IJNRD.ORG ISSN : 2456-4184
INTERNATIONAL JOURNAL OF NOVEL RESEARCH AND DEVELOPMENT (IJNRD) | IJNRD.ORG
An International Open Access, Peer-reviewed, Refereed Journal

# PHARMAEASY

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***Abstract :*** The pharmaceutical industry plays a vital role in safeguarding global health. However, its supply chain is complex, susceptible to fraud and often inefficient. There also is an issue where many different medications which are close to the expiry date are discarded by local pharmacies which leads to a lot of wastage which is also hazardous to the environment. To prevent this we have developed a system which benefits the manufacturer as well as the user in many ways. Our system takes the medicines that are close to expiration and sells them to the user at a discounted rate which helps the user to get medicines at a reduced cost. The system also helps in prediction of the disease of the patient and suggesting medicines based on the disease to the user due to which the user can buy the required medicine based on the suggestion as well as if the required medicine is unavailable user can suggest the system to add the required medicine. The 'Pharma-Easy' project aims to tackle challenges in the pharmaceutical industry. The main objective of our project is to help the users who are in need to get medications at a low cost as well as reducing the wastage of medicines.

***IndexTerms*** **– Prediction,Availability,Healthcare,Affordable.**

## I. INTRODUCTION

## INTRODUCTION

The pharmaceutical industry plays a vital role in safeguarding global health. However, its supply chain is complex, susceptible to fraud and often inefficient. The internet has revolutionized and changed our lives, communication, and procurement practices and strategies There also is an issue where many different medications which are close to the expiry date are discarded by local pharmacies which leads to a lot of wastage which is also hazardous to the environment. To prevent this we have developed a system which benefits the manufacturer as well as the user in many ways. Our system takes the medicines that are close to expiration and sells them to the user at a discounted rate which helps the user to get medicines at a reduced cost. The system also helps in prediction of the disease of the patient and suggesting medicines based on the disease to the user due to which the user can buy the required medicine based on the suggestion as well as if the required medicine is unavailable user can suggest the system to add the required medicine. The 'Pharma-Easy' project aims to tackle challenges in the pharmaceutical industry. Pharmacy, the science and art concerned with the preparation and standardization of drugs. The main objective of our project is to help the users who are in need to get medications at a low cost as well as reducing the wastage of medicines. There has been a revolution in the way that products are marketed and sold to consumers. Pharmaceutical goods are no exception, and online pharmacies or Internet pharmacies have arisen in response. Online sales of drugs have grown rapidly, often driven by the lower price point of online pharmacies. Making healthcare a universal right by making it quantum's cheaper and accessible. online pharmacy is an internet-based vendor (legal or illegal), which sells medicine and may operate as an independent internet-only site, an online branch. The system simulates an online pharmacy with an adaptive user interface

## II. REVIEW OF LITERATURE SURVEY

### 2.1 Literature Survey

The following chapter is a literature survey of the previous research papers and research which gives detailed information about the previous system along with its advantages and disadvantages.

N. Nagarajan, S. Balaharani.[1] The system suggests RFID technology for medication expiry determination, utilizing RFID tags on packaging. Components comprise RFID readers, an ATmega microcontroller, display, and GSM module for data transmission. Arduino facilitates computer connectivity. When a tagged medication strip is near the reader, relevant details display on an LCD. A computer GUI via RS232 enhances accessibility. A photograph validates functionality, affirming error reduction and user-friendliness. Future upgrades include cloud integration, robotic retrieval, and 5G compatibility, promising improved efficiency and

adaptability in medication management. The system represents a significant advancement in pharmacy operations, offering accurate information retrieval and potential for further automation.

Piñeiro, Daniel José; Narula, Jagat; Pervan, Borjana [2] Since 1999, global online pharmaceutical purchasing has surged in popularity, yet the UAE Ministry of Health and Prevention staunchly prohibits it due to the prevalence of substandard and counterfeit drugs, with 90% from unknown sources, per the World Health Organization. Despite health risks, online buying persists for its perceived convenience, speed, and cost-effectiveness. Many uninsured individuals seek affordability, further driving the trend. Online platforms offer extensive product accessibility and privacy for patients concealing medical conditions. However, a study from the University of Pécs, Hungary, reveals widespread ignorance among patients regarding legal and illegal online pharmacies, especially those purchasing prescription medications without medical consultation. This underscores the necessity for heightened patient education and counseling to mitigate the dangers associated with online pharmaceutical purchases and safeguard public health.

