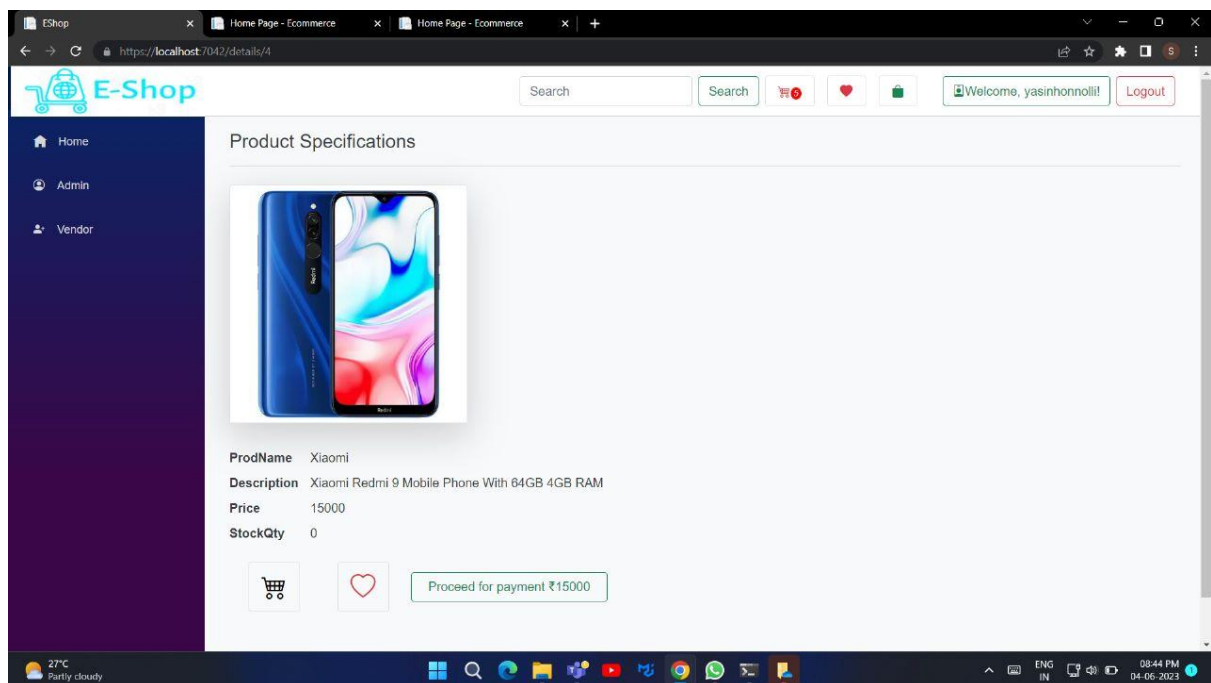
Landing page



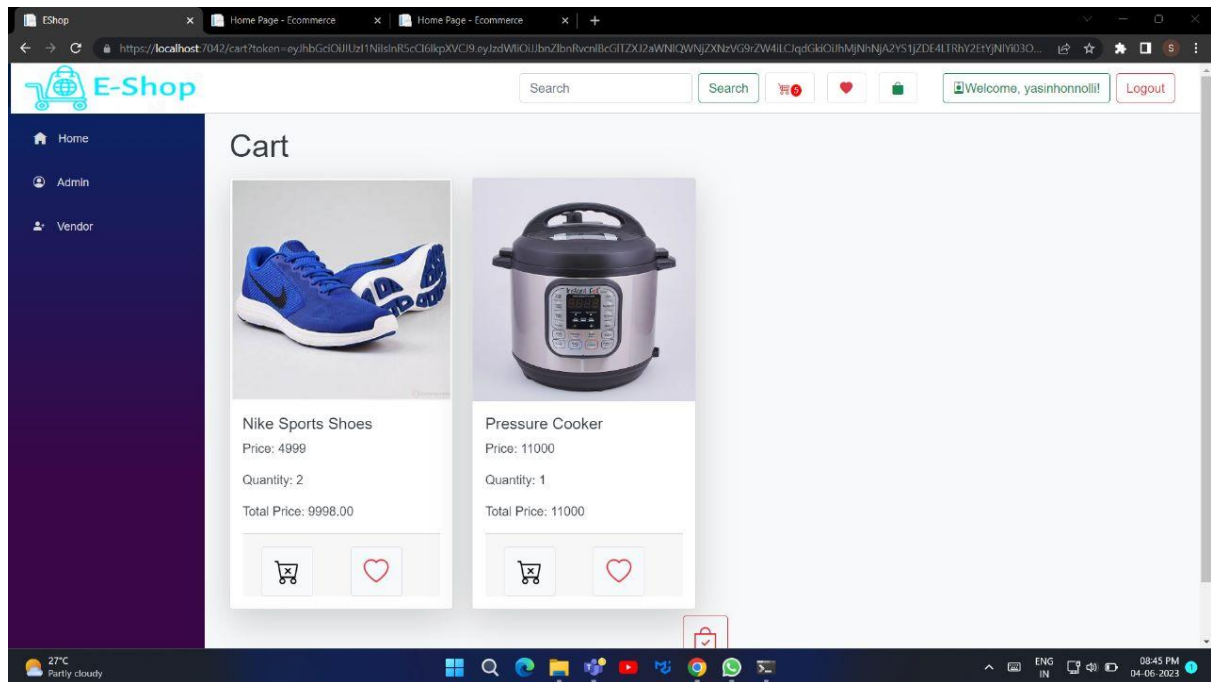
User Profile page



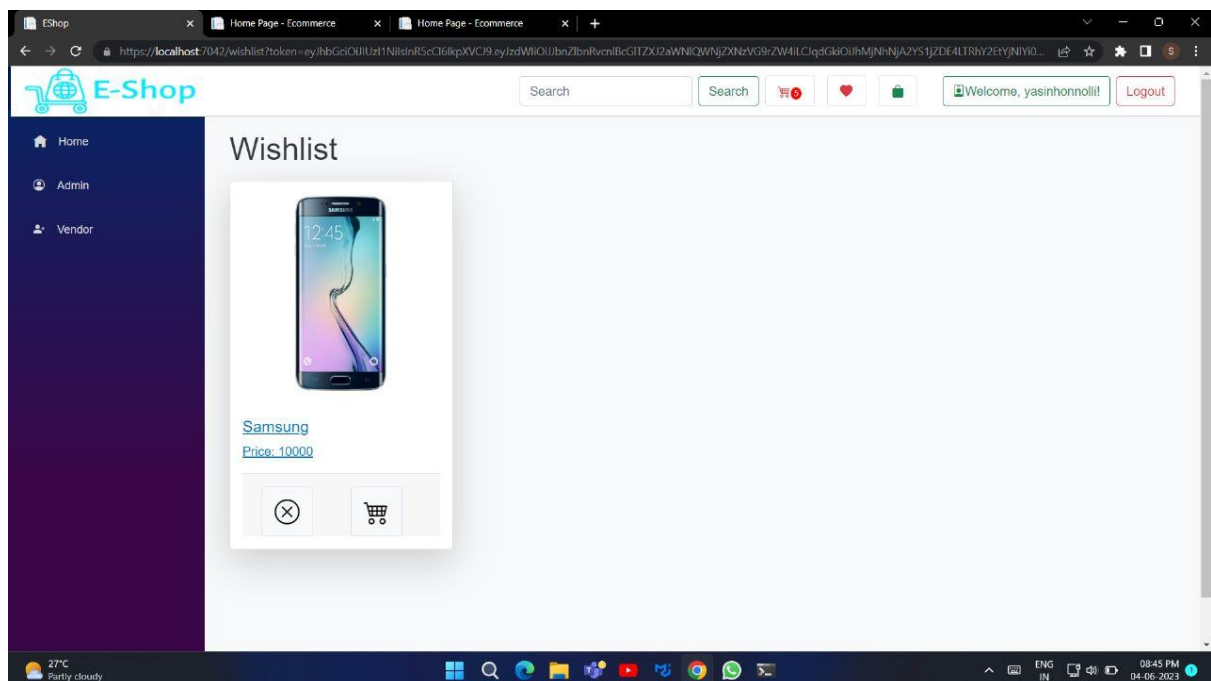
Products details



