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EXPIRY TRACKER WITH NEXT.JS

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Abstract : In today's fast-paced lifestyle, individuals and businesses often overlook product expiration dates, leading to unnecessary wastage, financial loss, and potential health risks. The Expiry Tracker System is designed as a smart and efficient solution to monitor, manage, and notify users about upcoming product expirations. This project focuses on reducing waste and improving inventory management through automated reminders and organized tracking mechanisms. The system allows users to add product details, store expiration dates, and receive alerts before products expire. By integrating a user-friendly interface with structured data management, the Expiry Tracker enhances efficiency in households, pharmacies, grocery stores, and small businesses. The implementation demonstrates how digital tracking can replace manual monitoring methods, ensuring accuracy, reliability, and convenience.

IndexTerms **- Expiry Tracking, Inventory Management, Automated Alerts, Product Expiration Monitoring, Waste Reduction, Digital Tracking System, Smart Inventory, Health Safety.**

I. INTRODUCTION

Managing product expiration dates is a common yet often neglected task in daily life and commercial environments. Many households and businesses rely on manual checking, which increases the chances of missing important expiry information. Expired products can lead to health hazards, especially in the case of food items and medicines, and also contribute significantly to wastage and financial loss.

The Expiry Tracker System was developed to address this problem through automation and digital organization. The system provides a centralized platform where users can store product information and monitor expiry dates efficiently. By incorporating reminder notifications and categorized storage, the system simplifies product management. This project demonstrates how technology can be applied to solve practical real-world problems by ensuring timely alerts and systematic tracking.

II. PURPOSE

The primary purpose of the Expiry Tracker System is to minimize product wastage and enhance safety by providing timely notifications before items expire. The system aims to replace traditional manual tracking methods with an automated solution that improves accuracy and efficiency.

Another important objective of this project is to promote awareness about responsible consumption and inventory management. By informing users about upcoming expirations, the system encourages better planning, reduces unnecessary purchases, and ensures that products are used within their valid period. Overall, the project is designed to support both individual users and businesses in maintaining organized and safe inventory practices.

III. SCOPE

The scope of the Expiry Tracker System extends to various domains including households, pharmacies, supermarkets, restaurants, and small-scale businesses. In households, the system can be used to track groceries, dairy products, cosmetics, and medicines. In commercial settings, it helps store managers monitor bulk inventory efficiently.

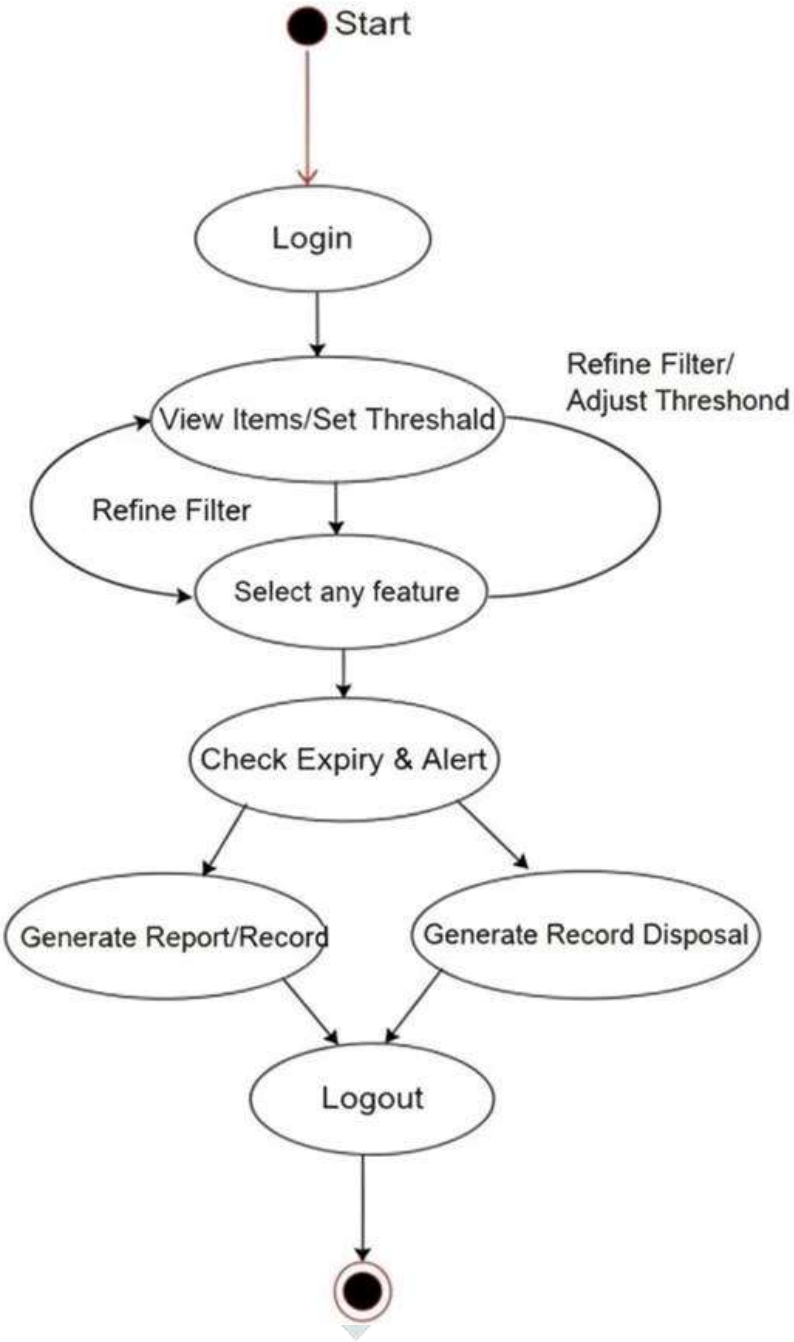
The system can be further expanded to include features such as barcode scanning, cloud storage integration, mobile application support, and AI-based predictive analysis. It also has the potential to integrate with e-commerce platforms for automatic updates of purchased products. Therefore, the project has wide applicability and scalability for future technological advancements.