Harshali Bhalerao, Dr. Dhananjay Mandalik [3] The surge in online pharmacies stems from internet proliferation, digital health advancements, and diminished in-person doctor-patient interactions. Consumers increasingly favor virtual over local pharmacy visits, drawn by convenient, discreet online options. India's internet drug market is rapidly expanding, fueled by convenience and informed purchasing. Rising smartphone usage, internet availability, and tech literacy drive this shift. Market leaders like NetMeds, 1mg, Pharmeasy, and MedLife dominate the Asia-Pacific region. Both retail and e-commerce flourish. Jaipur's study revealed consumers' awareness of online pharmacies, accessing prescription drugs from various sources. However, public education on online pharmacy risks is crucial. Pujari et al.'s 2016 study highlighted how only 60% follow doctor recommendations, with price often prioritized over medical advice. Factors influencing e-pharmacy acceptance include convenience, affordability, and anonymity, alongside government initiatives like Digital India and foreign investment in e-pharma.

Mohamed Adel Al-Shaher & Ali Qasim Abdul-wahed [4] The project encountered both minor and major hurdles, notably in porting a trained CNN to Android via TensorFlow Lite, necessitating adjustments due to differing file types. Minor issues like package installations were resolved through GitHub or Google assistance. Healthcare, crucial as the aging population rises, faces significant demand for senior care, with estimates projecting 83.7 million individuals aged 65 and older by 2050. A GreatCall Health Agency forecast predicts a $26-billion mobile healthcare sector by 2017, offering benefits like medication reminders and easy healthcare provider access. However, seniors require more support, and behavioral pattern shifts pose challenges. Android's versatility across various devices, with over 20 updates since 2008 and 1 billion users in 2014, underscores its importance. Reliable medical data recording on mobile apps is vital for user safety. Developing mobile healthcare systems for Android watches demands meticulous attention, systematic procedures, and rigorous testing due to resource limitations and complexity.

A. Gupta and N. Sharma.[5].The e-commerce industry in India has flourished due to increased smartphone and internet accessibility. E-pharmacy, an emerging sector, faces regulatory challenges concerning the sale of prescribed drugs. The absence of specific rules leads online pharmacies to follow retail pharmacy regulations outlined in the Drugs and Cosmetics Act of 1940. Complaints by various state Food and Drugs Administrations against online pharmacies highlight regulatory concerns. E-pharmacy drawbacks include medication quality maintenance, storage, self-medication risks, and confusion regarding drug names and manufacturers. To address these issues, a government-appointed panel and industry bodies like FICCI and the Indian Internet Pharmacy Association are working on guidelines and regulations for online drug sales. Pending government decisions, industry associations are taking steps to regulate accredited e-pharmacy members, awaiting clarity on the regulatory framework.

Jude, G. M. Poor, and D. Guinness.[6] In a study by Srivastava et al. (2020) on consumers' usage of e-pharmacies in India, lack of awareness regarding the benefits of online pharmacies among the general population was noted, highlighting the need for increased education and demonstration of e-pharmacy benefits. Customers appreciated the convenience of home delivery, especially during acute illnesses. The Indian government has drafted rules for online pharmacies, recognizing the outdated nature of existing regulations. Anwar et al. (2020) investigated factors driving preference for online medicine purchases, citing cost-effectiveness, convenience, and initiatives like Digital India and foreign investment as key growth drivers. Despite good consumer awareness, education on risks associated with e-pharmacy purchases is essential. Salter et al. (2014) found that a majority of respondents (66%) purchased medicine online, indicating the rapid growth of e-pharmacy in India's retail pharmacy landscape.

Romeo Minodoru Cosnita, Anca Maria Cimpean, Marius Raica [7] During a crisis, such as the COVID-19 pandemic, maintaining a consistent pace of learning required implementing proactive measures like increasing partial evaluations, engaging students in the learning and examination process remotely. This strategy, though initially challenging, resulted in improved student performance. Utilizing digital learning and examination platforms became essential, particularly for remote assessment, emphasizing the importance of computer security and anti-fraud measures. However, transitioning to fully online teaching and evaluation systems posed significant challenges for both students and teachers, especially in institutions with limited e-Learning infrastructure. The Department of Histology at Victor Babes University of Medicine and Pharmacy Timisoara addressed this by implementing the E-School 6 platform, offering a comprehensive library of scanned slides for teaching and assessment purposes. The selection of an online assessment platform was based on its ability to provide accurate evaluations, ensuring effective distance evaluation during the crisis.

Dr Sarah Dineen-Griffin & Dr Abubakar Usman. [8] In 2020, the International Pharmaceutical Federation (FIP) introduced the FIP Development Goals (DGs), aiming to revolutionize the pharmacy profession and enhance global health through advancements in pharmaceutical sciences, practice, and education. DG 21 emphasizes the importance of policies and strategies to ensure the sustainability of pharmacy practice, while DG 20 focuses on fostering digital transformation and equipping the pharmaceutical workforce with digital literacy. The rise of digital health in community pharmacy has empowered pharmacists to mitigate medicine

risks and take greater responsibility for safety, efficacy, and overall value. The COVID-19 pandemic has further accelerated the adoption of digital health, with consumers increasingly relying on online platforms for health information and products. In September 2021, FIP issued a Statement of Policy in Digital Health, advocating for pharmacists to play pivotal roles in integrating evidence-based digital technologies into daily practice and promoting patients' digital literacy.

