AUTOMATED PRODUCT DATA ENTRY FOR ECOMMERCE BOOKSTORE

A PROJECT REPORT

Submitted by

DIVYASHREE S (220701070)

in partial fulfillment for the course

OAI1903 - INTRODUCTION TO ROBOTIC PROCESS AUTOMATION

for the degree of

BACHELOR OF ENGINEERING

in

COMPUTER SCIENCE AND ENGINEERING

RAJALAKSHMI ENGINEERING COLLEGE

RAJALAKSHMI NAGAR

THANDALAM

CHENNAI – 602 105

NOVEMBER 2024

RAJALAKSHMI ENGINEERING COLLEGE

CHENNAI - 602105

BONAFIDE CERTIFICATE

Certified that this project report **"AUTOMATED PRODUCT DATA ENTRY FOR ECOMMERCE BOOKSTORE"** is the bonafide work of **"DIVYASHREE S (220701070)"** who carried out the project workfor the subject OAI1903-Introduction to Robotic Process Automationunder my supervision.

Mrs. J. Jinu Sophia, M.E. (Ph.D.),

Assistant Professor (SG),

Department of

Computer Science and Engineering

Rajalakshmi Engineering College

Rajalakshmi Nagar

Thandalam

Chennai - 602105

Submitted to Project and Viva Voce Examination for the subject

OAI1903-Introduction to Robotic Process Automation held on_____.

ABSTRACT

This project leverages Robotic Process Automation (RPA) to streamline product data entry for an eCommerce bookstore web application. The system eliminates the manual task of entering product details, such as book title, price, stock and description, by automating the process. Product information is extracted directly from an Excel sheet and entered into the Admin Panel of the web application by the RPA bot, ensuring accuracy and consistency. In addition to automating data entry, the system includes data manipulation to ensure consistent formatting and organization, along with error management to detect and log issues like missing fields or incorrect data, preventing faulty entries. Once the product is successfully added, the system automatically triggers email notifications to users, keeping them informed about new arrivals. Users can log into the User Panel to explore and purchase these newly added products. The proposed system offers several advantages, including time efficiency by significantly reducing the time spent on repetitive data entry, error reduction through automation, and improved productivity by allowing administrators to focus on strategic tasks. Additionally, the system enhances user engagement with timely notifications, provides scalability to handle an expanding product catalog, and reduces operational costs by minimizing manual effort.

ACKNOWLEDGEMENT

Initially we thank the Almighty for being with us through every walk ofour life and showering his blessings through the endeavour to put forth this report. Our sincere thanks to our Chairman **Thiru. S.Meganathan, B.E., F.I.E.,** our Vice Chairman **Mr. M.Abhay Shankar, B.E., M.S.,** and our respected Chairperson **Dr. (Mrs.) Thangam Meganathan, M.A., M.Phil., Ph.D.,** for providing us with the requisite infrastructure and sincere endeavouring in educating us in their premier institution.

Our sincere thanks to **Dr. S.N.Murugesan, M.E., Ph.D.,** our beloved Principal for his kind support and facilities provided to complete our work in time. We express our sincere thanks to **Dr. P.Kumar, M.E., Ph.D.,** Professor and Head of the Department of Computer Science and Engineering for his guidance and encouragement throughout the project work. We convey our sincere and deepest gratitude to our internal guides, **Mrs. J. Jinu Sophia, M.E., (Ph.D.),** Assistant Professor (SG), Department of Computer Science and Engineering for their valuable guidance throughout the course of the project. We are very glad to thank our Project Coordinators, **Dr. N.Durai Murugan, M.E., Ph.D.,** Associate Professor, and**Mr. B.Bhuvaneswaran, M.E.,** Assistant Professor (SG), Department of Computer Science and Engineering for their useful tips during our review to build our project.

DIVYASHREE S (220701070)

TABLE OF CONTENTS

LIST OF FIGURES

CHAPTER 1

INTRODUCTION

1.1 GENERAL

In today's digital world, automation is crucial for improving efficiency and reducing the manual effort required in various processes. For eCommerce platforms, updating product details is a vital but time-consuming task. Manually entering product information such as titles, authors, prices, and descriptions can lead to errors and delays, especially when dealing with large volumes of products.

Robotic Process Automation (RPA) is a technology designed to automate repetitive tasks, reducing the risk of human error and increasing productivity. This project uses RPA to automate the product data entry process for an eCommerce bookstore. By automating this task, the system ensures that product details are added quickly and accurately, freeing up administrators to focus on more strategic activities.

Additionally, the system includes features for data manipulation to ensure product information is consistently formatted and organized. It also has error management capabilities to detect and log issues, preventing incorrect data from being entered. Once the product is successfully added, the system automatically sends email notifications to users about new arrivals, enhancing user engagement.

This automation offers a wide range of benefits, significantly enhancing the flight search and booking process. By streamlining these tasks, it saves users considerable time, ensuring they can quickly access the information they need without the hassle of manual searching. The system guarantees that the flight details provided are accurate, up-to-date, and well-organized, reducing the chances of errors that often occur with manual data handling.

By minimizing the potential for human mistakes, the bot ensures that users can make well-informed decisions based on reliable, accurate data. This is particularly valuable for individual travelers who need quick, precise information for personal trips, as well as businesses managing corporate travel. The Flight Details Automation Bot is a powerful, scalable, and user-friendly tool that simplifies flight planning. It makes the entire process more efficient, less stressful, and far more accurate, providing a seamless experience for both personal and professional use.

1.2 EXISTING SYSTEM

The current flight search and booking process is largely manual, requiring users to check multiple websites for flight options and enter details manually. This leads to inefficiencies, potential errors, and delays. Users often need to compare flights across different platforms, which can result in outdated or incorrect information being presented. Additionally, the existing systems lack integration and personalization, making the experience less efficient and prone to mistakes, especially when dealing with high volumes of data or business travel needs. Overall, the current system is time-consuming and error-prone.

1.3 PROPOSED SYSTEM

The proposed solution uses a Flight Details Automation Bot to automate the flight search and booking process, improving efficiency and accuracy. The bot will automatically gather and organize up-to-date flight information, such as prices and availability, from various sources, eliminating the need for manual searches and reducing errors. It will present tailored flight options based on user preferences like travel dates and budget, ensuring reliable and personalized results. This integrated system will minimize human input, reduce mistakes, and provide a seamless, efficient booking experience for both individual travelers and businesses.

CHAPTER 2

LITERATURE REVIEW

2.1 GENERAL

Automation technologies have increasingly revolutionized industries, particularly in sectors like travel and eCommerce. The rise of Robotic Process Automation (RPA) has led to significant improvements in operational efficiency, data accuracy, and customer satisfaction by automating repetitive tasks that are prone to human error. RPA is widely used in various industries, especially for tasks like data entry, customer service, and flight booking. Studies by Lacity & Willcocks (2018) show that RPA helps reduce operational costs, boost productivity, and ensure better data accuracy. In travel, it is particularly effective in streamlining tasks like flight search, booking, and managing booking details, ensuring users have real-time, error-free data.

In the eCommerce sector, particularly in product data management, automation has been identified as a crucial tool for reducing manual effort. Research by Goehler (2020) highlights that automating product data entry improves catalog management and keeps product information up-to-date, which is essential for businesses to stay competitive. It eliminates human errors, enhances consistency, and saves time, enabling businesses to focus on strategic initiatives like enhancing user experience and expanding their product offerings.

RPA is also transforming flight booking systems. Papalambros et al. (2019) emphasized how automation helps manage large volumes of flight data, providing customers with accurate, real-time options while reducing the manual input required. This integration not only improves accuracy but also personalizes the booking experience by presenting options based on user preferences.

Moreover, automation systems have evolved to include features that improve user engagement. Kannan and Li (2019) demonstrated that personalized notifications and recommendations, powered by automation, lead to better customer satisfaction. In both flight booking and eCommerce, automated notifications about new products or deals keep users informed and engaged, encouraging repeat interactions.

Despite the clear advantages, challenges such as the initial investment in technology and the need for scalability remain. However, research by Avasarala et al. (2020) shows that businesses that adopt automation technologies are better positioned to handle increased data volumes and meet customer demands efficiently. The benefits of automation outweigh the drawbacks, as it enables businesses to provide faster, more accurate services, reducing operational costs and minimizing human error.

In summary, automation through RPA is transforming industries by improving efficiency, data accuracy, and user experience. It offers numerous benefits for both eCommerce and travel, and as technology continues to evolve, it will enable businesses to scale their operations while meeting customer expectations more effectively.

CHAPTER 3

SYSTEM DESIGN

3.1 SYSTEM FLOW DESIGN

A flowchart is a type of diagram that represents an algorithm, workflow or process. The flowchart shows the steps as boxes of various kinds, and their order by connecting the boxes with arrows. This diagrammatic representation illustrates a solution model to a given problem.

