

THE MAILMINDER BOT

A PROJECT REPORT

Submitted by

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BONAFIDE CERTIFICATE

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ABSTRACT

"MailMinder: An Intelligent Email Management and Automation Bot"

"MailMinder" is an advanced Robotic Process Automation (RPA) solution built using UiPath, designed to revolutionize email management and streamline critical operations. This innovative bot automates key tasks such as extracting payment details, organizing emails into designated folders, and summarizing email content, significantly reducing manual effort while enhancing accuracy and productivity.

Users provide a specified email account, and the bot intelligently processes incoming emails, employing advanced algorithms to extract crucial payment information such as invoice numbers, due dates, and amounts. It further identifies and categorizes important emails, automatically moving them into a dedicated folder to ensure streamlined organization. Additionally, MailMinder compiles key email details into a comprehensive and user-friendly report, facilitating efficient tracking and analysis.

By leveraging intelligent data extraction and automation, "MailMinder" eliminates the risk of human error, accelerates operational workflows, and ensures the timely handling of critical communications. This RPA-driven solution exemplifies how automation can enhance efficiency and maintain organization in dynamic professional environments, setting a benchmark for intelligent email management.

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LIST OF ABBREVIATIONS

ABBREVIATION	ACCRONYM
RPA	Robotic Process Automation
AI	Artificial Intelligence
IMAP	Internet Message Access Protocol
REGEX	Regular Expression
OCR	Optical Character Recognition
HTTP	Hypertext Transfer Protocol

CHAPTER 1

1.1 INTRODUCTION

In today's fast-paced digital world, email remains one of the most critical modes of communication for individuals and organizations alike. However, with the ever-increasing influx of emails, managing and organizing one's inbox can become a daunting task. Important emails often get buried under countless promotions, spam, and less critical messages, leading to missed deadlines, overlooked payments, and reduced productivity.

To address this challenge, the **MailMinder Bot** was conceptualized and developed as an innovative tool to streamline email management. This project aims to provide users with an efficient way to extract crucial information from emails, prioritize them, and organize them for better accessibility and productivity. By leveraging automation, the MailMinder Bot significantly reduces manual effort while ensuring that no important emails are missed.

The MailMinder Bot leverages advanced algorithms to streamline email management by performing three core functionalities. First, it automatically identifies and extracts payment-related information such as due dates, invoice numbers, and amounts from emails, ensuring users never miss critical payment deadlines. Second, it enhances inbox organization by moving high-priority emails to a designated "Important" folder, enabling quick access and improved management of essential communications. Finally, the bot records key details from selected emails into a structured format, providing users with an organized log for easy reference and documentation. Together, these features make the MailMinder Bot an indispensable tool for efficient and stress-free email handling.

This report outlines the design, development, and implementation of the MailMinder Bot, including its architecture, features, and benefits. By automating email management, the bot not only saves time but also enhances the user's ability to focus on more meaningful tasks, thus fostering improved productivity and efficiency in communication management.

the MailMinder Bot serves as a powerful solution to the challenges of email management by automating critical tasks like payment detail extraction, inbox organization, and email logging. With its efficiency and user-centric design, the bot helps users stay organized, save time, and focus on more important tasks, making it an indispensable tool for managing digital communication effectively.

In the current scenario, managing email data and extracting critical information from emails involves substantial manual effort. Users manually read through emails to identify important details such as payment due dates, amounts, and transaction IDs, which are then documented separately in spreadsheets or other tools. This process is repetitive, time-consuming, and prone to human error.

Sorting emails into designated categories, such as "Important" or "Payment Details," requires additional manual effort and often lacks consistency, leading to overlooked or delayed responses to critical communications.

Moreover, any attempt to cross-validate extracted data with external systems or databases typically requires multiple tools and manual intervention, adding to inefficiency. These manual processes not only reduce productivity but also limit scalability when dealing with large volumes of emails.

Overall, the existing system lacks automation, precision, and the ability to streamline tasks, creating a need for a smarter, more efficient solution to manage email workflows. "MailMinder" aims to address these challenges through intelligent automation.

1.2 OBJECTIVE

The primary objective of the "MailMinder Bot" is to revolutionize email management by automating key processes. By leveraging advanced algorithms, the bot aims to efficiently extract payment-related details, organize high-priority emails into an "Important" folder, and log essential email information. The project seeks to provide users with a streamlined, accurate, and time-saving solution to manage their inbox effectively, ensuring no critical emails are overlooked.