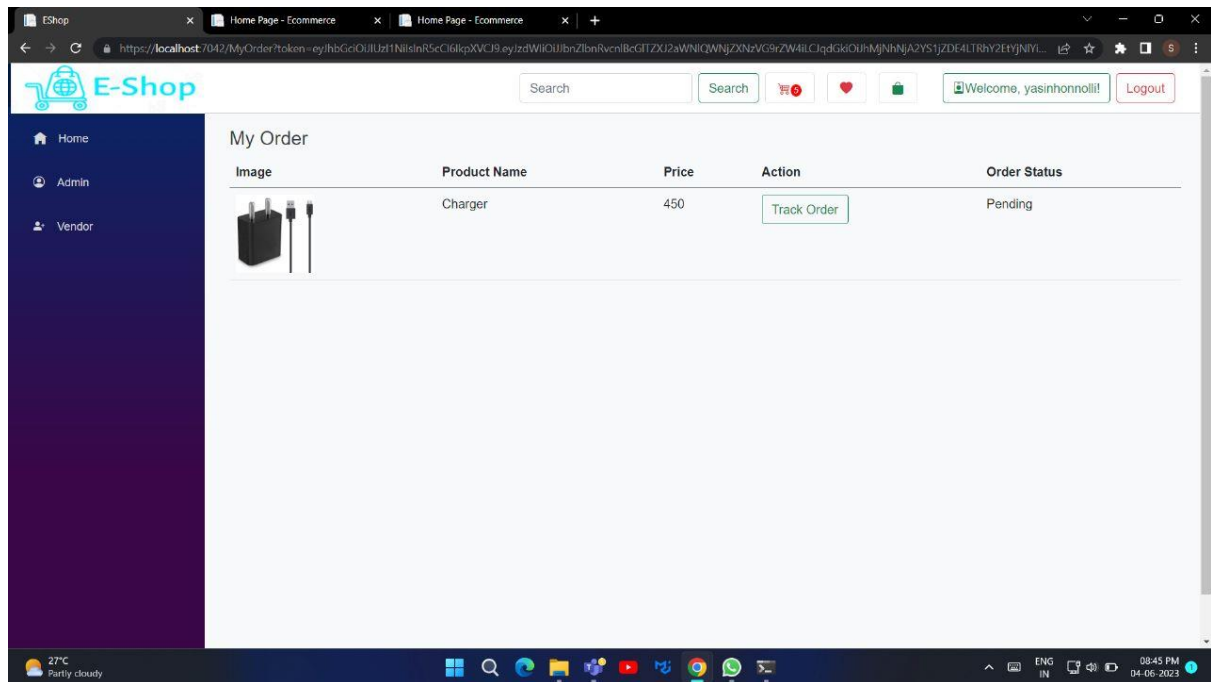
Cart



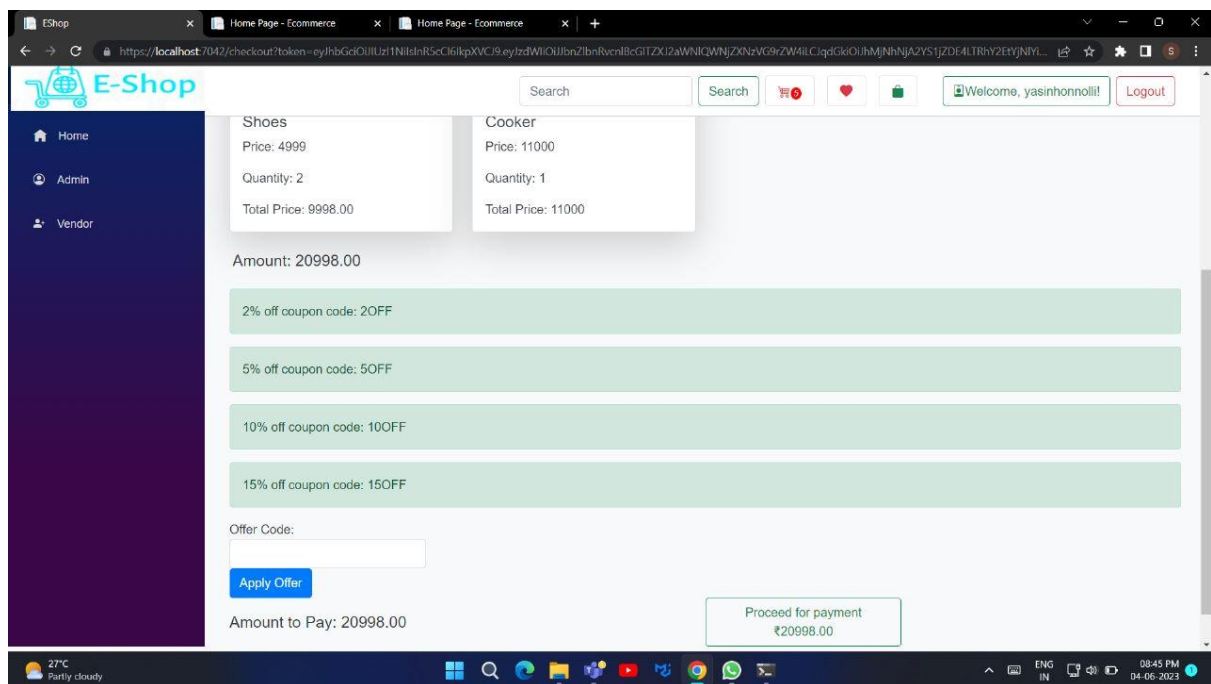
Wishlist



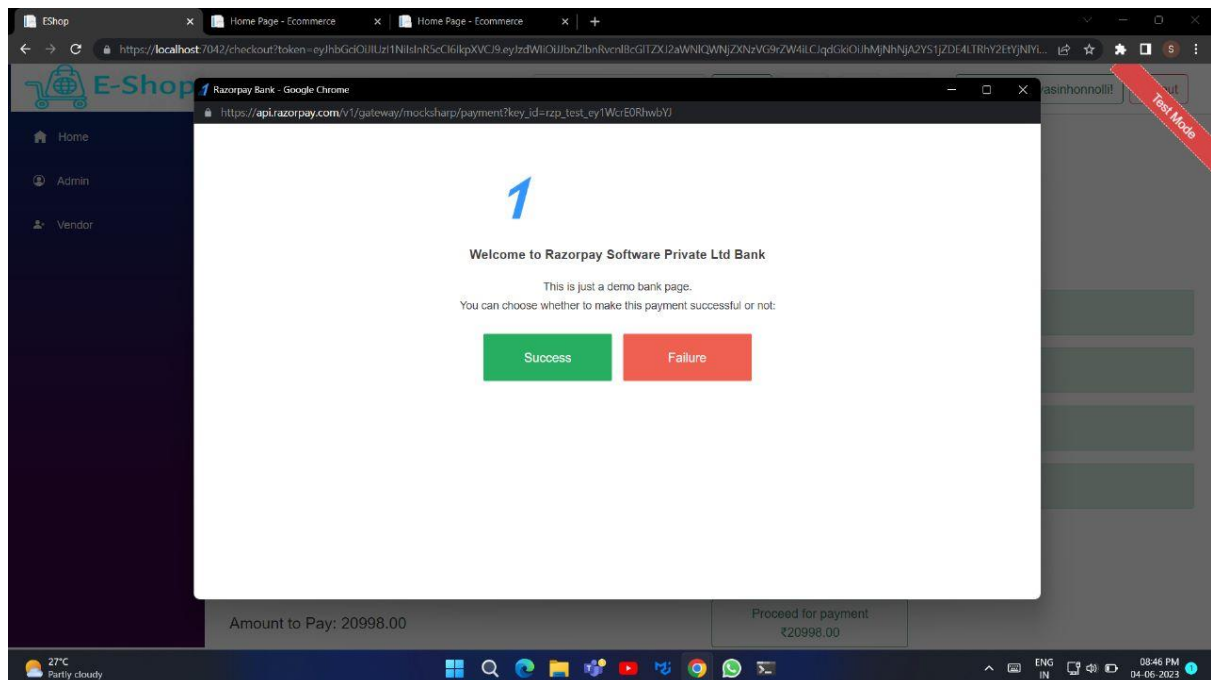
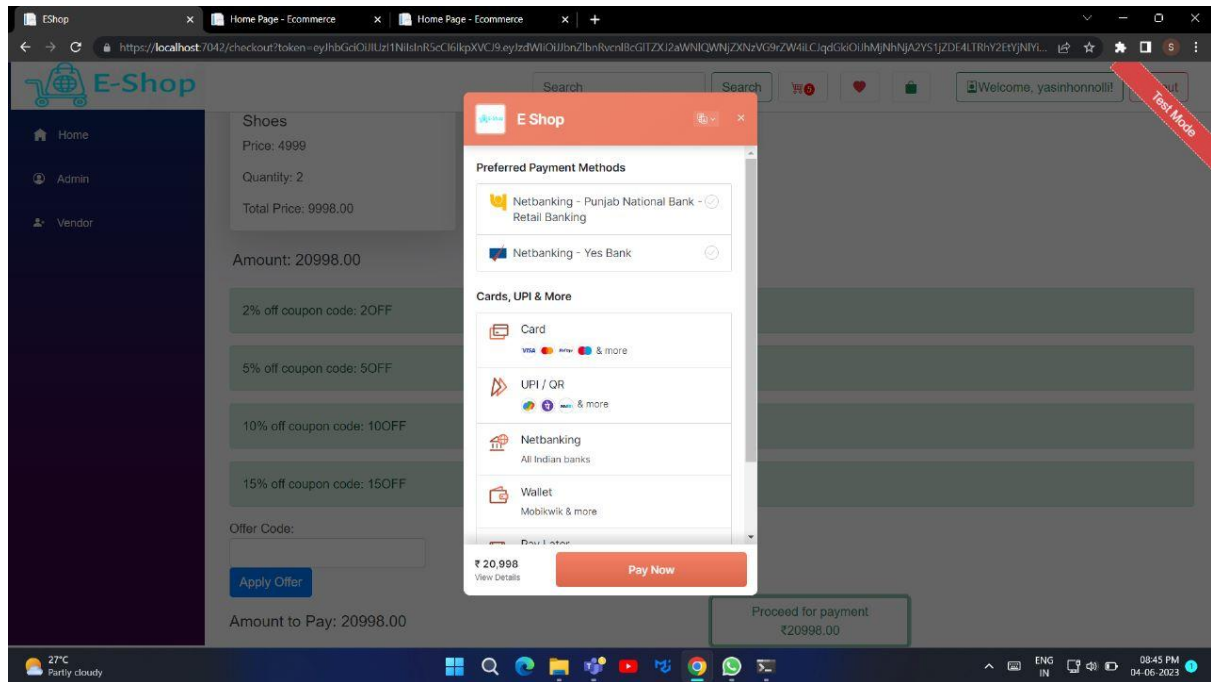
Orders



