Electro Bazzar

A PROJECT REPORT
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Submitted by

Monty Sharma
(202410116100124)
Manish Kumar
(202410116100113)
Mohd Kasif Khan
(202410116100122)
Mohd Faizan
(202410116100120)

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Mrs. Shruti Aggarwal
Assistant Professor

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Uttar Pradesh-201206

CERTIFICATE

Certified that **Monty Sharma(202410116100124),**Mohd **Kasif Khan (202410116100122), Manish Kumar (202410116100113), Mohd Faizan (202410116100)** has/ have carried out the project work having "**Electro Bazaar**"(**Mini Project-II,ID201B**) for **Master of Computer Application** from Dr. A.P.J.Abdul Kalam Technical University (AKTU) (formerly UPTU), Lucknow under mysupervision. The project report embodies original work, and studies are carried out by thestudent himself/herself and the contents of the project report do not form the basis for theaward of any other degree to the candidate or to anybody else from this or any otherUniversity/Institution.

Miss. Shruti Aggarwal	**Dr. Akash Rajak**
Assistant Professor	**Dean**
Department of Computer Applications	**Department of Computer Applications**
KIET Group of Institutions, Ghaziabad	**KIET Group of Institutions, Ghaziabad**

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Manish Kumar

Mohd Kasif Khan

Mohd Faizan

ABSTRACT

Electro Bazzar is a comprehensive e-commerce platform designed to streamline online shopping and enhance the experience of both customers and administrators. This system offers essential functionalities such as user login and signup, ensuring secure access and personalized services for every shopper.

Users can explore a wide range of product categories, including electronics, gadgets, home appliances, and accessories, with smart filters and detailed product descriptions tailored to their preferences. Additionally, the system organizes items into specific types—such as smartphones, laptops, kitchen appliances, and smart devices—enabling customers to easily discover products that meet their needs and budgets.

The platform also features an engaging blog section, offering articles, reviews, buying guides, and tech tips to keep users informed and updated on the latest trends in technology and electronics. Furthermore, detailed profiles of sellers and brands, including their ratings and contact information, allow customers to connect with trustworthy vendors for a smooth shopping experience.

By integrating these features into a user-friendly and responsive interface, Electro Bazzar ensures a convenient, organized, and interactive environment for both customers and store administrators. This project aims to enhance operational efficiency, customer engagement, and overall satisfaction within the online shopping community.

ACKNOWLEDGEMENT

Success in life is never attained single-handedly. I am deeply grateful to my project supervisor, **Miss. Shruti Aggarwal**, for his invaluable guidance, unwavering support, and encouragement throughout my project work. His enlightening ideas, constructive comments, and thoughtful suggestions have greatly contributed to the completion of this project.

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I am fortunate to have many understanding friends who have supported me in numerous ways during challenging moments. Their assistance and companionship have been a constant source of motivation.

Finally, my sincere gratitude goes to my family members and all those who have directly or indirectly provided me with moral support, encouragement, and assistance. Their unwavering belief in me and their continuous efforts to keep my life filled with happiness and joy made the completion of this project possible.

Monty Sharma

Manish Kumar

Mohd Kasif Khan

Mohd Faizan

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INTRODUCTION

1.1 **General**

Electro Bazzar is a user-centric e-commerce platform designed to streamline online shopping and enhance the buying experience for customers. As digital marketplaces grow in size and popularity, manually managing product inventories, customer data, order processing, and vendor coordination becomes increasingly complex. This project addresses these challenges by introducing a digital solution that automates various processes while ensuring user engagement and satisfaction.

1.2 **Overview of the Electro Bazzar**

Electro Bazzar is an innovative e-commerce platform designed specifically for purchasing electronic products with ease, reliability, and affordability. Whether you're looking for the latest gadgets, laptops, smartphones, or electronic accessories, Electro Bazzar provides a seamless shopping experience through a user-friendly interface, secure transactions, and a wide range of products.

1.3 **Objectives of Electro Bazzar**

- **Provide a Seamless Online Shopping Experience**
  To offer users an intuitive, fast, and secure platform to purchase electronic products from the comfort of their homes.
- **Centralize Electronic Product Listings**
  To build a digital marketplace that aggregates a wide range of electronic products with detailed specifications and images.
- **Ensure Secure and Reliable Transactions**
  To integrate secure user authentication and checkout processes using technologies like JWT and HTTPS, ensuring user data and transactions are safe.
- **Enable Easy Product Management**
  To allow admins to effortlessly add, update, or delete product listings, including image uploads and inventory management.

1.3.1 **Member Benefits**

- **Simplified access** to a wide range of product categories and detailed item descriptions.
- **Availability of diverse products**, including electronics, gadgets, home appliances, and accessories.
- **Insightful blogs** on tech trends, product reviews, and buying guides to help customers make informed purchasing decisions.

1.3.2 **Administrator Benefits**

- **Secure user management** through login/signup functionalities.
- **Streamlined processes** for managing vendor profiles, product listings, and inventory updates.
- **Efficient storage and retrieval** of data to support better decision-making and operational control.

1.4 **Problem Statement**

The e-commerce industry has experienced rapid growth, leading to increased customer expectations and a surge in online transactions. However, many platforms still rely on outdated or partially manual processes for managing products, orders, and customer interactions, resulting in inefficiencies, errors, and poor user experiences. This project aims to address these challenges by developing a robust, automated **Electro Bazzar** system to enhance efficiency and customer satisfaction.

1.5 **Target Audience**

The **Electro Bazzar** system is tailored for:

- **E-commerce platform owners and administrators** seeking to enhance operational efficiency and streamline online transactions.
- **Online shoppers** looking for a convenient, engaging, and personalized shopping experience.
- **Vendors and sellers** aiming to showcase their products and connect with a wider customer base.

1.6 **Project Significance**

By automating core processes, the **Electro Bazzar** platform not only improves the day-to-day operations of e-commerce businesses but also fosters a more engaging and seamless shopping experience for customers. It aligns with modern retail trends by integrating advanced technology into the online shopping and product management process, helping businesses stay competitive and responsive to customer needs.

1.7 **Limitations of the System**

- **Initial implementation costs** may be a barrier for small e-commerce businesses or startups.
- **Dependency on stable internet connectivity** for smooth operation, especially during peak shopping hours and order processing.

FEASIBILITY STUDY

2.1 Technical Feasibility

2.1.1. Technology Stack Feasibility

- **Frontend:**
  - **HTML, CSS, JavaScript:** Simple and effective technologies for building responsive and interactive user interfaces.
  - **Thymeleaf:** Seamless server-side rendering engine integrated with Spring Boot, allowing dynamic content rendering directly from the backend.
- **Backend:**
  - **Spring Boot:** A robust Java-based framework ideal for building REST APIs and managing business logic. It simplifies configuration and accelerates development.
  - **Spring Data JPA:** Makes database operations easier and cleaner by providing built-in methods for CRUD operations.
- **Database:**
  - **MySQL:** A reliable and widely-used relational database, suitable for handling structured data like user info, product listings, and orders.

2.1.2. Development Feasibility

- **Ease of Integration:**
  Thymeleaf integrates tightly with Spring Boot, reducing the complexity of handling frontend-backend communication.
- **Available Skills:**
  Technologies used are standard and widely supported, meaning tutorials, documentation, and community help are readily available.
- **Tool Support:**
  Supported by IDEs like **Eclipse**, **IntelliJ**, or **VS Code** for fast and efficient development.

