Cart Shopping System

Minor Project-II

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Submitted in partial fulfilment of the requirement of the degree of

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by

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CERTIFICATE

This is to certify that the Project Synopsis entitled, "**CART SHOPPING SYSTEM**" submitted by " **,Anushka Rana(2301730115) , Samya Sharma (2301730083),Dhruv Tyagi (2301730122) and Namrata Mahandru (201730084)** to **K.R Mangalam University, Gurugram, India,** is a record of bonafide project work carried out by them under my supervision and guidance and is worthy of consideration for the partial fulfilment of the degree of **Bachelor of Technology** in **Computer Science and Engineering** of the University.

Type of Project:

Industry Problem

Signature of Internal supervisor
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Faculty

Signature of Project Coordinator
Dr. Vandna Batra

Date: 29th April 2025

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ABSTRACT

The bustling shopping complex in our neighbourhood serves as a vital hub for residents, but its growing popularity has created significant challenges in managing the billing process efficiently, particularly during peak hours. To address this issue, we propose the development of an e-commerce website or mobile application designed to streamline shopping and billing. This solution would allow customers to browse products, add items to a virtual cart, and complete transactions seamlessly online or through self-service kiosks within the complex. The application could incorporate features such as real-time inventory tracking, digital payment options, personalized offers, and convenient order pick-up or delivery services. By reducing reliance on traditional counter-based billing and minimizing queues, this system aims to enhance customer satisfaction while improving operational efficiency and productivity. This innovative approach not only resolves the immediate problem of billing congestion but also lays the foundation for a modernized, customer-centric retail experience.

KEYWORDS: E-commerce platform, Real-time inventory tracking, Customer satisfaction, Billing efficiency

Chapter 1
Introduction

1. Background of the project

The growing congestion at our neighbourhood whole sale complex, especially during checkout, has resulted in long queues, billing errors, and dissatisfied customers. A significant factor contributing to this issue is the reliance on manual billing. To tackle this challenge, we propose developing an e-commerce website or mobile app that will allow customers to browse products, add items to their cart, and complete transactions online. This digital approach will minimize wait times, improve operational efficiency, and elevate the shopping experience.

One of the core features of this platform is **real-time inventory tracking**, ensuring customers have accurate product availability while helping store staff manage stock efficiently. Additionally, an **automated billing system** will generate digital invoices, reducing human errors and eliminating the need for manual calculations.

To further streamline in-store purchases, the platform will incorporate **QR code-based self-checkout**. Shoppers can simply scan their items and make payments directly from their smartphones, bypassing traditional checkout lines altogether. For added convenience, the system will support multiple payment methods, including UPI, credit/debit cards, and digital wallets.

Beyond checkout, the platform will introduce **flexible order fulfilment options**. Customers can choose between in-store pickup at designated counters or home delivery, making shopping more adaptable to their needs.

The user interface will be intuitive and accessible for both customers and store personnel. Personal accounts will allow users to track orders, save preferred products, and receive personalized recommendations. Robust security measures, including encryption and secure payment gateways, will be in place to safeguard customer data.

2. MOTIVATION

The idea for developing an e-commerce application to tackle the billing challenges in our neighbourhood's wholesale complex was sparked by the seamless, high-speed transaction systems used by leading fast-food giants like KFC and McDonald's. These brands have perfected the art of managing large customer volumes efficiently, even during rush hours, thanks to their user-friendly billing interfaces that allow staff to swiftly process orders, customize selections, and complete payments with minimal errors. Inspired by this streamlined approach, we saw an opportunity to apply a similar model to the shopping complex, where long queues and billing confusion are frequent issues. Our proposed platform aims to bring that same level of efficiency to the retail environment, offering real-time billing, inventory updates, and simplified customer management. By adopting this digital solution, we not only enhance the overall shopping experience but also ease the operational load on store personnel, creating a faster, smarter, and more customer-focused system tailored to the needs of a busy marketplace.

Chapter 2
LITERATURE REVIEW

1. Review of existing literature

The rapid expansion of e-commerce and digital payment systems has revolutionized traditional retail operations, offering businesses and consumers a more efficient and convenient shopping experience. In small shopping complexes, where overcrowding and inefficient billing processes often lead to customer dissatisfaction and operational delays, adopting an e-commerce platform presents a strategic solution.