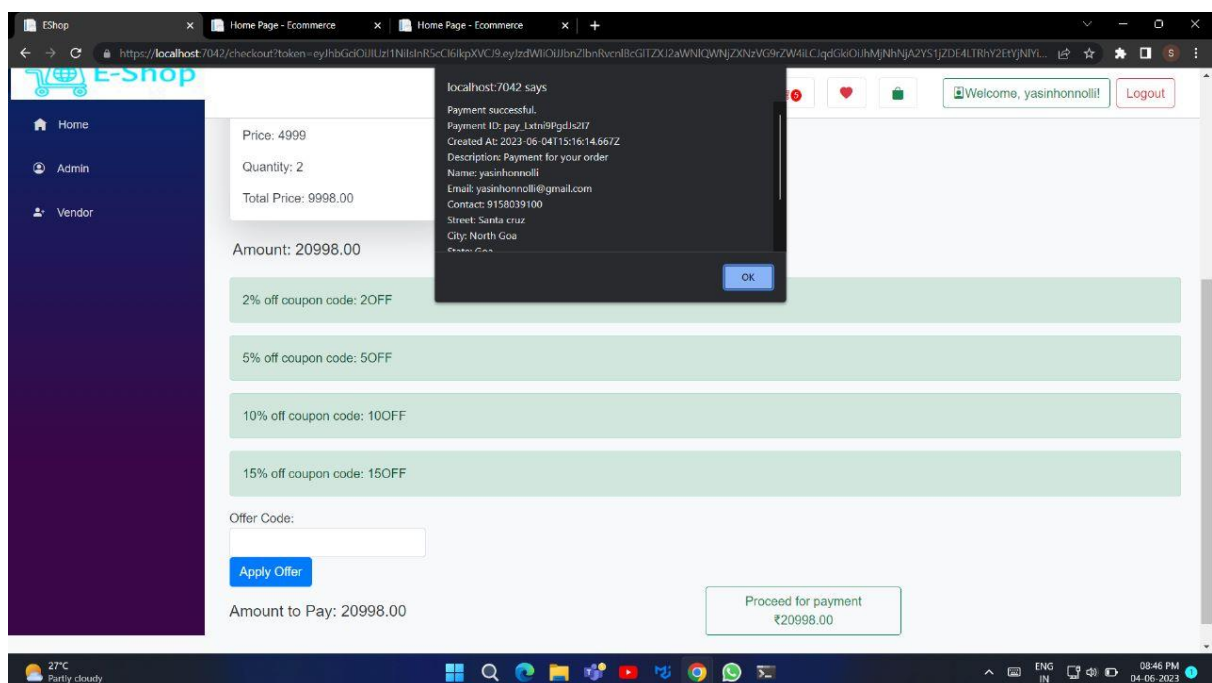
Checkout page



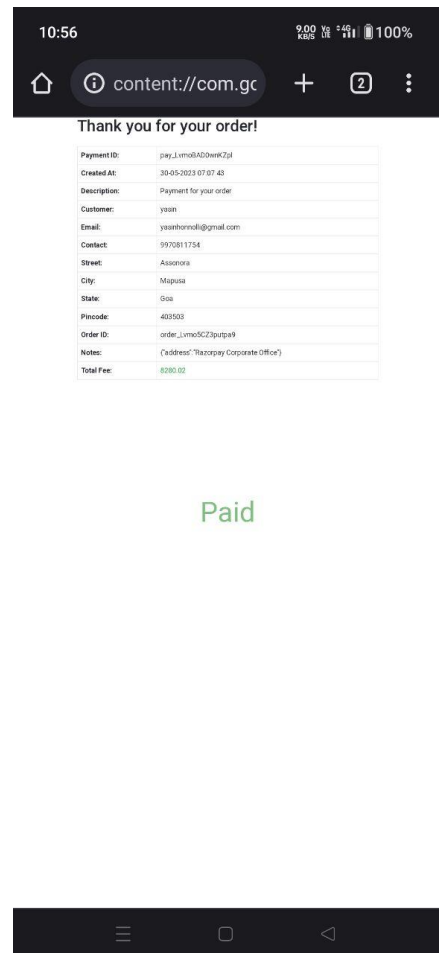
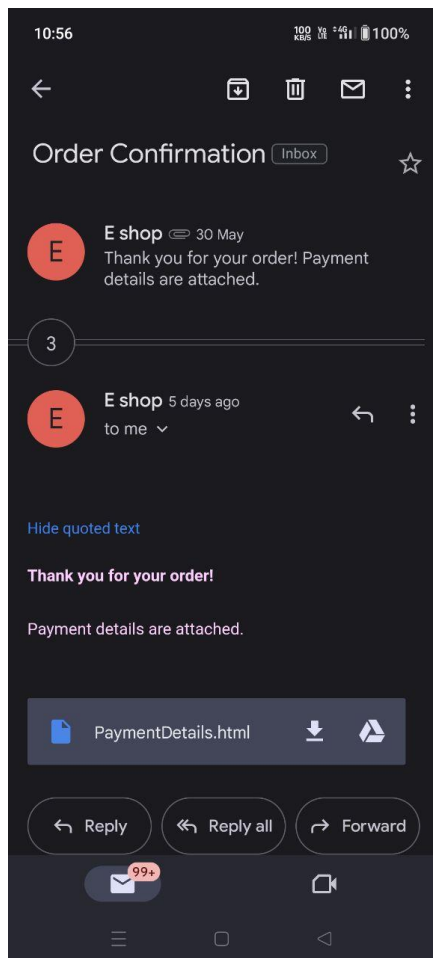
Payment



The screenshot shows the E-Shop checkout page. A green overlay with a white checkmark icon and the text "Payment successful" and "₹ 20,998" is displayed in the center. Below the overlay, a white box shows the E-Shop logo, the date and time "Jun 4, 2023 | 08:46 PM", and the NetBanking payment details: "NetBanking | pay_Lxtni9PgJJs2i7" and "Visit razorpay.com/support for queries". A red banner at the bottom of the overlay says "Redirecting in 3 seconds...". The background shows the checkout page with a sidebar on the left containing links for Home, Admin, and Vendor. The main content area displays the item "Shoes" with a price of 4999, a quantity of 2, and a total price of 9998.00. Below this, there are five coupon codes: 2% off (2OFF), 5% off (5OFF), 10% off (10OFF), and 15% off (15OFF). The "Order Code:" field is empty, and the "Apply Offer" button is visible. The "Amount to Pay: 20998.00" is shown at the bottom. The top navigation bar includes a search bar and a shopping cart icon. The bottom status bar shows the temperature as 27°C, the time as 08:46 PM, and the date as 04-06-2023.