2.1.3. Performance & Scalability

- **Spring Boot with JPA** enables efficient database operations and optimized API responses.

- While Thymeleaf is server-rendered and not as dynamic as SPAs (like React), it works efficiently for small-to-medium-scale applications.
- Can be scaled by optimizing SQL queries, enabling caching, and eventually moving to more advanced frontend if needed.

2.1.4. Security

- **JWT or Spring Security:** Can be used for login authentication and protecting sensitive routes.
- Thymeleaf can enforce role-based UI rendering (e.g., admin vs. user views).
- Form validations and CSRF protection are easily manageable with Spring Security.

2.2 Economic Feasibility

2.2.1. Development Costs

Since the project is being developed as a personal or academic project, the **initial investment is minimal**, and mostly includes:

- **Manpower:**
  - Self-developed — no salary or developer hiring costs involved.
- **Technology & Tools:**
  - All tools used are **open-source and free**:
    - Spring Boot, JPA, MySQL
    - Thymeleaf, HTML, CSS, JS
    - IDEs like Eclipse or VS Code
    - GitHub for version control
- **Learning Resources:**
  - Free or low-cost online tutorials, documentation, and forums.

2.2.2. Hosting & Deployment Costs

- **Short-Term (Development/Testing):**

- Platforms like **Render**, **Vercel**, or **Railway** offer free tiers for testing and early deployment.

- **Long-Term (Production):**

Resource	Estimated Monthly Cost
Render (Spring Boot backend)	$7–$10/month *(on paid plan)*

2.3 Market Research

2.3.1. Industry Overview

- The **global electronics e-commerce market** is one of the fastest-growing sectors in the digital economy.
- According to recent reports, **consumer electronics** account for a major share of online shopping in India and globally.
- The rise of digital payments, smartphone usage, and increasing trust in online shopping continues to drive demand.

2.3.2. Target Audience

Segment	Description
Age Group	18–45 years
Demographic	Students, working professionals, tech enthusiasts
Geography	Initially India-focused, scalable to global market
Buying Behavior	Price-conscious, research-driven, prefer comparisons and reviews

2.3.3. Competitor Analysis

Competitor	Strengths	Weaknesses
Amazon	Trusted brand, huge inventory, fast delivery	Higher pricing, less focus on niche electronics
Flipkart	Popular in India, variety of offers	Crowded UI, inconsistent product descriptions
Croma	Specializes in electronics	Limited stock, less online reach
LocalShops Online	Affordable, flexible	Lack of trust, weak backend & UX

2.4 Existing E-commerce Solutions

Existing e-commerce platforms such as Shopify, WooCommerce, and BigCommerce provide basic functionality for product management, order processing, and customer service. However, many of these solutions lack customizable features or offer limited user engagement options. Features like personalized product recommendations, real-time inventory updates, and seamless integration between the website and mobile apps are often missing. Additionally, some platforms fail to offer full automation for order fulfillment, customer support, and inventory management, leaving e-commerce businesses to rely on manual processes, which can lead to inefficiencies. The integration of a Django back-end in the proposed **Electro Bazzar** platform allows for greater flexibility in implementing custom features, such as personalized shopping experiences, real-time order tracking, and dynamic product recommendations, which are often lacking in many existing solutions.

2.5 Interactive Product Browsing:

Using **JavaScript and Thymeleaf**, users can dynamically filter products, view real-time stock updates, and interact with product pages without full reloads.

- **Personalized Customer Profiles:**
  Spring Security (or session-based auth in Spring Boot) enables each customer to have a **custom profile**, including their order history, wishlists, and saved preferences.
- **Product Recommendations (Optional Feature):**
  With **Spring Boot + JPA**, data such as browsing history or previous orders can be analyzed to offer **simple product suggestions**.
- **Automated Order Management:**
  The **Spring Boot + JPA** backend manages **product listing, order processing, and status updates** efficiently with minimal manual input.
- **Responsive Web Design:**
  Designed using **HTML, CSS, and JavaScript**, the front-end ensures a smooth and **responsive user experience** across all devices.

PROJECT OBJECTIVE

The primary objective of this project is to develop an efficient, user-friendly e-commerce platform that automates business processes while enhancing the overall shopping experience. The platform will streamline various aspects of online retail, such as product management, order processing, and customer service, while offering features that improve customer engagement. Specific goals include:

1. **Implementing Secure Login/Signup**: The system will provide a secure and seamless login/signup process using Spring Boot's user authentication system. Customers will be able to create personalized accounts, log in securely, and reset their passwords when needed. The security features will include encryption, password hashing, and session management to protect user data.

2. **Providing Detailed Product Categories and Vendor Profiles**: The system will allow customers to browse through different product categories (e.g., electronics, home appliances, gadgets) and view detailed vendor profiles. Each vendor's profile will include their product offerings, ratings, and customer reviews. This feature will help users select products based on their preferences and connect with trusted sellers.

3. **Offering Exclusive Deals, Discounts & Promotions**: The platform will feature a section dedicated to exclusive deals, discounts, and promotions. Customers will have access to time-limited offers, seasonal sales, and bulk purchase discounts. A discount system will be integrated into the checkout process, allowing users to apply coupon codes and benefit from special offers. This feature will engage customers by providing incentives to return for future purchases, creating a sense of excitement and urgency around discounts.

By achieving these goals, the **Electro Bazzar** platform will offer both online retailers and customers a more streamlined, personalized, and engaging shopping experience, improving overall efficiency and satisfaction.

HARDWARE AND SOFTWARE REQUIREMENTS

4.1 Hardware Requirements

For the **Electro Bazzar** project, the hardware requirements are as follows:

- **Processor (CPU):** A minimum of an Intel Core i3 or AMD Ryzen 3 processor is required for basic development. However, for better performance, an Intel Core i5 or AMD Ryzen 5 processor or above is recommended.
- **RAM:** The system should have at least 4 GB of RAM for basic development. However, for smooth development and testing, 8 GB of RAM or higher is preferred.
- **Storage:** A minimum of 100 GB of HDD or SSD storage is required to store the project files, database, and other necessary components. For optimal performance, a 256 GB SSD or larger is recommended.
- **Monitor:** A minimum resolution of 1366x768 is acceptable for basic development. A Full HD (1920x1080) monitor is recommended for a better working experience.
- **Internet Connection:** A basic broadband connection is sufficient for development purposes, but a stable high-speed internet connection is recommended for testing, deployment, and smooth collaboration.

4.2 Software Requirements

The software requirements for developing and deploying **Electro Bazzar** are as follows:

- **Operating System:** The platform can be developed on Windows 10/11, Ubuntu Linux (20.04 or above), or macOS. Any of these operating systems will be sufficient for the development and deployment of the project.
- **Development Tools and Technologies:**
    - **Java Development Kit (JDK):** JDK 17 or above is required to run and develop the Spring Boot application.
    - **Spring Boot:** Spring Boot is used as the backend framework to create REST APIs for the application.

- **Maven:** Maven is the build automation tool used to manage project dependencies and build the application.
- **MySQL:** MySQL (version 8.x) is used as the relational database management system for storing product and user data.
- **Thymeleaf:** Thymeleaf is the server-side templating engine used for rendering dynamic HTML content.
- **HTML5 / CSS3:** HTML5 and CSS3 are used to create the structure and design of the frontend of the website.
- **JavaScript:** JavaScript is used to add interactivity and dynamic behavior to the website.
- **Eclipse / IntelliJ IDEA / VS Code:** These IDEs can be used for the development of the backend and frontend code.
- **Postman (optional):** Postman can be used to test the REST APIs during development.
- **Git & GitHub:** Git is used for version control, and GitHub is used to host the project repository and collaborate with other developers.