Abhishek Revadekar, Rahul Soni and Anant V. Nimkar.[9] The paper proposes an algorithm based on Reinforcement Learning to optimize delivery chains with multiple carriers having different starting points. It discusses a potential use case in the pharmacy industry, where online medicine orders are delivered to doorsteps with minimal delay. Divided into six sections, it covers state-of-the-art solutions for delivery systems and pharmacy management, a pharmacy use case, and a solution for the Multiple Vehicle Covering Salesman Problem (MVCSD). The 7 Q-Optimised Routing Algorithm (QORAl) minimizes delivery delays and travel costs while addressing MVCSD. Although not pharmacy-specific, QORAl can be applied across domains. Section V details tests, results, and observations. Pharmacists' role in managing acute diseases is highlighted, with technology solutions like automated pharmacy systems and inventory management discussed.

R. Kumar and M. M. Ali.[10]The widespread availability of high-speed, low-cost mobile internet has facilitated the online purchase of both tangible and intangible goods. While intangible commodities demonstrate an ideal business model, tangible goods face challenges such as transportation time and product quality reliability. Nevertheless, the advantages of online shopping, including increased choice, discounts, free and cash-on-delivery options, and easy returns, outweigh these limitations. Consequently, online purchasing is gaining popularity across various sectors, including electronics, books, and household items, attracting customers of diverse demographics. This shift in consumer perception has led to an accelerated adoption of online shopping, prompting more vendors to embrace or transition to the online sales model. However, certain industries, such as the flower, vegetable, firecracker, and pharmaceutical industries, face constraints due to product attributes, security concerns, or government regulations, hindering their ability to fully adopt online sales.

Eshonkhuzhaev Olimjon Odilovich. [11] Virtual simulations, mobile applications, augmented reality, and online resources have revolutionized clinical pharmacology education. Simulations immerse students in realistic clinical scenarios, allowing interaction with virtual patients and medication prescription. Mobile apps provide convenient access to drug databases and interactive learning modules, promoting engagement and self-directed learning. Augmented reality overlays drug information onto physical objects, enhancing understanding of drug mechanisms. Online platforms offer vast educational materials and facilitate peer-to-peer learning and collaboration. Together, these technologies enhance pharmacological education by providing immersive, accessible, and interactive learning experiences.

Selina Sandoval , Sally Rafie , Gennifer Kully , Sheila Mody , Sarah Averbach.[12] Pharmacist provision of medication abortion addresses gaps in access to care amidst rising restrictions, as shown in a pilot study demonstrating feasibility and patient satisfaction. Utilizing adapted toolkits and collaborative practice agreements, pharmacists offer safe and convenient services, especially in rural areas. However, challenges such as limited payment pathways and scalability remain, necessitating further research and infrastructure development. Leveraging technology like telehealth and electronic records enhances efficiency and communication in this innovative care model, highlighting its potential for broader implementation.

Felix Busch, Lena Hoffmann, Daniel Truhn, Subish Palaian. [13] In a comprehensive study of international pharmacy students' perspectives on integrating artificial intelligence (AI) into their education and practice, findings revealed predominantly positive attitudes towards AI in medicine, with 58% expressing favorable views. Despite this positivity, a significant proportion (72%) desired more AI education, highlighting a perceived gap in current pharmacy curricula. Notably, many students (63%) reported limited general knowledge of AI, and half felt unprepared to use AI in their future careers. Subgroup analyses showed that students who had AI courses felt better prepared and had greater AI knowledge. These results underscore the necessity for enhanced AI education in pharmacy curricula to address knowledge gaps and better equip future pharmacists for AI-driven healthcare environments.

Kristina Reinstatler, Gregory Payne, Jonathan Lister, Tera Moore, Brittany Parmentier, Ranel Troy Santos, Carla Cobb.[14] The development of the Core Outcome Set for Psychiatric Pharmacists (COS-PP) by the American Association of Psychiatric Pharmacists (AAPP) offers a standardized framework to evaluate the impact of psychiatric pharmacists on patient care, healthcare costs, patient experience, and clinician well-being. By establishing consensus-based outcomes and measures, COS-PP facilitates comprehensive assessment and comparison of interventions across diverse practice settings. This standardization enhances the quality and clinical relevance of research in psychiatric pharmacy, enabling stakeholders to better understand the value of pharmacist-led interventions and support evidence-based decision-making in patient care.