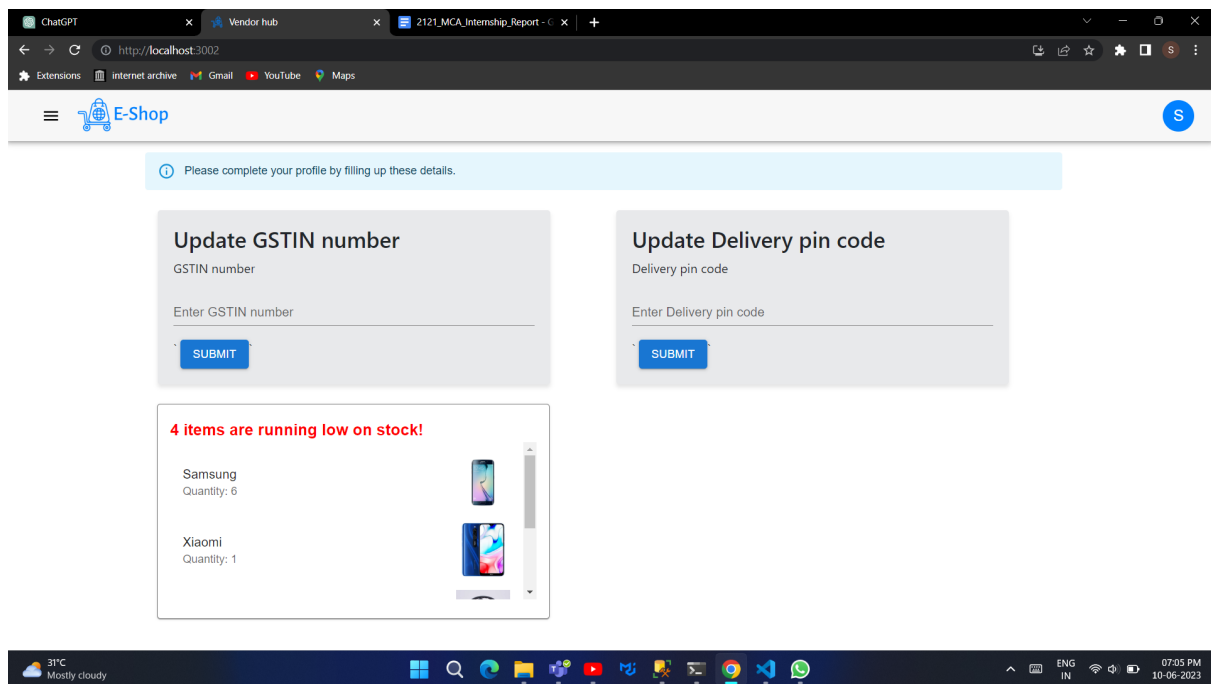


Invoice sent on mail

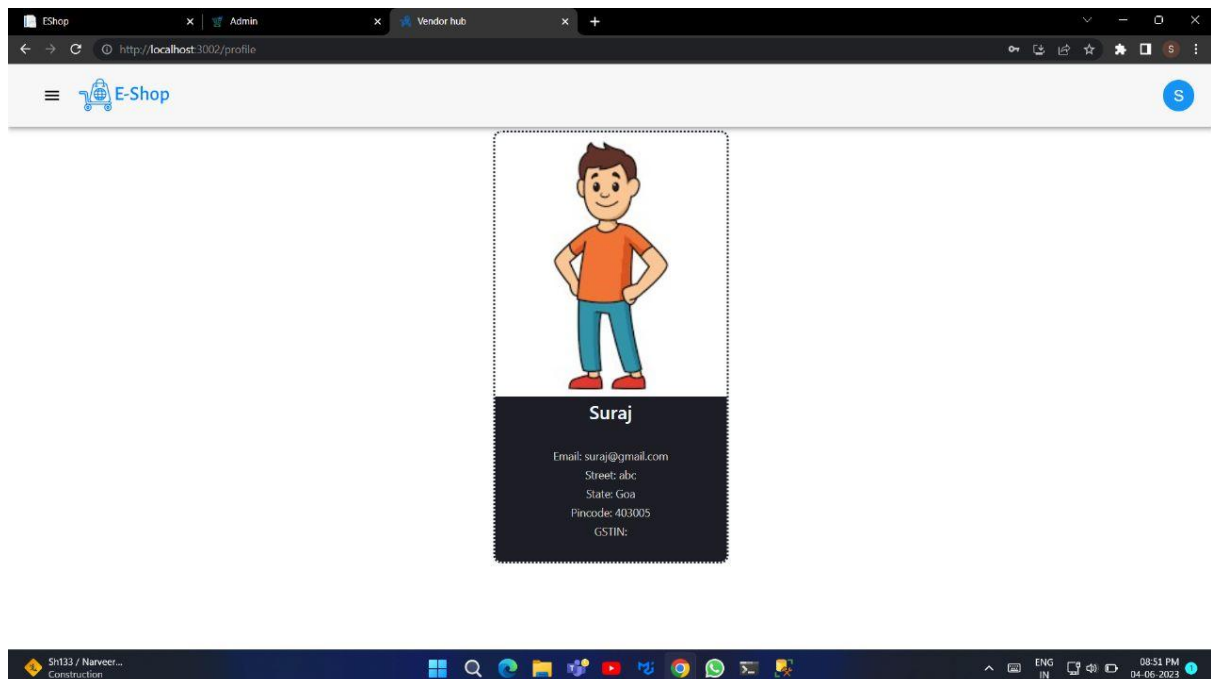


Vendor App

Dashboard







Profile page



Products listings





The screenshot shows the 'Listing management' page of an 'E-Shop'. At the top, there's a navigation bar with the 'E-Shop' logo and a user profile icon. Below the navigation bar, the page title 'Listing management' is displayed. To the right, there's a link to 'Create listing using products available on E-shop' and a search bar labeled 'Search products'. Below the search bar, there are three summary boxes: '13 Total listings', '9 Active listings', and '4 Inactive listings'. A '+ NEW PRODUCT' button is located below these boxes. The main content area is a table titled 'PRODUCTS' with the following columns: Name, Category, Price, Quantity, Base Price, Listing status, and Edit. The table contains two rows of data:

Name	Category	Price	Quantity	Base Price	Listing status	Edit
 Nike Sports Shoes	Men's Footwear	7537	27	4999	<input checked="" type="checkbox"/>	
 Women's t-shirt	Women's Clothing	1817	46	1999	<input checked="" type="checkbox"/>	

The bottom of the screenshot shows a Windows taskbar with the date and time '07:07 PM 10-06-2023'.

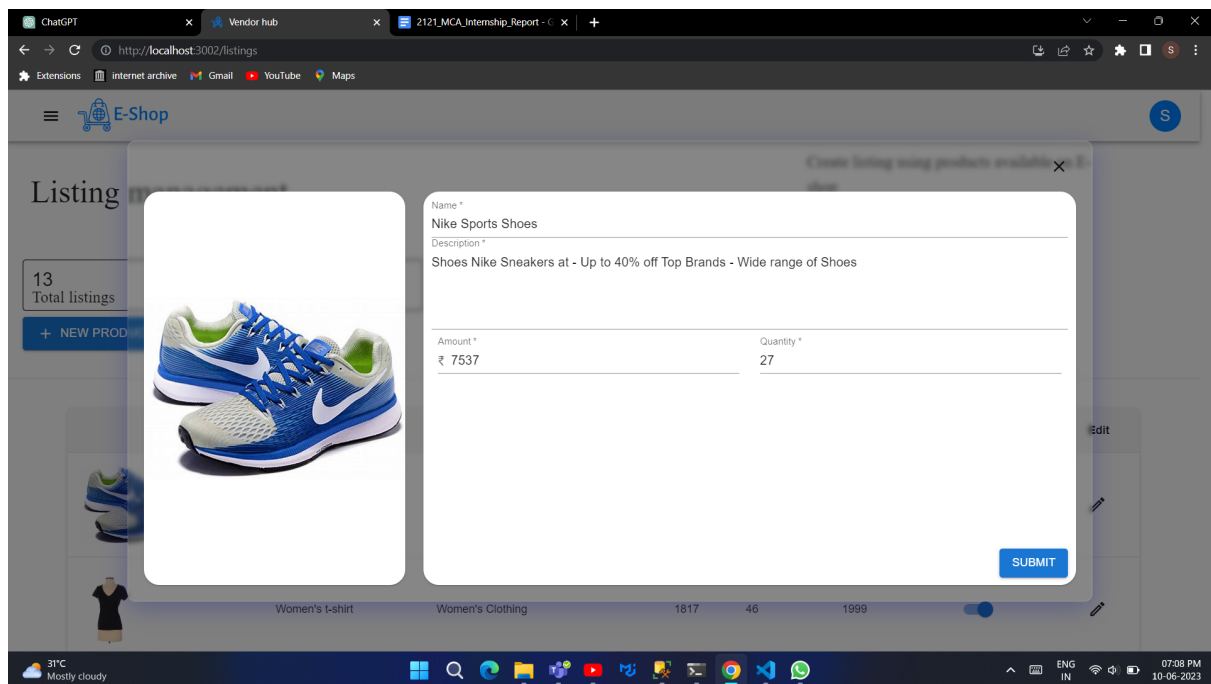
Products search

This screenshot is similar to the previous one, but with the search bar 'Search products' active. The dropdown menu shows search results for 'shoe'. The results are categorized into 'Kids Footwear' and 'Men's Footwear'. Under 'Kids Footwear', there is a result for 'SparX Shoe' with an image. Under 'Men's Footwear', there is a result for 'Nike Sports Shoes' with an image. The table below the search bar remains the same as in the previous screenshot.

