DRUG PRICE COMPARISON BOT

A PROJECT REPORT

Submitted by

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BONAFIDE CERTIFICATE

Certified that this project report **"Drug price comparison bot"** is the Bonafide work of **"AKIELESH B(220701021)"** who carried out the project work for the subject OAI1903-Introduction to Robotic Process Automation under my supervision.

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INTERNAL EXAMINER **EXTERNAL EXAMINER**

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ABSTRACT :

In the era of digital transformation, cost-effective healthcare solutions are a priority for patients and providers alike. This project presents a robotic process automation (RPA) tool, developed using UiPath, designed to streamline the process of comparing drug prices across various online platforms. The bot automates the retrieval of drug price data by reading drug names from an Excel sheet, querying multiple websites, and extracting price details. By sorting the prices, it identifies the lowest and highest price points for each drug and updates this information directly in the same Excel sheet.

To enhance usability and accessibility, the bot automatically sends the updated Excel sheet to designated recipients via email, enabling swift decision-making. This automation reduces manual workload, minimizes human errors, and ensures timely access to accurate data. The project demonstrates the significant potential of RPA in improving operational efficiency within the healthcare sector and beyond, offering a scalable solution for repetitive, data-intensive tasks.

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LIST OF ABBREVIATIONS:

Abbreviation	Full Form
SMTP	Simple Mail Transfer Protocol
ERD	Entity Relationship Diagram
DFD	Data Flow Diagram
HR	Human Resources
API	Application Programming Interface
RE	Robotic Enterprise
RPA	Robotics Process Automation

CHAPTER-1

INTRODUCTION

Managing medication costs is a critical concern in today's healthcare system, with numerous online platforms offering varying prices for the same drug. Manually comparing prices across these platforms is time-consuming and prone to errors. To address this, robotic process automation (RPA) offers an efficient and accurate solution.

1. 1 GENERAL

In today's digital age, automation is transforming industries by simplifying repetitive and time-consuming tasks. One such area is price comparison, where manual efforts can be inefficient and prone to errors. Robotic Process Automation (RPA) provides a practical solution by automating these processes with speed and accuracy

1.2 OBJECTIVE

The objective of this project is to automate the process of comparing medical drug prices using UiPath. The bot retrieves price data from online platforms, identifies the lowest and highest prices through sorting, updates the results in an Excel sheet, and sends the updated sheet via email. This solution aims to reduce manual effort, enhance accuracy, and provide timely information for better decision-making in drug procurement.

1.3 EXISTINGSYSTEM

In the current system, comparing drug prices is often a manual process, requiring users to individually search for drugs on multiple websites and record prices. This process is time-consuming, error-prone, and inefficient, especially when handling large volumes of data. Moreover, consolidating and sharing this information manually adds to the workload and delays decision-making. The lack of automation results in inconsistencies and makes it difficult to ensure timely and accurate price comparisons, limiting the ability to make cost-effective choices.

1.4 PROPOSEDSYSTEM

The proposed system aims to automate the process of comparing drug prices using a Robotic Process Automation (RPA) bot developed in UiPath. The bot will read drug names from an Excel sheet, search for prices across multiple online platforms, and extract the price data. It will then sort the prices to identify the lowest and highest price points for each drug. The bot will automatically update the Excel sheet with these price points and send the updated file via email to designated recipients. This system will significantly reduce manual effort, minimize errors, improve data accuracy, and ensure quicker and more reliable price comparison, thereby enhancing decision-making in drug procurement.

CHAPTER-2

LITERATURE_REVIEW

Robotic Process Automation (RPA) has gained significant traction in various industries for automating repetitive and rule-based tasks. Studies have highlighted the potential of RPA in streamlining operations, reducing human errors, and increasing efficiency. In the healthcare sector, where accurate and timely information is crucial, RPA has proven valuable in automating administrative tasks like data extraction, processing, and reporting

2.1 GENERAL

Robotic Process Automation (RPA) has become a powerful tool in automating repetitive tasks across various industries, enhancing efficiency, reducing errors, and saving time. In the context of price comparison, RPA is particularly beneficial for streamlining processes that involve gathering data from multiple sources, such as online platforms, and consolidating it in a meaningful way. Many studies emphasize the advantages of automating data extraction, analysis, and reporting, especially in environments like healthcare and retail, where cost management is crucial.