IV. EXISTING ALGORITHM

The system uses the Tesseract OCR engine, powered by LSTM neural networks, to extract text from uploaded product images. When a user uploads an image, the system first verifies authentication and securely stores the file on the server. The image is then processed using Tesseract.js, which recognizes and converts the text within the image into machine-readable format.

After text extraction, the algorithm applies predefined date pattern matching techniques to detect common expiration date formats such as DD/MM/YYYY, MM/YYYY, or YYYY-MM-DD, including keywords like "Expiry" or "Best Before." The identified date is converted into a standardized format for database storage. The system then analyzes the extracted text lines, filters out numeric or irrelevant entries, and selects the most relevant descriptive line as the product name. Finally, the extracted product name and expiration date are returned as structured output for further processing within the Expiry Tracker system.

IV. FLOW OF PROJECT



V. RESULTS AND DISCUSSION

The implementation of the Expiry Tracker System produced positive outcomes during testing and evaluation. Users were able to successfully add, update, and delete product details within the system. The reminder notification feature functioned accurately by alerting users before the expiration date.

During testing, it was observed that the automated system significantly reduced the chances of missing expiry dates compared to manual tracking. The user interface was found to be simple and easy to navigate, ensuring accessibility for users with basic technical knowledge. The discussion highlights that digital automation not only improves efficiency but also enhances reliability and user confidence in managing products systematically.

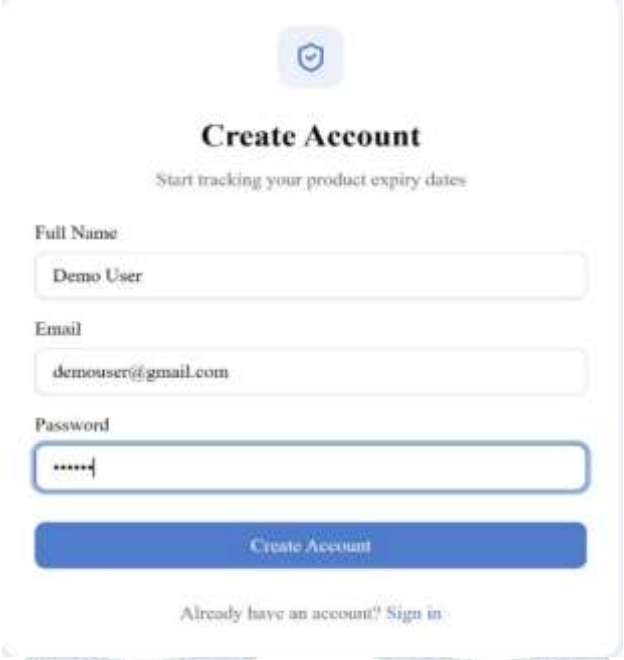


Figure 1.1

The above interface represents the account creation page of the Expiry Tracker application, designed to provide a simple and user-friendly onboarding experience. The form allows new users to register by entering essential details such as full name, email address, and password. A clean and minimal layout has been implemented to reduce user confusion and enhance accessibility. The structured input fields ensure proper data collection while maintaining a secure authentication process. Password masking is applied to protect user privacy during account creation. The "Create Account" button is prominently positioned to guide users through the registration process efficiently. Additionally, an option for existing users to sign in is provided, ensuring smooth navigation and improved user experience within the system.

