GREENCART

SUBMITTED BY

Group Number - 5

Ishita Ghosh

Registration No: 200020275986, Enrollment No: 2012200002027

Soumyajit Nag

Registration No: 200020216959, Enrollment No: 2011200002021

Srijan Singh

Registration No: 200020233596, Enrollment No: 2011200002023

Anirudh Jalan

Registration No: 200020022811, Enrollment No: 2011200002002

Under the Supervision of

Professor Soma Hazra

Assistant Professor

Acknowledgement

We would like to convey my heartfelt gratitude to Professor Soma Hazra for her tremendous support and assistance in the completion of our project. We would also like to thank our HOD, Professor Dr. Anirban Mitra, for providing this wonderful opportunity to work on a project with the topic GreenCart (Ecommerce for Sustainable and Eco-Friendly Products). The completion of the project would not have been possible without their help and insights.

Date: Name & Signature of all Group Members:

Certificate from the Head of the Department of the University

This is to certify that Mr/Ms Ishita Ghosh, Soumyajit Nag, Srijan Singh and Anirudh Jalan are final semester/year students of B.Tech in Computer Science and Business System in the Sister Nivedita University. They will appear for the final year examination during May 2024. Their result is awaited. They have obtained a cumulative percentage/CGPA of 8.3, 8.69, 7.37 & 8.82 respectively in the previous semesters/years exams of this degree.

Place: Signature and Seal of

Head of the Department of Computer Science and Engineering

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1. INTRODUCTION:

In recent years, the drive towards sustainable living has gained significant momentum, spurred by growing environmental concerns and the shift in consumer behavior towards eco-friendly products. Our Greencart platform is a direct response to this increasing demand for sustainable alternatives. Unlike traditional marketplaces, Greencart is dedicated exclusively to offering eco-friendly products, thereby addressing the urgent need for environmentally conscious shopping options. By focusing on eco-friendly products, Greencart simplifies the process for consumers to make environmentally responsible choices, ensuring that their purchases contribute positively to the planet.
Our motivation stems from the pressing environmental issues that are reshaping consumer preferences and behaviors. With climate change, pollution, and resource depletion becoming critical global concerns, there is an undeniable need for platforms that prioritize sustainability. Greencart aims to bridge this gap by providing a marketplace that not only meets consumer demand for green products but also promotes a culture of environmental responsibility and ethical consumption. We believe that by fostering a community centered around sustainable living, we can influence broader societal changes. Greencart seeks to inspire and empower consumers to make choices that are not only good for them but also for the environment.

The problem at hand is the pervasive availability and use of non-eco-friendly products that contribute to environmental degradation. Traditional retail platforms often overlook the environmental impact of the products they offer, making it challenging for consumers to make sustainable choices. By focusing exclusively on eco-friendly products, Greencart alleviates this problem, making it easier for consumers to adopt a sustainable lifestyle. This comprehensive approach to sustainability helps to reduce the ecological footprint of consumer products and encourages a market shift towards greener alternatives.

We have chosen this topic due to its critical relevance in today's world. The shift towards sustainability is not just a trend but a necessary evolution in how we live and consume. Our project is designed to support this transition by making eco-friendly products more accessible and appealing to a broader audience. This focus aligns with our commitment to fostering a more sustainable and ethically responsible society. By providing a platform that champions sustainability, we hope to accelerate the adoption of eco-friendly habits and create a ripple effect that influences other sectors and industries.

In terms of industrial application, Greencart addresses the growing demand for sustainable products in the business-to-consumer (B2C) and business-to-business-to-consumer (B2B2C) sector. As more corporations adopt sustainable practices, the need for dedicated platforms that offer eco-friendly goods becomes increasingly apparent. By collaborating with businesses that share our commitment to sustainability, we aim to create a robust ecosystem that drives a positive environmental change, facilitating the sale of green

products, serving as a catalyst for a broader movement towards a sustainable economy and reinforcing the significance of our mission in the modern industrial landscape.

2. LITERATURE REVIEW

- Intention to buy eco-friendly packaged products among young consumers of India: A study on developing nation [1]
  This paper investigates the influence of ecodesigned packaging on consumers' responses, particularly focusing on young Indian consumers, utilizing the Theory of Reasoned Action (TRA) framework. Through structural equation modeling and analysis of data from 204 respondents, the study confirms that purchase intention towards eco-friendly packaging is significantly affected by personal norms, attitude, environmental concern, and willingness to pay. The research contributes valuable insights into the attitudes and behaviors of young consumers regarding ecodesigned packaging, addressing a gap in the literature by providing a focused examination within the Indian context. While existing literature acknowledges the positive correlation between environmental concern and sustainable consumer behavior, there is a lack of detailed understanding regarding the specific factors driving young consumers' intentions to purchase ecodesigned packaging, especially in emerging economies like India. The study fills this gap and highlights practical implications for marketers, enabling them to develop targeted strategies to promote sustainable packaging practices and reduce the global ecological footprint effectively.

- Consumer awareness towards green products and its impact [2]
  This paper explores consumers' awareness of green products and the impact of their purchasing decisions on the environment. Green products, which are either environmentally friendly in themselves or produced through eco-friendly methods, are increasingly favored by ecologically conscious consumers. Understanding this awareness is crucial for predicting green purchasing behaviors and their environmental benefits. The study surveyed 30 respondents using a structured questionnaire and convenience sampling, with data analyzed through frequency analysis. Findings indicate that promotional activities significantly enhance consumers' awareness of eco-friendly products, and a majority of respondents are already aware of such products. However, while the study highlights the positive influence of promotions on awareness, it also reveals a gap in understanding other factors affecting green purchasing decisions, such as price sensitivity, perceived efficacy, and accessibility. Future research should address these factors to provide a more comprehensive understanding of consumer motivations and behaviors in sustainable consumption, offering valuable insights for businesses and policymakers promoting environmentally responsible choices.

- Consumer awareness towards eco-friendly product through green advertising: Environmentally friendly strategy [3]

This paper explores consumers' awareness of green products and the impact of their purchasing decisions on the environment. Green products, which are either environmentally friendly in themselves or produced through eco-friendly methods, are increasingly favored by ecologically conscious consumers. Understanding this awareness is crucial for predicting green purchasing behaviors and their environmental benefits. The study surveyed 30 respondents using a structured questionnaire and convenience sampling, with data analyzed through frequency analysis. Findings indicate that promotional activities significantly enhance consumers' awareness of eco-friendly products, and a majority of respondents are already aware of such products. However, while the study highlights the positive influence of promotions on awareness, it also reveals a gap in understanding other factors affecting green purchasing decisions, such as price sensitivity, perceived efficacy, and accessibility. Future research should address these factors to provide a more comprehensive understanding of consumer motivations and behaviors in sustainable consumption, offering valuable insights for businesses and policymakers promoting environmentally responsible choices.

- Antecedents of green awareness for Increased consumption of Eco-Friendly Products: [4]
  This empirical research delves into the cultivation of green awareness among customers and its impact on the consumption of eco-friendly products, focusing on factors like green advertising, brand attributes, perceived value of green initiatives, and brand image within the context of Supermarket Retail in West Java Province. While existing literature acknowledges the significance of green marketing strategies, gaps persist in understanding the comprehensive relationship between these factors and their collective influence on consumer behavior. While previous research highlights the role of green advertising and brand image, it often overlooks the holistic interplay of these factors. This study aims to address these gaps by providing nuanced insights into the drivers of green awareness and their implications for sustainable consumption. By analyzing customer behaviors, the research offers practical recommendations for industries promoting eco-friendly goods, emphasizing the importance of green advertising, perceived value, brand image, and attributes in fostering environmentally conscious consumer behaviors, particularly in regions like Indonesia.

- A consumer definition of eco-friendly packaging: [5]
  Global warming and environmental degradation are undeniable realities, transforming environmental stewardship from a niche interest twenty years ago into an urgent necessity today. Despite this urgency, the demand for eco-friendly products remains disappointingly low, with consumers showing limited inclination to purchase green products. Addressing this issue, this study explores factors influencing sustainable green purchasing intent through structural equation modeling, analyzing responses from 357 Thai Generation Y participants. The results indicate that attitudes towards green packaging and awareness of green marketing significantly influence purchasing intentions,

while environmental concern has the weakest impact. The literature highlights the benefits of focusing on green packaging and marketing strategies to boost consumer interest in eco-friendly products. However, it also reveals a gap: despite high awareness, actual purchase intent remains low, suggesting a disconnect between consumer values and behaviors. Bridging this gap requires innovative marketing approaches and enhanced consumer education to better align purchasing habits with environmental values, thereby addressing the disparity between consumer awareness and action.