In healthcare, RPA has been increasingly used to automate tasks such as inventory management, patient data processing, and drug price comparisons. Research has shown that automating drug price retrieval can significantly reduce the time and effort spent on manual research, allowing for more timely and accurate price comparisons. Existing tools like

UiPath offer the capability to automate workflows that involve multiple applications, such as web scraping, data processing in Excel, and sending automated emails.

Literature on RPA in data-intensive tasks suggests that automation not only increases productivity but also ensures data consistency, helping organizations make informed decisions faster. The integration of RPA tools with everyday software like Excel and email systems has made such automation more accessible and practical for businesses, particularly in sectors that rely on up-to-date information for decision-making.

CHAPTER-3

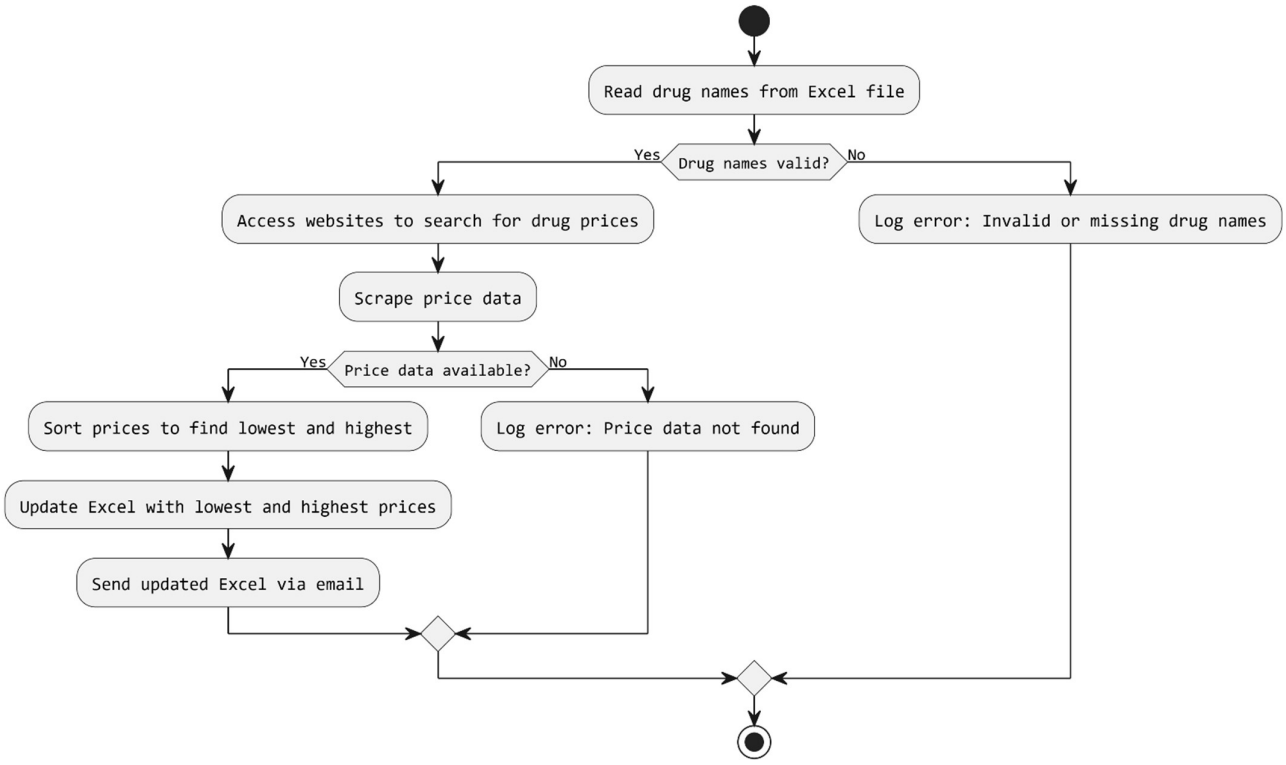
SYSTEM DESIGN

3.1.1 SYSTEM FLOW DIAGRAM

The **System Flow Diagram** outlines the overall flow of data and processes in the system. It demonstrates how user inputs, system processing, and outputs interact.

Description:

1. **Input**: An Excel sheet with a list of drug names.
2. **Process**:
    - Bot searches for each drug's price on predefined websites.
    - Extracted prices are sorted to find the lowest and highest.
    - The prices are updated in the original Excel sheet.
3. **Output** Confirmation of email sent and logs for error handling.