1.3 EXISTING SYSTEM

In today's fast-paced digital environment, managing and organizing emails has become a challenging and time-consuming task. Users often struggle to identify and prioritize important emails, extract critical information, and maintain an organized inbox amidst the overwhelming influx of messages. This process requires constant attention and effort, leading to reduced productivity and missed opportunities. The need for an automated and efficient solution to streamline email management and enhance productivity is increasingly evident.

1.4 PROPOSED SYSTEM

The "MailMinder Bot" is envisioned as a transformative solution to the challenges of email management. By leveraging advanced automation techniques, the bot systematically processes emails to extract key payment-related details, such as due dates, invoice numbers, and amounts, while organizing high-priority messages into an "Important" folder for quick access. Additionally, it logs essential email details into a structured format, ensuring seamless documentation and reference. The proposed system aims to significantly reduce the manual effort required for email organization, offering users a tool that enhances productivity and ensures no critical messages are overlooked. Through this project, we aspire to redefine email management by integrating intelligent automation into everyday

communication workflows. By seamlessly integrating with external services for data validation and leveraging automation for repetitive tasks, MailMinder minimizes human intervention while maintaining accuracy and consistency. Once all emails are processed, the bot provides a comprehensive report and signals the completion of its operations. "MailMinder" not only optimizes email management but also empowers users to focus on critical decision-making by reducing manual workload, enhancing efficiency, and promoting seamless workflow in modern communication management.

CHAPTER 2

LITERATURE REVIEW

2.1 SURVEY ON ROBOTIC PROCESS AUTOMATION (RPA) IN EMAIL MANAGEMENT

Robotic Process Automation (RPA) has proven to be a transformative tool in automating repetitive tasks across industries, particularly in email management. RPA enhances efficiency by automating routine tasks such as email sorting, data extraction, and prioritization, but challenges remain in handling unstructured email data. The literature review of research papers related to RPA in Email Management is listed below:

[1] **Rathod, S. et al. (2021):** This study focused on integrating machine learning (ML) with RPA to handle high email volumes in corporate environments. Their system categorized emails, extracted key data fields, and improved operational efficiency by 40%, though the lack of contextual understanding in emails posed limitations.

[2] **Jiang, L. & Zhang, W. (2020):** The researchers implemented an RPA system for financial institutions to process invoices received via email. Using natural language processing (NLP), their solution extracted invoice details and reduced manual intervention by 60%, highlighting the need for NLP in handling semi-structured data.

2.2 SURVEY ON DATA EXTRACTION FROM EMAILS

Data extraction from emails involves identifying and capturing structured or unstructured information, such as payment details or invoice data. While RPA tools offer significant potential, issues with unstructured data remain a key

challenge. The literature review of research papers related to Data Extraction from Emails is listed below:

[3] **Ahmed, R. et al. (2022):** This research compared rule-based and machine learning-based approaches for extracting data from email bodies. The ML-based system achieved 85% accuracy in extracting details like invoice numbers and payment dates, outperforming traditional rule-based methods.

[4] **Gupta, P. & Verma, N. (2023):** A hybrid approach combining RPA with deep learning was proposed for financial data extraction. Their system demonstrated high precision in parsing unstructured data but faced difficulties in processing inconsistent email formats.

2.3 SURVEY ON EMAIL ORGANIZATION AND PRIORITIZATION

Email organization is a critical aspect of managing high email volumes, with advancements leveraging AI and RPA for improved efficiency. The literature review of research papers related to Email Organization and Prioritization is listed below:

[5] **Taylor , J. & Wilson, M. (2021):** This research presented algorithms to prioritize emails based on sender reputation and content analysis. Their system achieved 92% accuracy in moving high-priority emails to designated folders, significantly reducing response times in corporate settings.

[6] **Khan, Z. et al. (2020):** A reinforcement learning-based personalized email sorting mechanism was introduced. The system continuously adapted to user preferences, optimizing folder organization and improving satisfaction by 70% compared to traditional methods.

2.4 SUMMARY OF THE INTERSECTION OF RPA, DATA EXTRACTION, AND EMAIL PRIORITIZATION

The MailMinder Bot integrates these advancements to address contemporary challenges in email management. By leveraging RPA for task automation, employing NLP and ML for data extraction, and utilizing AI for email prioritization, the bot offers a comprehensive solution. This project exemplifies the convergence of RPA, AI, and email management tools, delivering significant improvements in efficiency, accuracy, and user experience.

CHAPTER 3

SYSTEM DESIGN

3.1 SYSTEM FLOW DIAGRAM

A system flow diagram 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. The system flow diagram for this project is in Fig. 3.1.