- Generation Y's sustainable purchasing intention of green personal care products: [6]
  Global warming and environmental degradation are undeniable realities, transforming environmental stewardship from a niche interest twenty years ago into an urgent necessity today. Despite this, the demand for eco-friendly products remains disappointingly low, with consumers showing a limited inclination to purchase green products. Addressing this issue, studies on the factors influencing sustainable green purchasing intent are increasingly critical. This study employs structural equation modeling to explore these factors, analyzing responses from 357 Thai Generation Y participants. The results indicate that attitudes towards green packaging and awareness of green marketing significantly influence purchasing intentions, while environmental concern has the weakest impact. The literature highlights the pros of focusing on green packaging and marketing strategies to boost consumer interest in eco-friendly products. However, it also reveals a gap: despite high awareness, actual purchase intent remains low, suggesting a disconnect between consumer values and behaviors. Bridging this gap requires innovative marketing approaches and enhanced consumer education to align purchasing habits with environmental values.

- E-bazaar, farmers & consumers e-commerce system: [7]
  Bangladesh faces a significant challenge in its agricultural sector, losing tons of fruits and vegetables each season due to inadequate post-harvest facilities and storage systems. A report by Bangladesh Agricultural University highlights that approximately RM 3.6 billion worth of produce is wasted annually. Additionally, another report indicates that highly perishable fruits and vegetables can lose up to 40% of their value in just one season. The literature underscores both the severity of these losses and the potential benefits of addressing them. On the positive side, implementing effective post-harvest technologies and storage solutions could drastically reduce waste, enhance food security, and increase farmers' incomes. However, the literature also reveals gaps, such as the high initial costs of modern storage facilities, the need for training farmers in new technologies, and the logistical challenges of deploying these solutions across rural areas. Addressing these gaps through targeted investments and policies could significantly mitigate the losses and improve the overall efficiency of Bangladesh's agricultural supply chain.

- Efficiency of an E-Commerce Web Application with MERN Stack and Modern Tools: [8]
  In today's digital age, technology plays a pivotal role in managing daily life and fulfilling basic necessities, with e-commerce platforms revolutionizing shopping experiences across various sectors. Reflecting this trend, we developed a comprehensive chocolatier e-commerce web application using the MERN stack (MongoDB, Express.js, React.js, and Node.js), offering multiple user and admin views and encompassing eight core functions. Consumers can browse, purchase, add, remove, edit, and save products, while administrative capabilities include login/logout options, an admin dashboard, and management tools for categories, brands, payment methods, reviews, and promotions. Despite the advantages of the MERN stack, including development efficiency, code reuse, a responsive user interface, and scalability, challenges such as security, performance under heavy traffic, and cross-device user experience persist. Additional functionalities like AI-driven product recommendations and advanced analytics could further enhance consumer insights and utility. Addressing these gaps is essential for improving the overall user satisfaction and effectiveness of e-commerce applications.

3. METHODOLOGY:

3.1 PROBLEM SPECIFICATION

Team effectiveness in a multi-disciplinary group like ours, comprising mixed roles like graphics designer, backend developer, frontend developer and database admin, is influenced by several key dimensions. Effective communication is the cornerstone, involving the clarity and frequency of information exchange. Collaboration is another crucial factor, encompassing how well team members work together to achieve common goals through knowledge sharing and mutual support. Optimal skill utilization assigns tasks based on individual strengths, enhancing productivity and output quality. Trust and respect foster an environment where open communication and collaboration thrive, leading to innovation.

Currently, our team maintains regular meetings and uses tools like Gmeet and email for updates, but there are occasional misunderstandings about project requirements and deadlines, indicating room for improvement in communication clarity and frequency. Most team members have a clear understanding of their roles, yet there are times when we need to overcome the problems. Trust levels are high, fostering a positive work environment, but occasional friction from differing opinions on design and functionality exists. Leadership is proactive and supportive, but more consistent feedback and conflict resolution strategies could enhance team dynamics.

To enhance team effectiveness, several strategies can be implemented. Enhanced communication protocols, such as regular check-ins, clear

documentation of project requirements, and using collaborative tools to improve clarity and frequency of communication. Establishing a culture of open feedback and recognizing individual contributions can build trust and respect, and conflict resolution training can manage differing opinions more constructively.

2.2. WHY IS THIS PROBLEM SIGNIFICANT / NEED FOR THE STUDY

The significance of addressing the need for an e-commerce platform allocated to sustainable products in India is emphasized by the limited presence of brands in this space. Despite the presence of pioneering brands analogous as Brown Living, Sustain Kart, and Ecohoy, the request for eco-friendly products remains underdeveloped. This failure of offerings presents a substantial occasion to fill a vital gap in the request. By establishing a platform simply concentrated on sustainable products, a company can meet the rising consumer demand for eco-friendly options and contribute to the larger thing of promoting sustainable living practices in the Indian request.

India's consumer base is increasingly leaning towards environmentally conscious consumption. This shift is driven by growing awareness about the environmental impact of conventional products and a desire to embrace further sustainable societies. The current request, still, does not adequately feed to these evolving preferences. The numerous brands, while estimable, can't meet the burgeoning demand alone. This creates a ripe opportunity for a devoted e-commerce platform that can total a different range of sustainable products, making it easier for consumers to access eco-friendly options.

An e-commerce platform devoted to sustainable products can address several critical aspects. First, it provides a centralized business for eco-conscious consumers, simplifying the process of finding and copying sustainable products. Consumers constantly struggle to find eco-friendly druthers amidst the plethora of conventional products. A devoted platform can palliate this issue by curating and vetting products that meet specific sustainability criteria, icing that consumers have access to authentically eco-friendly options.

Alternatively, such a platform can support small and rising brands that prioritize sustainability. Multitudinous small businesses face challenges in gaining visibility and reaching a broader cult due to the dominance of established brands in traditional retail channels. An e-commerce platform concentrated on sustainable products can offer these businesses an important-required platform to show their products, thereby fostering invention and diversity within the sustainable product request. This, in turn, can drive competition and encourage farther brands to borrow sustainable practices.

Likewise, a devoted platform can play an educational part. By furnishing information about the environmental benefits of sustainable products and the impact of consumers' choices, the platform can raise awareness and educate consumers about sustainable living. This can lead to a more informed consumer base that values sustainability and laboriously seeks out eco-friendly products. Over time, this shift in consumer behavior can have a significant impact on reducing the environmental footprint of consumption in India.

From a profitable perspective, investing in a sustainable e-commerce platform aligns with global trends towards green economy practices. As governments and international bodies emphasize the significance of sustainability, businesses that align with these principles are likely to profit from supportive programs and impulses. also, such a platform can tap into the growing request of environmentally conscious consumers, potentially leading to substantial profitable earnings.

Also, promoting sustainable living through a devoted e- commerce platform can contribute to broader environmental pretensions. By easing the transition to sustainable products, the platform can help reduce waste, lower carbon emigrations, and promote the use of renewable resources. This aligns with global sweats to combat climate change and promotes a more sustainable future.

In conclusion, the limited presence of brands devoted to sustainable products in India highlights a significant request gap. Establishing an e-commerce platform concentrated simply on sustainable products can meet the rising consumer demand for eco-friendly options, support small and rising brands, educate consumers, and contribute to broader environmental and profitable pretensions. This action not only caters to the evolving preferences of environmentally conscious consumers but also plays a vital part in promoting sustainable living practices in the Indian request.

