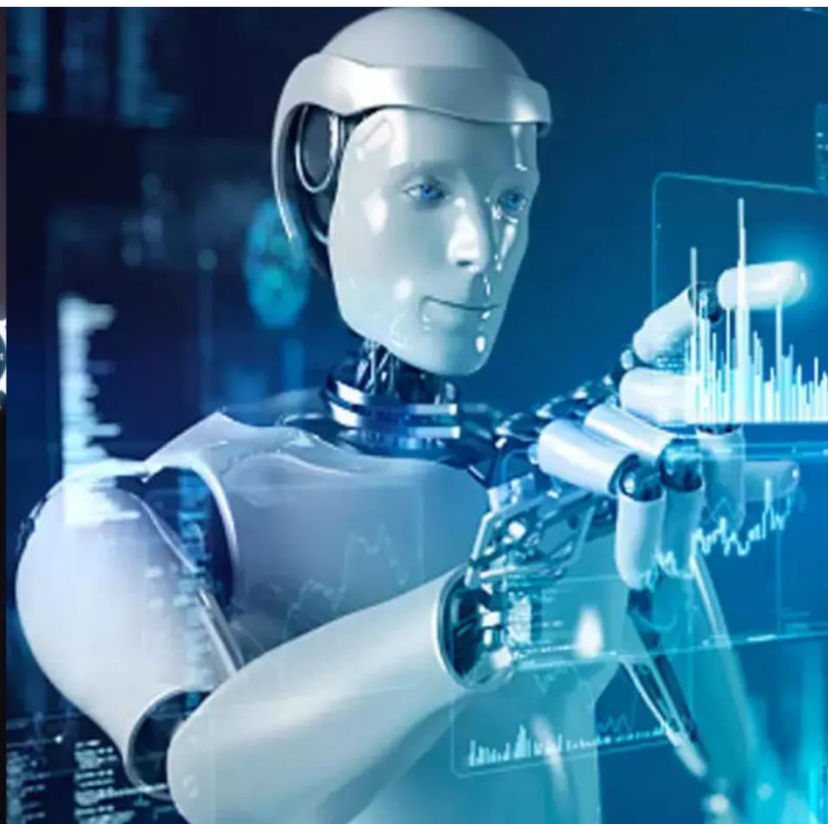




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E commerce Telegram Bot

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ABSTRACT: The E-commerce Telegram Bot for Food Consumers is an innovative solution aimed at transforming the way people order food by leveraging the Telegram messaging platform. With the increasing popularity of messaging apps and the demand for quick, easy-to-use food delivery services, this bot offers a seamless integration of e-commerce functionality into a familiar chat-based environment. Designed with user convenience in mind, the bot enables food consumers to browse menu, view item details, images, and prices, and customize their orders—all without leaving the Telegram app. Users can select items, adjust quantities, and receive order summaries before finalizing their purchase. Payment can be completed securely through integrated gateways. The backend, built using robust technologies like Node.js and a MongoDB, ensures efficient data handling, scalability, and reliability. The E-commerce Telegram Bot for Food Consumers brings together the simplicity of messaging apps and the power of modern e-commerce systems to create a fast, efficient, and user-friendly food ordering experience. It is especially suited for urban users looking for convenience, and anyone who prefers a chat-based interface over traditional mobile applications or websites.

KEYWORDS: E-commerce Telegram Bot, Telegram Mini App, E-Commerce, Telegram Bot, React, Node.js, MongoDB, Telegraf, Chatbot.

I. INTRODUCTION

The rapid advancement of digital technology has significantly transformed the way consumers interact with businesses, particularly in the food and hospitality sector. With the increasing demand for speed, convenience, and accessibility, food ordering systems have shifted from traditional phone calls and dine-ins to mobile apps and online platforms. However, despite the rise of these digital solutions, many users still face challenges such as downloading bulky apps, navigating complex interfaces, or dealing with slow-loading websites. To solve this problem, messaging platforms such as Telegram have emerged as a powerful medium for delivering services through automated bots, offering a lightweight and accessible alternative for consumers. This project, titled "E-commerce Telegram Bot", focuses on creating a smart, user-friendly food ordering system within the Telegram messaging app. Here, users through the process of browsing menus, selecting items, customizing orders and making payments—all through simple chat commands or button-based interactions. This eliminates the need for separate apps or web portals, providing a frictionless experience for the end user. The familiarity of Telegram ensures that users of all ages and backgrounds can quickly adapt to the system without a learning curve. By leveraging Telegram's widespread availability and chat-based interface, this project presents a scalable, cost-effective solution for digitizing food ordering services. It is especially valuable for small restaurants, cloud kitchens, and local food vendors seeking to reach customers without the overhead of traditional app development. Ultimately, the E-commerce Telegram Bot offers a blend of modern convenience and intelligent automation, revolutionizing the way food is ordered and delivered in today's connected world.