Research indicates that digital transformation in retail not only optimizes billing operations but also enhances the customer experience by minimizing wait times and providing seamless payment options. Key elements of a successful transition include:

- **User-friendly interfaces** to improve accessibility
- **Secure payment gateways** to ensure trust and security
- **Integrated inventory management systems** for real-time stock updates

Studies have shown that digital platforms not only streamline billing operations but also enhance customer experience by reducing wait times and providing seamless payment options. Research on digital transformation in retail highlights the importance of adopting user-friendly interfaces, secure payment gateways, and integrated inventory management systems to optimize business processes.

Incorporating artificial intelligence and machine learning further enhances these systems by enabling personalization and predictive analytics, which allow businesses to anticipate customer needs and provide tailored recommendations. Case studies of similar implementations in small and medium-sized retail enterprises demonstrate notable improvements in both operational efficiency and customer satisfaction, positioning the transition to e-commerce as a strategic solution to address overcrowding and billing challenges in small shopping complex

2. GAP ANALYSIS

Current Challenges:

- **Manual Billing – Leads to long queues, delays, and transaction errors.**
- **No Online Presence – Customers must visit the store for every purchase.**
- **Limited Payment Options – No digital payments, increasing cash dependency.**
- **No Self-Checkout or Order Scheduling – Reduces customer convenience.**
- **No Delivery or Pickup Services – Adds to in-store congestion.**
- **Lack of Data Analytics – Inefficient stock management and marketing strategies.**

Proposed Solution:

- **Develop an e-commerce platform for seamless online orders.**
- **Implement digital payment options to enhance transaction convenience.**
- **Introduce automated billing for accuracy and efficiency.**
- **Enable self-checkout with QR code scanning for faster in-store payments.**
- **Offer order pickup and home delivery to improve flexibility.**
- **Utilize data analytics for sales tracking, stock optimization, and targeted marketing.**

PROBLEM STATEMENT

In our neighborhood, the bustling wholesale complex frequently experiences heavy crowding during peak hours, leading to delays, inefficiencies, and frequent errors caused by its outdated manual billing system. These issues result in long queues and growing customer frustration, ultimately diminishing the overall shopping experience.

The current process struggles to keep pace with high transaction volumes, making the need for a more efficient system increasingly urgent. To address this, we propose the development of a customized e-commerce application designed specifically for the complex's unique needs. This platform would simplify and modernize the billing process by incorporating online ordering, digital payment options, and a self-checkout feature—dramatically reducing wait times and enhancing both operational efficiency and customer satisfaction.

OBJECTIVES

1. To develop a seamless and efficient digital billing system to reduce long queues and enhance the checkout experience for customers.
2. To develop a user-friendly interface for store owners to manage incoming orders, track deliveries, and update product availability efficiently.
3. To implement an inventory management system to track stock levels in real time, preventing overstocking or shortages.
4. To integrate multiple payment gateways (UPI, debit/credit cards, digital wallets) to facilitate fast and secure transactions.
5. Design a scalable solution that can accommodate more stores and customers in the future as the business expands.

The objective is to implement an e-commerce solution for the shopping complex will revolutionize operations by streamlining billing, minimizing in-store congestion, and enhancing overall customer convenience. The integration of digital payment options, automated inventory management, real-time order tracking, and local delivery services will boost efficiency while ensuring a smooth shopping experience.