Description:

Input:

- User provides email credentials (e.g., IMAP login).
- The system accesses the user's mailbox to retrieve emails.

Process:

- Emails are parsed, key information is extracted using regex, and attachments are saved.
- A log of all activities is maintained.
- Results are validated and stored in an Excel report.

Output:

- The bot generates a detailed Excel report with extracted data and processed attachments.
- Logs and notifications indicate the completion status.

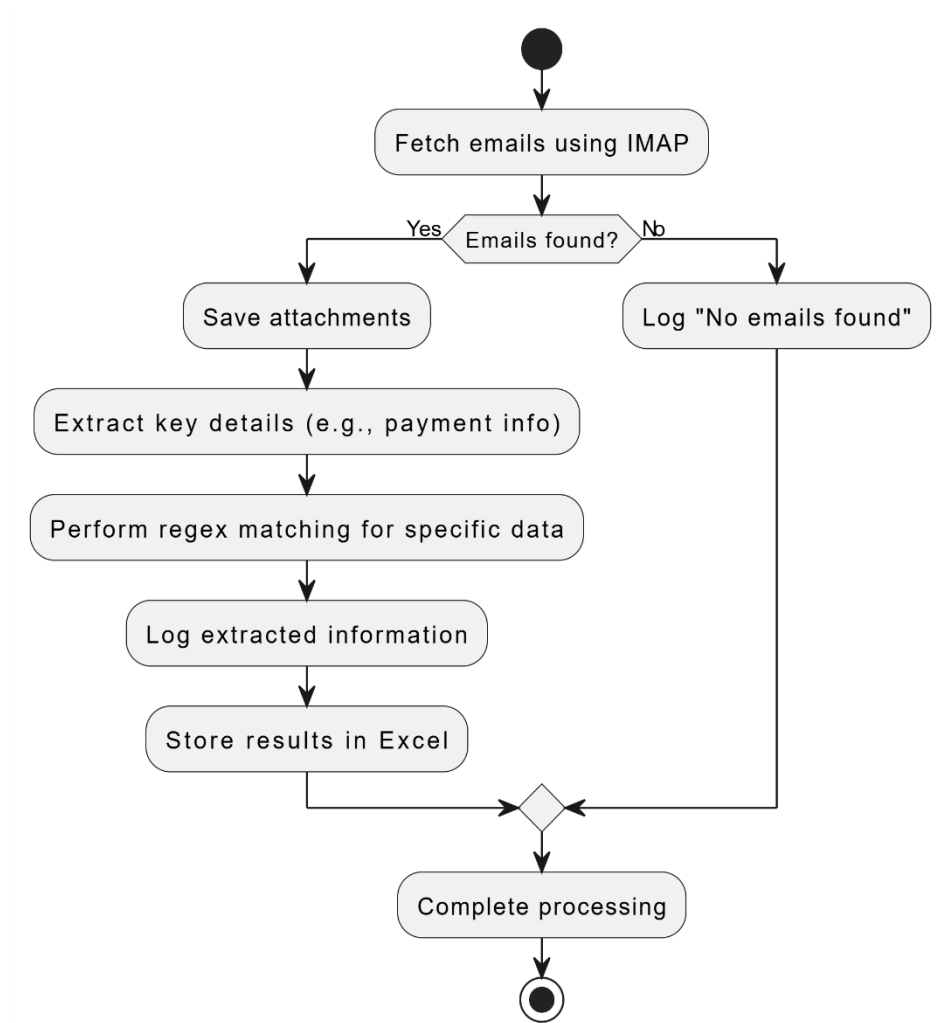


Fig 3.1 System Flow Diagram

3.2 ARCHITECTURE DIAGRAM

An architecture diagram is a graphical representation of a set of concepts, that are part of an architecture, including their principles, elements and components. The architecture diagram for this project is in Fig. 3.2.

Description:**Input:**

- User credentials to access the IMAP server.
- Emails fetched from the server and their respective attachments.

Process:

- **Input Layer:** Handles communication with the email server.
- **Processing Layer:** Parses emails, extracts information, processes attachments, and validates data.
- **Storage Layer:** Stores attachments, organizes data, and creates reports.
- **Output Layer:** Notifies users and provides a report viewer for administrators.

Output:

- Validated data is stored in a structured format (Excel or database).
- Notifications are sent to users.
- Admins access detailed reports for oversight.