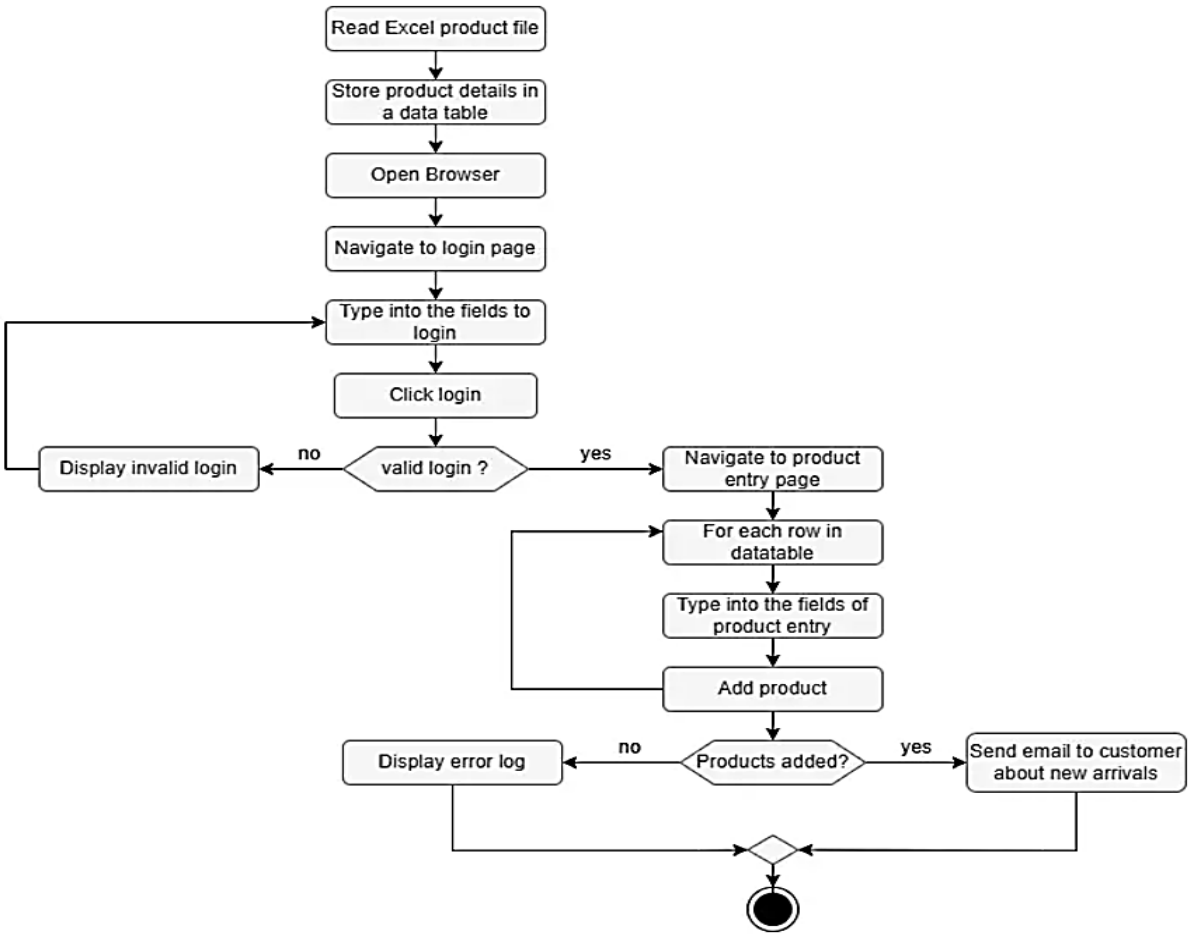


Fig 3.1 System Flow Design

3.2 ARCHITECTURE DIAGRAM

An Architecture Diagram for the Flight Details Automation Bot visually represents system's components and their interactions. It highlights the user interface, data extraction, processing, storage, and notification layers, showing how flight details are gathered, organized in Excel, and sent via email. This diagram simplifies understanding the overall system design and flow, helping stakeholders grasp how each part contributes to the automation process.

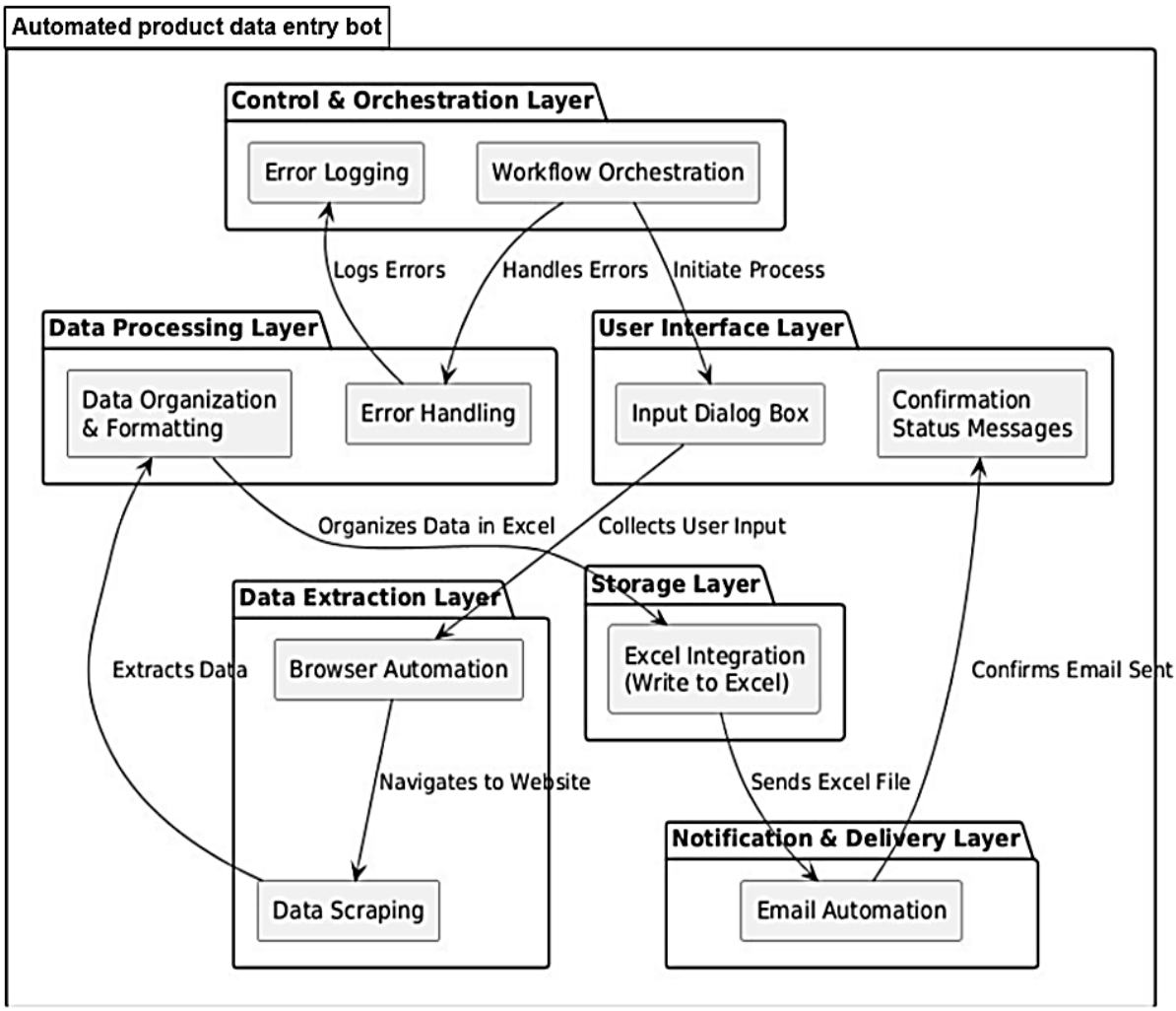


Fig 3.2 Architecture Diagram

3.3 SEQUENCE DIAGRAM

A sequence diagram is a type of interaction diagram because it describes how—and in what order—a group of objects works together. A sequence diagram is a type of UML (Unified Modeling Language) diagram that illustrates the interactions and messages exchanged between different components or objects in a system over time. It provides a dynamic view of a system, focusing on the order of interactions between objects or components.

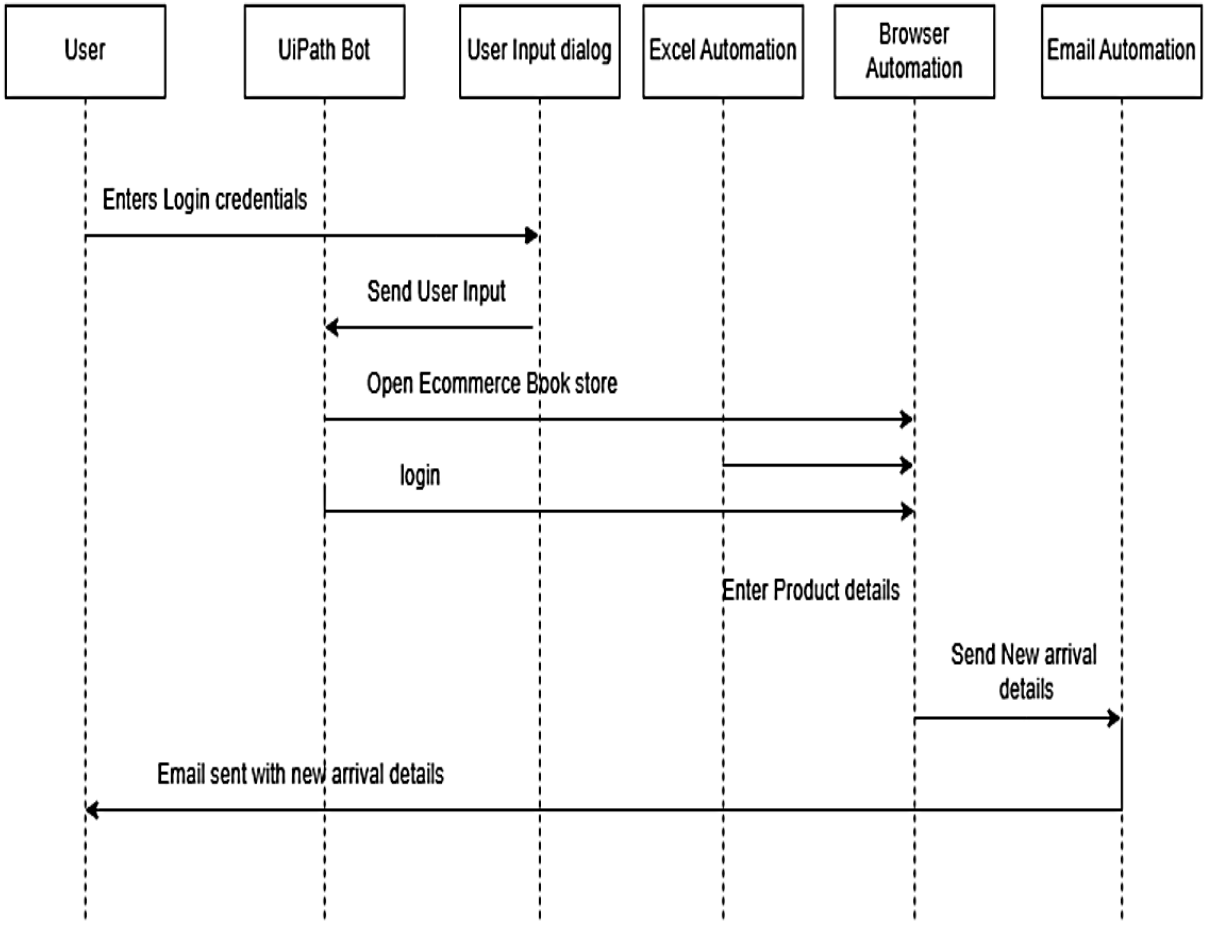


Fig 3.2 Sequence Diagram

CHAPTER 4

PROJECT DESRIPTION

4.1 CREATING PROJECT

Open UiPath Studio and check for the version of the application. While it’s not compulsory to work with the latest version, it is recommended as some features might have been added or few changes might have been made to the already existing Packages/Activities/Properties etc. Once the application is opened, createa new process, name the file and choose the directory where the UiPath files must be stored. Once you are done with the following steps, you will be good to continuewith the next steps of actually Creating the Project.