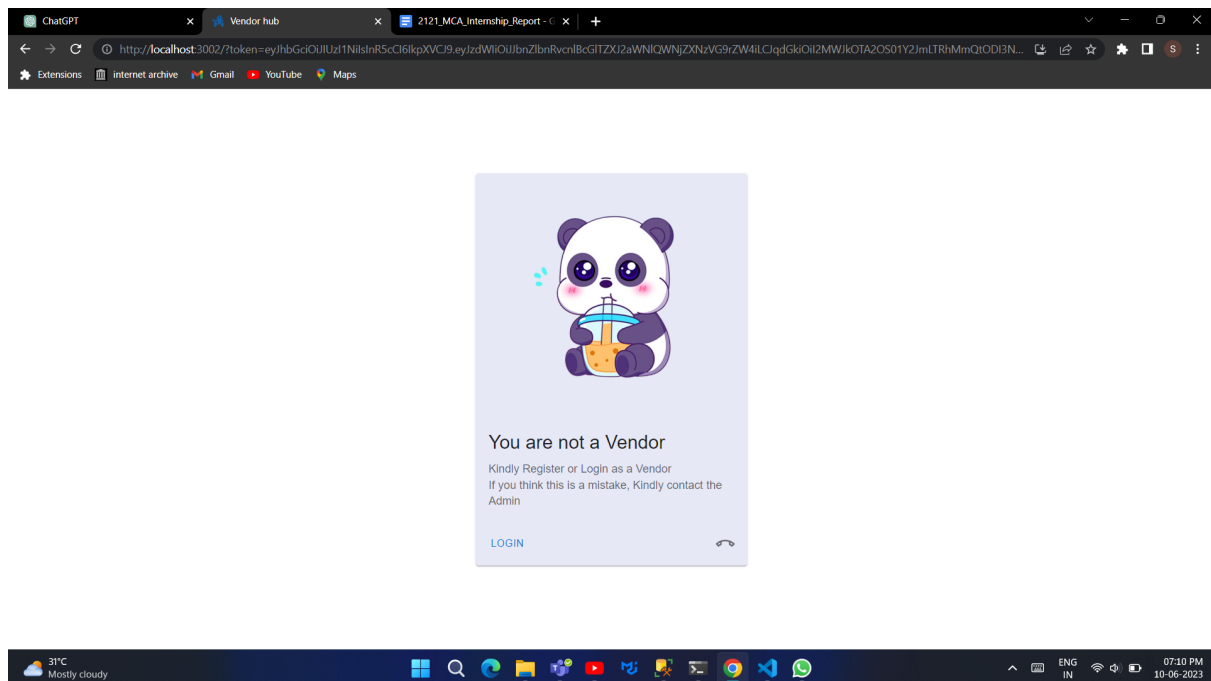
Name	Category	Price	Quantity	Base Price	Listing status	Edit
 Nike Sports Shoes	Men's Footwear	7537	27	4999	<input checked="" type="checkbox"/>	
 Women's t-shirt	Women's Clothing	1817	46	1999	<input checked="" type="checkbox"/>	

The bottom of the screenshot shows a Windows taskbar with the date and time '07:09 PM 10-06-2023'.