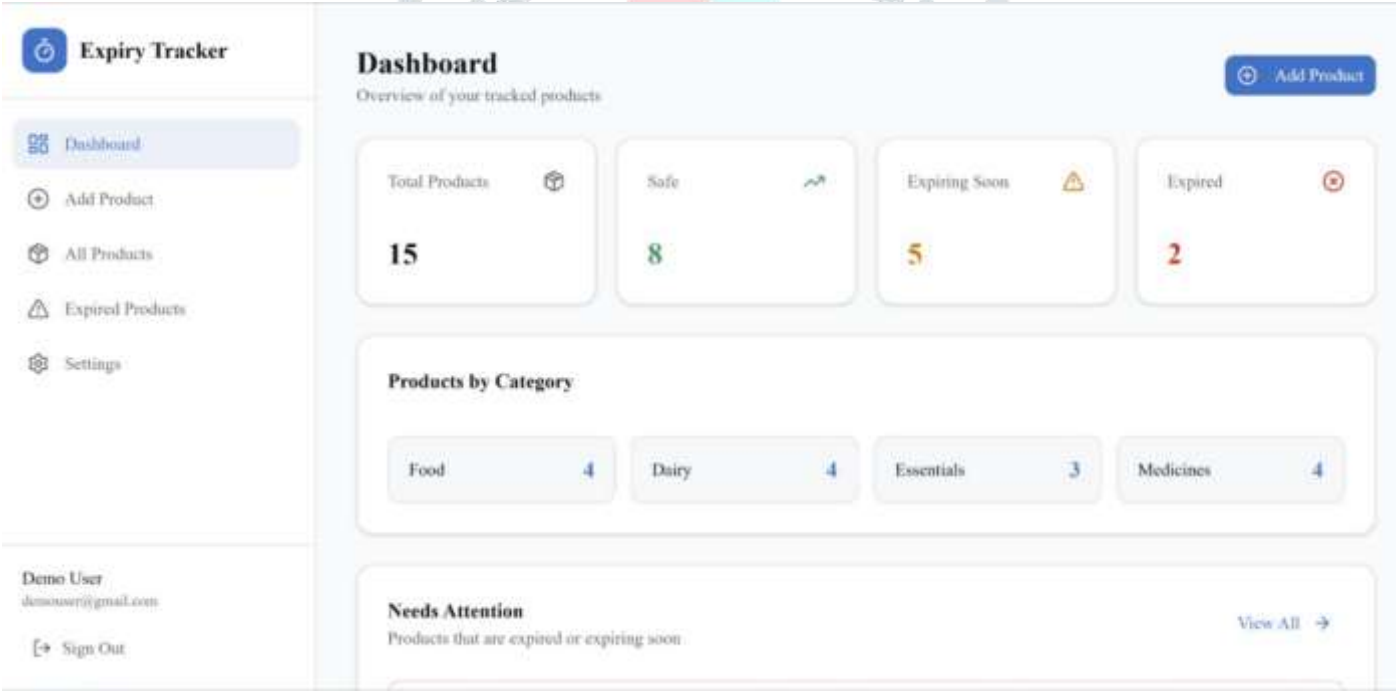


Figure 1.2

The above image illustrates the dashboard interface of the Expiry Tracker application, which provides users with a comprehensive overview of their tracked products. The dashboard displays key summary metrics, including total products, safe items, products expiring soon, and expired items, allowing users to quickly assess their inventory status. Each status category is visually highlighted to improve clarity and support faster decision-making. The system also categorizes products into sections such as food, dairy, essentials, and medicines, enabling organized monitoring. A dedicated "Needs Attention" section draws focus to items that require immediate action, enhancing proactive management. The navigation panel on the left side offers easy access to features such as adding products, viewing all products, and checking expired items. Overall, the dashboard is designed to deliver clear insights, improve usability, and support efficient inventory control within the system.