4.2 PACKAGES REQUIRED

For the successful completion of the Flight Details Automation Bot, it's crucial to download the necessary packages to enable the required activities. The following packages should be installed:

UiPath.WebAPI.Activities: For web scraping and data extraction.

UiPath.Excel.Activities: To work with Excel files and organize flight data.

UiPath.Mail.Activities: For sending the Excel file via email.

UiPath.UIAutomation.Activities : For sending emails with attachments (Excel file).

UiPath.System.Activities: For basic workflow automation tasks like logging & exception.

4.3 PROJECT WORKFLOW

Now, as we know the objective of the project it is time to create the workflow that actually makes up the project. The workflow for this project is simple.

4.3.1 ACTIVITES USED

To create the project the following activities are required:

1. Excel Application Scope
2. Data Table
3. Read Range
4. Open Browser
5. Attach Browser
6. Type Into
7. Click
8. For each row
9. Send SMTP Mail Messages
10. Delay

4.3.2 EXPLAINING SEQUENCE

Here's the sequence of the Flight Details Automation Bot project, detailing each step in the workflow from start to finish:

1. Excel Application Scope

This activity opens the Excel file containing the product details such as title, author, price, and description. It establishes a controlled environment for accessing and manipulating the data, ensuring the file is ready for subsequent actions like reading or writing.

2. Read Range

Reads a specified range of data from the Excel file into a **Data Table**. This ensures all product details are captured in a structured format for efficient processing. The activity is designed to handle large volumes of data, making it scalable.

3. Data Table

The product details extracted from the Excel file are stored in a **Data Table**, which acts as a central structure. This format allows the bot to easily iterate through each row of data, mapping the columns to corresponding fields in the web application.

4. Open Browser

Launches a web browser and navigates to the Admin Panel of the eCommerce platform. This sets up the environment for product data entry and ensures the bot interacts with the correct web application.

5. Attach Browser

Ensures the bot remains focused on the active browser session during the workflow. This activity prevents the bot from being disrupted by other browser windows or tabs, keeping the automation precise and reliable.

6. For Each Row

Iterates through each row in the **Data Table**, processing one product's details at a time. This step ensures all product information from the Excel file is entered into the web application sequentially.

7. Type Into

Inputs data from the **Data Table** into the corresponding fields in the Admin Panel. For example, the bot types the product title, author, price, and description into their respective input boxes, ensuring accuracy by mapping data directly.

8. Click

Simulates clicking the "Add Product" button in the Admin Panel. This action submits the entered details and adds the product to the eCommerce system's database.

9. Delay

Introduces short pauses between operations to ensure the system has sufficient time to process each action. For example, a delay after clicking the "Add Product" button allows the system to update the database before the bot proceeds to the next product.

10. Send SMTP Mail Messages

Sends email notifications to users informing them about the newly added products. This activity uses the configured SMTP server to send automated emails with details about the product arrivals, improving user engagement and keeping customers informed.