M. Balmith, W. Cordier, A. Bhayat, C. Basson, M. Morule, N. Schellack.[15] This study assesses Bachelor of Oral Hygiene (BOH) students' and graduates' perceptions and knowledge of pharmacology at a Pretoria institution. Findings reveal positive perceptions of the pharmacology module but concerns over time constraints and assessment strategies. While participants self-rated their knowledge favorably, actual knowledge varied, with significant differences among BOH groups. Deficiencies in pharmacological concepts were noted, emphasizing the need for curriculum review to enhance pharmacological competencies. Overall, the study underscores the importance of evaluating pharmacology understanding among oral hygienists for improved patient care and curriculum development.

## III. RESEARCH METHODOLOGY

### 3.1 Block Diagram

The figure 3.1 represents the block diagram of the project. It contains different blocks which are present in our project and how the blocks are connected to each other.

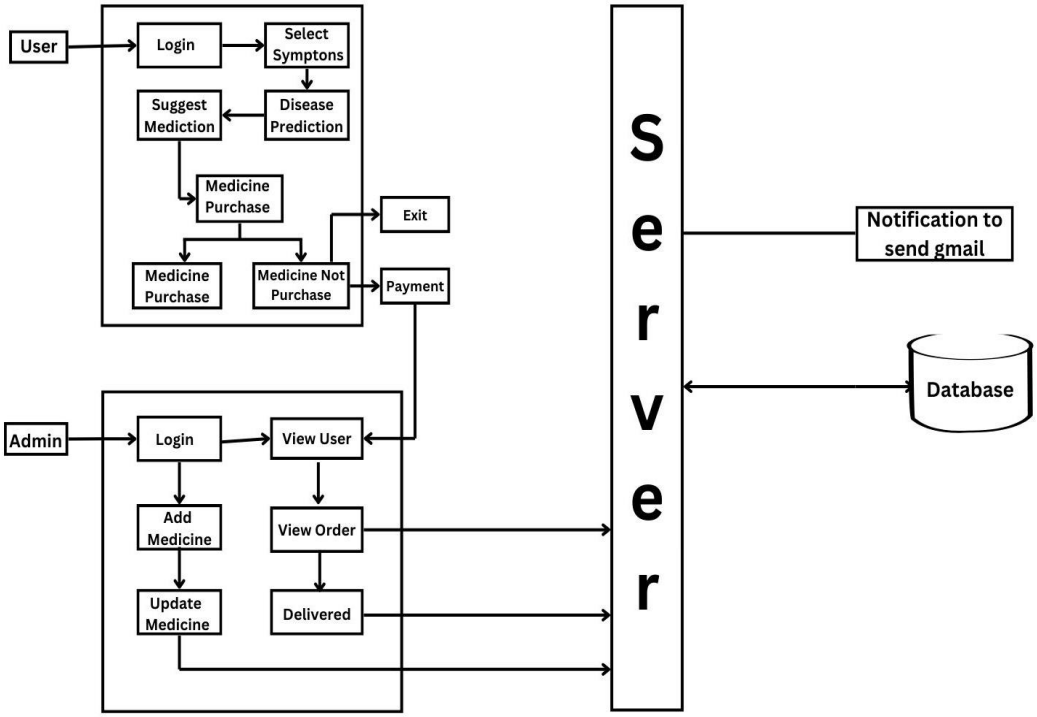


Fig 3.1 PharmaEasy Block Diagram

PharmaEasy aims to revolutionize the online pharmacy experience by offering a seamless platform for Disease Prediction, Medicine Suggestion, and Online Medicine Purchase. The admin manages the entire database part, including backend functionalities such as user registration, user profile management, and user order processing. This helps to provide users with a better interface and enhances their overall experience in utilizing the system. Upon placing an order, a pop-up message is sent to the user's Gmail account confirming that their order has been successfully placed. The admin also manages the addition of new medicines to the system and updates existing medicine information as needed.