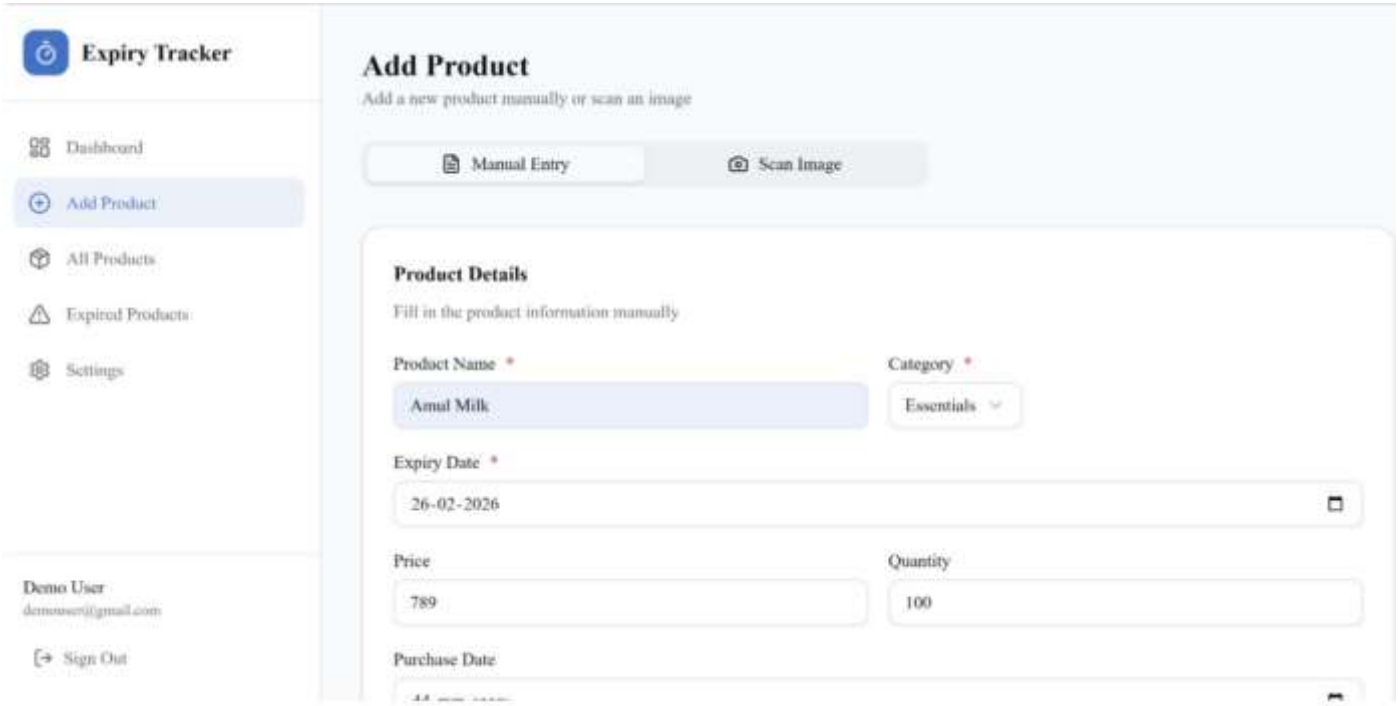


Figure 1.3

The above image presents the "Add Product" interface of the Expiry Tracker application, which enables users to register new items into the system. This page provides two options for data entry: manual input and image scanning, allowing flexibility based on user preference. In manual mode, users can enter essential product details such as product name, category, expiry date, price, quantity, and purchase date. The structured form layout ensures accurate data collection and reduces the possibility of incomplete entries. Required fields are clearly marked to guide users during submission. The interface is designed with simplicity and clarity to enhance usability and minimize errors. Overall, this feature supports efficient product management and ensures that all necessary information is recorded for effective expiry tracking.