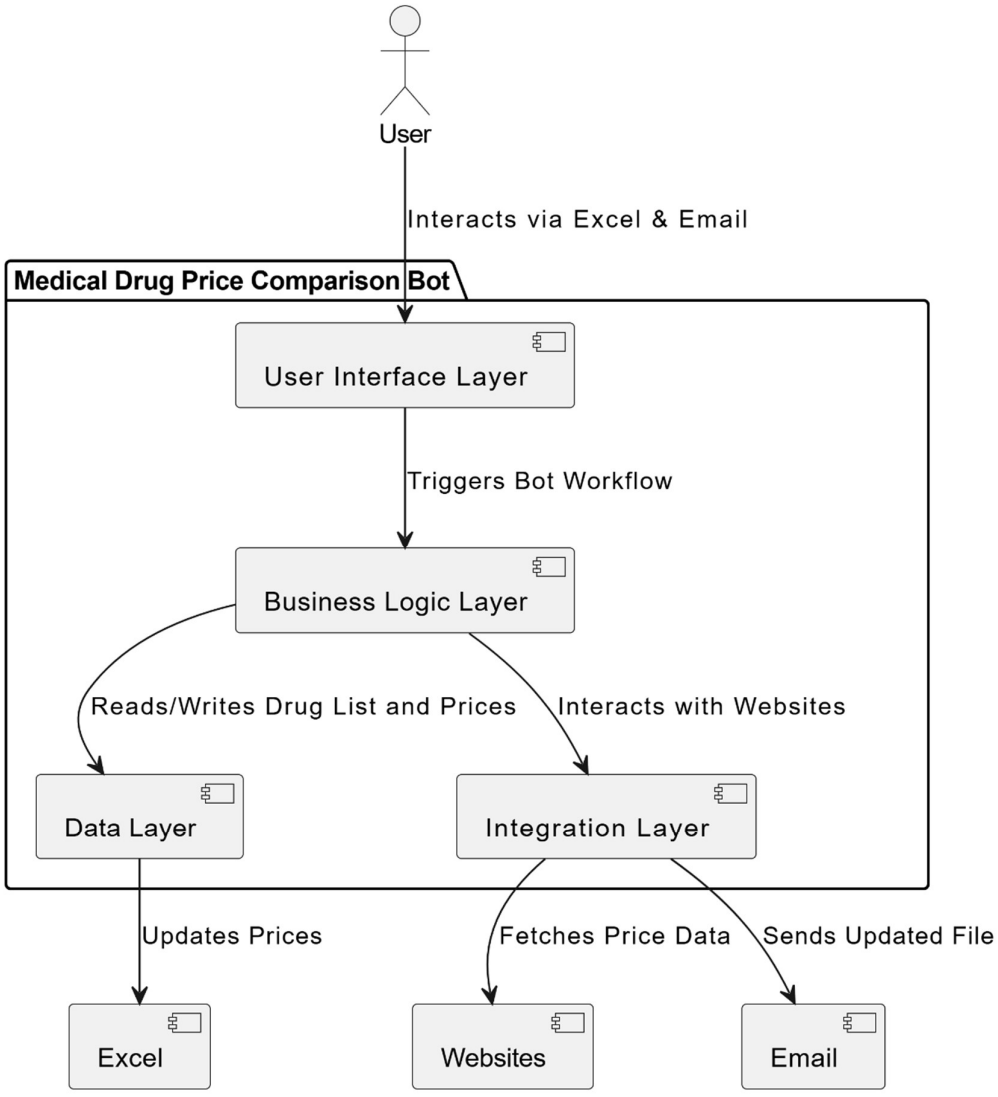


3.1.2 ARCHITECTURE DIAGRAM

The **Architecture Diagram** provides a high-level view of the system's structure and its components.

Components:

1. **Frontend**: User interface for HR personnel (e.g., UiPath Forms or a dashboard).
2. **Backend**: Core logic, including:
   - Excel processing to read candidate data.
   - Recruitment letter generation.
   - Email module for sending letters.
3. **Database/Storage**: To log sent emails and errors.
4. **External Services**: Email server (SMTP) for dispatching letters.