II. LITERATURE SURVEY

The development of our E-commerce Telegram Bot was guided by multiple research studies that emphasized usability, automation, and secure system architecture. Insights from [1] "A Study of Consumer Adoption of Chatbot in E-Commerce Sector in India" helped us focus on user-friendly design, privacy, and personalized interactions to enhance adoption. The [2] "Survey on E-Commerce Telegram Chatbot" provided a functional blueprint for integrating product listings, order management, and payment gateways within Telegram, enabling smooth end-to-end transactions.

Building on [3] “Developing Telegram Bots for General Store Application,” we incorporated automated order confirmations, interactive navigation, and real-time updates to streamline customer engagement. The backend was powered by Node.js, inspired by [4] “Role of Node.js in Modern Web Application Development,” ensuring scalability and efficient request handling. A ReactJS-based admin panel, guided by [5] “ReactJS: A Modern Web Development Framework,” allowed intuitive management of products and orders, while MongoDB, as discussed in [6] “Enhancing Data Management with MongoDB and its REST API,” provided a flexible and secure data storage system with features like authentication and real-time CRUD operations. Together, these studies shaped a secure, efficient, and user-centric Telegram-based e-commerce solution.

III. METHODOLOGY

The E-commerce Telegram Bot uses an intelligent and structured approach to manage user interactions, automate shopping processes, and enhance the overall buying experience. It integrates various components such as product browsing, order management, and payment handling within a single Telegram chat interface. Developing an E-commerce Telegram Bot involves several key stages to ensure smooth functionality and user experience. The first step is to determine the bot’s features, such as product display, shopping cart management, and secure payment processing, along with identifying the target audience and defining system performance requirements to handle multiple users efficiently. In the design phase, the bot’s flow is mapped out, detailing how users interact with it—from browsing products to completing purchases. System components such as the Bot Server, APIs, and databases are also defined, including structured data tables for products, user profiles, and orders. During the development phase, the bot’s logic is coded, integrating it with the e-commerce backend through APIs and connecting payment gateways for transaction handling. The testing phase ensures that the bot correctly processes commands, responds to user inputs, handles errors gracefully, and maintains stability even under heavy user load. Once tested, the deployment phase involves hosting the Bot Server on a suitable platform and registering it with the Telegram Bot API for public access. Finally, the monitoring and maintenance phase focuses on fixing bugs, adding new features, and ensuring consistent uptime and performance monitoring to keep the bot reliable and up to date.

IV. EXPERIMENTAL RESULTS

Fig. 1 displays the food menu which lists all available items (e.g., Pizza, Hot Drinks) with their respective costs and users can add items to the cart by clicking ‘+’ button.

Fig. 2 shows the final order review before checkout, confirming the quantity and individual price of each selected item and users can change the order by going back.