4.3 Optional Tools

Some additional tools and libraries that can be used to enhance the functionality of the platform include:

- **Spring Security:** For implementing user authentication and authorization.
- **Docker:** For containerized deployment, especially if scalability and easy deployment are required in production.
- **Bootstrap / Tailwind CSS:** These CSS frameworks can be used for more advanced UI styling and responsiveness.
- **Lombok:** Lombok can be used to reduce boilerplate code in Java, improving code readability and maintenance.

PROJECT FLOW

5.1 Development Methodology

1.Requirement Gathering and Analysis:

- The project begins with gathering requirements from stakeholders, such as the target user base, desired features, and business goals.
- This stage includes conducting market research, identifying user personas, and defining core functionality for the platform.

System Design and Architecture:

- Based on the requirements, a system architecture and design plan are created. This includes designing the database schema, setting up Spring Boot for the backend, and determining the structure for the frontend using HTML, CSS, JavaScript, and Thymeleaf.

Development (Iterative Sprints):

- The core development is carried out in **short, iterative sprints**. Each sprint focuses on delivering a specific feature, such as product browsing, user authentication, or order management.
- Features are developed, tested, and integrated continuously. Regular feedback and collaboration ensure that the system meets both technical and user requirements.

Testing:

- Testing is an ongoing process during each sprint. Functional testing, unit testing, and integration testing are conducted to ensure the platform works as expected.
- Automated tests are implemented to validate the backend, while frontend testing (using tools like **Jest** for JavaScript) ensures UI interactivity.

Deployment:

- At the end of each sprint, the developed features are deployed on a staging environment. The platform is tested in real-world conditions, and final user acceptance testing (UAT) is performed.

2. Literature Review and Feasibility Study

- The **literature review** for the **Electro Bazzar** e-commerce platform focuses on examining existing research, case studies, and technological trends in e-commerce systems.
- **E-commerce Trends:** There is a growing demand for online shopping platforms that offer personalized user experiences, secure payment methods, and mobile responsiveness.
- **Technological Evolution:** Modern e-commerce platforms are increasingly leveraging frameworks like **Spring Boot** for backend development and **Thymeleaf** for rendering dynamic content in Java-based environments.
- **Security Practices:** Ensuring the security of user data is paramount in online shopping. The use of **SSL certificates**, **data encryption**, and **secure payment gateways** is critical for maintaining customer trust.

3. System Design and Architecture

Overview of System Architecture

The architecture of **Electro Bazzar** is built on a **multi-tiered** structure, consisting of the following layers:

1. **Presentation Layer (Frontend):**
    - This is the user-facing layer that interacts directly with customers. It consists of the website's user interface (UI) and handles all user interactions.
    - **Technologies Used:** HTML5, CSS3, JavaScript, **Thymeleaf** (for server-side rendering).
    - This layer handles:
        - Product display and filtering.

        - User authentication and account management.
        - Cart management and checkout process.
        - Mobile responsiveness and interactivity.

2. **Business Logic Layer (Backend):**
    - The backend layer handles the core business logic of the application. It processes requests from the frontend, interacts with the database, and returns appropriate responses.
    - **Technologies Used: Spring Boot**, **Spring Security**, **Spring Data JPA**, **MySQL**.
    - This layer includes:
        - API endpoints for handling product browsing, order processing, and customer management.
        - User authentication and authorization using **JWT** tokens.
        - Integration with third-party services for payment processing.
3. **Data Layer (Database):**
    - The data layer is responsible for managing persistent data and ensuring data consistency across the application. It handles CRUD operations and ensures the integrity of product, user, and order data.
    - **Technologies Used: MySQL**.

4. System Development

System development for **Electro Bazzar** involves the planning, designing, building, testing, and deployment of the platform. This section will describe the development process from requirements gathering to system deployment, focusing on how the platform is developed using various technologies and development methodologies.

5. Development Methodology

Electro Bazzar adopts the **Agile** methodology for system development. The Agile approach emphasizes iterative development, collaboration, and flexibility to accommodate changes as the project progresses. This methodology allows for continuous feedback from stakeholders and users, ensuring the platform meets the expected requirements.

Key phases in the development cycle include:

- **Sprint Planning:** Every development cycle is broken into sprints (typically 2-4 weeks). Each sprint is aimed at completing a set of tasks or features.
- **Daily Standups:** Regular meetings are held to discuss progress, blockers, and any changes needed.
- **Review and Retrospective:** At the end of each sprint, a review is conducted with stakeholders to ensure the platform meets requirements, followed by a retrospective to improve future sprints.