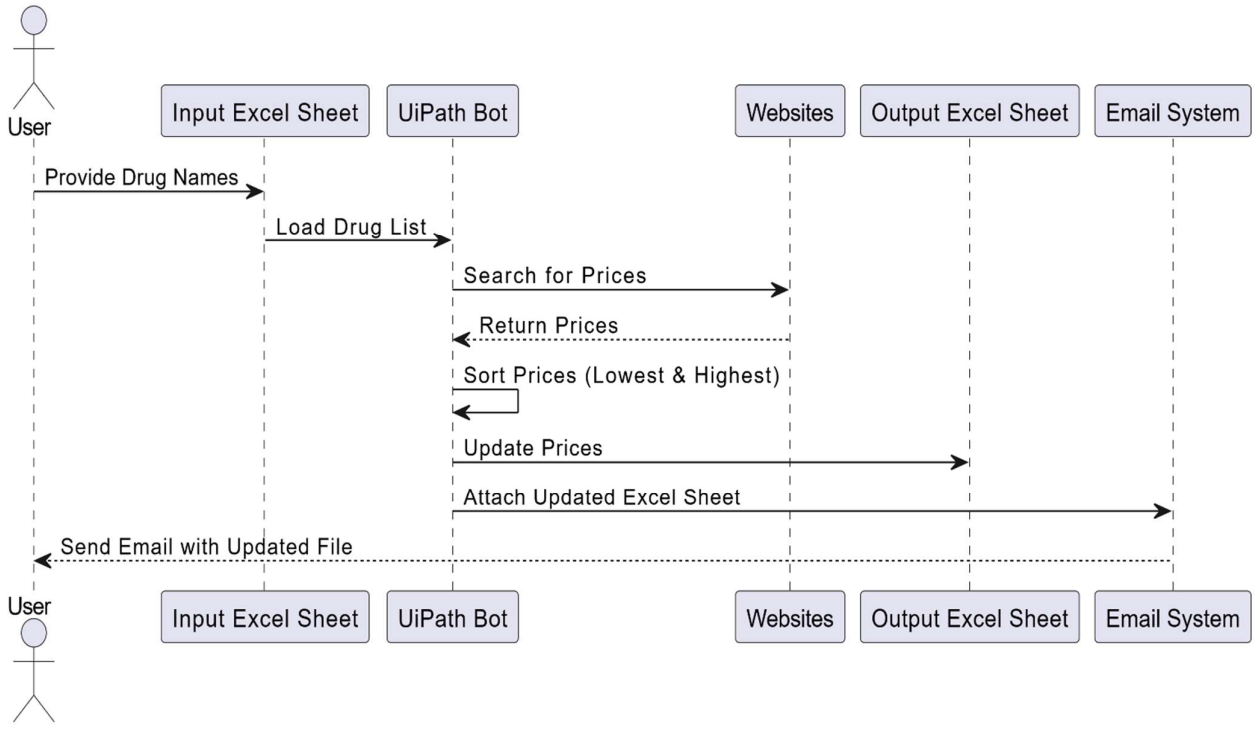
5.

3.1.3 SEQUENCE DIAGRAM

The **Sequence Diagram** shows the interaction between actors (HR personnel) and the system components in a sequential manner.

Steps:

1. HR personnel trigger the process.
2. The system reads the Excel sheet for candidate data.
3. For each candidate marked as "hired":
    - Generate a recruitment letter.
    - Send the letter via email.
    - Log success or failure.
4. Notify HR personnel of the completion or any errors.



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CHAPTER-4

PROJECT DESCRIPTION

The Medical Drug Price Comparison Bot automates the process of retrieving, sorting, and updating drug prices. It begins with an input Excel sheet that lists the drug names. The bot then searches predefined online platforms for the prices of these drugs. After extracting the price data, the bot sorts it to identify the lowest and highest prices for each drug. These price points are updated in the original Excel sheet. Finally, the bot sends the updated Excel sheet via email to the designated recipients, ensuring efficient and timely delivery of pricing information. This system eliminates manual effort, increases accuracy, and provides up-to-date information for better decision-making.

4.1 METHODOLOGY

1. Requirement Analysis:

Identify the drug price sources, input Excel format, and tasks to automate (searching, sorting, emailing).

2. Workflow Design:

Create an automation workflow in UiPath:

- Read drug names from Excel.

- Scrape prices from websites.

- Sort and update the lowest and highest prices in Excel.

- Send the updated file via email.

3. Automation:

Use UiPath to automate web scraping, data sorting, Excel updates, and email sending.

4. Testing:

Test the bot to ensure correct price retrieval, sorting, and Excel updates.

5. Deployment:

Deploy the bot for scheduled or on-demand execution.

6. Monitoring and Maintenance:

Monitor performance and update the bot as needed for efficiency.