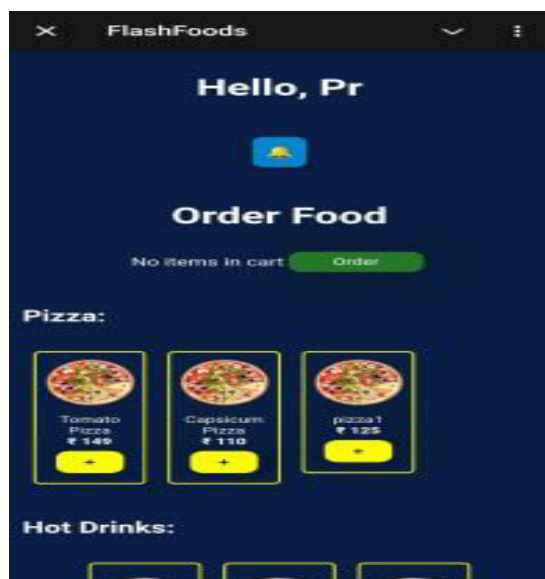


Fig. 1 Food Menu Page

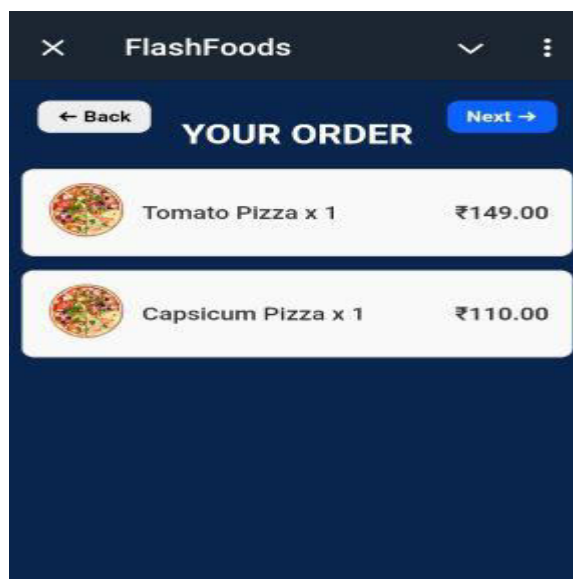


Fig. 2 Cart Management Page

Fig. 3 shows the step that captures all necessary shipping and contact details from the user.

Fig. 4 shows that the user is prompted to select their preferred payment option (UPI or Debit/Credit Card) to complete the transaction.



Fig. 3 Shipping Details Page

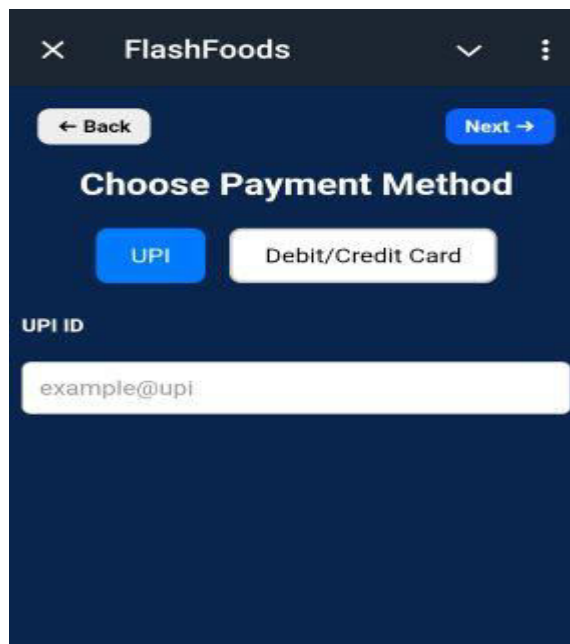


Fig. 4 Payment Method Selection Page

Fig. 5 shows a complete order summary of the transaction after fees are applied. The user can change the Name & Address, Payment Method by clicking the Edit button.

Fig. 6 displays a confirmation message that the users order has been placed successfully.