CHAPTER 5

OUTPUT SCREENSHOTS

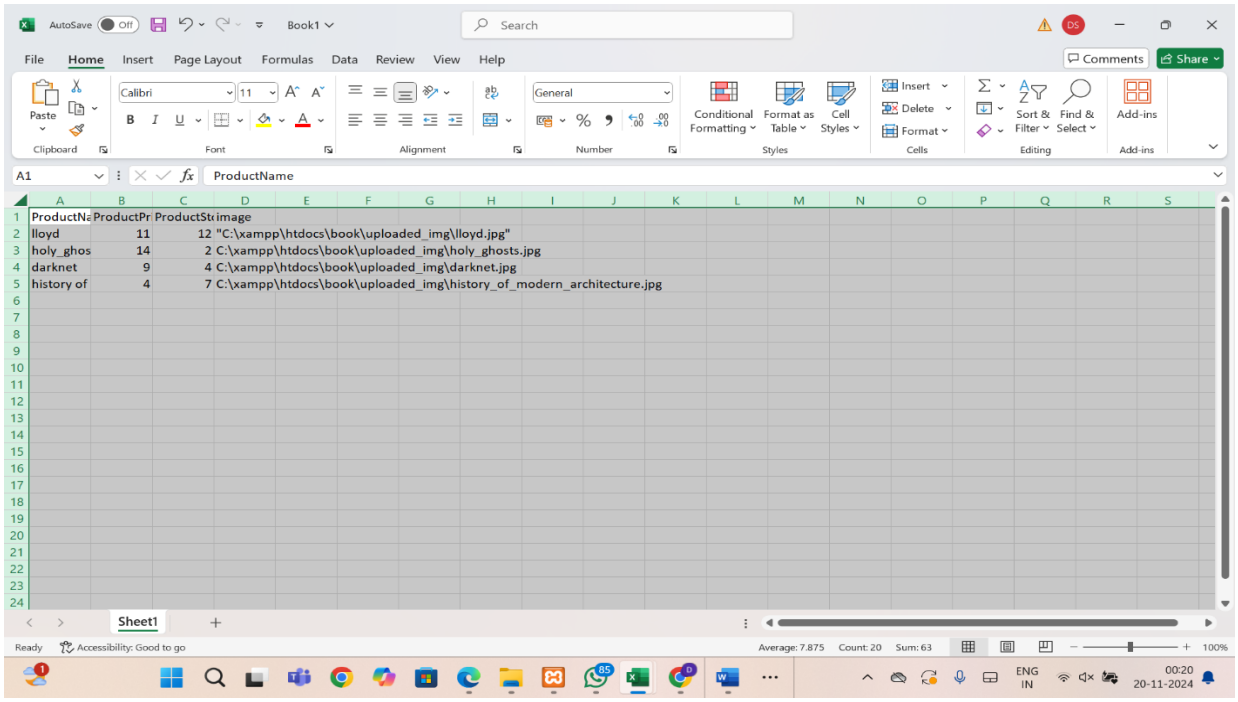


Fig 5.1 Product Details Excel Sheet

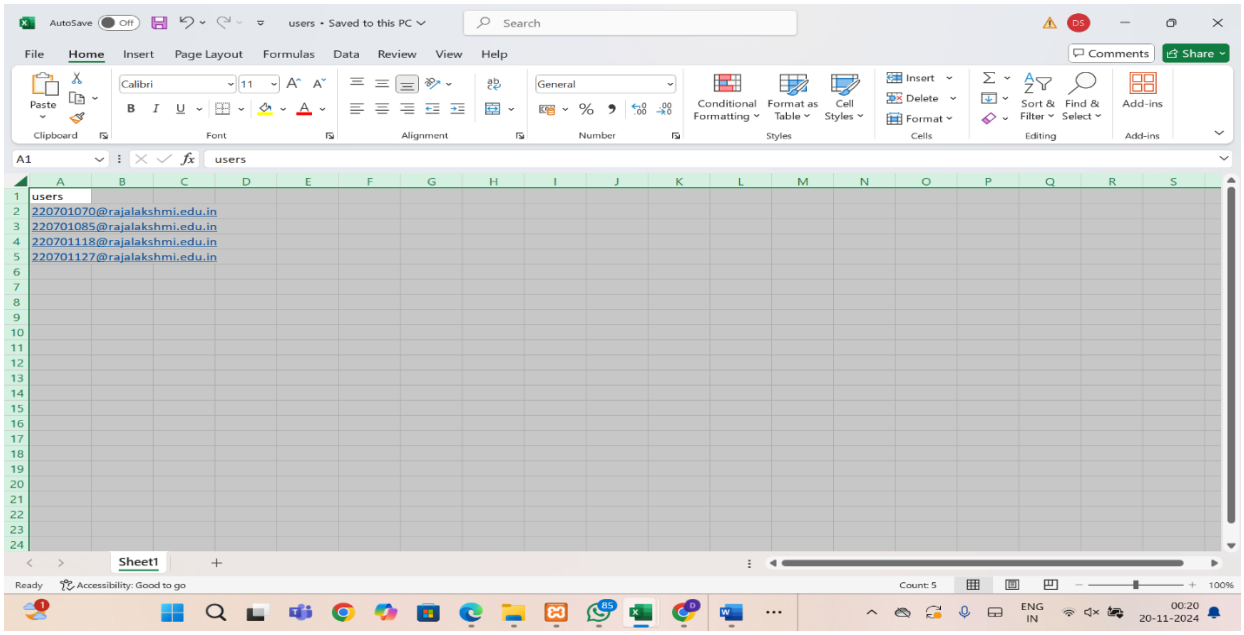


Fig 5.2 User Email Address Excel Sheet

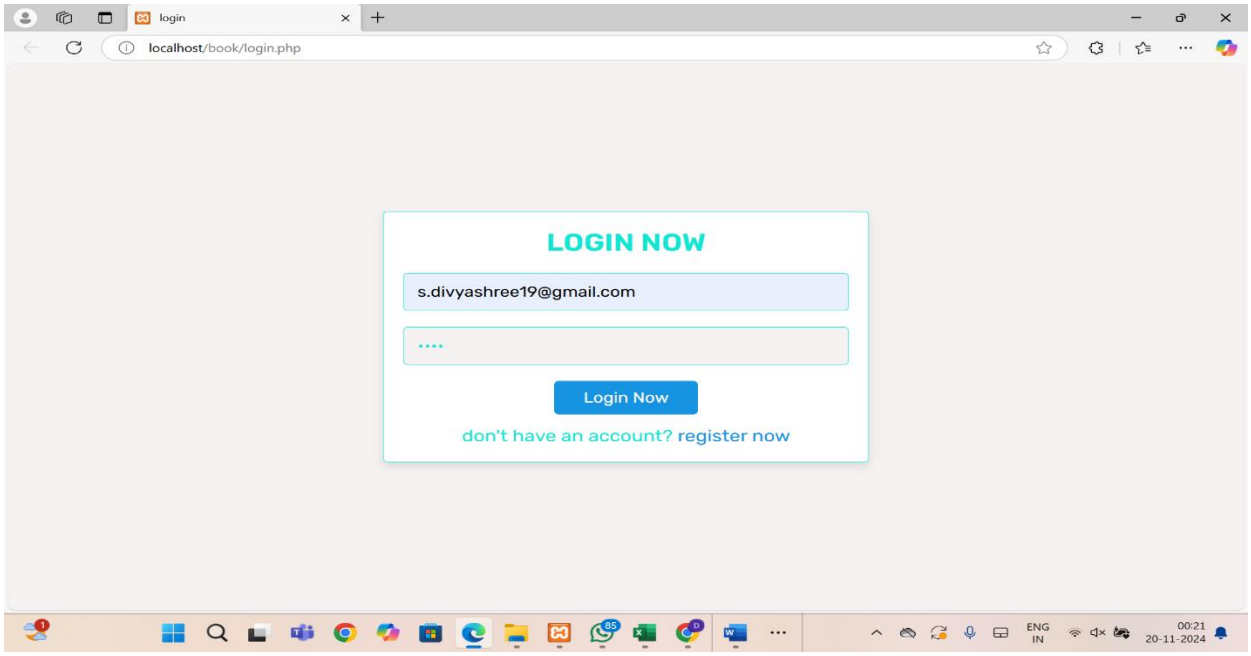


Fig 5.3 Login Page- Web Browser

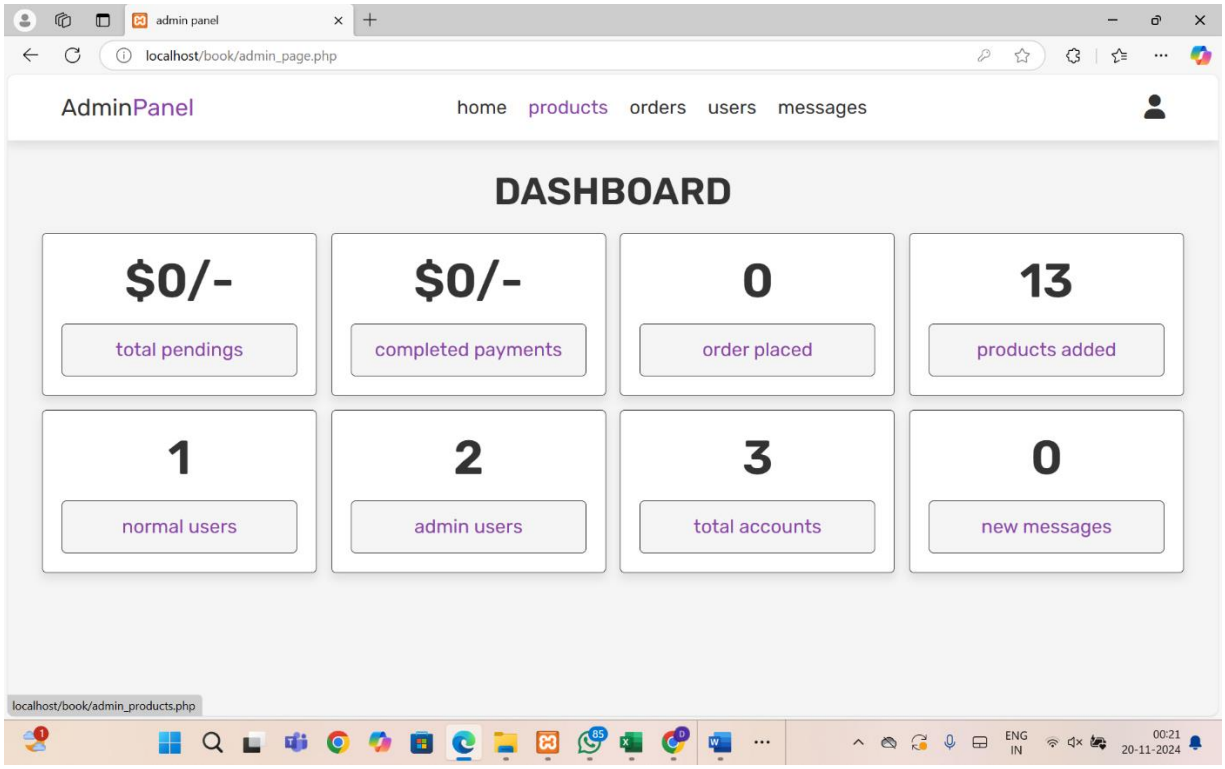


Fig 5.4 Admin Dashboard

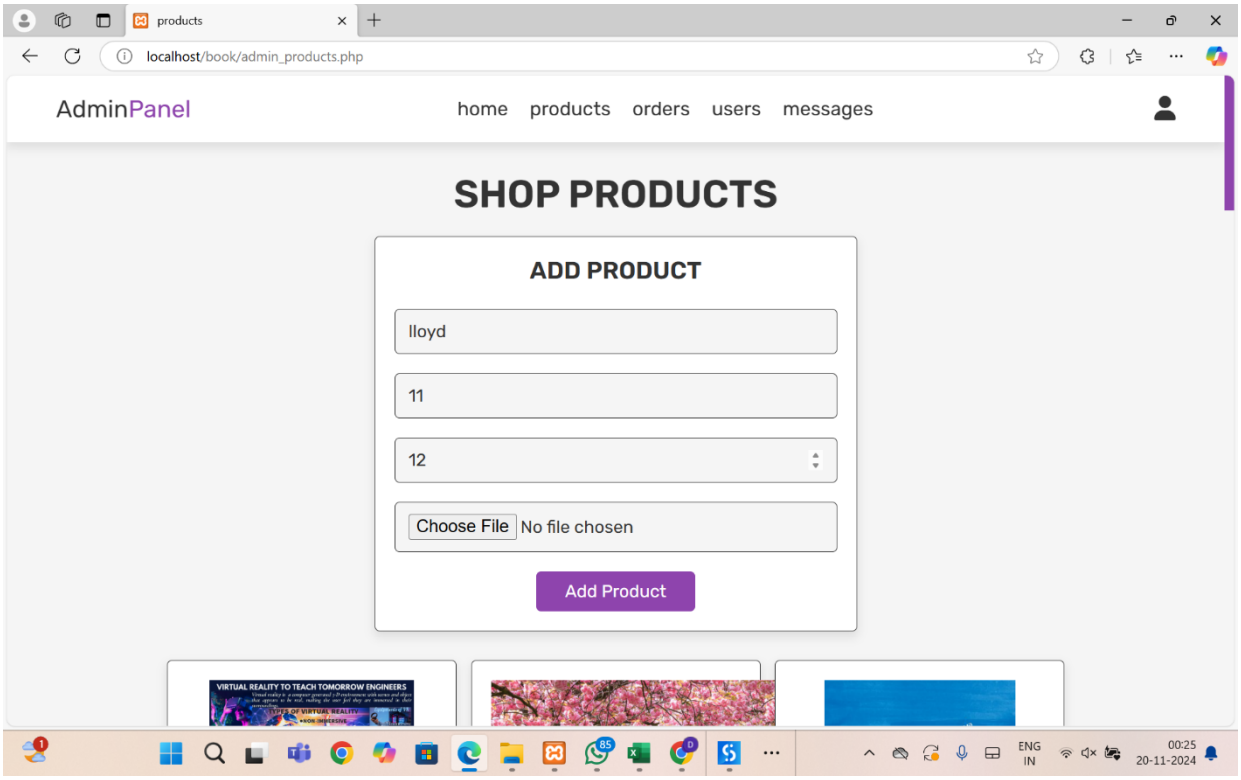


Fig 5.5 Product Data Entry

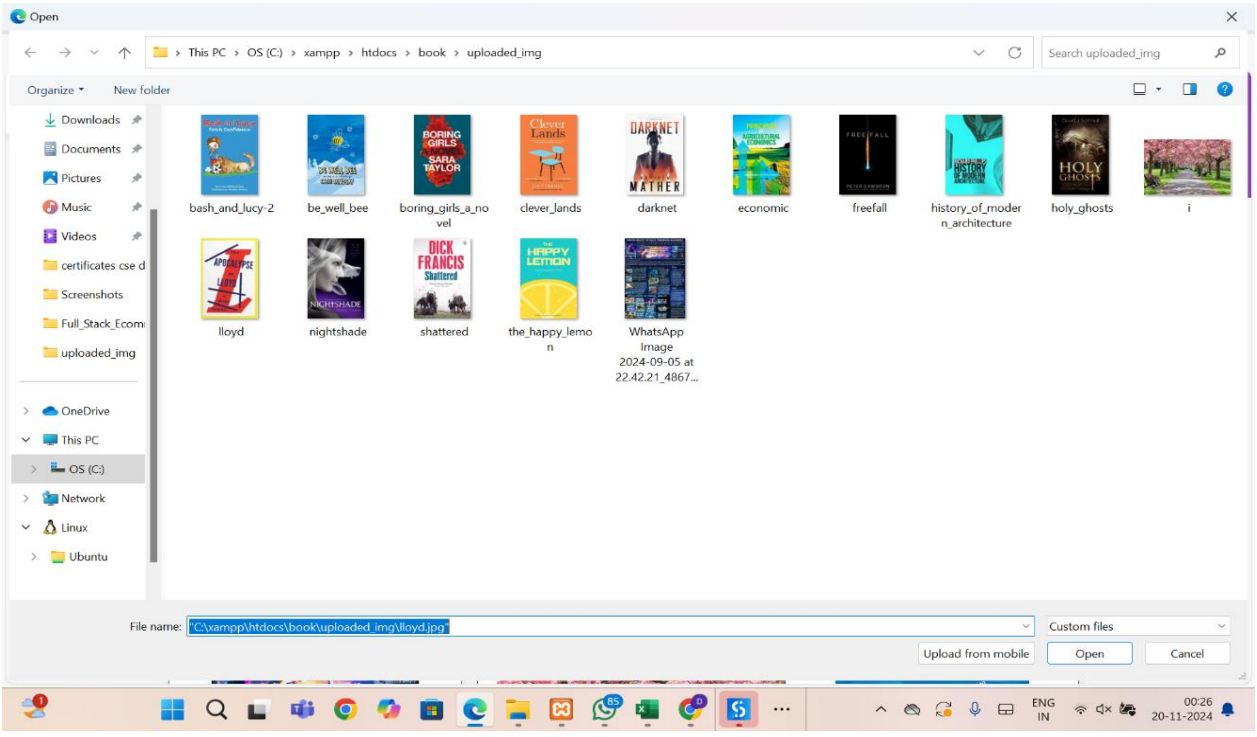


Fig 5.6 Product Image Upload

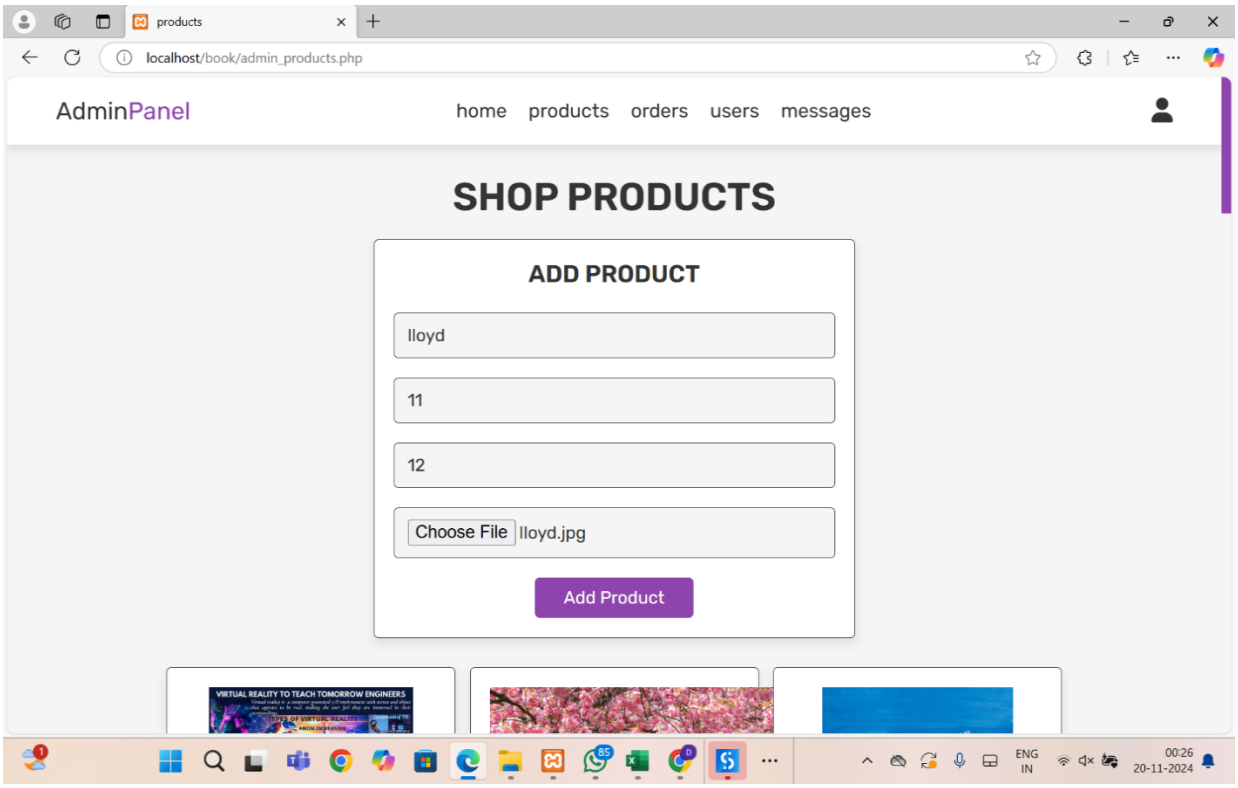


Fig 5.7 Add Products

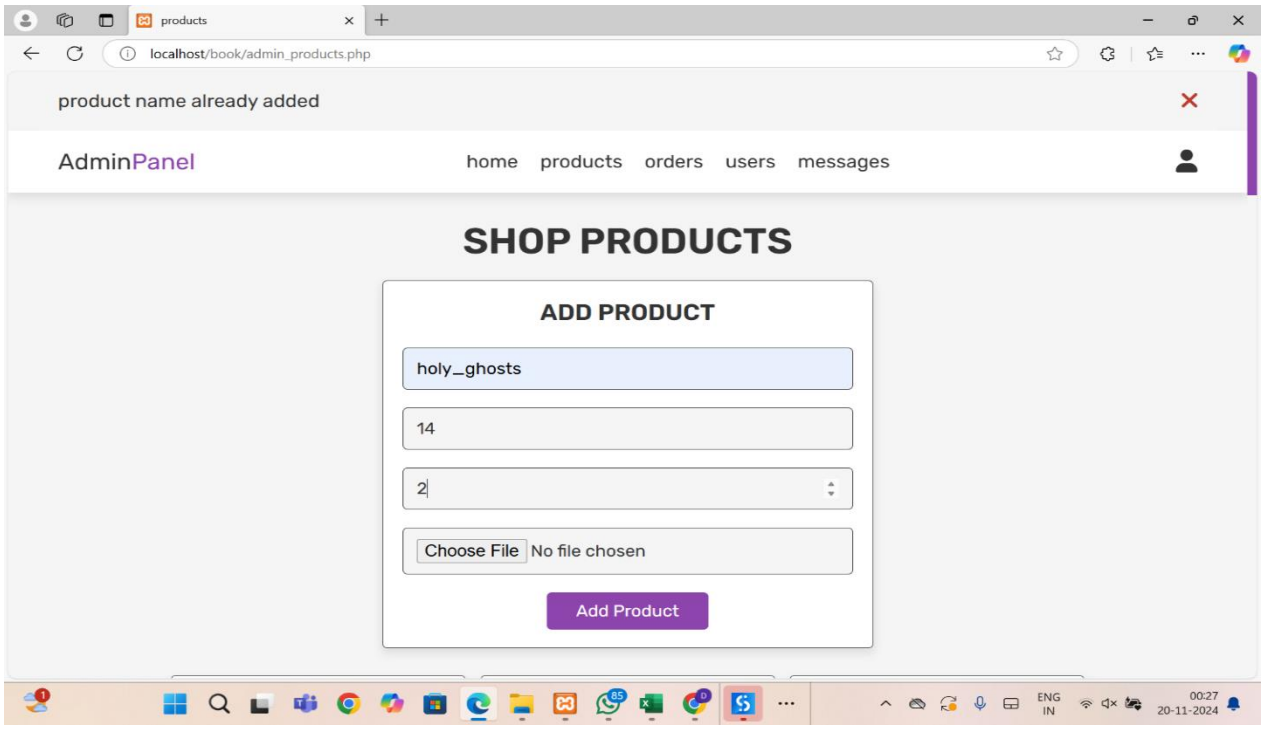