4. DETAILED METHODOLOGY

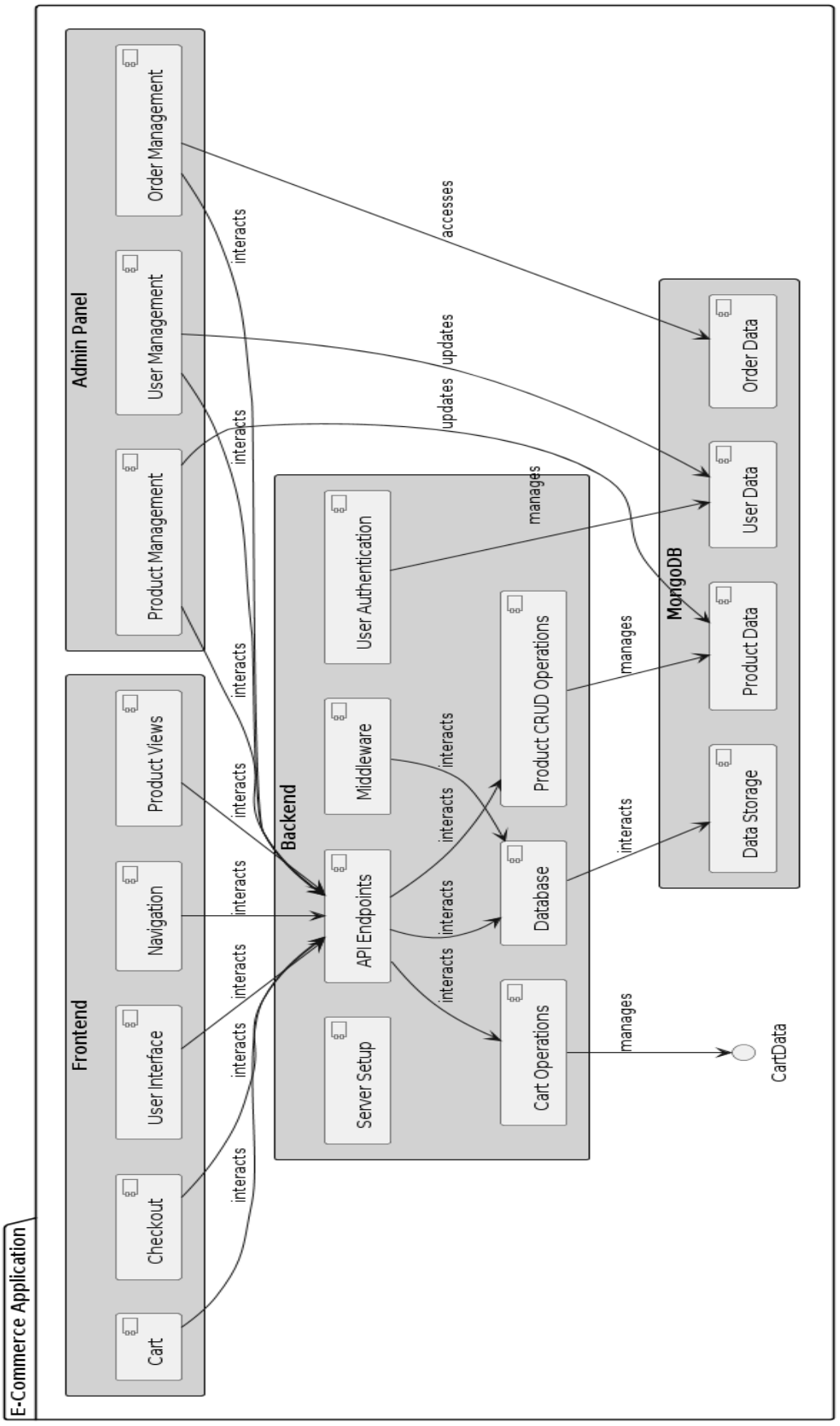
ENVIRONMENT SETUP

Our development environment for the eco-friendly and sustainable e-commerce project is built upon a robust stack of technologies aimed at fostering productivity and scalability. We leverage Node.js version 20, chosen for its stability and long-term support (LTS), providing a solid foundation for server-side JavaScript development. Node Package Manager (npm) version 10.4.0 is employed as the primary package manager, enabling seamless integration of third-party libraries and dependencies.

Visual Studio Code (VSCode) serves as our integrated development environment (IDE), offering a rich set of features such as code autocompletion, debugging tools, and Git integration, to streamline the development workflow. MongoDB Atlas is selected as our cloud database solution, providing a fully managed MongoDB database service with automated backups, scalability, and robust security features, ensuring reliable data storage and management.

To enhance the user interface and design aspects of our application, we incorporate React Bootstrap version 2.10.2, a popular front-end framework that combines the power of React.js with Bootstrap components, facilitating the creation of responsive, visually appealing user interfaces. By combining these technologies, we create a comprehensive development environment optimized for building a sustainable e-commerce platform that aligns with our project goals and objectives.

BLOCK DIAGRAM

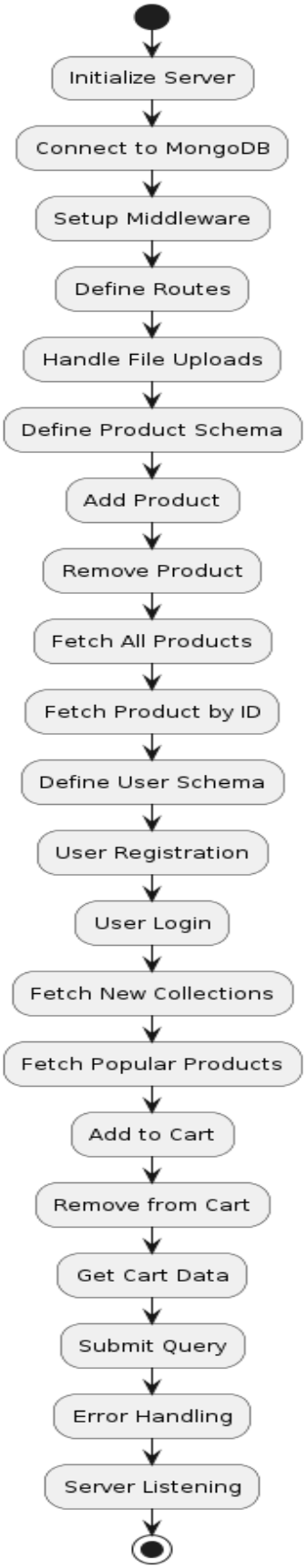


This e-commerce application is structured into three main components: the Frontend, Backend, and Admin Panel, with data stored in MongoDB. The Frontend includes the User Interface (UI), Navigation, Product Views, Cart, and Checkout components. These interact with the Backend via API endpoints for actions such as viewing products, managing the shopping cart, and completing orders. The Backend consists of Server Setup, Database (MongoDB), Middleware, User Authentication, Product CRUD Operations, and Cart Operations. It manages data storage in MongoDB, handling user, product, and order information. Middleware processes requests and responses, including authentication and validation. Admin functionalities are managed through the Admin Panel, which includes Product Management, User Management, and Order Management components. These interact with the Backend API for administrative tasks, updating MongoDB collections as needed.

The Frontend components communicate with the Backend API endpoints, which in turn interact with MongoDB for persistent data storage. CRUD operations manage user, product, and order data, ensuring efficient data management and retrieval. The Admin Panel utilizes the Backend API to perform administrative tasks, updating MongoDB collections for products, users, and orders. This architecture supports scalability, maintainability, and security by ensuring a clear separation of concerns between frontend and backend components, efficient data management through MongoDB, and robust communication through APIs and middleware. The use of an Admin Panel provides necessary tools for administrative tasks, enhancing the application's usability and manageability.

This methodology outlines a structured approach to developing an e-commerce application using React with ViteJS for the frontend and MongoDB for data storage. The architecture supports user interactions through a responsive and intuitive UI, backed by robust backend services for data management and security. The Admin Panel extends functionality by providing administrative tools to manage products, users, and orders. This approach ensures the application is scalable, secure, and maintainable, supporting future growth and adaptation to user needs.

BACKEND



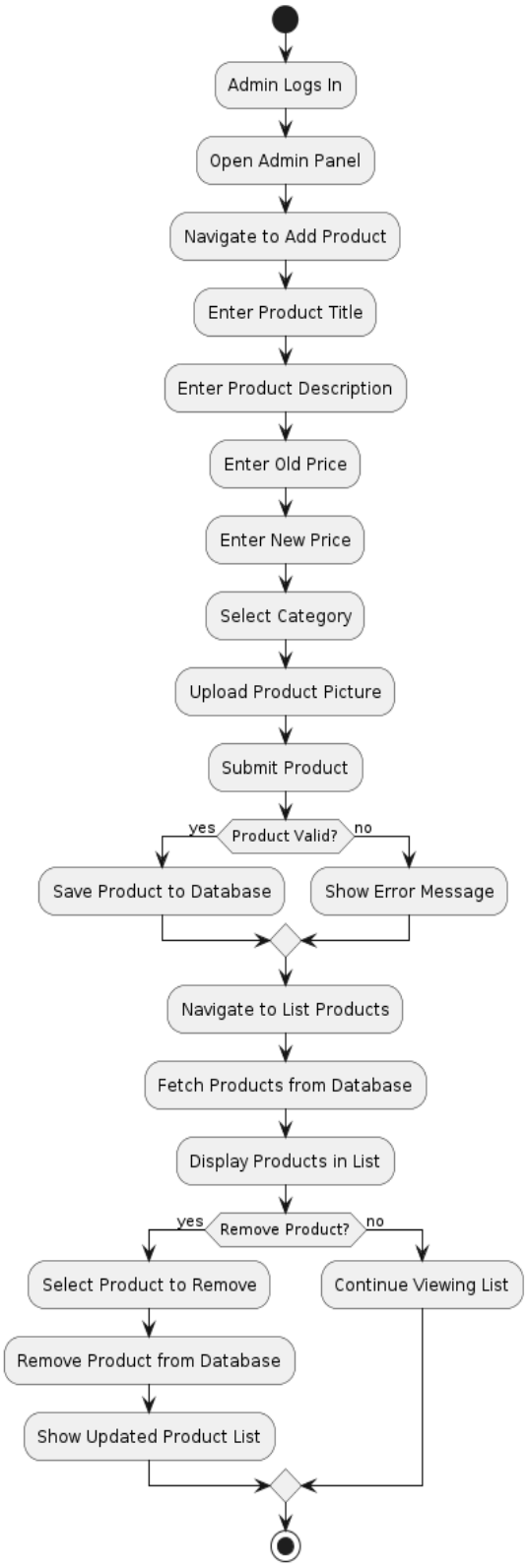

```
> backend@1.0.0 dev
> nodemon ./index.js

[nodemon] 3.1.0
[nodemon] to restart at any time, enter `rs`
[nodemon] watching path(s): *.*
[nodemon] watching extensions: js,mjs,cjs,json
[nodemon] starting `node ./index.js`
Server running on Port 4000
```

The e-commerce application server initialization involves connecting to MongoDB, setting up middleware for request handling, defining routes, managing file uploads, specifying product and user schemas, and implementing product and user management functionalities, including add, remove, fetch, register, and authenticate operations. Additional features include fetching new collections, and popular products, managing the shopping cart, handling queries, error management, and starting the server to listen for incoming requests on a specified port.