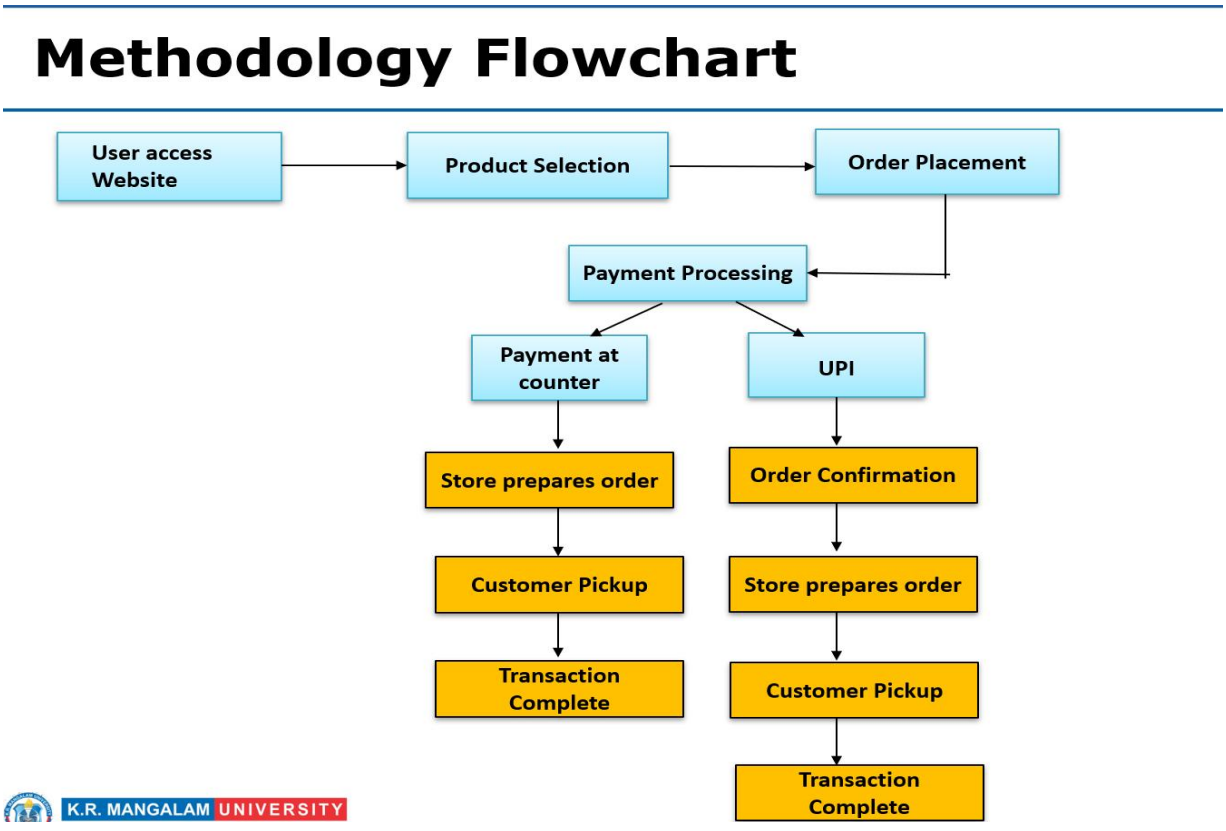
CHAPTER 3: METHODOLOGY

To ensure an effective solution, a survey or interview with the shopping complex owner was conducted to understand billing inefficiencies, such as long queues, manual errors, and inventory mismanagement. The scope of the e-commerce platform will be defined, covering essential features like product listings, cart management, payment integration, and order tracking.

After collecting the data, we sorted it according to the needs of our application. For the frontend we used HTML and JavaScript (React.js).

For database we used MySQL for product and order management.

For backend we will use Node.js with Express.js



The image displays the process flow for an e-commerce order system, likely tailored for a retail or wholesale setup. It represents a step-by-step breakdown of the user journey from accessing the website to completing the transaction, with two distinct payment paths: **counter payment** and **UPI**

- ## Steps in the Process (User Interface) :

  1) User Access Website

  The customer initiates the process by visiting the e-commerce website.

  2) Product Selection

  The customer browses and selects desired products.

  3) Order Placement

  After selecting the products, the customer places the order.

  4) Payment Processing

  Once the order is placed, the system moves to payment handling. Here, two options are available:

  - **Payment at Counter**
  - **UPI (Digital Payment Method**

- ## Store Interface:

  1) After opting to pay at the counter / UPI , the store begins preparing the customer's order.

  2) The customer arrives at the store, makes the payment at the counter, and collects the order.

  3) The process ends upon successful order pickup and payment.

Details of tools, software, and equipment utilized.

1. For this project, we have used various latest technologies which will be evaluated in this chapter with every detail of why it is used.

2. For front-end development, **HTML, CSS, and JavaScript** will be utilized to design a responsive and visually appealing interface. To enhance interactivity and performance, frameworks such as **React.js.**

   For the backend, our development strategy includes leveraging Node.js / SQL for robust server-side logic. To facilitate seamless API integration, we will utilize Express.js for creating RESTful APIs.

   For data storage, we plan to use a structured database like MySQL to efficiently manage product, user, and transaction data.

   To integrate secure payment options, APIs like Razorpay, PayPal, will be used.

   Reasons for Selecting this language:

   1. Short and Concise Language.
   2. Easy to Learn and use.
   3. Good Technical support over Internet
   4. Many Packages for different tasks.
   5. Run on Any Platform.
   6. Modern and OOP language

Chapter 4

Implementation

1. Project Overview

Baskit is a modern and user-friendly online ration and general store built using React.js. It mimics the functionality of a self-checkout system like McDonald's to reduce crowding at counters and streamline the buying process. Users can browse categories, search for products, add items to their cart based on quantity and pricing, and choose from multiple payment options like GPay, PhonePe, Paytm, and Cash at Counter.