## IV. RESULTS AND DISCUSSION

### 4.1 Result of PharmaEasy Model

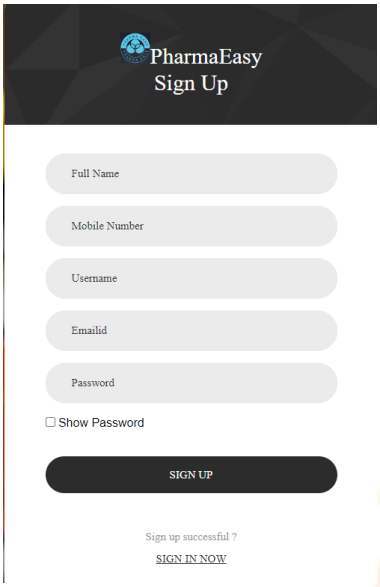


Fig. 4.1 Sign Up

Figure 4.1 is the sign up page where user can create his account

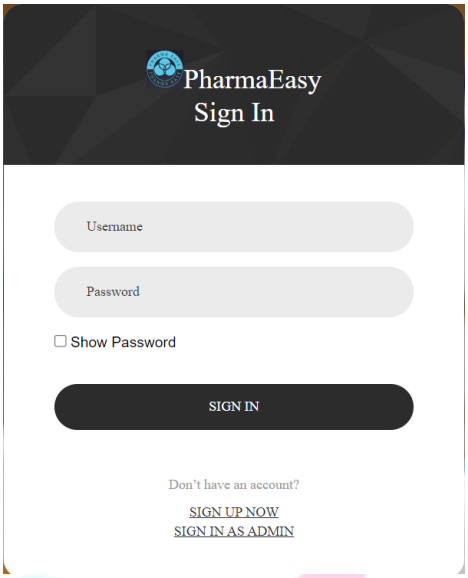


Fig. 4.2 login

Figure 4.2 is the login page where user can login to his account

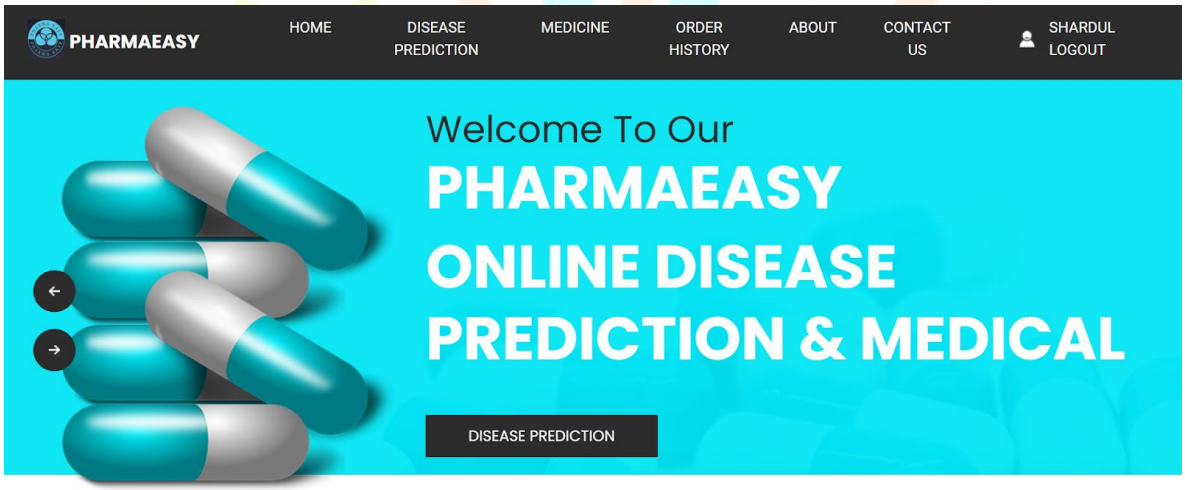


Fig. 4.3 Home Page

Figure 4.3 is the home page of the website

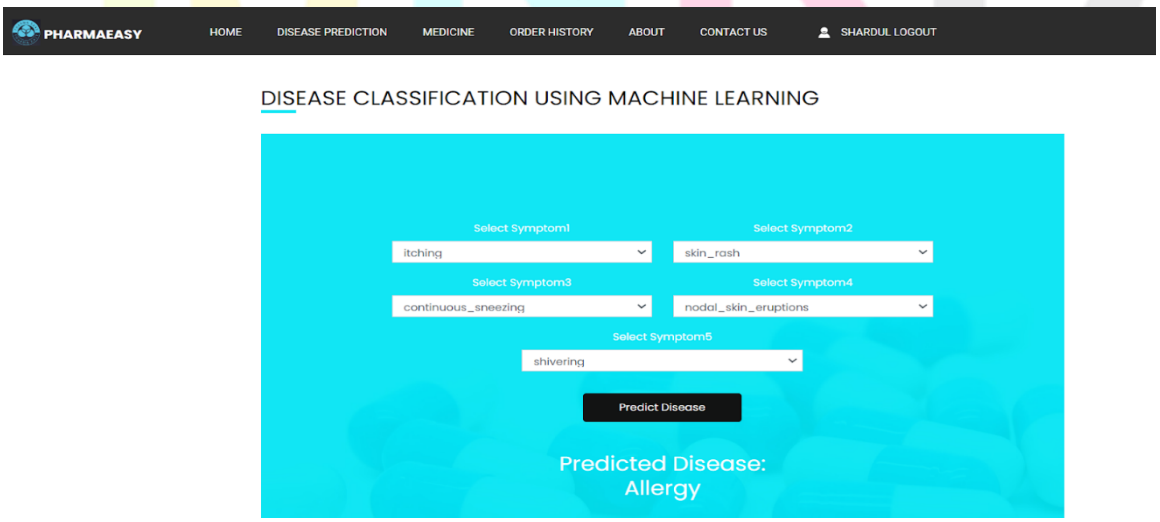


Fig. 4.4 Disease Prediction

Figure 4.3 is the disease prediction menu where user can enter the symptoms and with the help of which disease will be predicted