Products details edit page

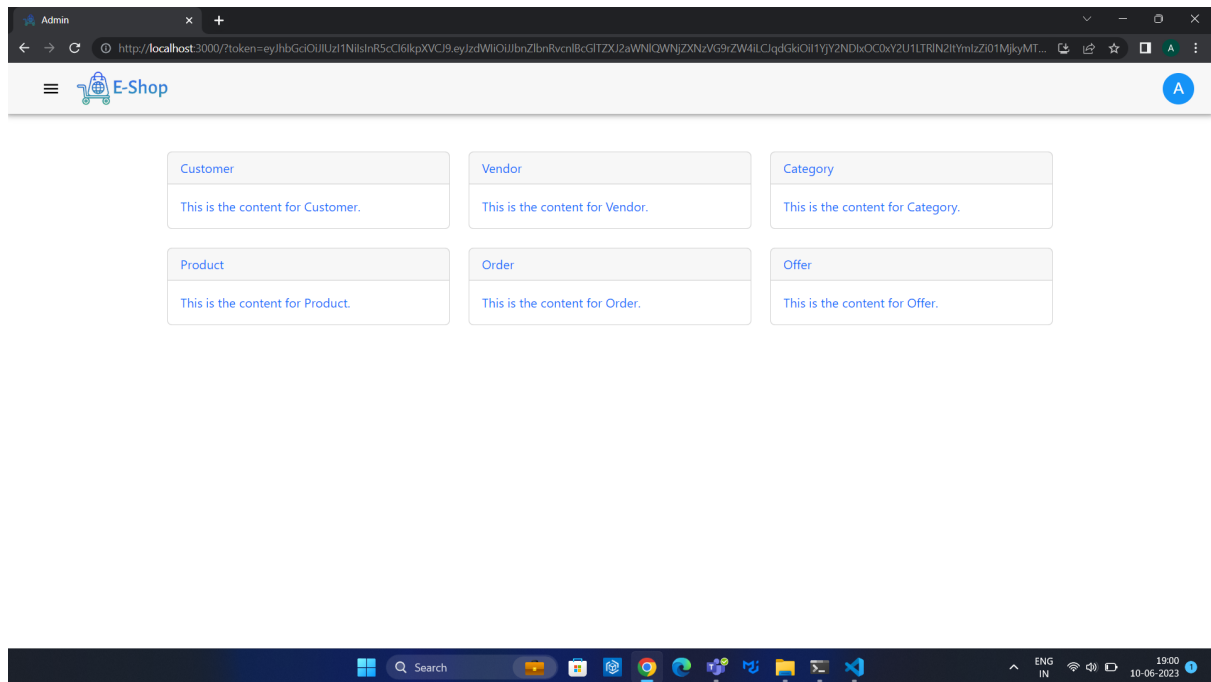


Error page

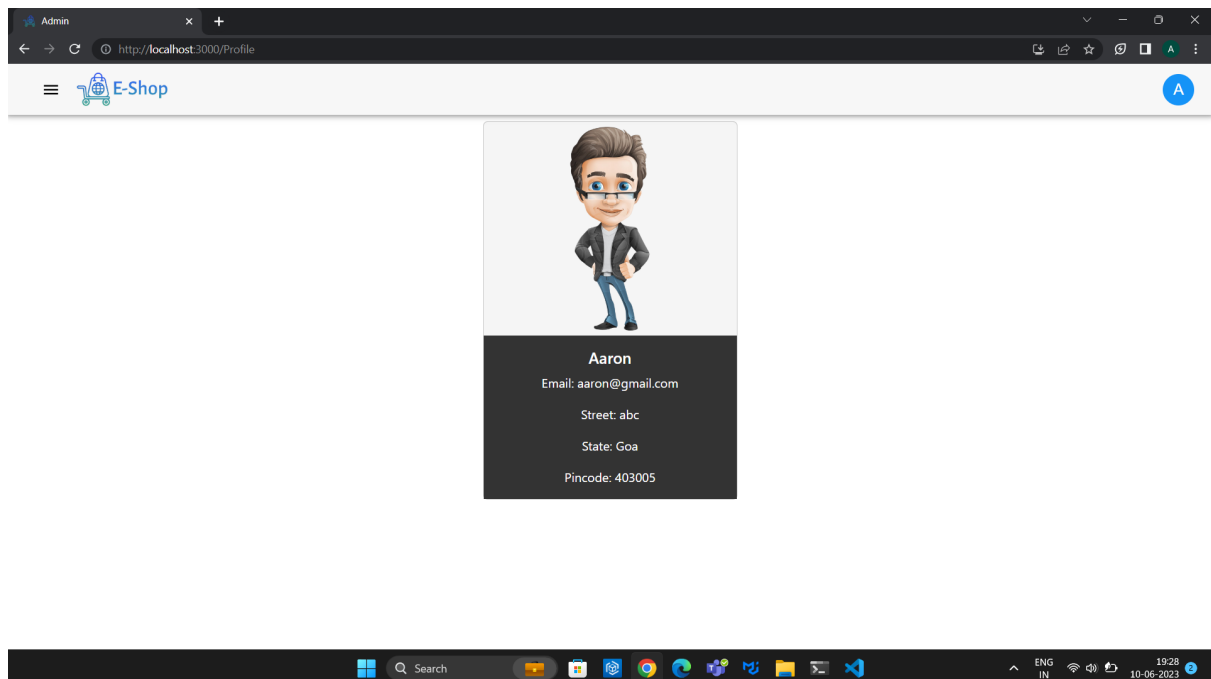


Admin app

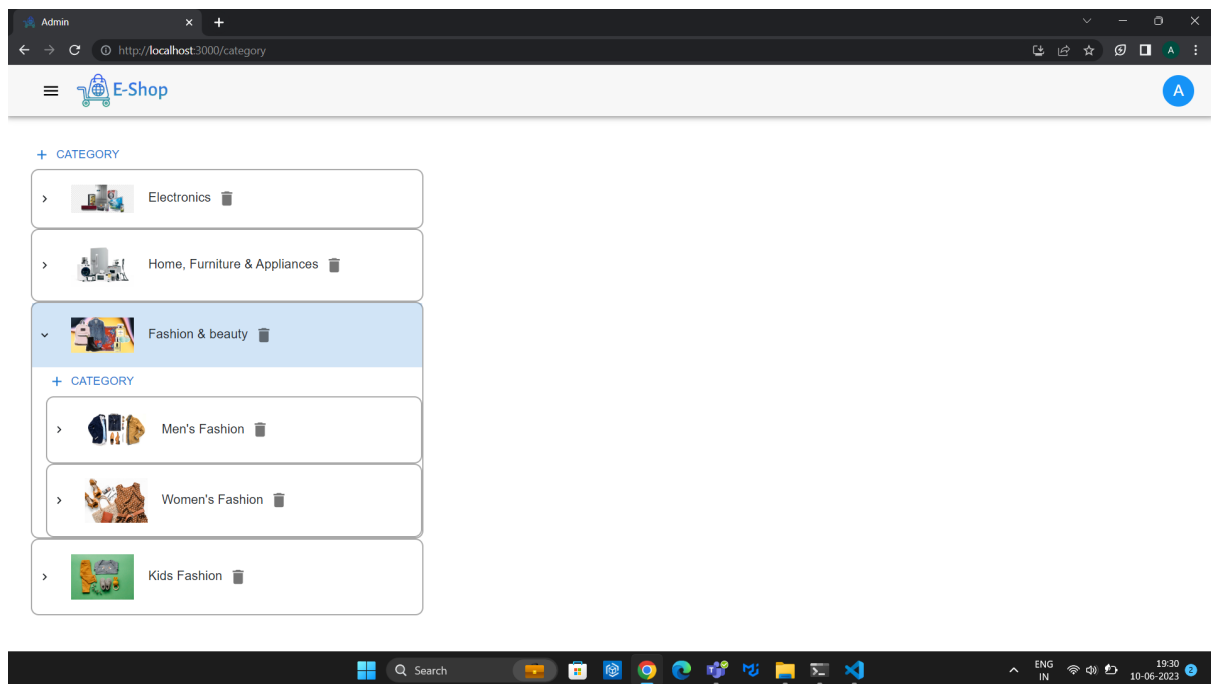
Dashboard



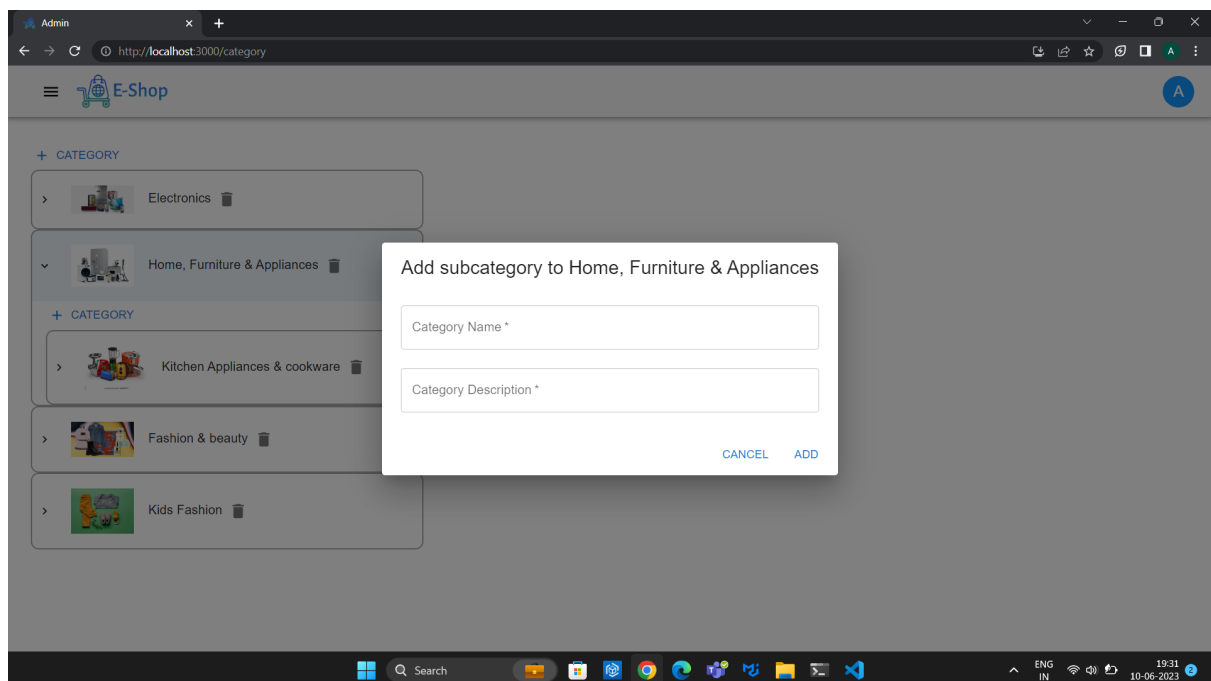
Profile page



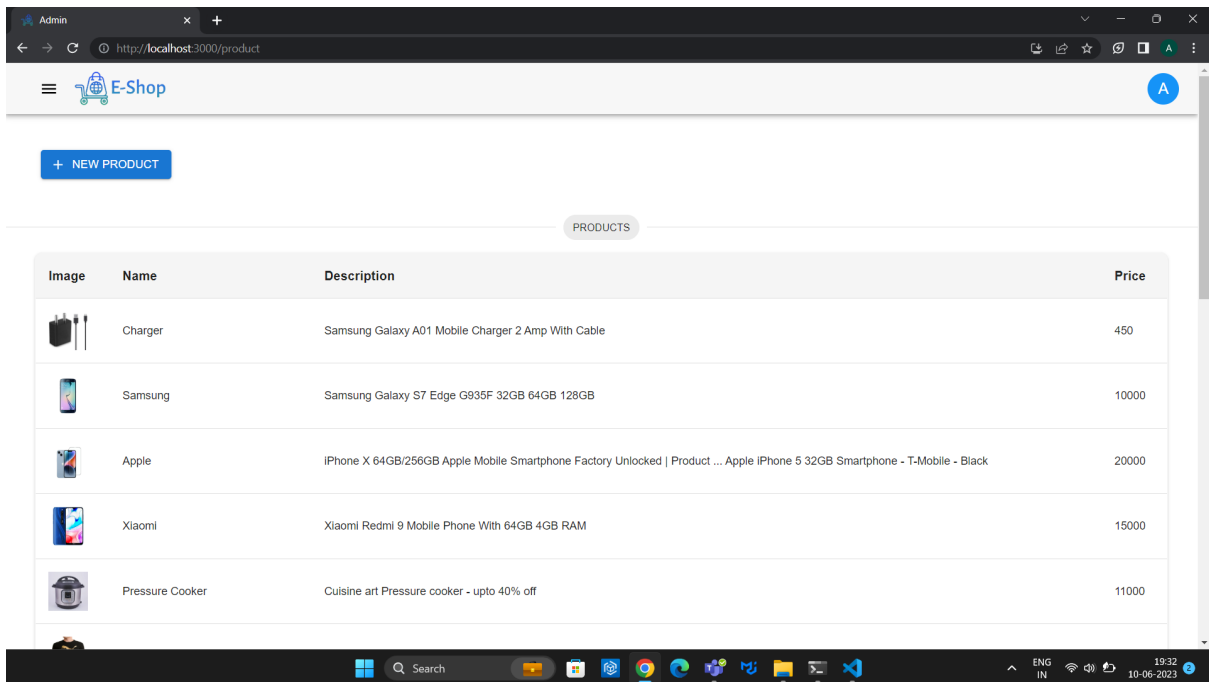
Category management page








Adding a new category



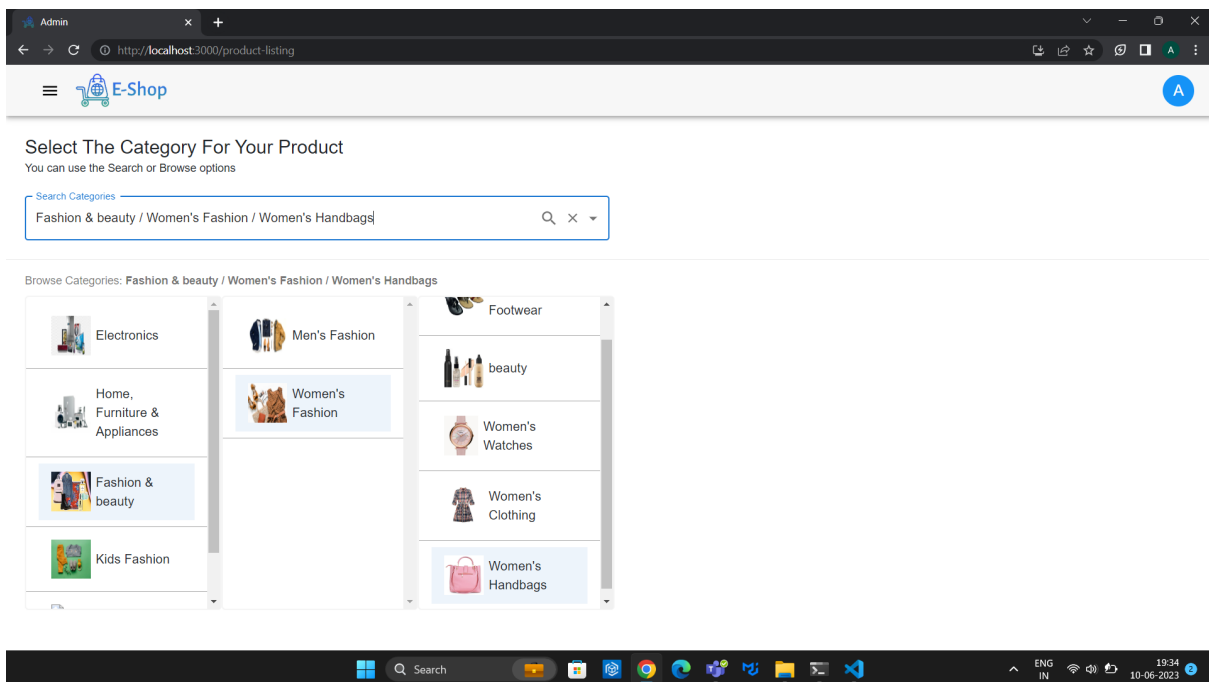
Products listed



The screenshot shows the E-Shop Admin interface. At the top, there's a navigation bar with the E-Shop logo and a user profile icon. Below the navigation bar, there's a button labeled "+ NEW PRODUCT". The main content area is titled "PRODUCTS" and displays a table of products.

Image	Name	Description	Price
	Charger	Samsung Galaxy A01 Mobile Charger 2 Amp With Cable	450
	Samsung	Samsung Galaxy S7 Edge G935F 32GB 64GB 128GB	10000
	Apple	iPhone X 64GB/256GB Apple Mobile Smartphone Factory Unlocked Product ... Apple iPhone 5 32GB Smartphone - T-Mobile - Black	20000
	Xiaomi	Xiaomi Redmi 9 Mobile Phone With 64GB 4GB RAM	15000
	Pressure Cooker	Cuisine art Pressure cooker - upto 40% off	11000

Selecting a category



The screenshot shows the E-Shop Admin interface for selecting a category. The page title is "Select The Category For Your Product". Below the title, there's a search bar with the text "Search Categories" and a dropdown menu showing the selected path: "Fashion & beauty / Women's Fashion / Women's Handbags". Below the search bar, there's a section titled "Browse Categories: Fashion & beauty / Women's Fashion / Women's Handbags" which displays a grid of category options.

Search Categories:

Browse Categories: Fashion & beauty / Women's Fashion / Women's Handbags

- Electronics
- Home, Furniture & Appliances
- Fashion & beauty
- Kids Fashion
- Men's Fashion
- Women's Fashion
- Footwear
- beauty
- Women's Watches
- Women's Clothing
- Women's Handbags

Concepts learnt

During my internship at AFour Technologies, I had the opportunity to learn and explore various concepts and technologies in the realm of web development. The following is a list of key concepts that I gained proficiency in:

1. ASP.NET MVC:

- Routing: I learned how to configure routing in ASP.NET MVC to define the URL structure and map it to appropriate controller actions.
- Asynchronous Programming: I worked with `async` and `await` keywords to handle asynchronous operations, improving the responsiveness and performance of the application.
- Stored Procedures in .NET: I leveraged stored procedures for executing database operations efficiently and implemented mechanisms to handle session and local storage.
- Models, Views, and Controllers: I gained a deep understanding of the MVC architectural pattern and how to design models, views, and controllers to achieve separation of concerns.
- Data Transfer Objects (DTOs): I learned the importance of using DTOs to transfer data between layers and improve performance by reducing unnecessary data retrieval.
- HTTP Methods: I utilized HTTP methods such as GET, POST, PUT, and DELETE to implement RESTful APIs and handle different types of client requests.