2. Key Features Implemented

Category Filtering

A sidebar lists categories like:

- Groceries
- Dairy & Products
- Bakery & Breads
- Tea & Coffee, etc.

- Clicking a category filters items in the main product display.

Search Functionality

- A search bar at the top allows users to filter items by name.
- It updates the product list live as the user types.

Item Display with Quantity & Price Selector

- Each product card shows:
  - An image
  - Name
  - A dropdown for selecting quantity (e.g., 1kg, 2kg)
  - Dynamic price based on quantity
  - "Add to Cart" button

Cart Functionality

- Items added to the cart are stored using React useState or optionally useContext.

- Cart calculates total price.
- Quantity-based addition ensures dynamic pricing is maintained.

Payment Integration

- A PaymentMethod component allows users to choose:
  - GPay
  - PhonePe
  - Paytm
  - Cash at Counter
- If “Cash at Counter” is selected, the scanner option is hidden.
- For other methods, a QR code scanner component appears (simulated for now).

Responsive & Modern UI

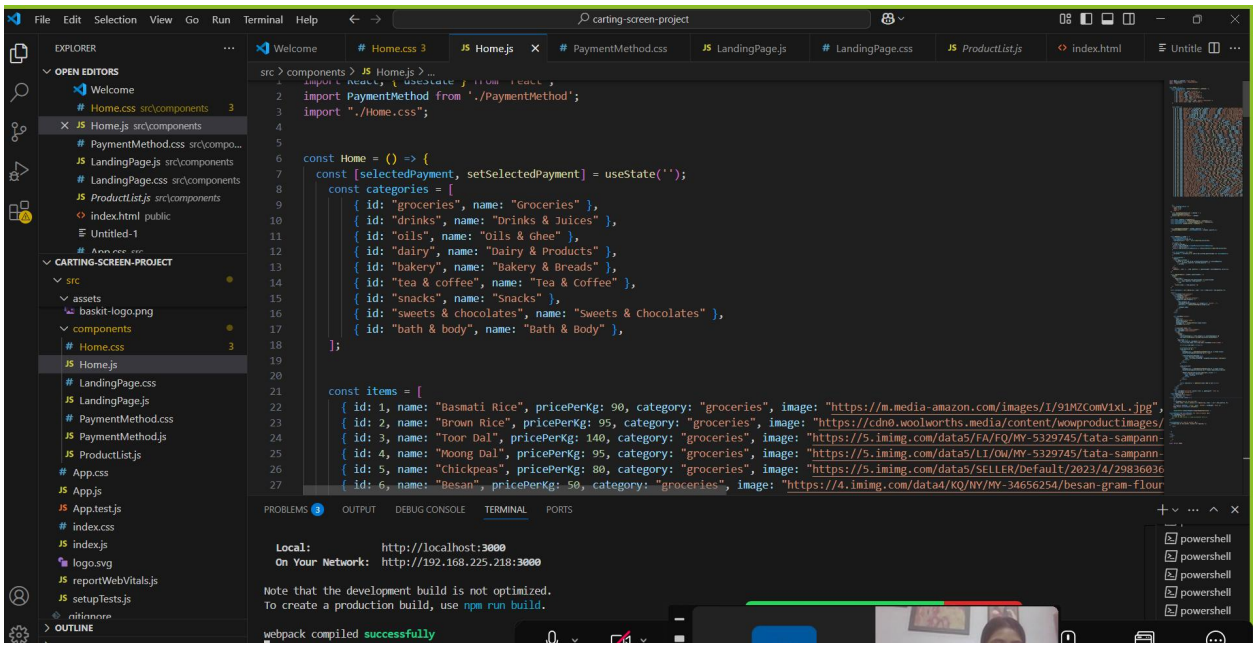
- Styled with modern colors (yellow/orange contrast as per your latest update).
- Product cards are shadowed and interactive.
- Sidebar is fixed and clean.

3. File & Component Structure

Located in src/components/:

Component File	Purpose
Home.js	Main screen with category sidebar, search, product list, and filtering.
ProductList.js	Renders products based on category/search filter.
Cart.js	Displays items in cart and total price.
CartScreen.js	Main cart interface with checkout button.
OrderSummary.js	Shows item summary before confirming order.
CheckoutPage.js	Final page before payment.
PaymentMethod.js	Lets user select payment type and handles logic for scanner visibility.
Home.css	Styles everything: sidebar, product cards, buttons, etc.