Fig 5.8 Product Data Entry

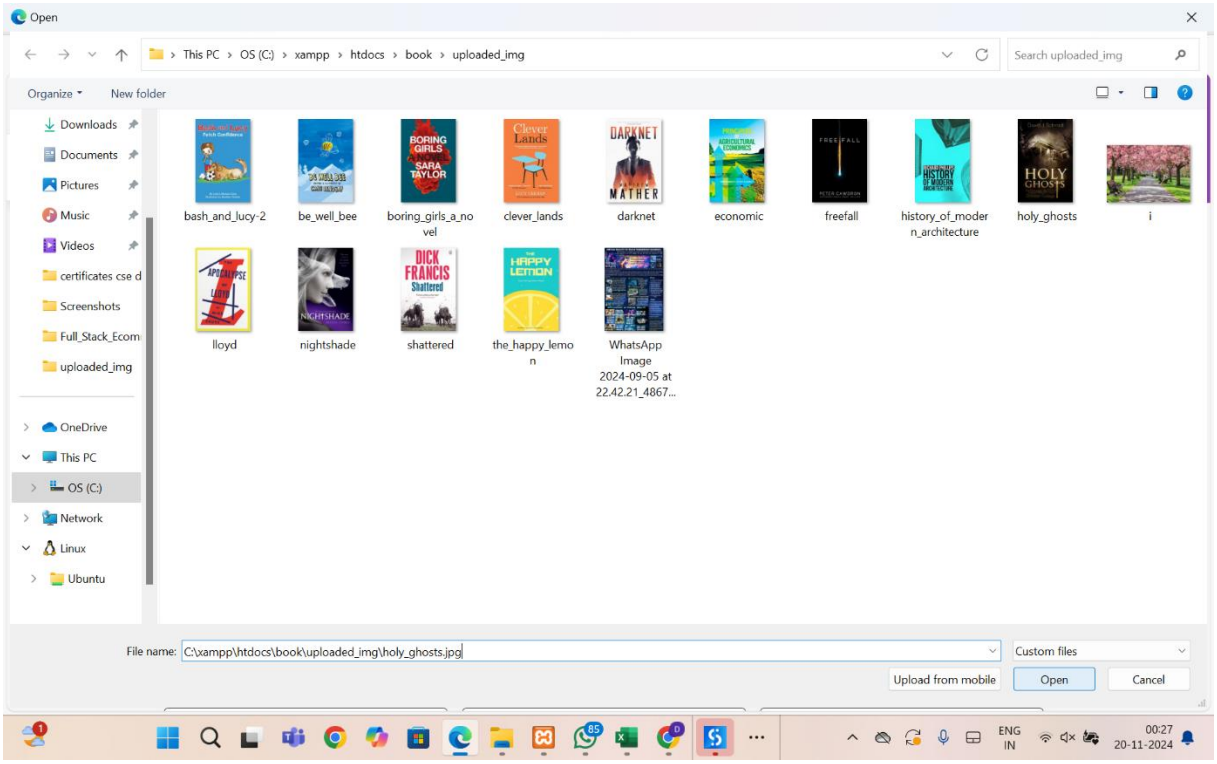


Fig 5.9 Product Image Upload

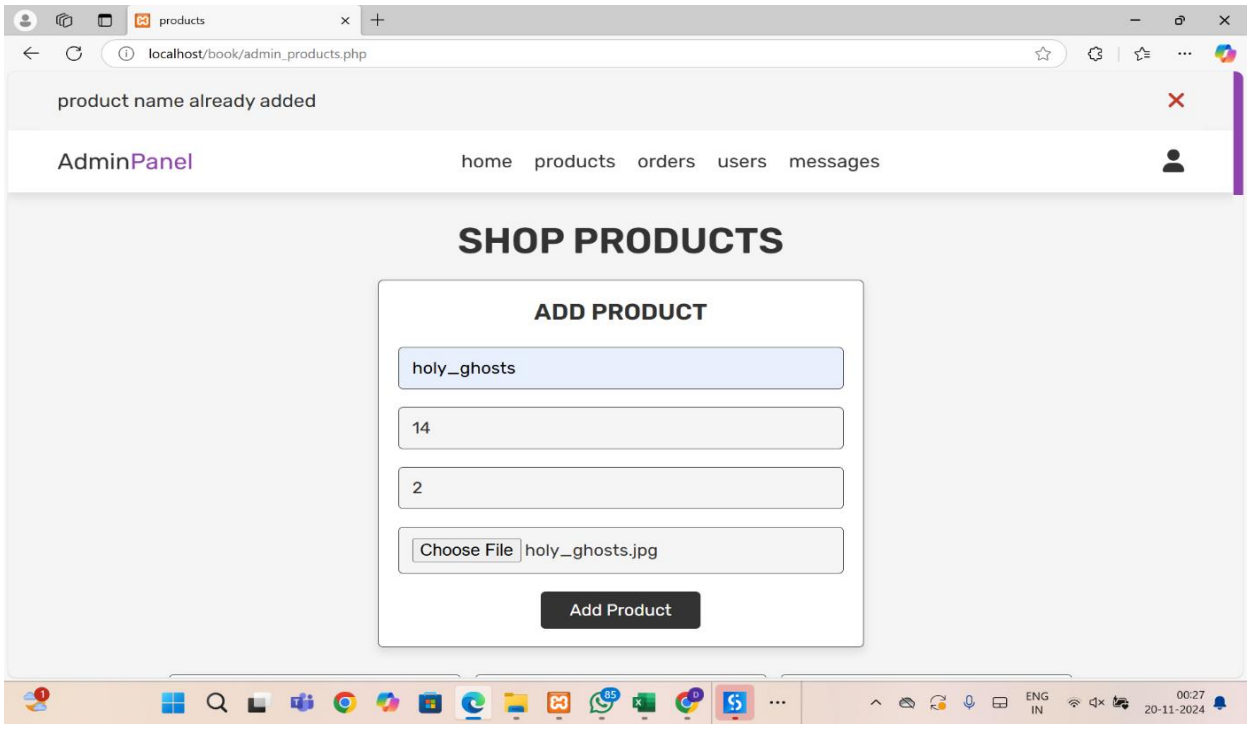


Fig 5.8 Add Product

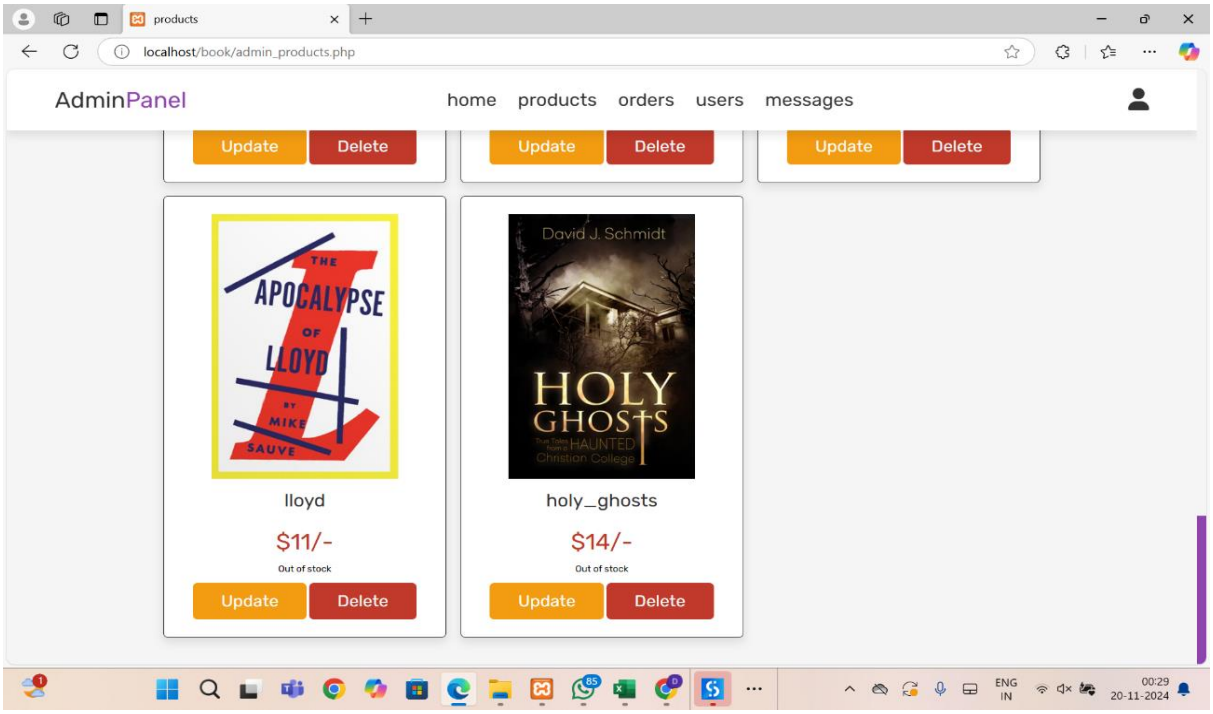


Fig 5.9 Products Added To Web Application

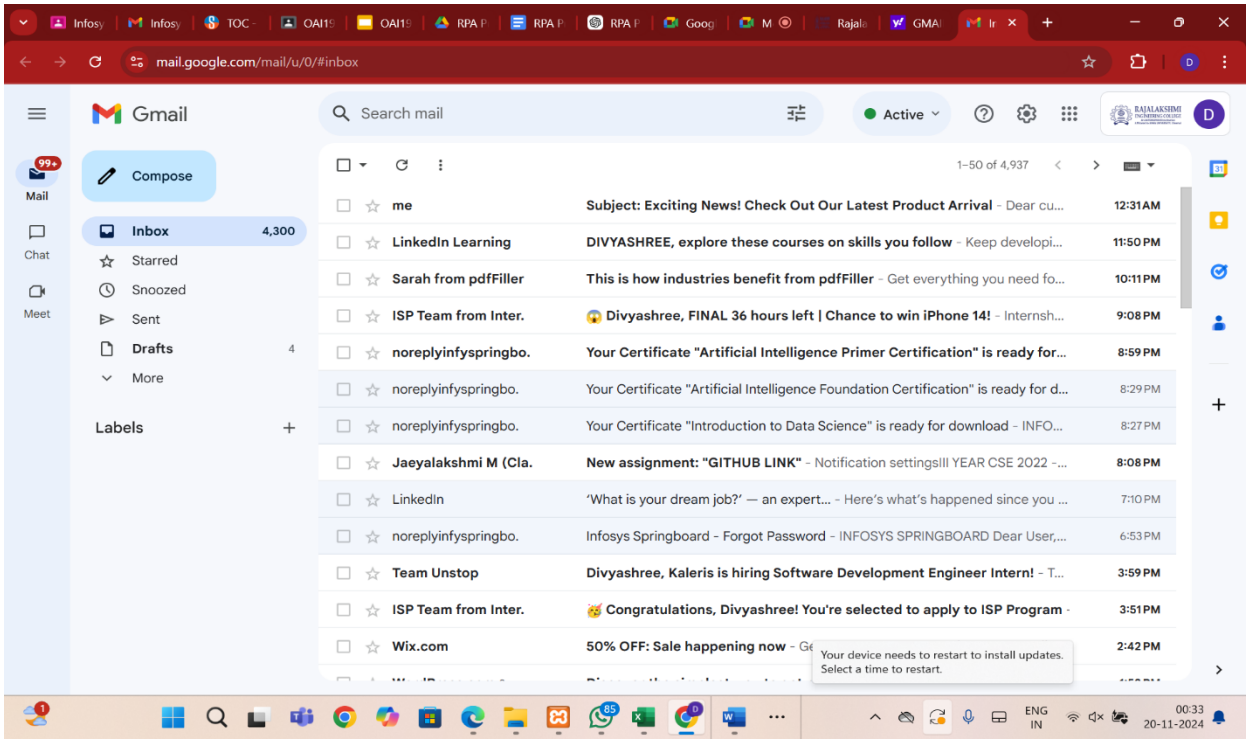


Fig 5.10 Email Sent To Users About New Arrivals

CHAPTER 6

CONCLUSION

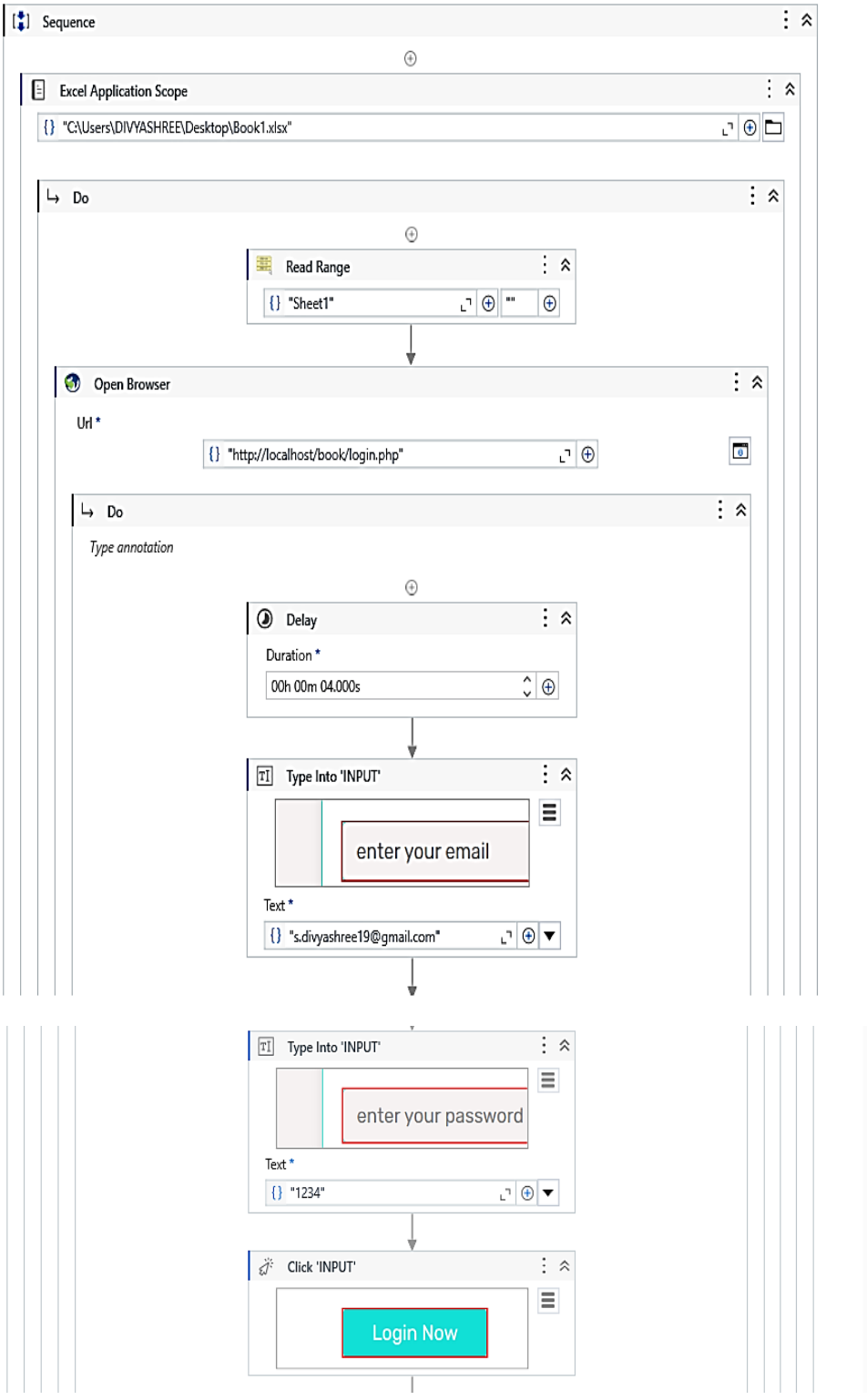
The project, **Automated Product Data Entry for an eCommerce Bookstore**, successfully implements Robotic Process Automation (RPA) to streamline the process of entering product details into an online platform. By