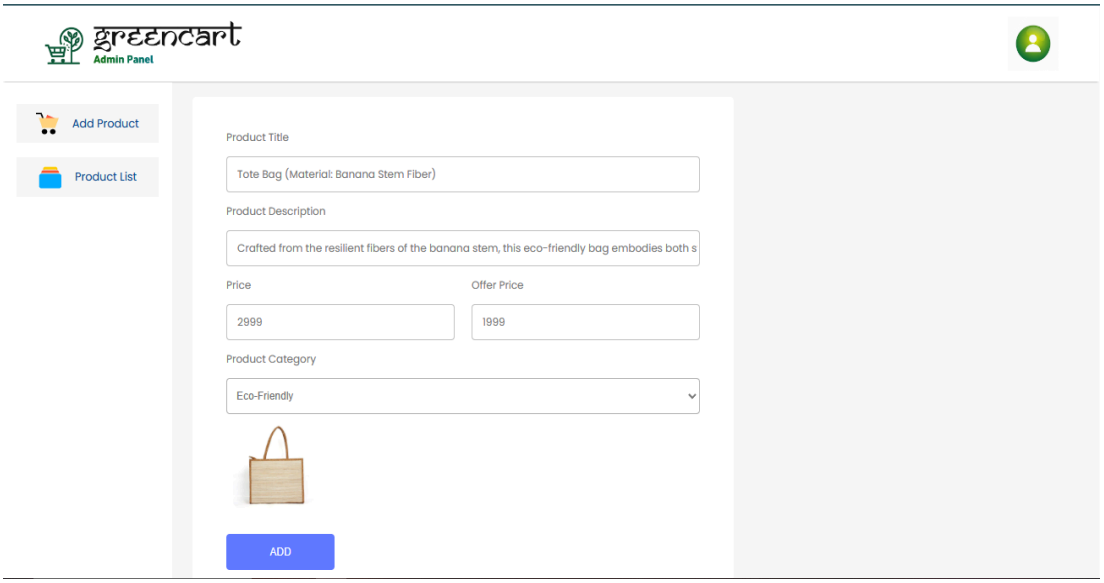
1. **Initialize Server:** The server initialization process begins. This typically involves setting up the basic server environment, loading configuration settings, and preparing for subsequent actions.
2. **Connect to MongoDB:** Establish a connection to the MongoDB database. This is crucial for storing and retrieving product, user, and session data.
3. **Setup Middleware:** Middleware functions are configured to handle HTTP requests. These functions can include authentication, logging, error handling, and other tasks that need to be performed before a request reaches the defined routes.
4. **Define Routes:** Various routes are defined to handle different functionalities of the e-commerce platform. These routes direct incoming requests to their respective controllers or handlers.
5. **Handle File Uploads:** Implement functionality to handle file uploads, such as product images. Files are stored in a specified location and their metadata is saved in the database.
6. **Define Product Schema:** Define the structure and attributes of the products stored in the MongoDB database. This includes fields like title, description, price, and images.
7. **Add Product:**Implement functionality to add new products to the product catalog. This involves validating the input, processing the request, and storing the product data in the database.
8. **Remove Product:** Implement functionality to remove existing products from the product catalog. This action requires authorization and ensures data consistency.
9. **Fetch All Products:** Implement functionality to fetch and display all products currently available in the catalog. This could include pagination and filtering options.
10. **Fetch Product by ID:** Implement functionality to fetch and display details of a specific product based on its unique identifier (ID).

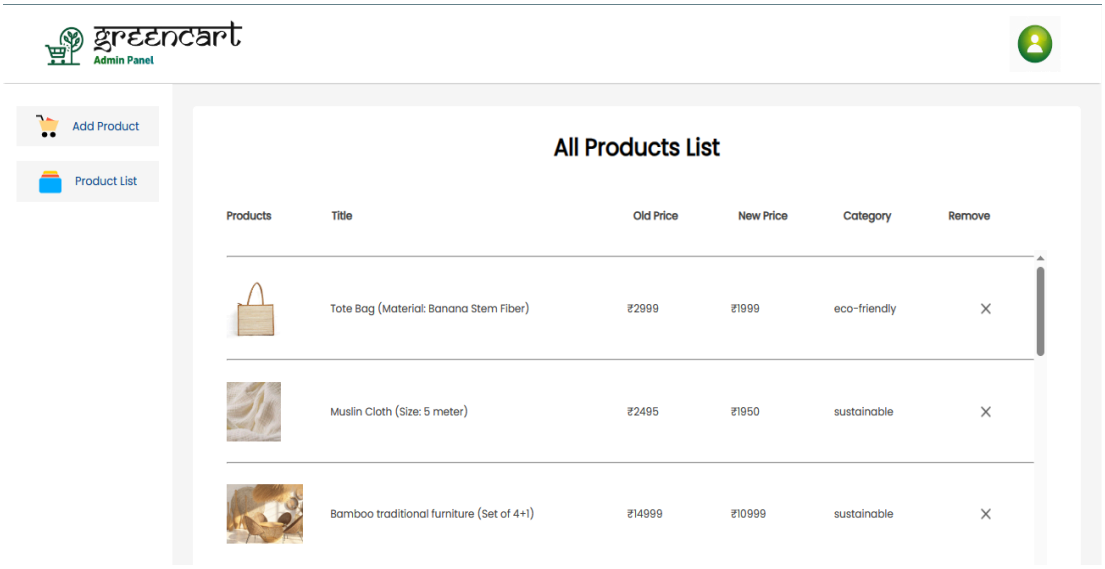
11. **Define User Schema:** Define the structure and attributes of the user data stored in the MongoDB database. This typically includes fields like name, email, password (hashed), and role.
12. **User Registration:** Implement functionality to allow new users to register by providing their details. This includes validating input, hashing passwords, and storing user data in the database.
13. **User Login:** Implement functionality for existing users to log in using their credentials. This involves validating the credentials, creating a session or token, and managing authentication.
14. **Fetch New Collections:** Implement functionality to fetch and display new collections or arrivals of products. This could be based on timestamps or other criteria.
15. **Fetch Popular Products:** Implement functionality to fetch and display popular products based on certain metrics such as views, sales, or ratings.
16. **Add to Cart:** Implement functionality to allow users to add selected products to their shopping cart. This involves managing the cart session or state for the user.
17. **Remove from Cart:** Implement functionality to remove products from the user's shopping cart. This requires updating the cart session or state.
18. **Get Cart Data:** Implement functionality to retrieve and display the contents of the user's shopping cart. This includes fetching product details and quantities.
19. **Submit Query:** Implement functionality to handle user queries or contact form submissions. This includes validating input and sending notifications or responses.
20. **Error Handling:** Implement mechanisms to handle and log errors that occur during the execution of the application. This ensures that errors are caught, logged, and possibly presented to the user in a user-friendly manner.
21. **Server Listening:** Start the server to listen for incoming requests on a specified port. This action makes the application accessible to users and begins handling incoming requests.

ADMIN PANEL




```
PS G:\Project\GreenCart\admin> npm run dev

> admin@0.0.0 dev
> vite


  VITE v5.2.11  ready in 2091 ms

  ➜  Local:   http://localhost:5173/
  ➜  Network: use --host to expose
  ➜  press h + enter to show help
```