- Database Configurations: I worked with various database configurations and learned how to establish connections, handle migrations, and perform database operations using Entity Framework.
- BCrypt Implementation: I implemented BCrypt for password hashing and securely storing user credentials.
- Services: I gained knowledge of service-oriented architecture and implemented services to encapsulate business logic and promote code reusability.

2. ASP.NET Blazor:

- Routing: I learned how to configure routing in Blazor applications to navigate between different components and pages.
- Transitioning from .cshtml to .razor syntax: I successfully converted existing UIs from .cshtml to .razor syntax, leveraging the power of Blazor components.
- AddServerSideBlazor: I utilized the `AddServerSideBlazor` method to enable server-side Blazor rendering and achieve real-time user interactions.
- Cross-Origin Resource Sharing (CORS): I learned how to enable CORS in Blazor applications to allow cross-origin resource sharing.

3. React:

- Router: I gained expertise in using React Router to handle client-side routing and enable navigation within the application.
- Hooks: I utilized various React hooks such as useContext, useState, useEffect, useRef, and understood their role in managing state and performing side effects.
- Axios: I worked with Axios to make HTTP requests, including GET, PUT, and POST, to interact with backend APIs.
- React-Bootstrap and Material UI: I used React-Bootstrap and Material UI libraries to create visually appealing and responsive user interfaces.
- Keys and Lists: I learned the importance of using unique keys when rendering lists in React to optimize performance and facilitate proper rendering.
- Forms: I gained experience in building and handling forms in React, including form validation and submission.

4. ASP.NET Web API:

- JWT Authentication: I implemented JWT (JSON Web Token) authentication in ASP.NET Web API to secure the API endpoints and authorize user access.
- CRUD API: I designed and developed CRUD (Create, Read, Update, Delete) APIs to perform database operations through the Web API.
- Entity Framework: I worked with Entity Framework to interact with the database, perform database migrations, and execute queries efficiently.
- CORS: I understood and implemented Cross-Origin Resource Sharing (CORS) in ASP.NET Web API to allow access from different domains.

Additionally, I utilized various .NET packages throughout the development process, including Microsoft.AspNetCore.Components.Web, System.Net.Http, BootstrapIcons.AspNetCore, System.IdentityModel.Tokens.Jwt, System.Security.Permissions, Microsoft.JSInterop, Razorpay, SendGrid, SendGrid.SmtpApi, Swashbuckle.AspNetCore, Microsoft.AspNet.WebApi.Client, Microsoft.AspNet.WebApi.Core, Microsoft.EntityFrameworkCore, Microsoft.EntityFrameworkCore.SqlServer, Microsoft.EntityFrameworkCore.Tools, Microsoft.AspNetCore.Authentication.JwtBearer, BCrypt.Net-Next, and Newtonsoft.Json.