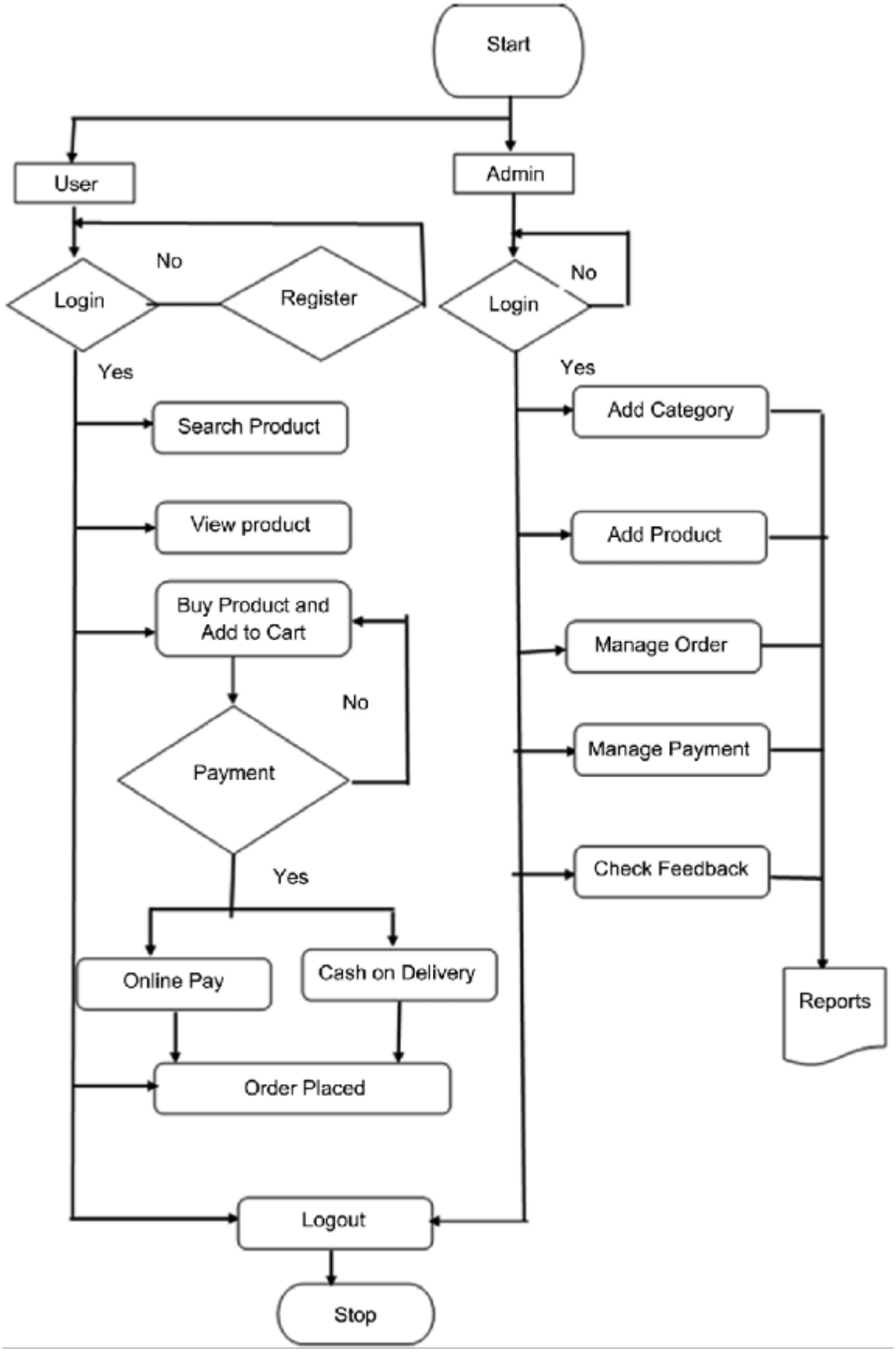
6. Deployment

- **Deploy**: Host on a server (e.g.,Render).
- **CI/CD**: Set up continuous integration and deployment pipelines.
- **Security**: Configure domain, SSL, and security settings.

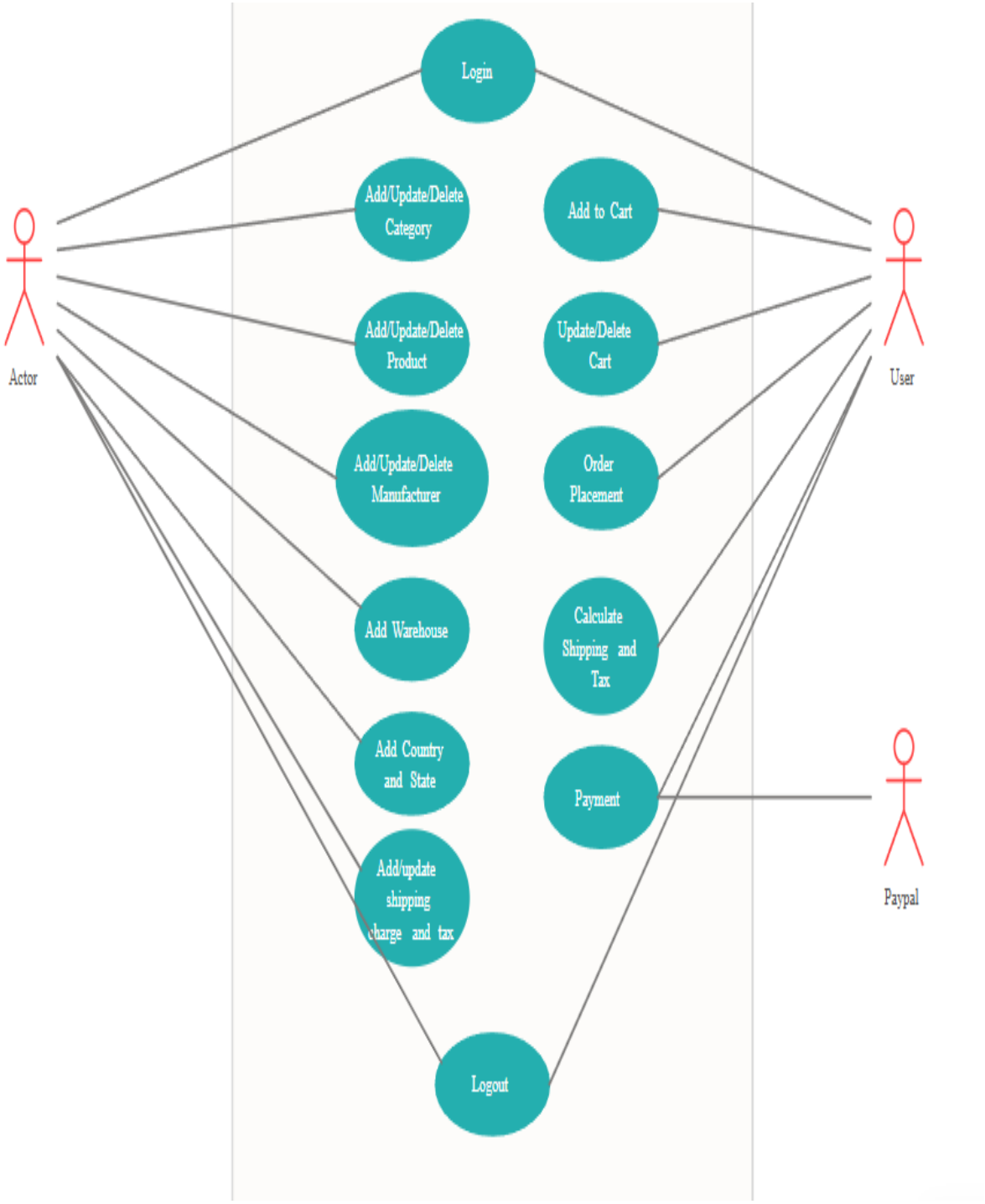
7. Maintenance and Updates

- **Monitor**: Track system performance and resolve issues.
- **Updates**: Regularly add new features or enhancements.
- **Security**: Apply updates to Django and dependencies.

5.2 Data flow Diagram



5.2 Usecase Diagram



PROJECT OUTCOME

6.1 System Features

- Secure Login/Signup:
  The system ensures a secure login/signup process, safeguarding user data and personal information. By implementing robust authentication mechanisms, it ensures that only authorized users (customers and vendors) can access their accounts, enhancing security and protecting privacy.
- Product Listings and Categories:
  Electro Bazzar organizes electronic products into dynamic categories such as mobile phones, laptops, accessories, and home appliances. Customers can easily browse through various product categories, filter based on their preferences, and view detailed product descriptions, helping them make informed purchasing decisions.
- Vendor Profiles and Product Listings:
  Vendors have personalized profiles where they can showcase their products, list prices, and manage stock. Each vendor's profile includes their business details, contact information, and ratings from customers, enhancing transparency and fostering trust between vendors and buyers.
- Shopping Cart and Checkout Process:
  The system includes a seamless shopping cart feature, allowing users to add multiple products before proceeding to checkout. The checkout process is simple, secure, and integrated with reliable payment gateways, ensuring smooth transactions and order processing.

6.2 User Interface Overview

- Intuitive, user-friendly interface with easy navigation.
- Visually appealing design to enhance the user experience.