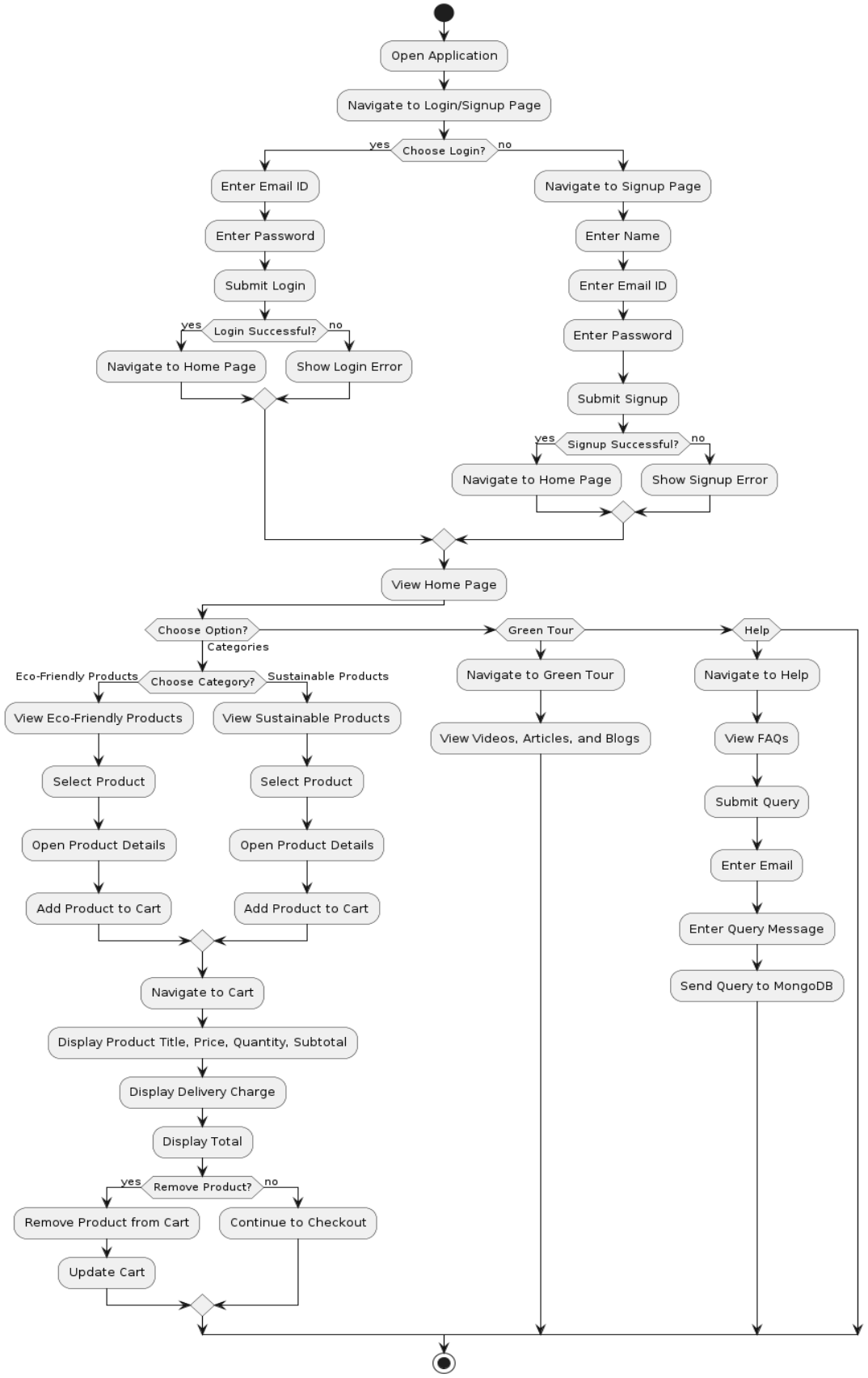
The admin begins by logging in with their credentials, which the server verifies against stored admin data. Upon successful verification, a session or token is created, granting the admin access to the admin panel. The admin is then redirected to the dashboard, where they can manage various functions, including product management. To add a new product, the admin navigates to the "Add Product" section and fills out a form with details such as the product title, description, old and new prices, category, and uploads a product image. Upon submitting the form, the server validates the product details. If the details are valid, the product is saved to the database; if not, an error message is shown, prompting the admin to correct the information and resubmit. The admin can then navigate to the "List Products" section to view all products in the database. The server fetches and displays the product list, including options for editing or removing products. If the admin decides to remove a product, the server updates the database and refreshes the list to reflect the changes. If no products are removed, the admin can continue viewing the list without making any changes.

1. **Admin Logs In:**
   - The admin enters login credentials (username and password).
   - The server verifies the credentials against stored admin user data.
   - If verified, a session or token is created for the admin, allowing access to the admin panel.
2. **Open Admin Panel:**
   - Upon successful login, the admin is redirected to the admin panel dashboard.
   - The admin panel provides access to various administrative functions, including product management.
3. **Navigate to Add Product:**
   - The admin navigates to the "Add Product" section of the admin panel.
   - This section presents a form for entering new product details.
4. **Enter Product Details:**
   - **Enter Product Title:** The admin inputs the product's name or title.
   - **Enter Product Description:** The admin provides a detailed description of the product.
   - **Enter Old Price:** The admin enters the original price of the product (optional, if applicable).
   - **Enter New Price:** The admin inputs the current price of the product.
   - **Select Category:** The admin selects the appropriate category for the product from a dropdown or list.
   - **Upload Product Picture:** The admin uploads an image of the product. The server handles file upload, storage, and generates a URL for the image.
5. **Submit Product:**
   - The admin submits the product form.
   - The server validates the product details (e.g., checks for required fields, correct data formats, etc.).
6. **Product Validation:**
   - **If Product Valid:** The server saves the product details to the database, including metadata like timestamps and the admin user ID who added the product.
   - **If Product Invalid:** The server returns an error message indicating what needs to be corrected in the form. The admin can then correct the details and resubmit.
7. **Navigate to List Products:**
   - The admin navigates to the "List Products" section.
   - This section displays a list of all products currently in the database.
8. **Fetch Products from Database:** The server retrieves the list of products from the database, including details such as title, description, price, category, and image URL.
9. **Display Products in List:**
   - The retrieved product list is displayed in a tabular or grid format in the admin panel.

- Each product entry includes options for editing or removing the product.

10. **Remove Product (Conditional):**
    - **If Remove Product:** The admin selects a product to remove from the list.
        - The server removes the selected product from the database.
        - The product list is updated and displayed without the removed product.
    - **If Continue Viewing List:** The admin can continue to view the product list without making any changes.