Through hands-on experience and practical application of these concepts and technologies, I expanded my knowledge and skills in full-stack web development, enabling me to contribute effectively to the Ecommerce project and furthering my growth as a software developer.

Future Enhancements

- Microservices Architecture
- Cloud Integration
 - Using SQL server on Azure or any other cloud providers
 - Hosting
 - CDN
- UI Design
- Integration of Social Login - Google/facebook
- Cash on Delivery (COD) as a payment option
- Refund and Exchange Management
- Review and Rating System
- SMS Notifications
- Search and Navigation Enhancements
- Recommendation Engine
- Advanced Analytics and Reporting for vendor and admin

Summary

The internship project at AFour Technologies was a valuable learning experience that allowed me to gain mastery in various technologies and contribute to the development of an e-commerce website. Over the duration of the internship, I held the role of an Internship Trainee - Fullstack Developer and collaborated with a team consisting of two other members, Suraj Pandey and Yasin Honnolli. Our primary objective was to become proficient in .NET technology, Rest API's, React, and SQL databases.

Throughout the project, I actively participated in both frontend and backend development tasks. On the backend, I worked on web API development using .NET and implemented features such as JWT token authentication for secure user access, CRUD APIs for database manipulation.

In terms of frontend development, I collaborated closely with my team to develop an authentication application using .NET for the backend and Razor Pages for the frontend. The main application was built using the Blazor technology, which provided a seamless and interactive single-page application experience. Furthermore, I successfully integrated the frontend developed in React with the backend implemented in .NET, allowing for a cohesive user interface and efficient communication between the two.

Throughout the project, I embraced a peer learning approach with my team members. While I focused on teaching them React, they shared their knowledge of Blazor, creating a mutually beneficial learning environment. This initiative allowed us to expand our skills and gain insights into both technologies, saving learning time and enhancing our overall knowledge and proficiency.

In summary, the internship project at AFour Technologies provided me with the opportunity to gain mastery in .NET technology, Rest API's, React, and SQL databases. I successfully contributed to the development of an e-commerce website by actively participating in both frontend and backend tasks. The utilization of various tools and technologies, such as .NET REST API, .NET MVC Razor, .NET Blazor, React, SQL Database, JWT Token, Razorpay Payment Gateway, SendGrid API, Bootstrap, Material UI, C#, Entity Framework, GitHub, and more, facilitated the successful implementation of the project.

The experience gained during this internship has equipped me with valuable skills and knowledge that I intend to utilize in future endeavors. I aspire to further enhance my skills in .NET, explore the MERN stack and continue expanding my expertise in fullstack web development. Overall, the internship project has had a significant impact on my career path, reinforcing my passion for technology and setting a strong foundation for future growth and success.

Internship timeline

January - February - March

Learning material provided by AFour Technologies. Stage 1 consisted of basic knowledge, and Stage 2 consisted of basics of .NET

March - April

Week 1: Completed onboarding formalities.

Week 2: Discussed JWT authentication and watched tutorials.

Week 3:

- Created models for tables.
- Implemented login and registration functionality, user authentication, and JWT for authentication and authorization in .NET API.

Week 4:

- Integrated .NET MVC app with API.
- Updated database design and models.

April - May

Week 1:

- Discussed implementing certain features.
- Worked on Architecture diagram, ER diagram, and Sitemap.

Week 2:

- Learned React basics.
- Implemented authentication check for the React app and redirected to login accordingly.
- Updated .NET app to redirect back to other apps on successful login.

Week 3:

- Learned Routing, Axios, and Hooks (useState, useContext, useEffect) in React.
- Consumed .NET API in React.

Week 4:

- Worked on the database initializer in .NET.
- Updated API for product in .NET.

May-June

Week 1:

- Created an API to fetch categories in .NET.
- Created UI for displaying categories in React.

Week 2:

- Updated API for adding categories.
- Created UI in React for adding categories.
- Handled errors in Axios and useEffect.

Week 3:

- Created UI in React for adding categories.
- Resolved GitHub merge conflicts.
- Added user authentication based on role (if not admin then redirect to login).
- Learned useRef hook.

Week 4:

- Handled errors in auth apps.

- Worked on the UI and logo of the React app.
- Listed use cases.

June:

Week 1:

- Worked on search functionality for categories.
- Worked on browsing categories for product listing.
- Worked on integrating search with browse functionality.
- Changed logo and loading image.
- Updated database initializer to include images for categories.
- Updated UI of categories for images.

My experiences of internship

I had an incredibly rewarding internship experience at AFour Technologies, where I had the opportunity to work on an exciting e-commerce website project. Throughout my journey, I encountered significant experiences and reflections that have contributed to both my professional and personal growth:

Development of Technical Skills: During the internship, I was fully immersed in improving my technical skills by working on the development of an e-commerce website. I actively engaged in frontend development using .NET MVC Razor and React, collaborating closely with my teammates who focused on Blazor and React. Additionally, I gained valuable experience in backend development by working with .NET Web API and SQL Server using Entity Framework. These technologies allowed me to acquire comprehensive skills in full-stack web development and established a strong foundation for my future career.

Collaboration and Teamwork: Being part of a collaborative team was an incredibly rewarding experience. I had the privilege of working alongside talented individuals, including Suraj Pandey and Yasin Honnolli. Together, we formed a cohesive unit, sharing ideas and providing support to one another throughout the development of the e-commerce project. This collaborative environment fostered effective teamwork and helped us overcome challenges collectively. I learned the significance of effective communication and collaboration in achieving project objectives and delivering high-quality outcomes.

Peer Learning and Knowledge Exchange: A standout aspect of the internship was the culture of peer learning within our team. While I focused on teaching my teammates concepts related to .NET and React, I had the opportunity to learn from them about Blazor. This mutual exchange of knowledge accelerated our learning process and created a supportive environment for growth. I recognized the power of peer learning in expanding our skill sets and deepening our understanding of diverse technologies.

Time Management and Prioritization: Working on a project with specific timelines and deliverables taught me invaluable lessons in time management and task prioritization. I quickly learned how to allocate my time efficiently, ensuring that critical tasks were completed within deadlines. This experience enhanced my ability to work under pressure, manage multiple responsibilities, and effectively produce results.

Professionalism and Adaptability: The internship provided exposure to a professional work environment, where I had to adhere to coding standards, meet deadlines, and maintain high-quality standards in my deliverables. I quickly adapted to the company's processes and workflows, ensuring a seamless integration within the team. This experience further developed my professionalism and adaptability, both of which are essential qualities in any professional setting.

Learning from Challenges: Throughout the internship, I encountered various challenges that tested my problem-solving skills. From debugging complex issues to resolving conflicts during code integration, these challenges presented valuable learning opportunities. They taught me the importance of perseverance, critical thinking, and seeking guidance when necessary. Overcoming these challenges strengthened my resilience and equipped me with valuable problem-solving abilities.

Future Goals and Aspirations: This internship experience has had a profound impact on my future goals and aspirations. Working on the e-commerce project and gaining hands-on experience in full-stack web development has reinforced my passion for this field. Moving forward, my aim is to further enhance my skills in .NET and explore the MERN stack to remain at the forefront of the industry. The internship has provided a strong foundation and a roadmap for my professional growth.

In conclusion, my internship at AFour Technologies has been a transformative journey of learning, collaboration, and personal growth. Despite working exclusively on the e-commerce project, I have gained valuable insights into the software development industry and strengthened my technical skills in full-stack web development. The experiences and reflections I have gained during this internship will undoubtedly shape my future career endeavors and inspire me to strive for excellence in the field of full-stack development.

References

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https://learn.microsoft.com/en-us/aspnet/core/?WT.mc_id=dotnet-35129-website&view=aspnetcore-6.0

Blazor:

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MVC:

https://learn.microsoft.com/en-us/aspnet/core/mvc/overview?WT.mc_id=dotnet-35129-website&view=aspnetcore-6.0

web API :

https://learn.microsoft.com/en-us/aspnet/core/web-api/?WT.mc_id=dotnet-35129-website&view=aspnetcore-6.0

Razor:

https://learn.microsoft.com/en-us/aspnet/core/razor-pages/?WT.mc_id=dotnet-35129-website&view=aspnetcore-6.0&tabs=visual-studio

React:

React Documentations : <https://react.dev/>

React-Router-dom: <https://reactrouter.com/en/main/start/tutorial>

Others :

Razor pay : <https://razorpay.com/docs/>

Material UI : <https://mui.com/>

sendGrid SMTP API: <https://app.sendgrid.com/guide/integrate>