automating this repetitive task, the system reduces manual effort, saves time, and minimizes errors associated with human input. Through the use of structured workflows, the bot efficiently extracts product information from an Excel file and enters it into the Admin Panel of the eCommerce site, ensuring accuracy and consistency in the data.

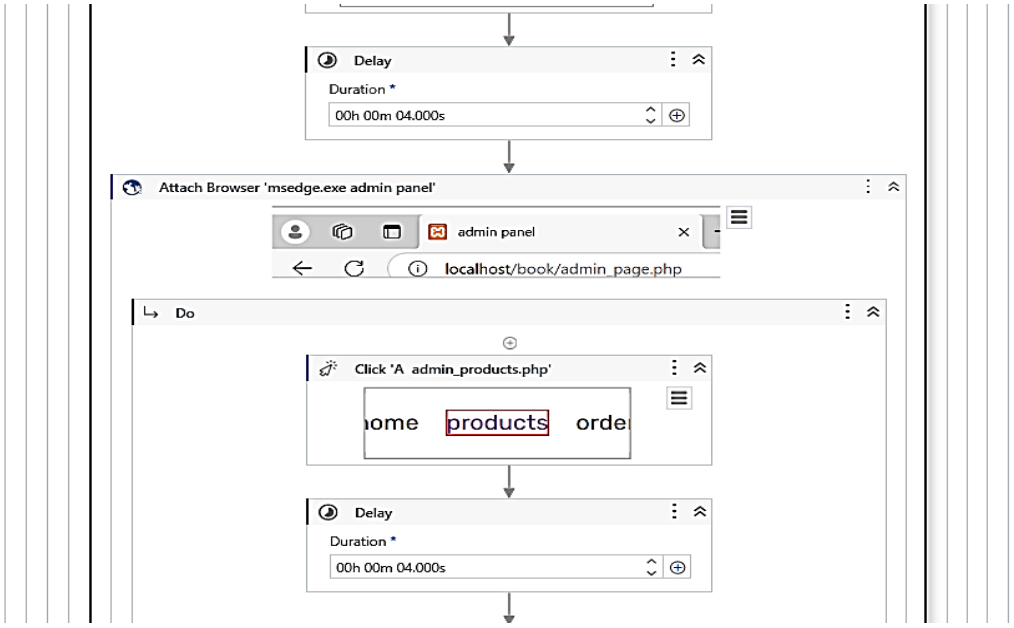
Additionally, the integration of email notifications to users about new product arrivals enhances user engagement, keeping customers informed and engaged with the platform. The automation provides significant