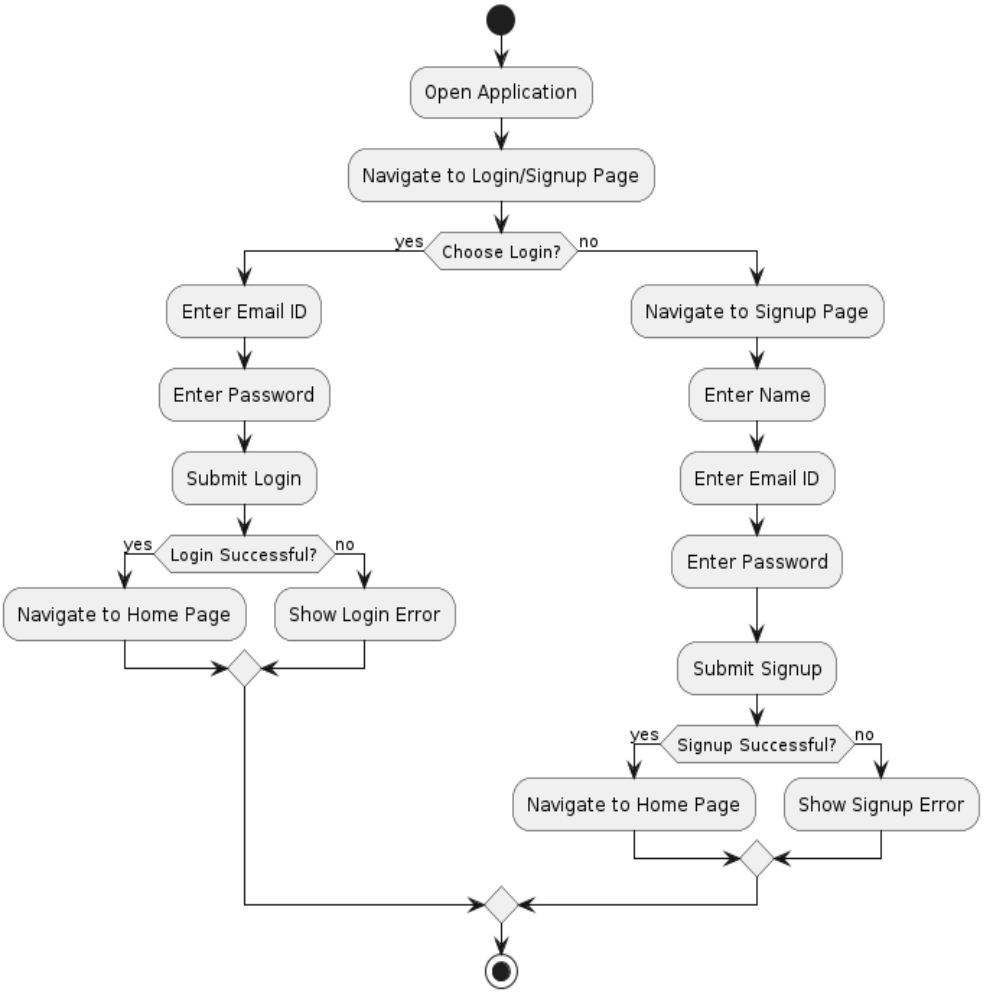
FRONTEND

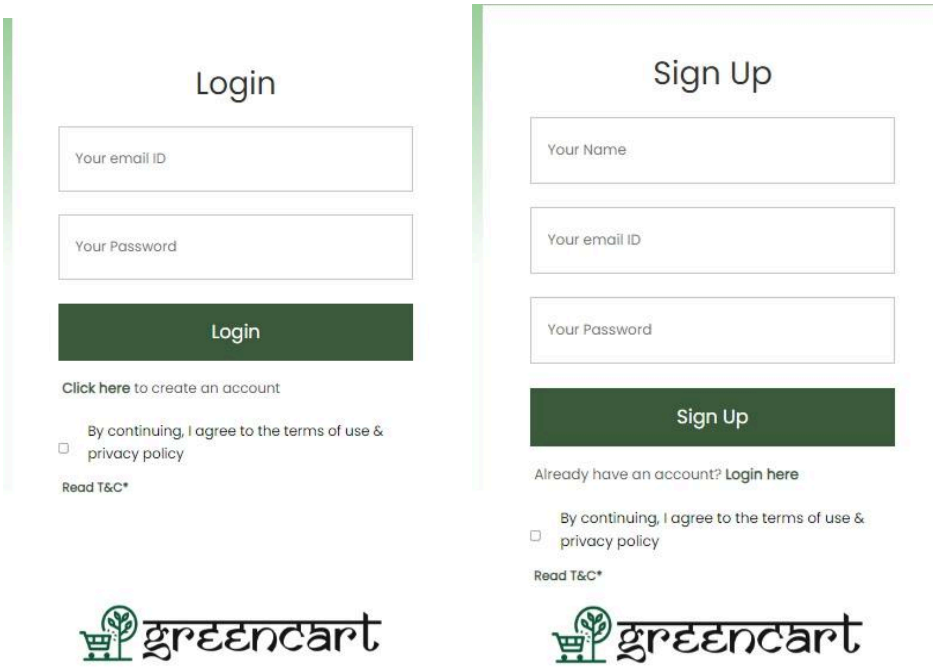

Open Application
Navigate to Login/Signup Page
Choose Login?
yes
no
Enter Email ID
Enter Password
Submit Login
Login Successful?
yes
no
Navigate to Home Page
Show Login Error
Navigate to Signup Page
Enter Name
Enter Email ID
Enter Password
Submit Signup
Signup Successful?
yes
no
Navigate to Home Page
Show Signup Error
View Home Page
Choose Option?
Categories
Green Tour
Help
Choose Category?
Eco-Friendly Products
Sustainable Products
View Eco-Friendly Products
View Sustainable Products
Select Product
Select Product
Open Product Details
Open Product Details
Add Product to Cart
Add Product to Cart
Navigate to Green Tour
View Videos, Articles, and Blogs
Navigate to Help
View FAQs
Submit Query
Enter Email
Enter Query Message
Send Query to MongoDB
Navigate to Cart
Display Product Title, Price, Quantity, Subtotal
Display Delivery Charge
Display Total
Remove Product?
yes
no
Remove Product from Cart
Continue to Checkout
Update Cart

1. **Open Application**: The user opens the e-commerce application on their device.
2. **Navigate to Login/Signup Page**: The user navigates to the login or signup page.
3. **Choose Login or Signup**:
   - The user decides whether to log in or sign up for a new account.
4. **Login Process**:
   - Enter Email ID: The user inputs their email address.
   - Enter Password: The user inputs their password.
   - Submit Login: The user submits the login form.
   - Login Successful?:
     - If the login is successful, the user is redirected to the home page.
     - If the login fails, an error message is displayed, prompting the user to retry.
5. **Signup Process**:
   - Navigate to Signup Page: The user is redirected to the signup page.
   - Enter Name: The user inputs their name.
   - Enter Email ID: The user inputs their email address.
   - Enter Password: The user inputs their password.
   - Submit Signup: The user submits the signup form.
   - Signup Successful?:
     - If the signup is successful, the user is redirected to the home page.
     - If the signup fails, an error message is displayed, prompting the user to retry.
6. **View Home Page**: The user views the home page after a successful login or signup.
7. **Choose Option**: The user selects an option from the home page, such as viewing product categories, taking a green tour, or accessing help.

8. **Categories Option**: Choose Category: The user selects a category (e.g., Eco-Friendly Products or Sustainable Products).
9. **Eco-Friendly Products**:
    - View Eco-Friendly Products: The user views a list of eco-friendly products.
    - Select Product: The user selects a specific product.
    - Open Product Details: The user views detailed information about the selected product.
    - Add Product to Cart: The user adds the product to their shopping cart.
10. **Sustainable Products**:
    - View Sustainable Products: The user views a list of sustainable products.
    - Select Product: The user selects a specific product.
    - Open Product Details: The user views detailed information about the selected product.
    - Add Product to Cart: The user adds the product to their shopping cart.
11. **Navigate to Cart:** The user navigates to the shopping cart.
12. **Display Cart Details:**
    - The cart displays product titles, prices, quantities, and subtotals.
    - It also shows the delivery charge and the total amount.
13. **Remove Product?:**
    - If the user decides to remove a product from the cart, it is removed, and the cart is updated.
    - If the user chooses to continue, they proceed to checkout.
14. **Green Tour:**
    - Navigate to Green Tour: The user navigates to the green tour section.
    - View Videos, Articles, and Blogs: The user views educational content related to green and sustainable living.
15. **Help:**
    - Navigate to Help: The user navigates to the help section.
    - View FAQs: The user views frequently asked questions.
    - Submit Query:
        - Enter Email: The user inputs their email address.
        - Enter Query Message: The user inputs their query message.
        - Send Query to MongoDB: The query is sent to the MongoDB database for processing.