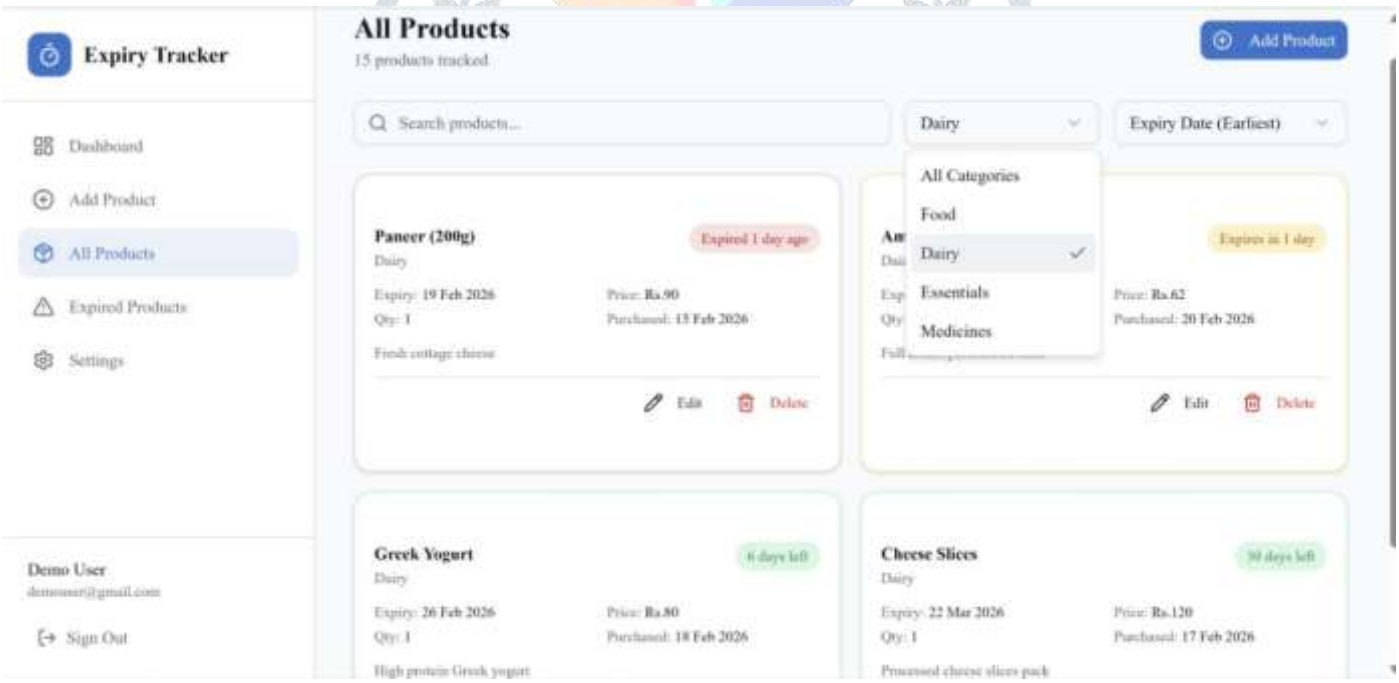


Figure 1.4

The above image illustrates the "All Products" section of the Expiry Tracker application, where users can view and manage all recorded items in a structured format. This page displays detailed product cards containing information such as product name, category, expiry date, price, quantity, and purchase date. Each product is visually labeled based on its expiry status, such as expired, expiring soon, or safe, enabling quick identification. A search bar and category filter options are provided to help users efficiently locate specific products. The sorting feature based on expiry date further enhances inventory organization and prioritization. Additionally, edit and delete options are available for each product, ensuring flexibility in managing records. Overall, this interface promotes effective monitoring and streamlined control of stored items within the system.

VI. FUTURE SCOPE

Although the current version of the Expiry Tracker System performs efficiently, several enhancements can be implemented in future versions. One potential improvement is the integration of mobile push notifications and SMS alerts for real-time updates. Another enhancement could involve the use of artificial intelligence to predict frequently expiring products and suggest optimized usage planning.

Cloud-based storage can also be introduced to allow users to access their data from multiple devices. Additionally, barcode scanning technology can simplify product entry, making the system faster and more user-friendly. These enhancements will increase the practicality and scalability of the project.

VII. RESULT AND PERFORMANCE EVALUATION

The performance evaluation of the Expiry Tracker System was conducted based on parameters such as accuracy, responsiveness, usability, and reliability. The system demonstrated high accuracy in calculating remaining days until expiration. Notification alerts were triggered correctly according to predefined time intervals.

In terms of usability, users reported that the interface was intuitive and easy to understand. The system showed stable performance without major delays or technical issues during testing. Data storage and retrieval processes were efficient, ensuring smooth operation even when multiple products were added. Overall, the evaluation confirms that the system meets its functional requirements effectively.

VIII. CONCLUSION

The Expiry Tracker System successfully addresses the problem of monitoring product expiration dates through a structured and automated approach. By providing timely reminders and organized storage, the system reduces wastage, prevents health risks, and improves inventory management.

This project demonstrates how a simple technological solution can create a significant impact in daily life and business operations. The results confirm that digital tracking systems are more reliable and efficient compared to manual methods. With future enhancements, the Expiry Tracker System has the potential to become a comprehensive inventory management tool suitable for various industries.

XI. ACKNOWLEDGMENT

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