These are the codes



4. State Management

- React's useState is used for:
  - Selected category
  - Filtered product list
  - Cart contents
  - Total price
  - Selected payment method
- useEffect updates the UI when search/filter values change.

5. Styling (Theme Update)

- Moved from dark blue theme to light yellow-orange for better readability and a more "grocery shop" vibe.
- CSS organized for sidebar, buttons, cards, and hover effects.

6. Challenges Faced

- Conditional rendering of scanner based on payment method
- Keeping pricing dynamic with quantity dropdown
- Consistent styling across multiple component levels
- Search and category filter working simultaneously

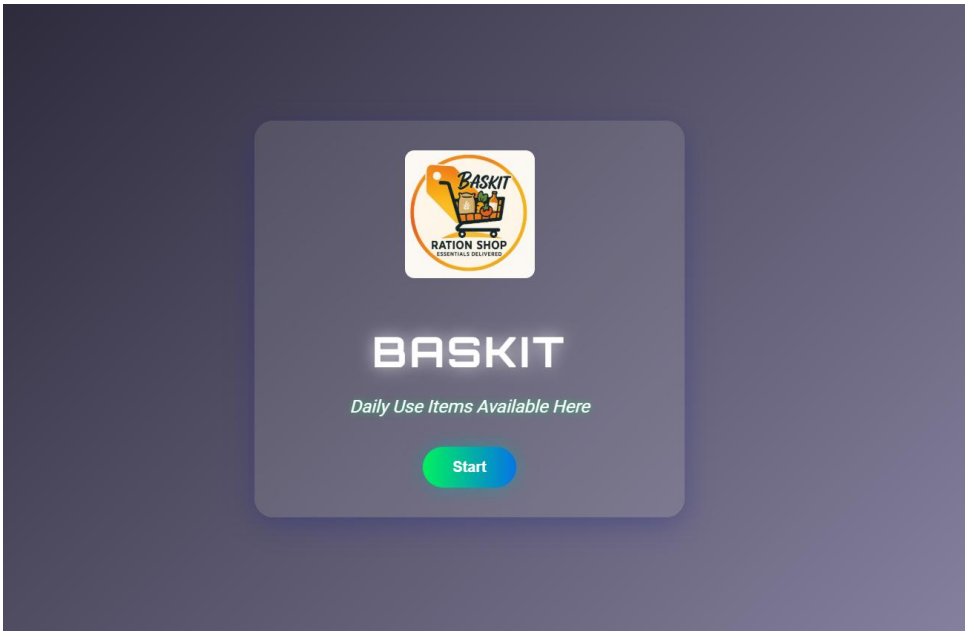
7. Possible Future Enhancements

- Login and authentication
- Persistent cart using localStorage
- Admin panel to add/edit products
- Backend API integration with database
- Real UPI/QR Code integration using Razorpay or Firebase