LOGIN/SIGNUP

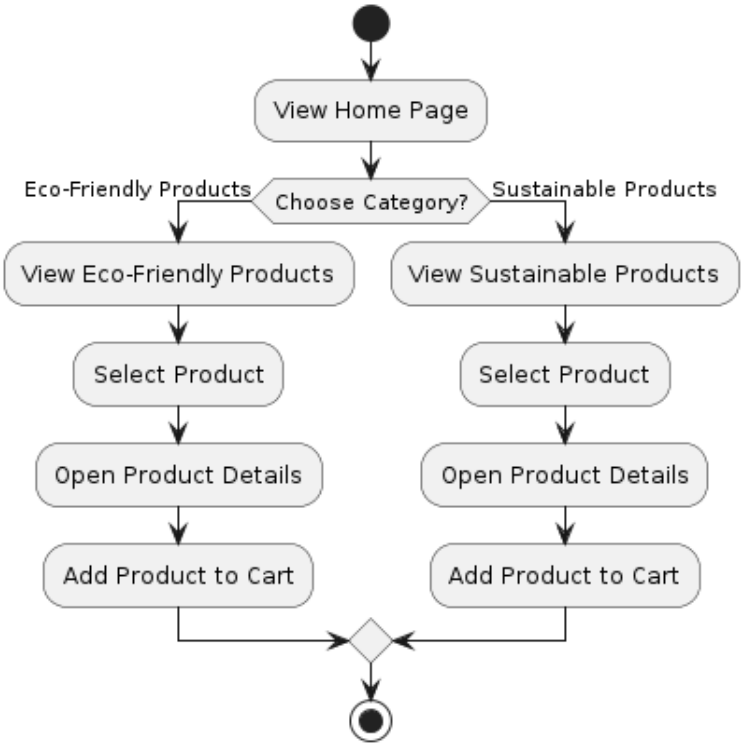


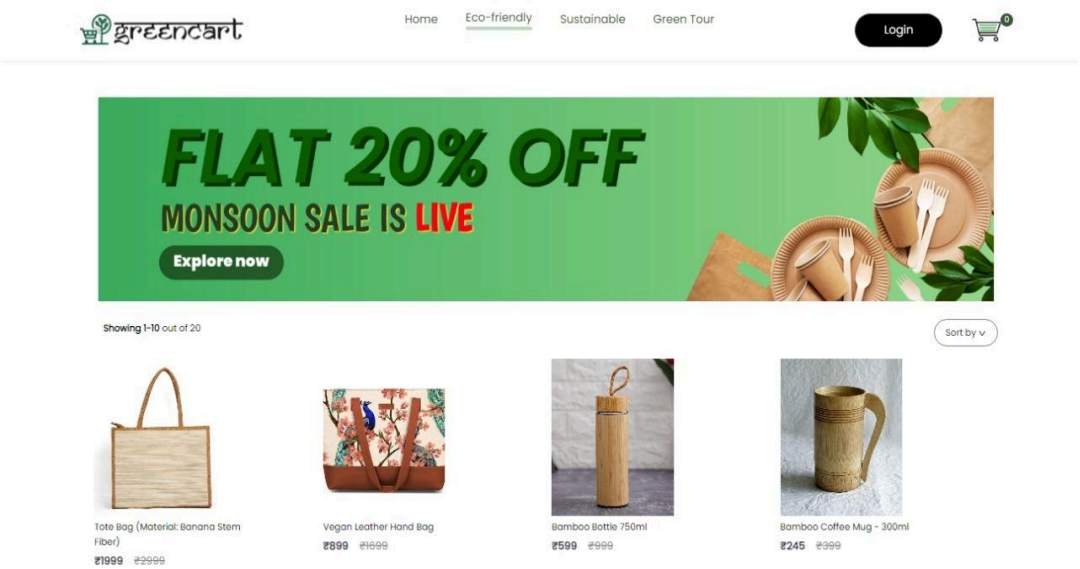


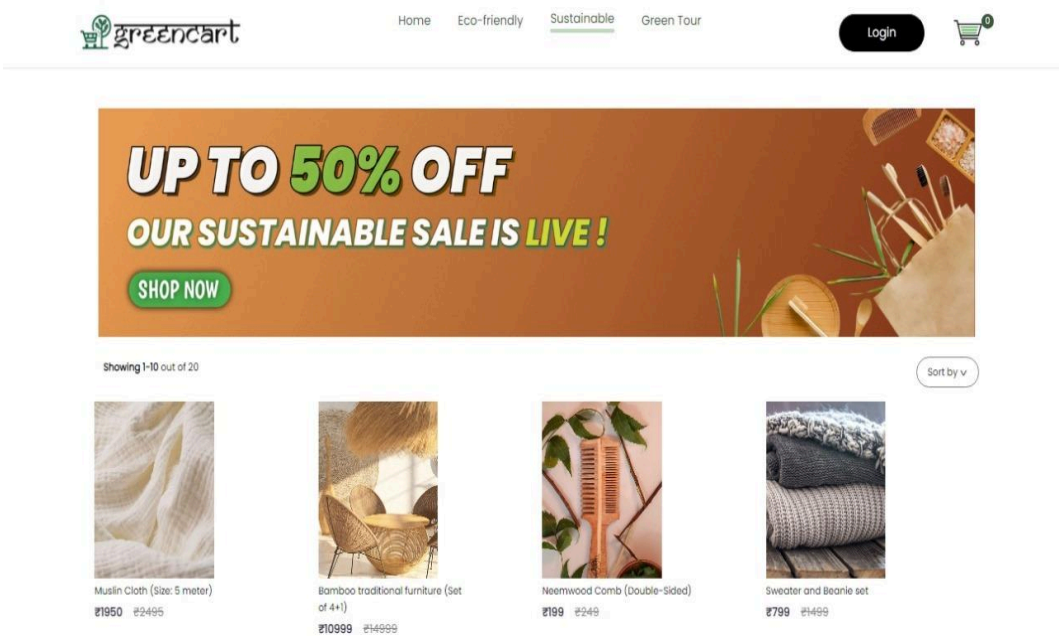
- **Login**: The process begins with admins logging into the admin panel by entering their email address and password .
- **Login Validation**: The system validates the entered credentials against stored user information likely in a database .
- **Successful Login**: Upon successful validation, the system grants access to the admin panel functionalities .
- **Choosing an Action**: Once logged in, admins are presented with two main options: "Add Product" for adding new items or "List Products" to manage existing ones .
- **Adding a New Product**: If the admin chooses to add a new product, they navigate to the "Add Product" section .
- **Product Details Input**: Within this section, admins meticulously provide essential details about the new product . This typically includes a catchy title, a comprehensive description highlighting features and benefits, and a competitive price point . Additionally, admins upload a high-quality image showcasing the product in all its glory . Finally, ensuring proper categorization, they select the most relevant category from the available options .
- **Data Validation and Saving**: After meticulously filling out all the information, the system automatically performs a validation check to identify any inconsistencies or errors. Upon confirmation of valid details, the product information is securely saved within the system's database, and a confirmation message appears for the admin's reference. If any errors are detected, the system provides clear error messages to guide the admin towards a successful product addition.
- **Management of Existing Products**: If the admin chooses to manage existing products instead of adding a new one, they can navigate to the "List Products" section.
- **Product List Display**: This section retrieves a comprehensive list of all current products within the system's database and displays it for the admin's review. This list serves as a central hub for managing the product inventory, allowing admins to monitor product availability and make informed decisions.
- **Product Selection for Removal**: From this central product list, admins can effortlessly remove products that are no longer available, out of stock, or simply need to be retired from the catalog. To initiate the removal process, the admin selects the desired product for deletion from the list.
- **Deletion Confirmation**: The system incorporates a safeguard to prevent accidental deletions. A confirmation prompt appears, requesting the admin to verify their selection before proceeding. This double-check helps ensure only intended products are removed from the inventory.
- **Product Deletion and Updated List**: Once the admin confirms the deletion, the chosen product is permanently removed from the database, reflecting the most up-to-date inventory. The system then refreshes the product list, providing the admin with an updated view of their

remaining inventory, ensuring they have accurate information to manage their product offerings.

CATEGORIES



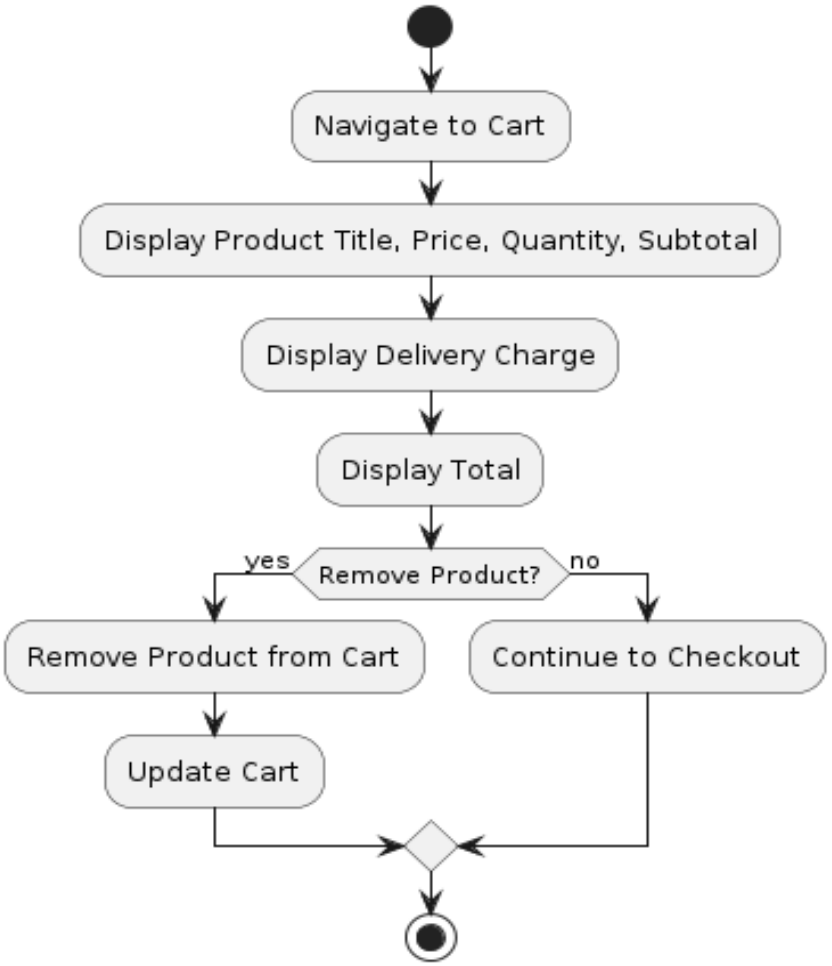


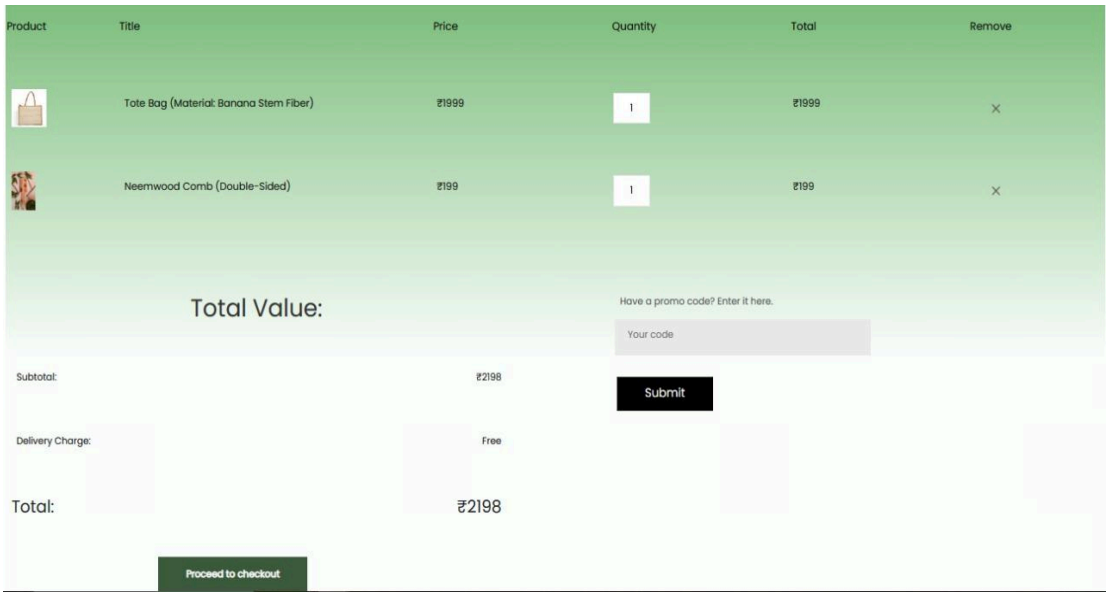


To develop the shopping cart functionality depicted in the uploaded flowchart using the MERN stack (MongoDB, Express.js, React.js, Node.js), we start with the frontend implementation. In React.js, we create a Cart component that displays the product details such as title, price, quantity, and subtotal for each item in the cart. The component also calculates and displays the delivery charge and the total amount. Users can choose to remove a product, which triggers a state update to reflect the removal and recalculate the totals. The Cart component integrates Redux or React Context to manage the cart state globally, ensuring consistent updates across the application.