This methodology ensures efficient, accurate, and automated drug price comparison.**4.1.1**

MODULES:

1. Data Input Module:

This module is responsible for reading the list of drug names from an input Excel sheet. The bot first loads the Excel file and extracts the drug names to be searched. It performs basic validation to ensure the data is correctly formatted, ensuring that all drug names are properly entered without errors. If the data is invalid or missing, the module generates an error message and halts the process for correction

2. Web Scraping Module:

The web scraping module automates the process of searching for each drug on predefined online platforms. For each drug name, the bot queries various websites that provide pricing information. The bot uses web scraping techniques, such as HTML parsing and XPath selectors, to extract the price data. This module is designed to handle multiple websites and various drug formats, ensuring that the bot can work across different platforms. It also includes error handling for cases where the drug name cannot be found or the website structure changes.

3. Data Processing and Sorting Module:

Once the price data is extracted, the bot processes and sorts the prices. This module compares the prices retrieved from different websites for each drug and identifies the lowest and highest price points. The bot then updates the original Excel sheet with these sorted price points, ensuring the data is well-organized and accurate. This module also includes data validation checks to ensure that the prices are in the correct format and fall within a reasonable range.

4. Excel Update Module:

The Excel update module takes the processed data (lowest and highest prices) and writes it back into the same Excel file. The bot locates the corresponding drug names in the Excel sheet and updates the respective columns with the new price data. It ensures that the information is added correctly, without overwriting existing data. Additionally, it formats the

Excel file to make it readable and professional, including proper alignment, fonts, and borders for clarity.

5. Email Automation Module:

This module automates the sending of the updated Excel file to designated recipients via email. Once the Excel sheet is updated, the bot prepares an email with the file attached. The bot ensures that the email is correctly formatted, with a relevant subject line and message body, providing clear instructions or context about the attached file. It also allows the sender's email address to be configured, and ensures the file is sent to the intended recipients without error.

6. Error Handling and Logging Module:

This module is designed to ensure that the bot runs smoothly by handling any errors or exceptions encountered during the process. Whether it's a failure in retrieving prices, an issue with the Excel file, or a problem sending the email, this module detects and logs the errors. It generates detailed error reports and alerts the user to specific issues. If an error occurs, the bot halts the process at the error point and provides actionable feedback for troubleshooting.

7. Monitoring and Reporting Module:

After the bot executes the price comparison process, this module provides ongoing monitoring and performance reports. It logs key actions, such as successful price retrieval, sorting, and email sending. The reports help track the bot's efficiency and provide insights into areas where improvements may be necessary. Regular updates ensure the bot operates efficiently and continues to meet the user's nee