advantages in terms of scalability, allowing the system to handle increasing volumes of data as the product catalog grows. Overall, this RPA solution not only improves operational efficiency but also enhances the user experience, providing a more streamlined and reliable process for both administrators and customers.

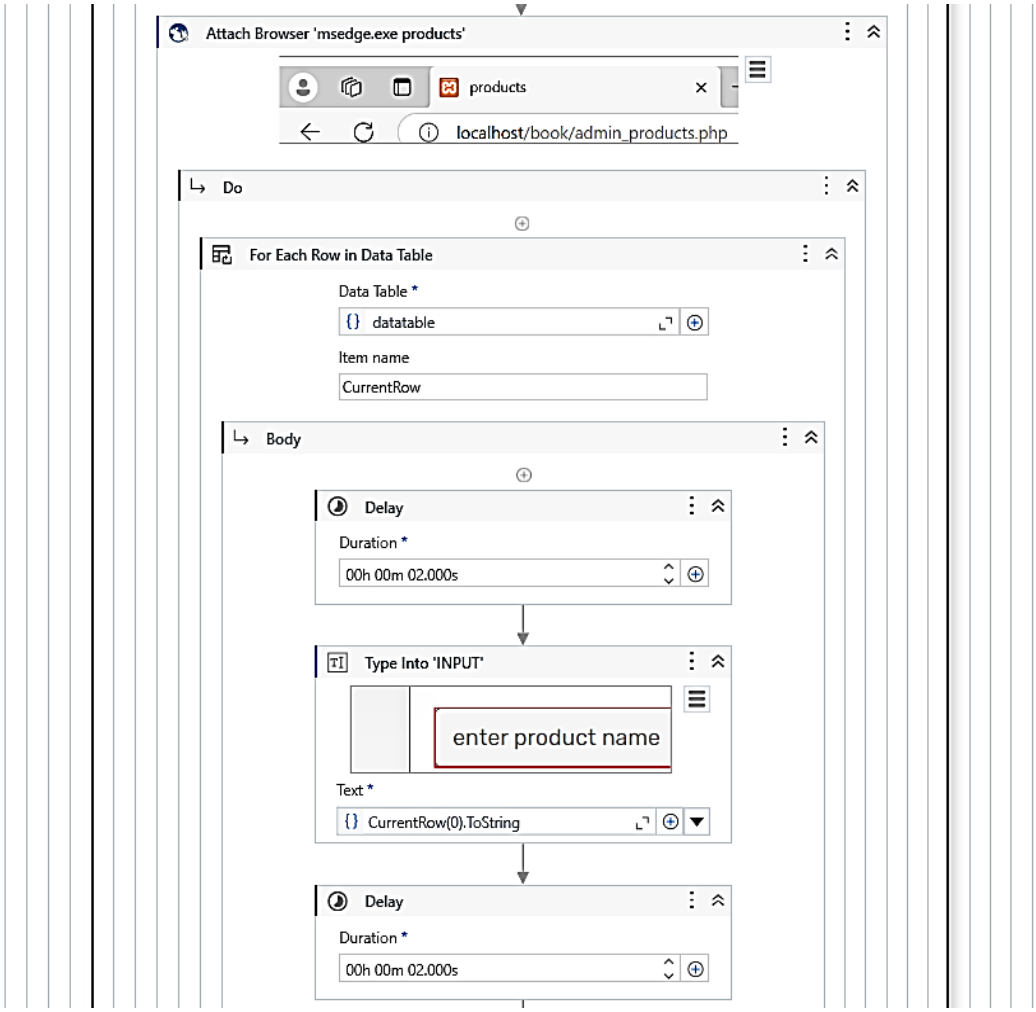
This system offers a strong foundation for future improvements, such as incorporating advanced data validation, adding product categorization features, or expanding the automation to include other repetitive tasks within the eCommerce platform.