On the backend, we enhance the Node.js and Express server to handle cart-related operations. We create API endpoints to update the cart, remove items, and fetch the latest cart data. When a product is removed from the cart on the frontend, an API call updates the cart in the backend database (MongoDB). The backend responds with the updated cart data, which the frontend then uses to refresh the cart view. The final step in the flow allows users to continue to the checkout process, which would involve further API interactions to handle order processing. This seamless interaction between the frontend and backend ensures a smooth user experience for managing the shopping cart.

CART





To develop the login and signup functionality depicted in the uploaded flowchart using the MERN stack (MongoDB, Express.js, React.js, Node.js), we

start by focusing on the frontend implementation. Using React.js, we create components for the Login and Signup pages. The application initially navigates to a LoginSignupPage component where users can choose between login and signup. For the login flow, users enter their email ID and password into a Login component, which submits the credentials to the backend API. Based on the API response, the application either navigates to the home page upon successful login or displays an error message.

For the signup flow, users are directed to a Signup component where they enter their name, email ID, and password. Upon submitting the signup form, the component sends the data to the backend API to create a new user account. If the signup is successful, the user is redirected to the home page; otherwise, an error message is shown. The frontend components handle form input and validation, providing feedback to users and ensuring smooth navigation between pages.

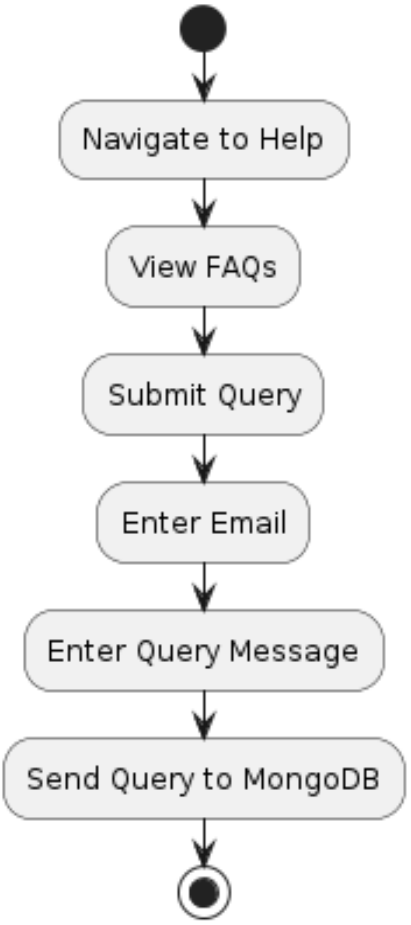
On the backend, we set up a Node.js and Express server to handle authentication requests. We create API endpoints for user login and sign up (/login). The login endpoint validates user credentials against stored data in MongoDB and generates a session or token upon successful authentication. The signup endpoint creates a new user record in the database. Error handling ensures that appropriate messages are returned for unsuccessful login or sign up attempts. This integration of frontend and backend functionality ensures secure and efficient user authentication and account creation processes within the application.

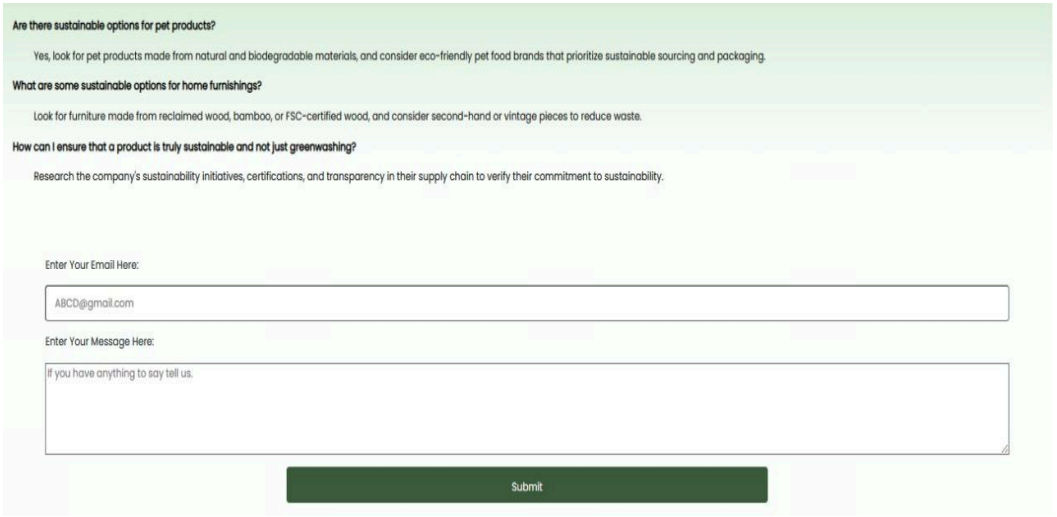
GREEN TOUR

1. **Display Title:** The component displays a heading that reads "About Sustainable and Eco-Friendly Products." This serves to introduce the webpage section and sets the context for the content that follows.
2. **Embed Videos:** Five YouTube videos are embedded within the component. These videos are likely chosen to cover various topics related to sustainable practices and the use of eco-friendly products.

The overall functionality of the React component is relatively simple. It presents a title and embeds videos, presumably chosen to educate users on sustainability and eco-friendly products. There is no apparent functionality for users to navigate beyond this section or interact with the videos in any way other than watching them.

HELP





- **Admin Login:** The process commences with admins logging into the admin panel.
- **Product Management Options:** After successful login, admins are presented with two main options: adding new products and managing existing ones.
- **Adding a New Product:** If the admin chooses to add a new product, they'll navigate to the designated section, typically labelled "Add Product".
- **Product Details Input:** Within this section, admins meticulously provide essential details about the new product. This typically includes a catchy title, a comprehensive description highlighting features and benefits, and a competitive price point. Additionally, admins upload a high-quality image showcasing the product in all its glory. Finally, ensuring proper categorization, they select the most relevant category from the available options.
- **Data Validation and Saving:** After meticulously filling out all the information, the system automatically performs a validation check to identify any inconsistencies or errors. Upon confirmation of valid details, the product information is securely saved within the system's database, and a confirmation message appears for the admin's reference. If any errors are detected, the system provides clear error messages to guide the admin towards a successful product addition.
- **Managing Existing Products:** If the admin chooses to manage existing products instead of adding a new one, they can navigate to the "List Products" section.
- **Product List Display:** This section retrieves a comprehensive list of all current products within the system's database and displays it for the admin's review . This list serves as a central hub for managing the product inventory, allowing admins to monitor product availability and make informed decisions.
- **Product Removal:** From this central product list, admins can effortlessly remove products that are no longer available, out of stock, or simply need to be retired from the catalog. To initiate the removal process, the admin selects the desired product for deletion from the list.
- **Deletion Confirmation:** The system incorporates a safeguard to prevent accidental deletions. A confirmation prompt appears, requesting the admin to

verify their selection before proceeding. This double-check helps ensure only intended products are removed from the inventory.

- **Product Deletion and Updated List:** Once the admin confirms the deletion, the chosen product is permanently removed from the database, reflecting the most up-to-date inventory. The system then refreshes the product list, providing the admin with an updated view of their remaining inventory, ensuring they have accurate information to manage their product offerings.

5. CONCLUSIONS and FUTURE PLAN

In concluding our project, our team's collective effort and dedication have led to a significant achievement. Through meticulous planning, execution, and collaboration, we tried to build an e-commerce website on MERN Stack (MongoDB, Express JS, React JS and Node JS). One notable outcome is a marketplace for sustainable and eco-friendly products, validating our objectives and showcasing our team's capability to overcome challenges.

Throughout the project, we navigated various challenges, turning them into opportunities for growth and innovation. Lessons learned strengthened our problem-solving skills and contributed to the overall resilience of our team. Collaboration has been a backbone of our success. Diverse skills and perspectives enriched our approach, fostering creativity and mutual support. Seamless coordination and communication were pivotal in achieving our goals. Reflecting on the journey, this experience has deepened our understanding of developing an e-commerce marketplace for eco-friendly and sustainable products, which equipped us with transferable skills for future endeavors.

In closing, we express gratitude to all the team members and our mentor, who contributed towards the successful completion of this project. The impact of our collective effort will resonate beyond this project, leaving a lasting mark on our professional journeys.

In the upcoming time, we will undertake several critical tasks to enhance our platform's functionality and user experience. First, we will integrate a payment gateway, enabling seamless and secure transactions for our customers. This will streamline the purchasing process and build trust by ensuring the safe handling of financial data. Next, we will develop an AI recommendation system and chatbot to personalize the shopping experience and provide instant assistance to users, thereby increasing engagement and satisfaction. Additionally, we will implement a robust customer verification system to protect against fraud and ensure the authenticity of user identities, enhancing overall security. We will also introduce a review system that allows customers to provide feedback on products, fostering transparency and helping future buyers make informed decisions. Finally, we will establish a credit (reward) system to incentivize purchases and foster customer loyalty by offering rewards for continued engagement with our platform. These initiatives collectively aim to create a more secure, personalized, and rewarding shopping experience for our users.

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