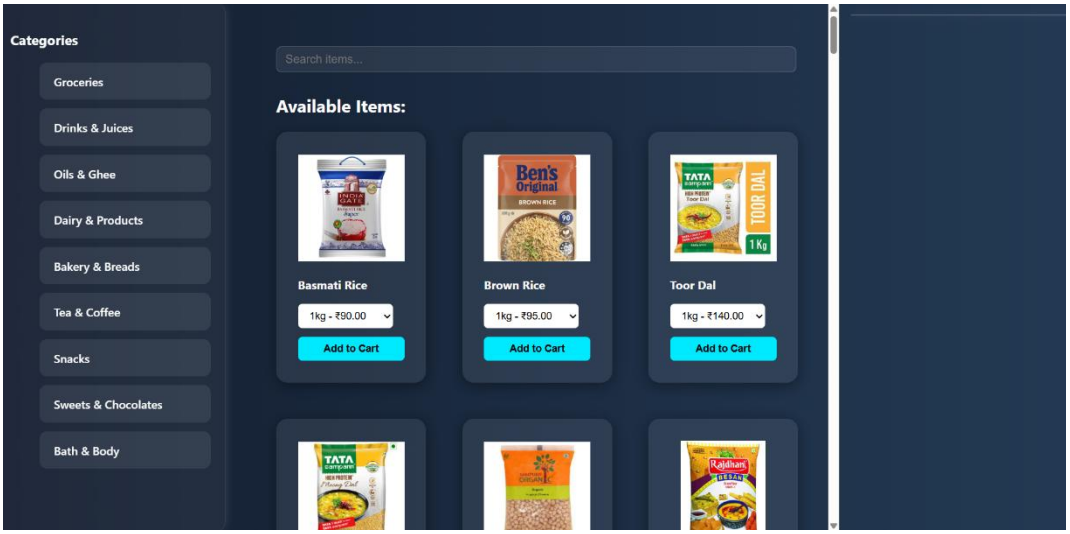
Chapter 5

RESULTS AND DISCUSSIONS

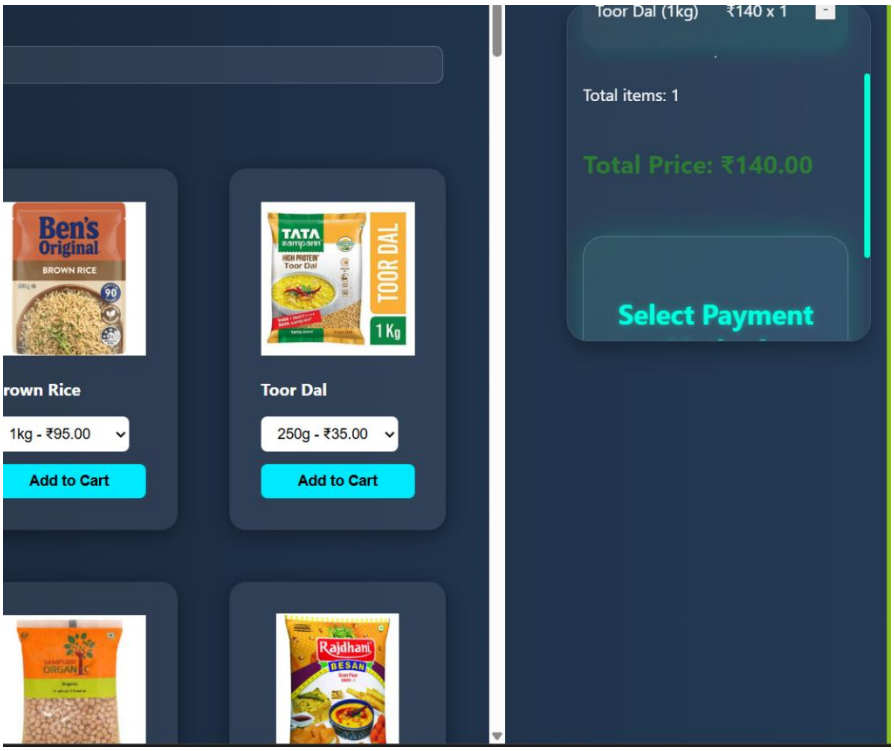
1. Home page



2. User page



3. Cart page


Ben's Original
BROWN RICE
rown Rice
1kg - ₹95.00
Add to Cart
TATA
TOOR DAL
1 Kg
Toor Dal
250g - ₹35.00
Add to Cart
Rajdhani
BESAN
Toor Dal (1kg) ₹140 x 1
Total items: 1
Total Price: ₹140.00
Select Payment

Chapter 6

CONCLUSION

The Cart Shopping System project successfully addresses the pressing challenges faced by wholesale ration shops, such as overcrowding, manual billing inefficiencies, and long customer wait times. By digitizing the entire shopping and billing process, the system provides a modern, efficient, and customer-friendly solution that is both scalable and practical for real-world deployment.

The project incorporates key technologies like HTML, CSS, JavaScript, Node.js, and Razorpay to deliver a seamless user experience, secure transactions, and real-time order management. The inclusion of features like digital cart handling, multi-payment options, and staff dashboards has significantly improved the shopping process and reduced operational workload.

Through careful planning, development, and testing, this project has demonstrated the potential to be deployed in actual retail environments. It not only benefits customers with quicker checkouts and digital convenience but also empowers shop owners with better control over orders and inventory.

In conclusion, the Cart Shopping System lays a strong foundation for further development, including future enhancements like mobile app support, multi-store management, and personalized customer experiences, making it a promising solution for modernizing traditional retail operations.

REFERENCES

1. E-Commerce 2023: Business, Technology, Society by Kenneth C. Laudon & Carol Guercio Traver

E-Commerce 2023: Business, Technology, Society

2. The Everything Store: Jeff Bezos and the Age of Amazon by Brad Stone

The Everything Store

3. Shopify - E-Commerce Resources

- Shopify Blog

4. BigCommerce - Retail Analytics and Data-Driven Marketing

- BigCommerce Blog