Fig. 4.5 Medicine

Figure 4.5 are the medicines suggested for the predicted disease

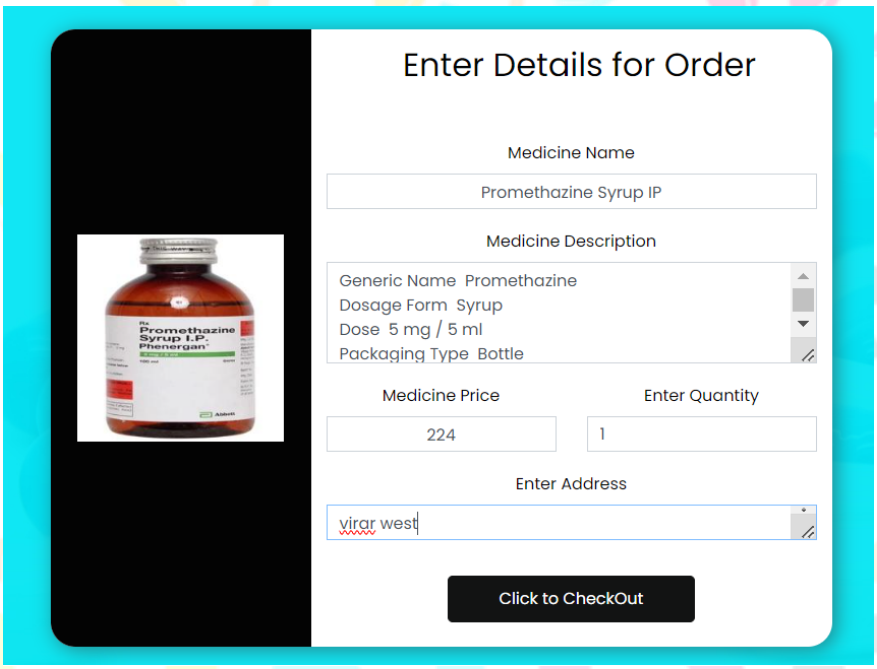


Fig. 4.6 Checkout

Figure 4.6 is the checkout menu where user can upload his address and purchase medicine