CHAPTER-5

OUTPUT SCREENSHOT

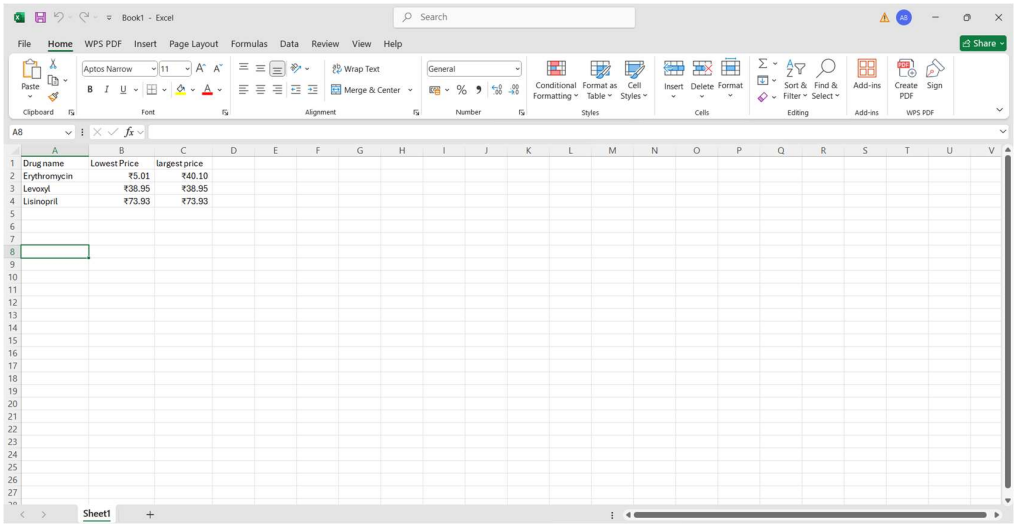

Fig. 5.1. Dispatcher of excel

From this above figure Contains the dispatcher Process of excel

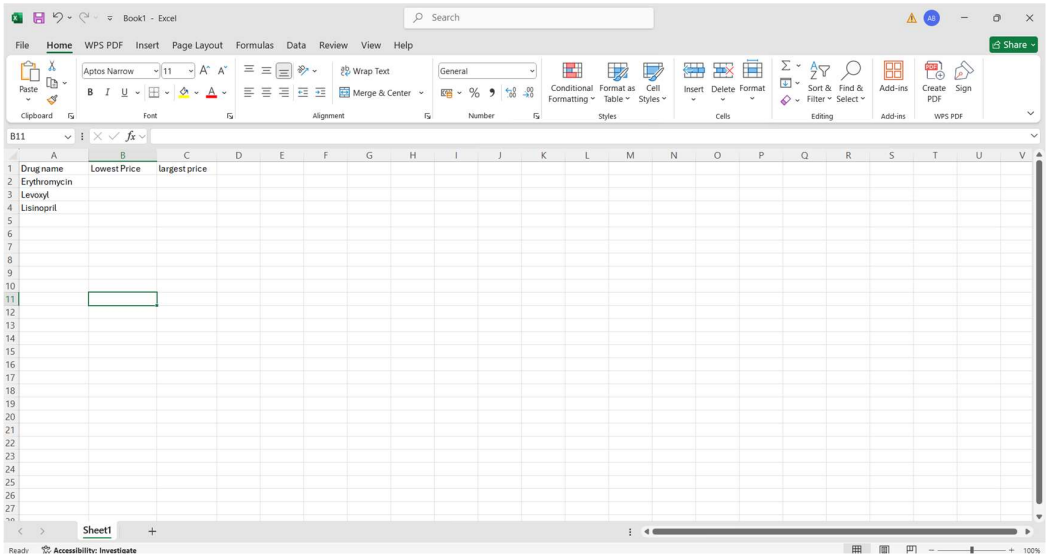

Fig. 5.2. Excel before update

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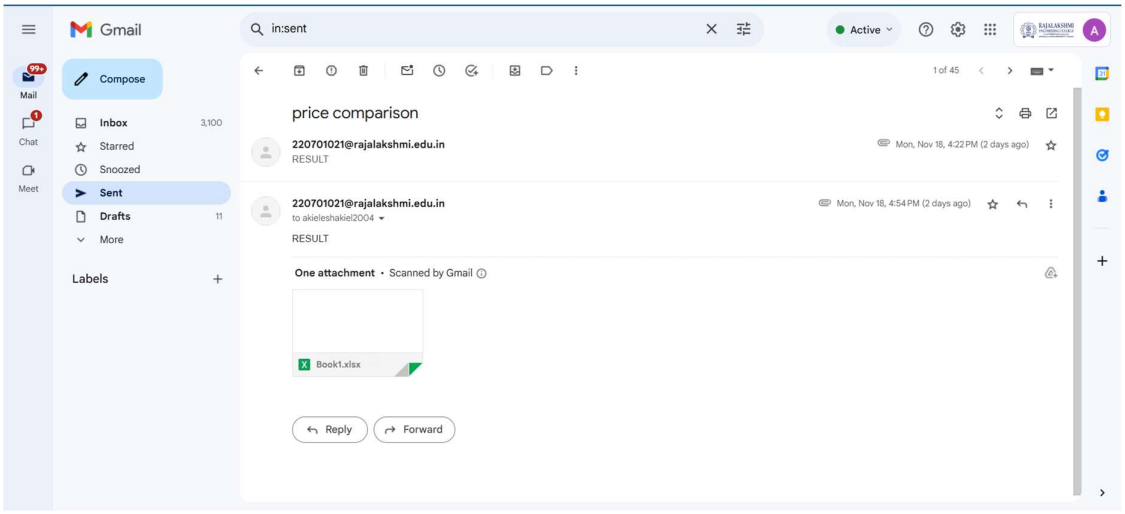