Home page:

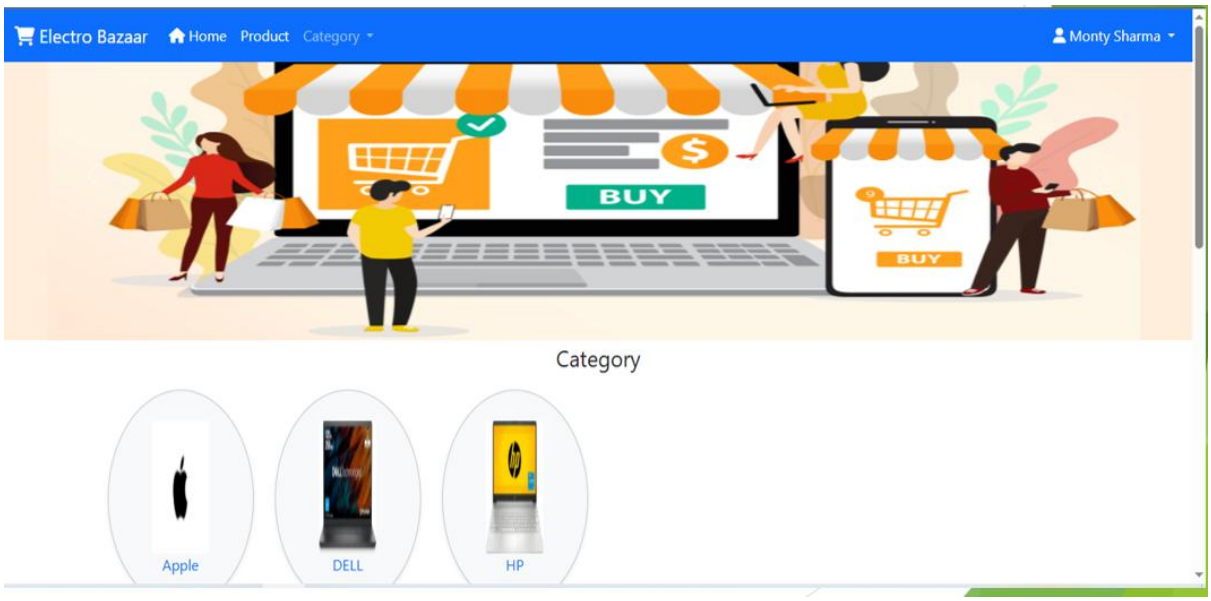


Figure –6.1

Signup page:

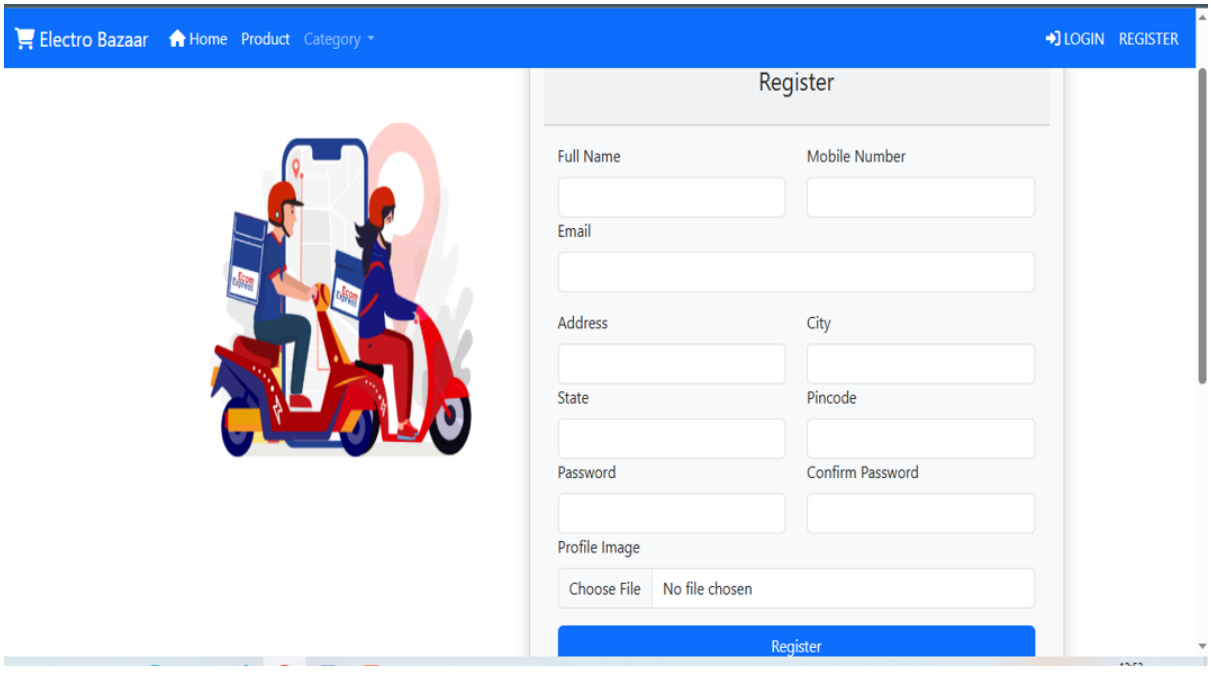


Figure - 6.2

Login page:

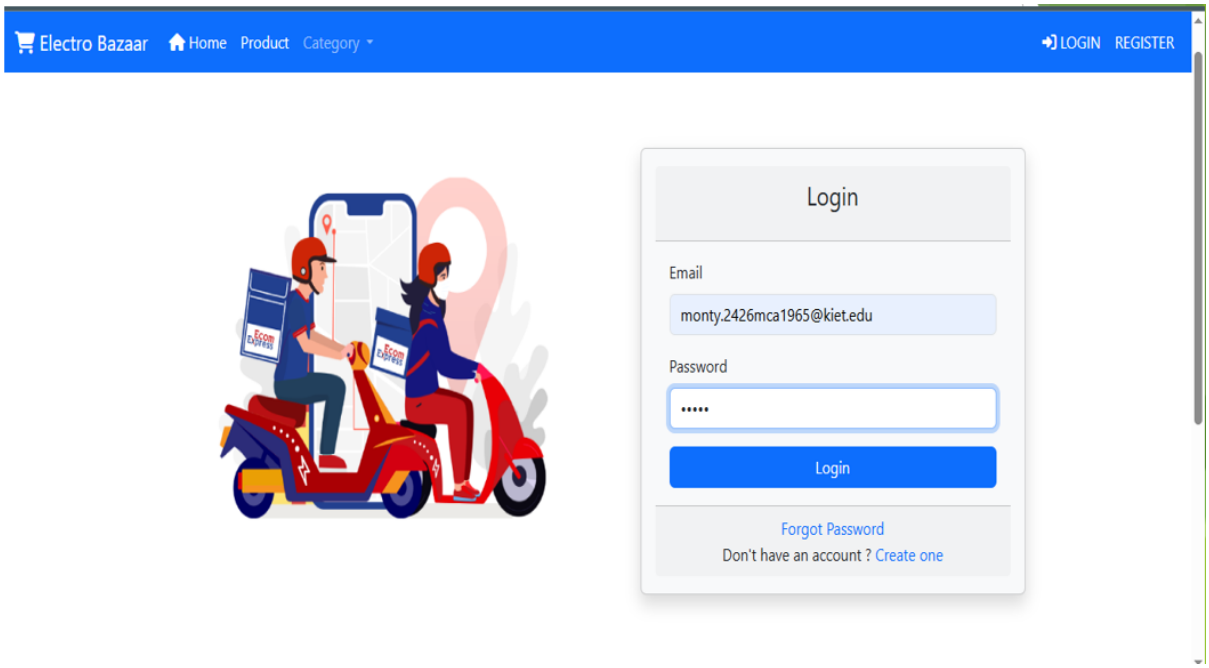


Figure – 6.3

Admin Dashboard:

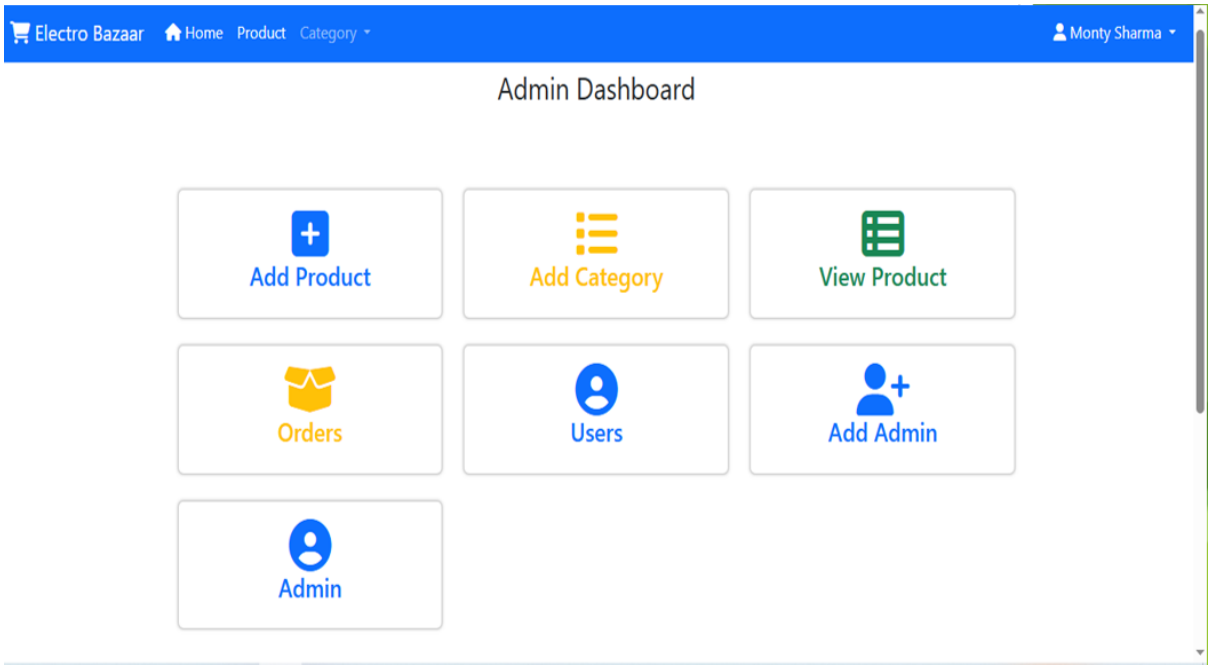


Figure – 6.4

User Profile Page :

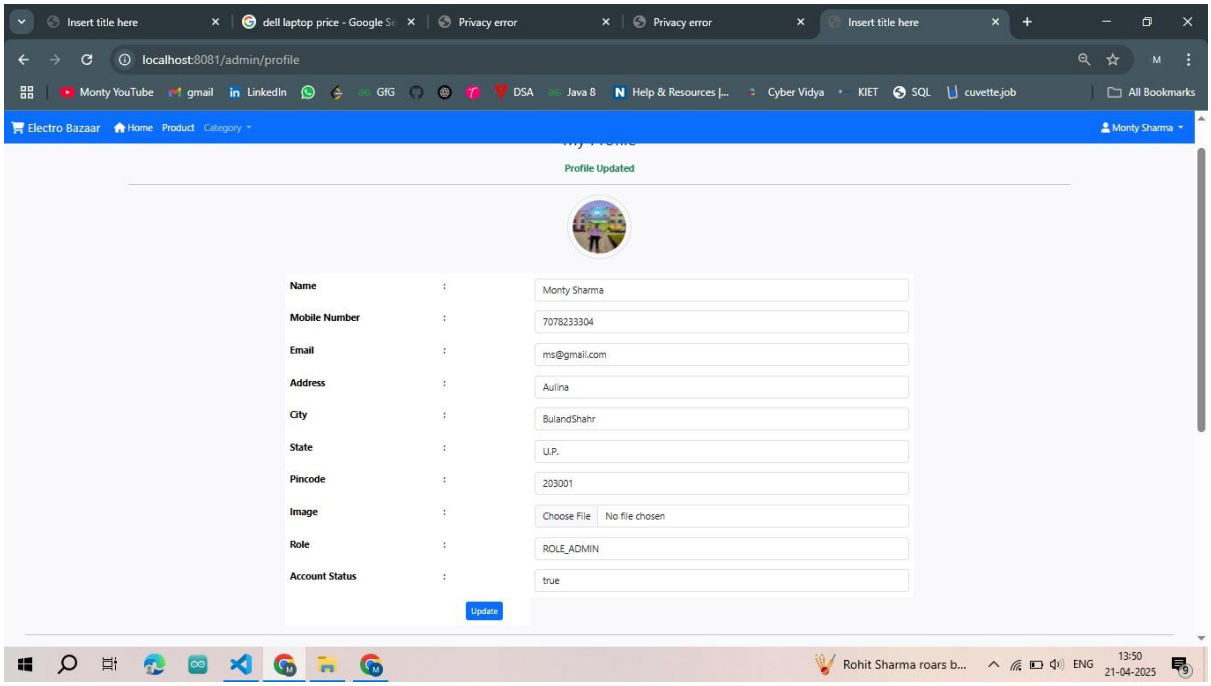


Figure –6.5

Add Product Page:

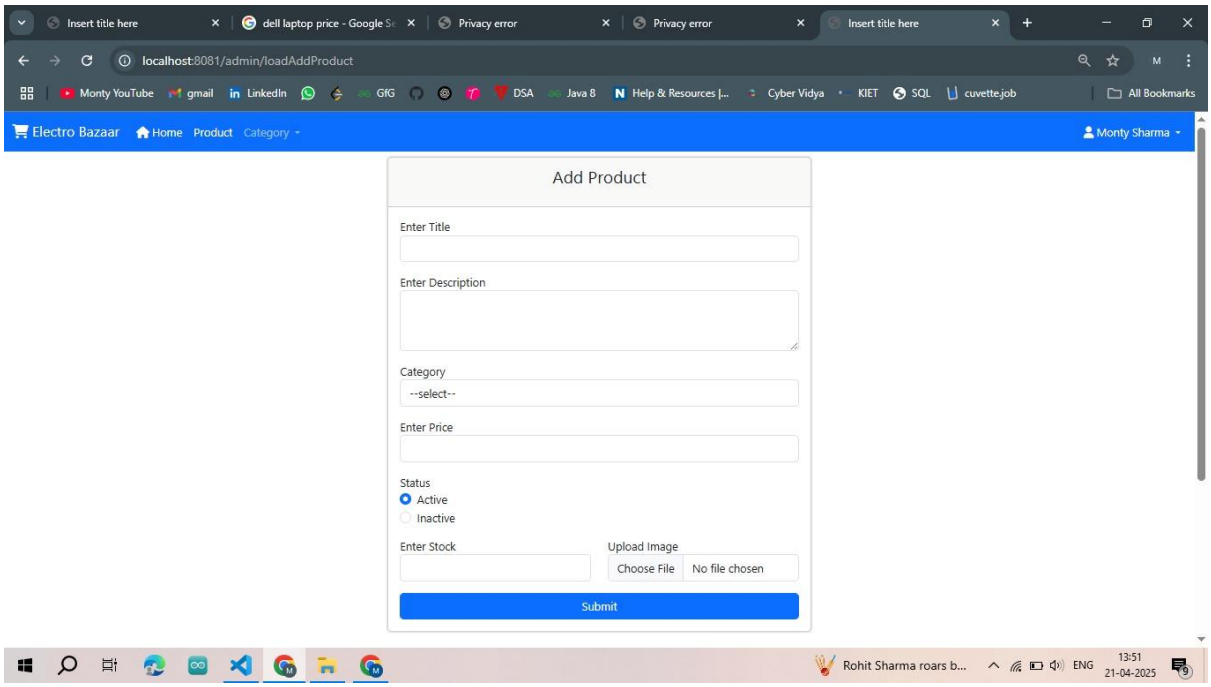


Figure - 6.6

Cart Page:

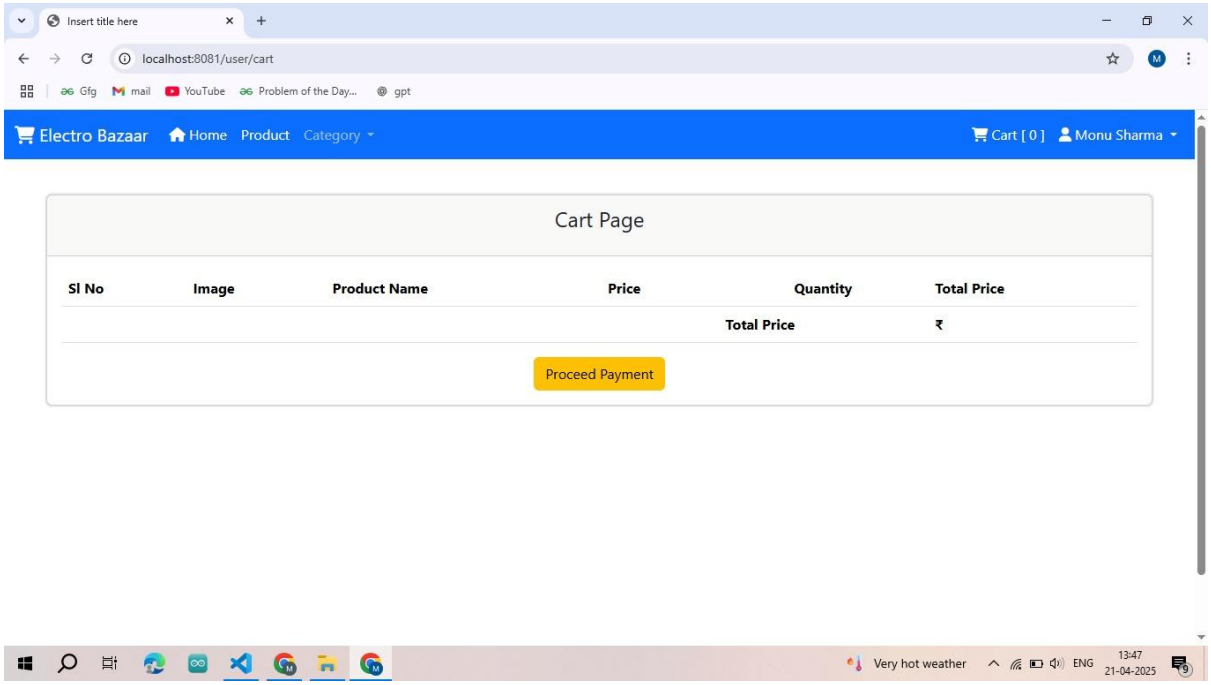


Figure - 6.7

My Profile Page:

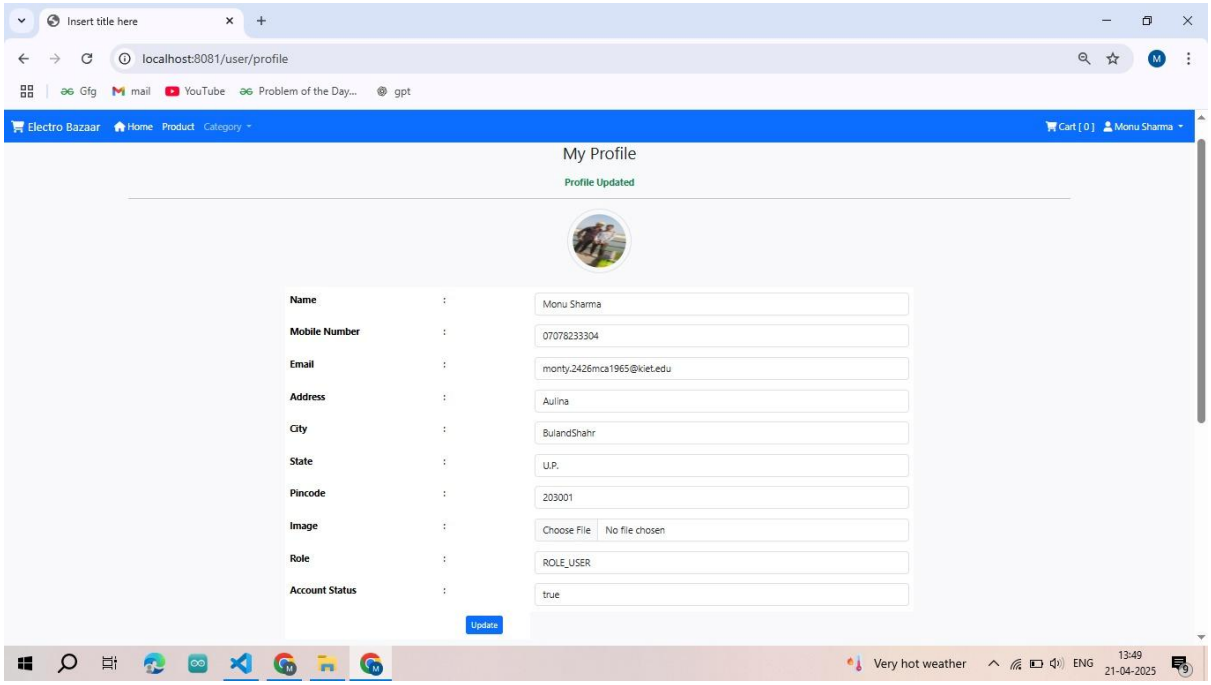


Figure - 6.8

Add Admin Page:

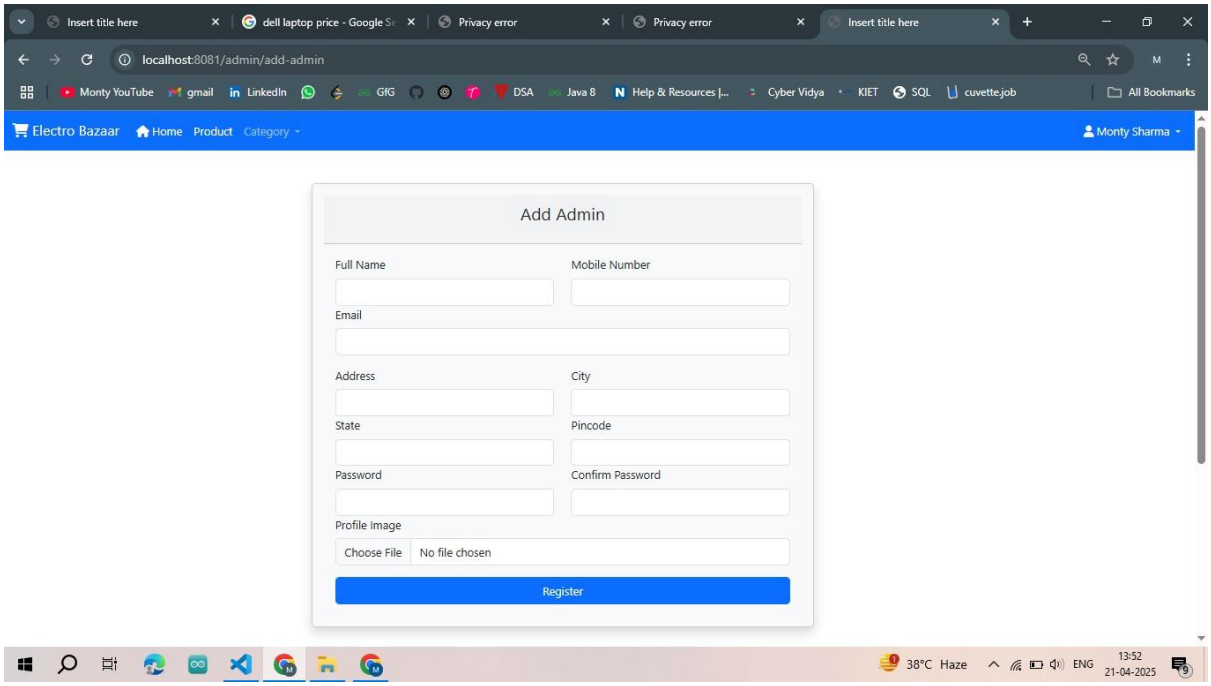


Figure –6.9

Admin Page:

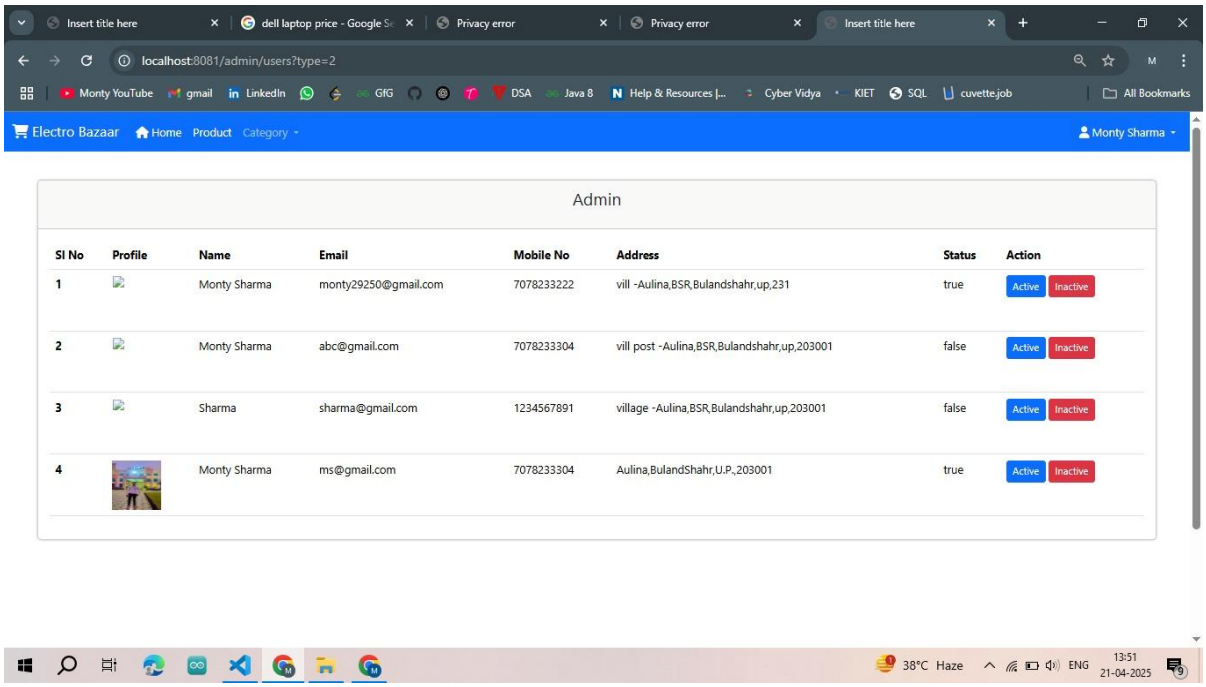


Figure –6.10

User Page:

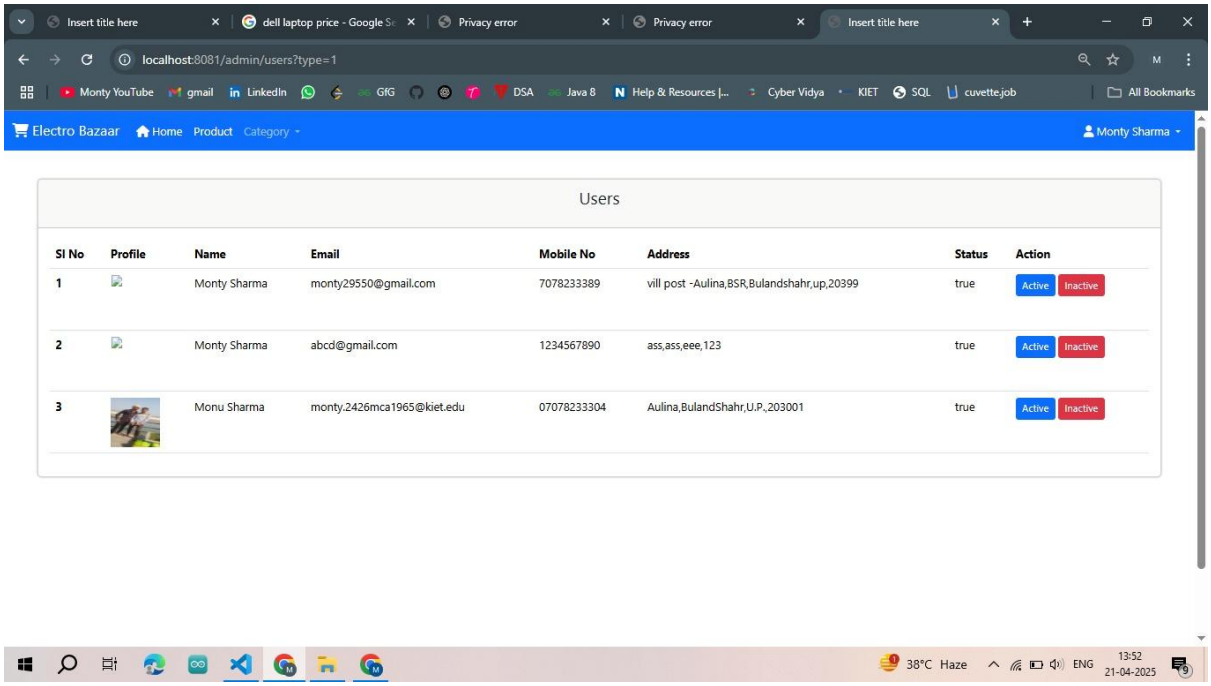


Figure – 6.11

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