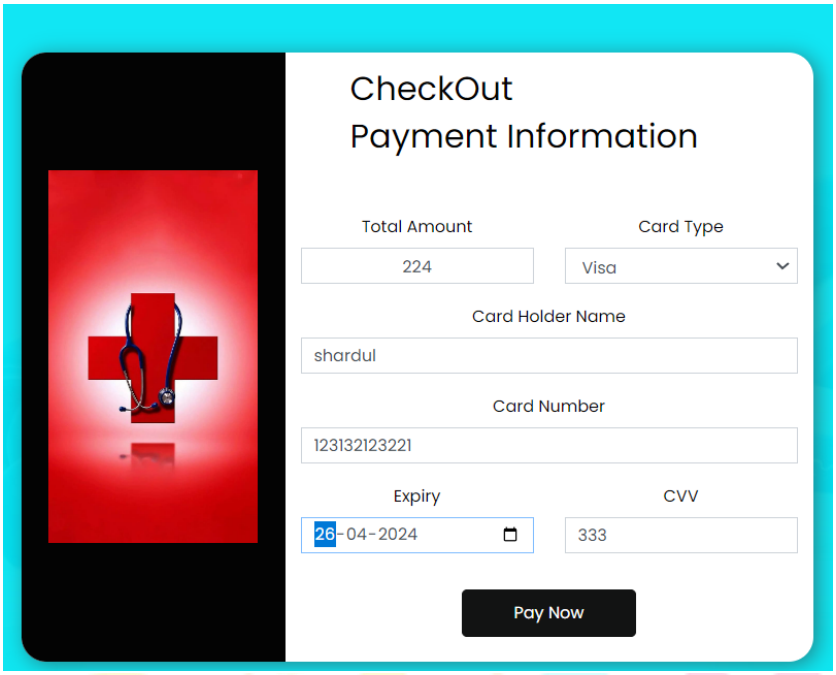


Fig 4.7 Payment

Figure 4.7 is the payment page where user can pay for his purchase

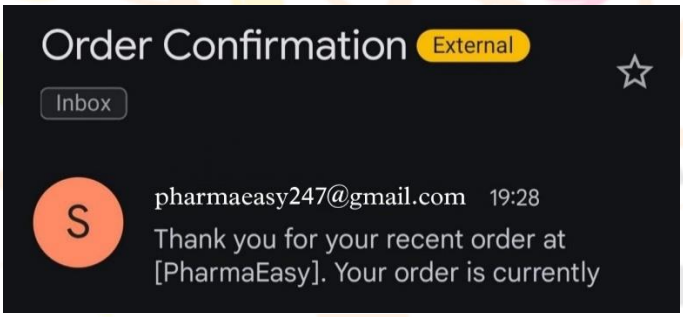


Fig 4.8 Confirmation Mail

Figure 4.8 shows the confirmation mail received by the user after placing order

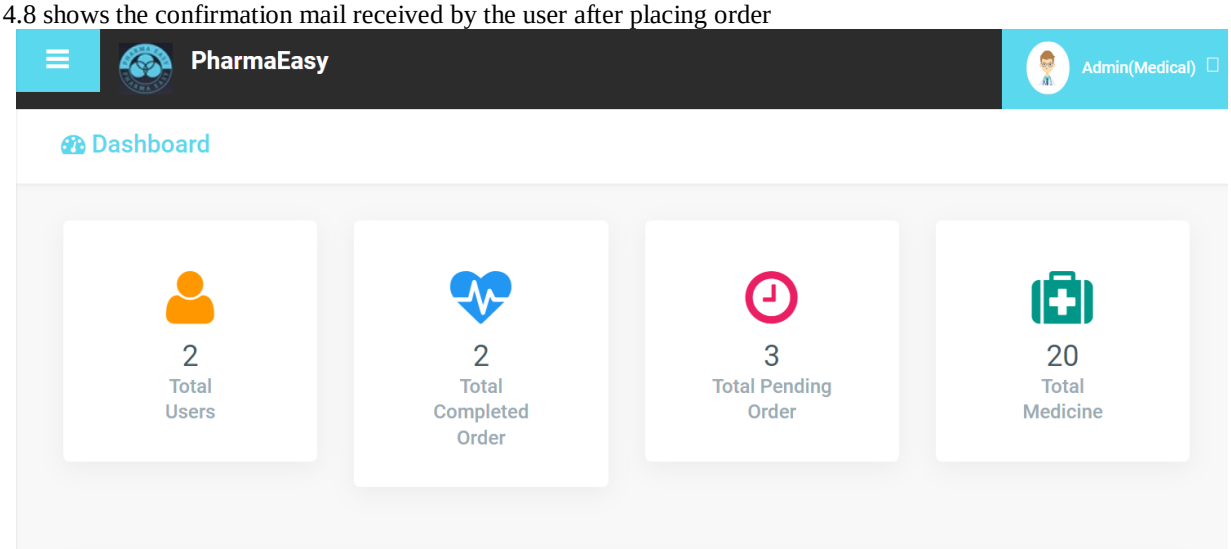


Fig 4.9 Admin Dashboard

Figure 4.9 is the dashboard interface for the admin

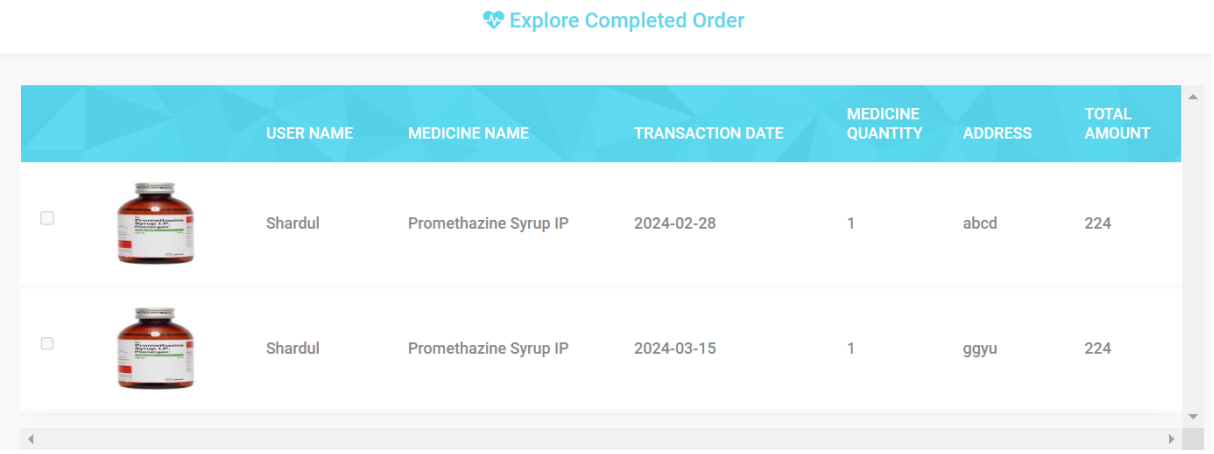


Fig 4.10 Order History

Figure 4.10 is the order history of a particular user

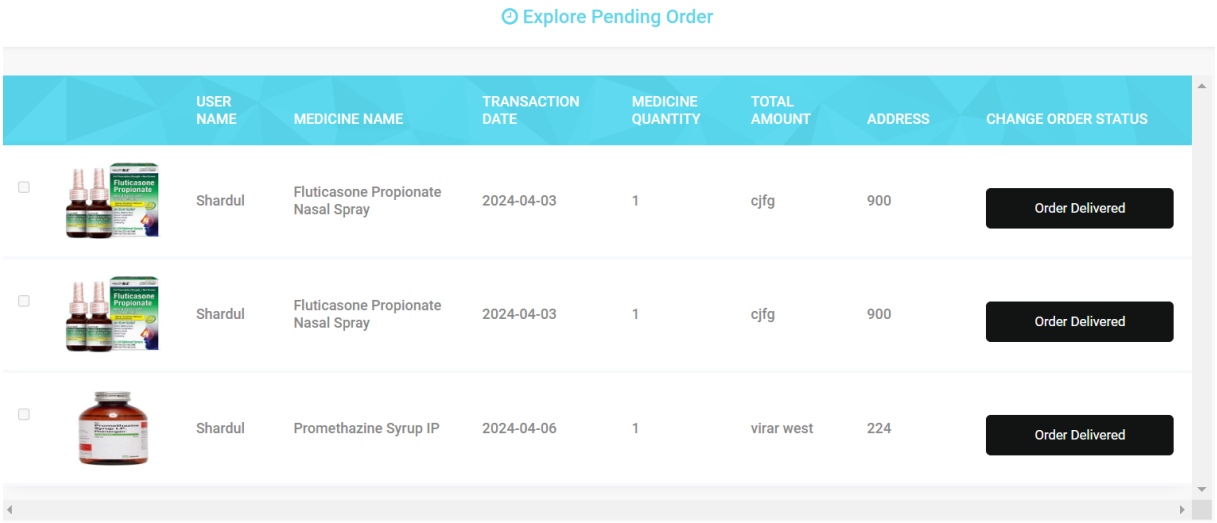


Fig 4.11 Pending Order

Figure 4.11 are the pending orders of the user that are yet to be delivered

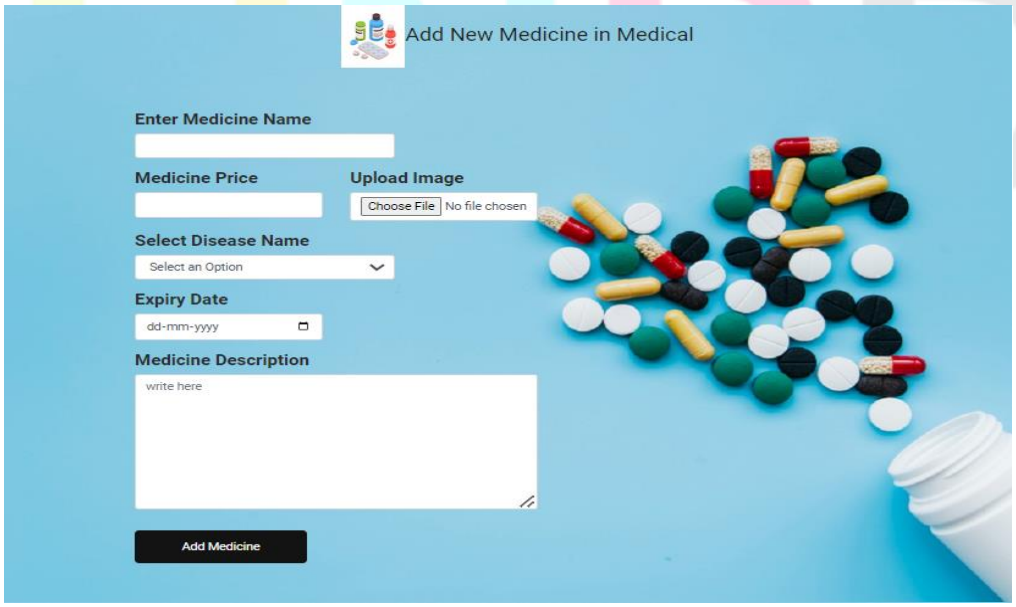


Fig 4.12 Add Medicine

Figure 4.12 is the add medicine menu where admin can add new medicines

## V. CONCLUSION

The 'Pharma-Easy' Project has come up as a very important step in reducing the wastage of many different pharmaceutical products due to expiry which can be countered with our project by selling the medicines close to expiry at discounted rates which can benefit both the customer as well as the seller. Also, the concept of disease prediction after providing symptoms can really help in saving lives and making the medications delivered in less time. Through our website, we have sought to address key challenges such as medication accessibility, affordability, and convenience.

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