Fig 5.3 sent mail

The bot sent mail to a particular email address

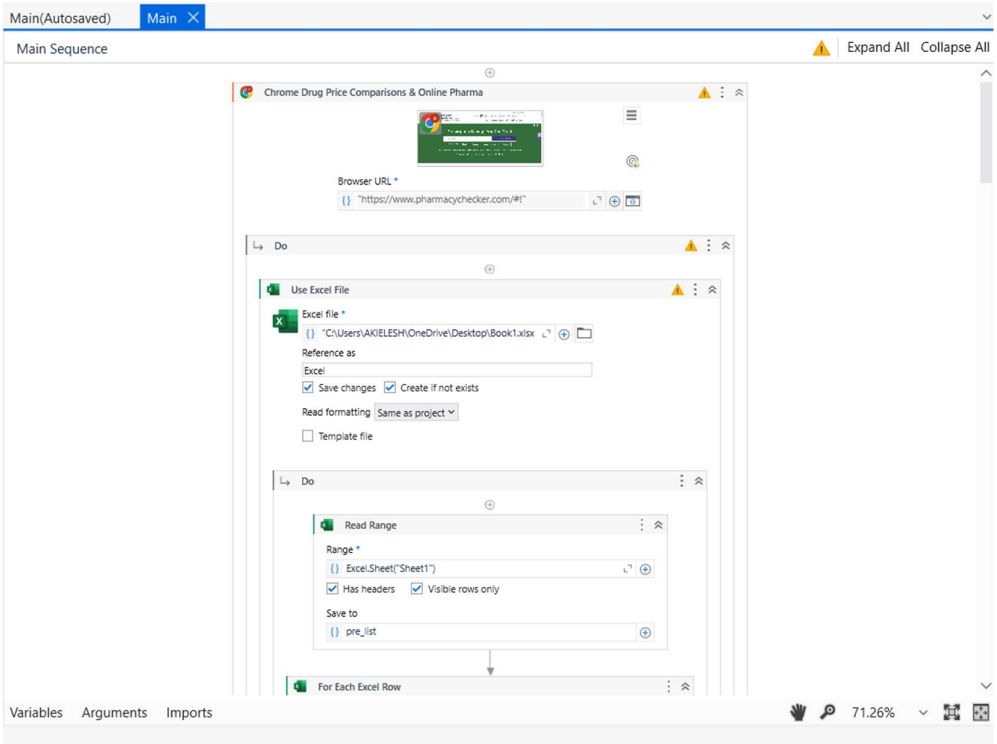

Fig:5.4 work flow(1)

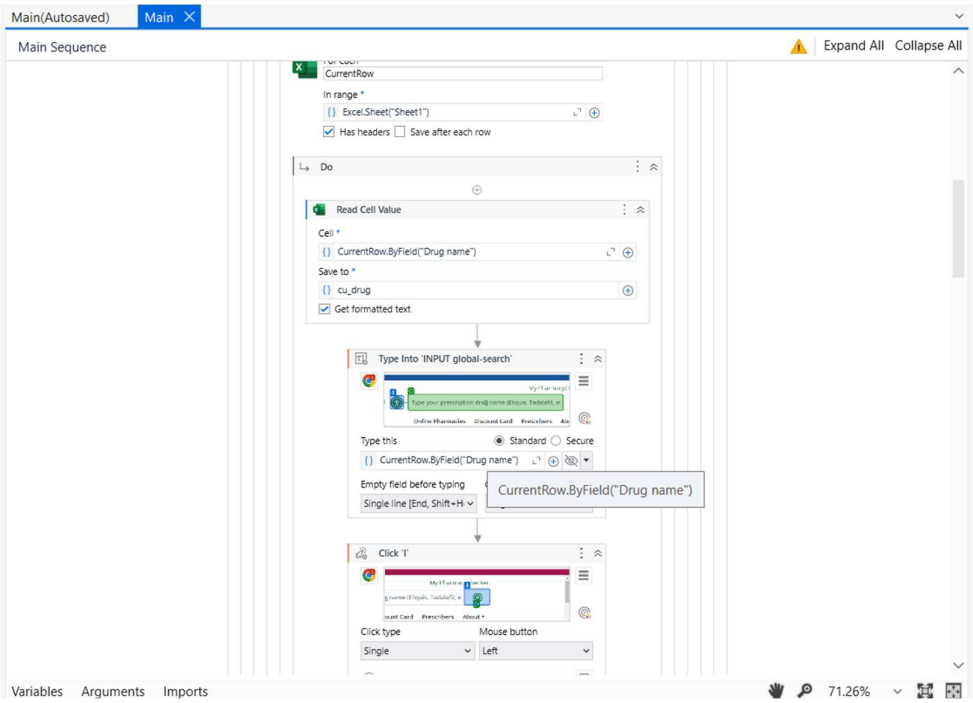

Fig 5.5 work flow(2)