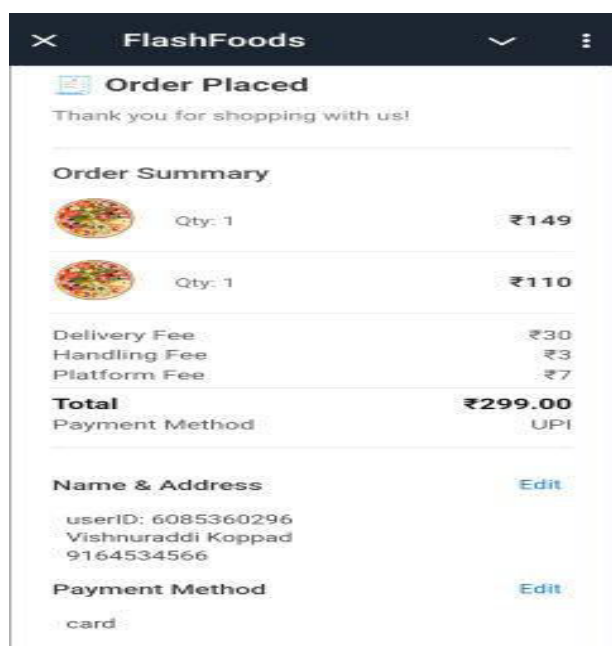


Fig. 5 Final Order Summary and Bill Page

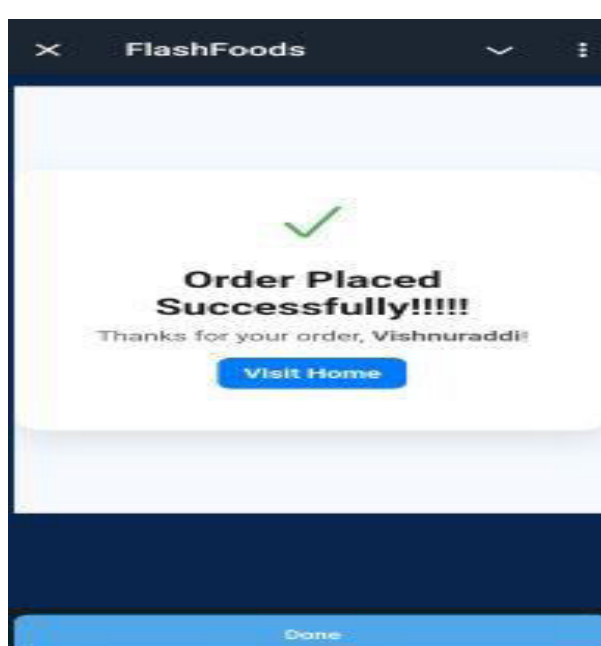


Fig. 6 Order Placement and Success Message Page

Fig. 7 displays the updates regarding the users order. It shows the Order ID and current status.

Fig. 8 shows the customers orders list for Admin, each with a unique Order ID and the current status with order details.

Fig. 9 illustrates an administrative or backend function of the project. It allows a admin to Add Item to the menu by specifying the category, item name, and price.

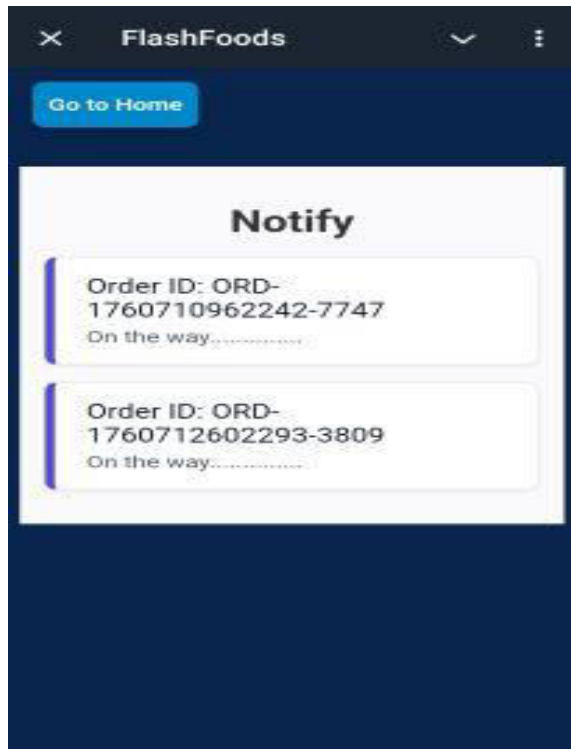


Fig. 7 Notification section with Order ID and Status updates



Fig. 8 Customer Orders List for Admin

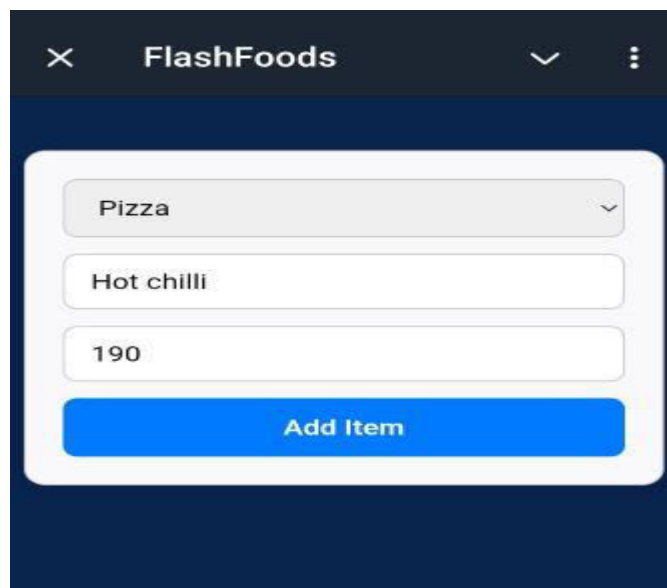


Fig. 9 Admin Menu Management (Add Item) Page

V. CONCLUSION

The E-Commerce Telegram Bot developed using React, Node.js, and MongoDB successfully provides an innovative and user-friendly shopping experience. It merges social interaction and online commerce into a single platform—Telegram. The system ensures secure order management, real-time data synchronization, and effortless shopping for users.

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