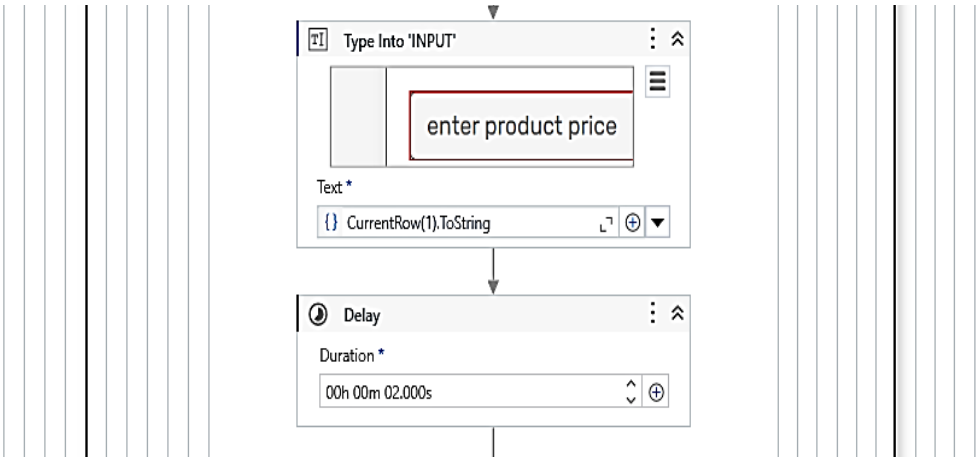
APPENDIX

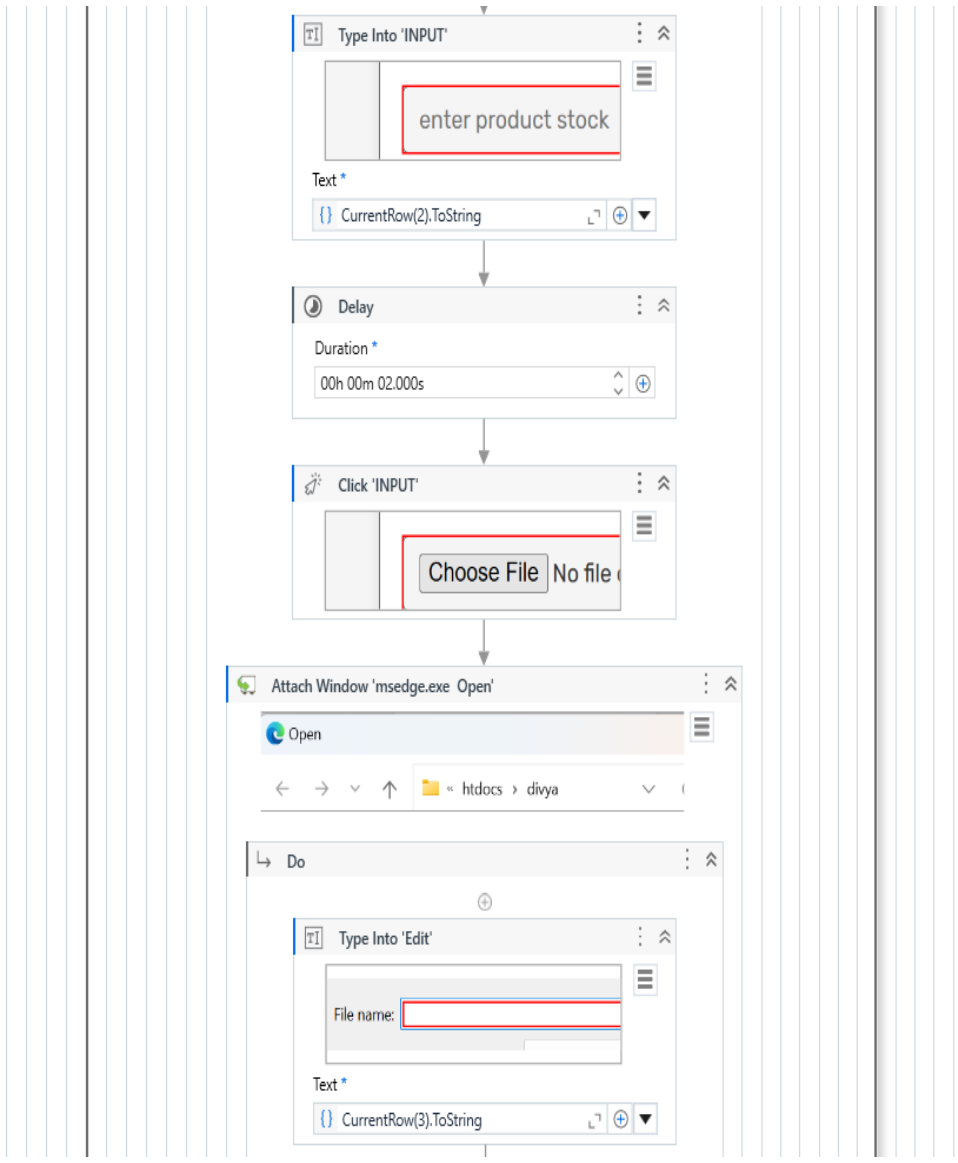
SAMPLE PROCESS

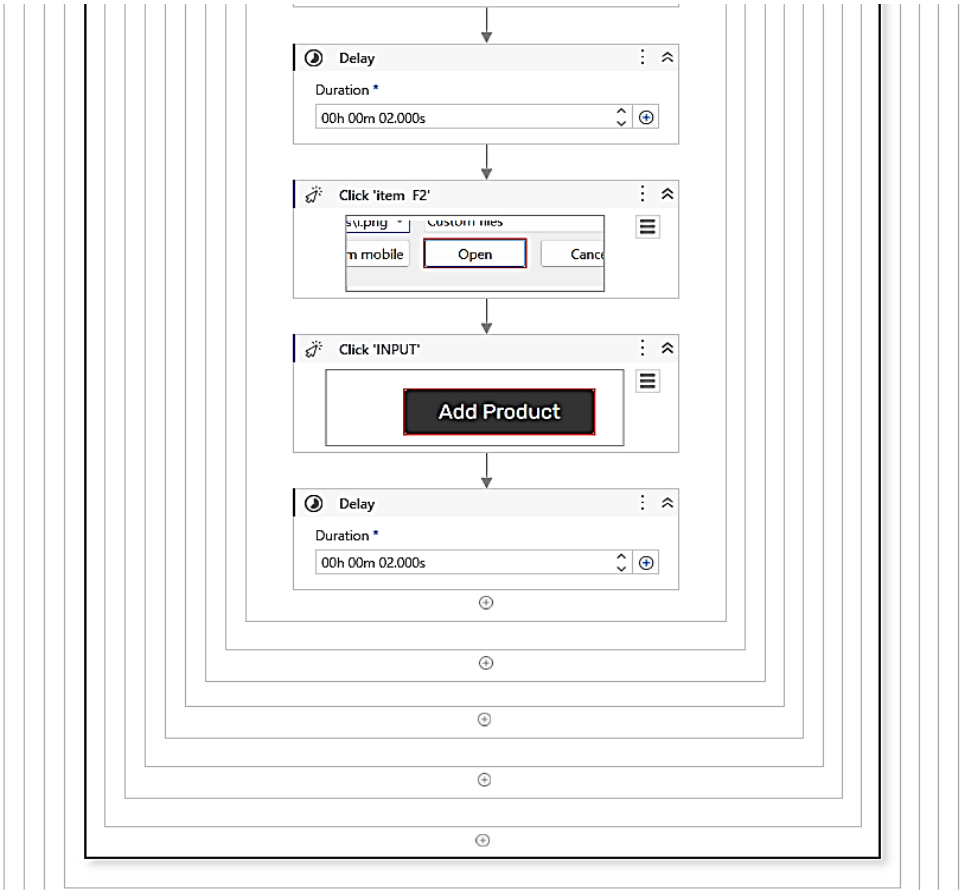


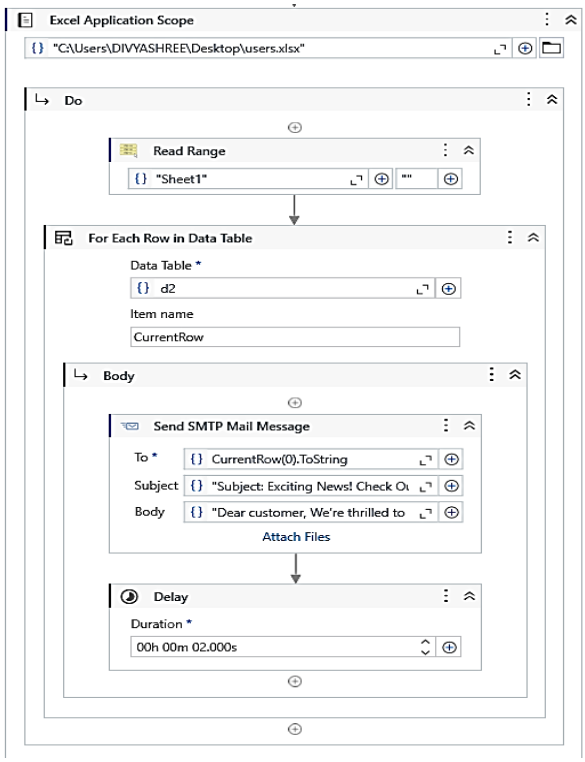

Delay
Duration *
00h 00m 04.000s
Attach Browser 'msedge.exe admin panel'
admin panel
localhost/book/admin_page.php
Do
Click 'A admin_products.php'
ome products orde
Delay
Duration *
00h 00m 04.000s


Attach Browser 'msedge.exe products'
products
localhost/book/admin_products.php
Do
For Each Row in Data Table
Data Table *
datatable
Item name
CurrentRow
Body
Delay
Duration *
00h 00m 02.000s
Type Into 'INPUT'
enter product name
Text *
CurrentRow(0).ToString
Delay
Duration *
00h 00m 02.000s


Type Into 'INPUT'
enter product price
Text *
{} CurrentRow(1).ToString
Delay
Duration *
00h 00m 02.000s


Type Into 'INPUT'
enter product stock
Text *
{} CurrentRow(2).ToString
Delay
Duration *
00h 00m 02.000s
Click 'INPUT'
Choose File
No file
Attach Window 'msedge.exe Open'
Open
« htdocs › divya
Do
Type Into 'Edit'
File name:
Text *
{} CurrentRow(3).ToString


Delay
Duration *
00h 00m 02.000s
Click 'item F2'
Open
Click 'INPUT'
Add Product
Delay
Duration *
00h 00m 02.000s


Excel Application Scope
"C:\Users\DIVYASHREE\Desktop\users.xlsx"
Do
Read Range
"Sheet1"
For Each Row in Data Table
Data Table *
d2
Item name
CurrentRow
Body
Send SMTP Mail Message
To *
CurrentRow(0).ToString
Subject
"Subject: Exciting News! Check Ou
Body
"Dear customer, We're thrilled to
Attach Files
Delay
Duration *
00h 00m 02.000s

REFERENCES

1. UiPath Forum: The UiPath Forum community where users share their experiences and solutions. https://forum.uipath.com/
2. UiPath Documentation: The official documentation of UiPath features and functionalities https://docs.uipath.com/