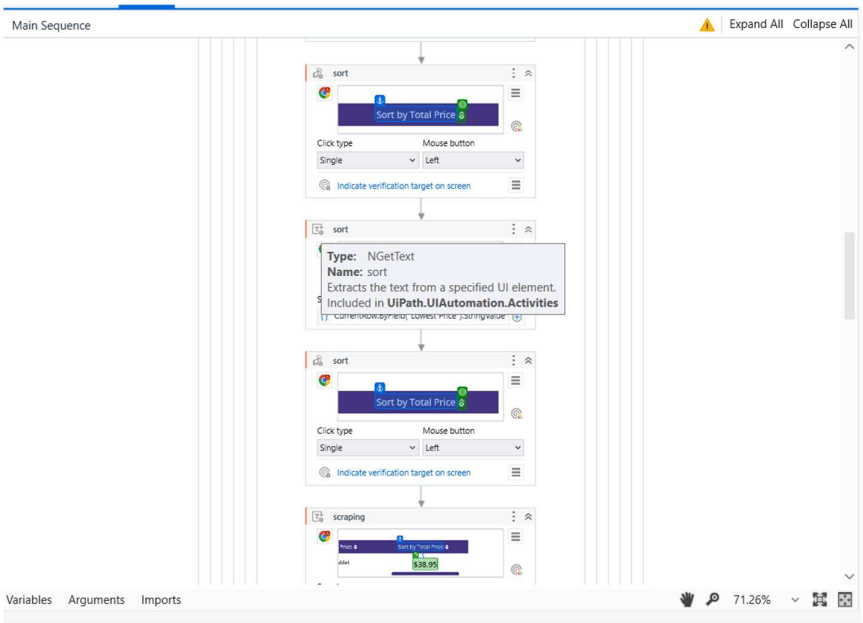

Fig:5.6 work flow(3)

CHAPTER-6

CONCLUSIONS

The Medical Drug Price Comparison Bot developed using UiPath effectively automates the process of retrieving, sorting, and reporting drug prices from multiple online platforms. By eliminating manual data collection, sorting, and reporting, the bot significantly reduces human error, saves time, and improves the accuracy of price comparisons. The system provides a seamless solution for healthcare providers, enabling them to quickly and efficiently access reliable pricing information for informed decision-making.

The automation process not only streamlines the workflow but also ensures that the most current price data is available for drug procurement, helping to make cost-effective purchasing decisions. The integration of RPA tools like UiPath with Excel and email systems further enhances the accessibility and functionality of the solution.

This project demonstrates the potential of Robotic Process Automation in optimizing data-intensive tasks and showcases how automation can improve operational efficiency, accuracy, and speed in the healthcare sector. Future enhancements could include expanding the system to handle more complex pricing structures, integrating additional data sources, or implementing advanced error-handling mechanisms for even greater reliability.

6.1 GENERAL:

The implementation of Robotic Process Automation (RPA) through the **Medical Drug Price Comparison Bot** demonstrates the efficiency of automating routine and data-intensive tasks. By automating the retrieval, sorting, and reporting of drug prices, the bot significantly reduces manual effort, minimizes errors, and ensures faster, more accurate results. This automated solution not only streamlines the workflow but also helps users make more informed decisions based on up-to-date and reliable pricing information

Overall, the project showcases how RPA can improve operational efficiency and accuracy in various industries. With the growing demand for automation, this solution highlights the potential of RPA tools to simplify complex processes, enhance decision-making, and improve productivity. Future developments could include expanding the bot's capabilities to handle more complex tasks or integrating it with additional systems for further optimization.

APPENDICES

1. Appendix A: Source Code

This appendix contains the source code of the UiPath workflows used in the Medical Drug Price Comparison Bot. It includes all the key automation sequences, such as web scraping, data processing, Excel updates, and email automation.

2. Appendix B: Sample Excel Sheet

A sample of the input Excel sheet containing drug names and the output Excel sheet with the corresponding lowest and highest prices. This demonstrates the structure and format of the data processed by the bot.

3. Appendix C: Web Scraping Techniques

A detailed explanation of the web scraping methods used, including XPath expressions and selectors for extracting price data from different websites. This also includes the list of websites from which drug prices were retrieved.

4. Appendix D: Testing Results

A set of test cases and results used to validate the functionality of the bot. This includes test data, expected outcomes, and any issues encountered during testing.

5. Appendix E: Error Handling Logs

Sample error logs that demonstrate how the bot handles exceptions, such as issues in retrieving price data, problems with file access, or email sending failures.

6. Appendix F: User Guide

A step-by-step guide for using the bot, including instructions on how to input the Excel sheet, run the automation process, and receive the email with the updated pricing information.

7. Appendix G: System Requirements

A list of the hardware and software requirements needed to run the bot, including the UiPath version, system configuration, and dependencies.

These appendices provide additional details and support the technical aspects of the project, ensuring that the implementation can be easily understood and replicated.

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