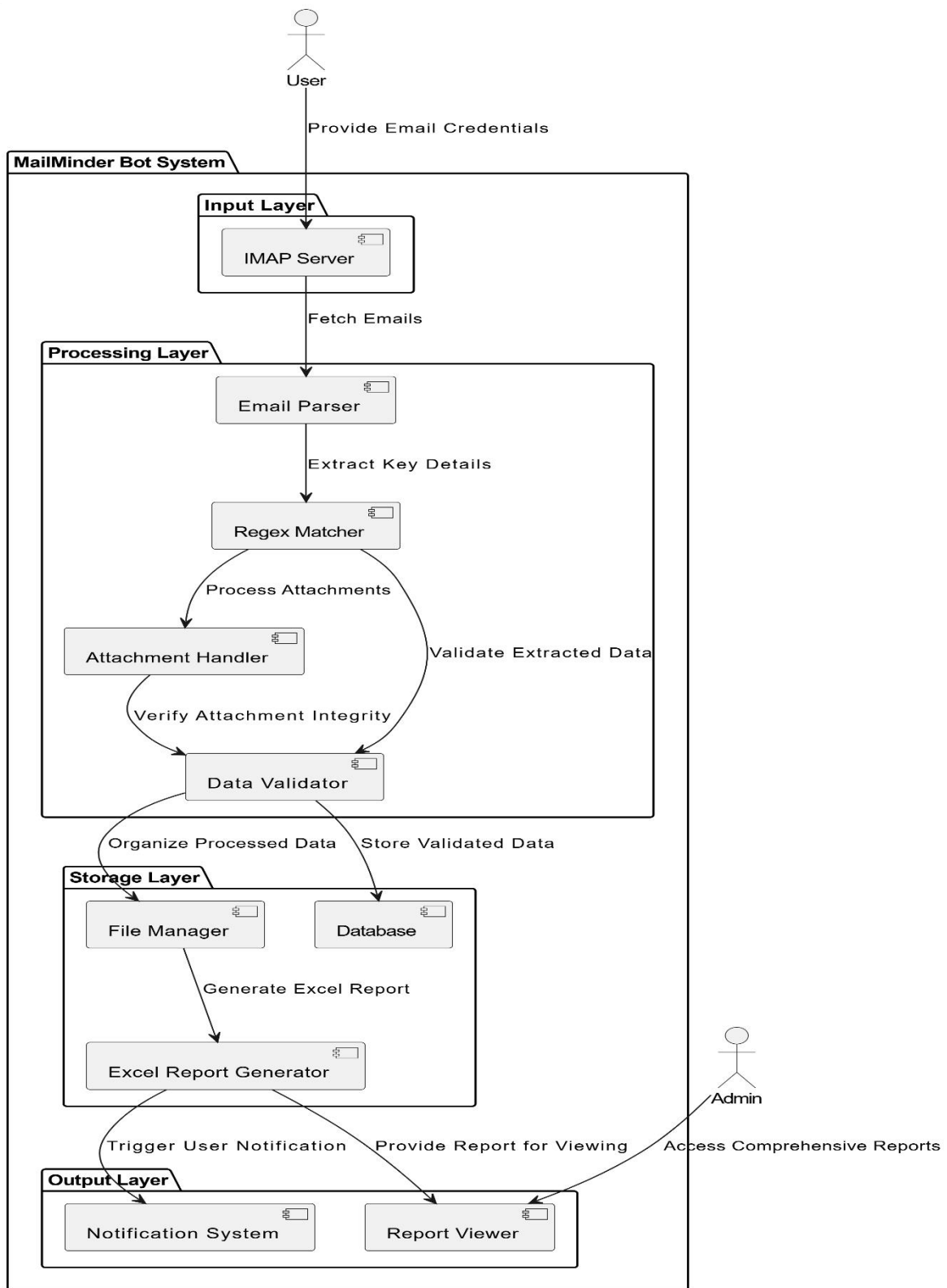


Fig 3.2 Architecture Diagram

3.3 SEQUENCE DIAGRAM

A sequence diagram is a type of interaction diagram because it describes and shows in what order a group of objects works together. The sequence diagram for this project is in Fig. 3.3.

Description:

Input:

- User initiates the MailMinder bot by providing email access credentials.
- IMAP server fetches the emails for processing.

Process:

- The bot parses each email, extracts key data, and processes attachments.
- Validates data for correctness and stores it in an Excel file.
- If no emails are found, a log entry is created indicating no processing was required.

Output:

- Processed data and attachments are saved.
- A completion notification is sent to the user, and admins can access the final report.

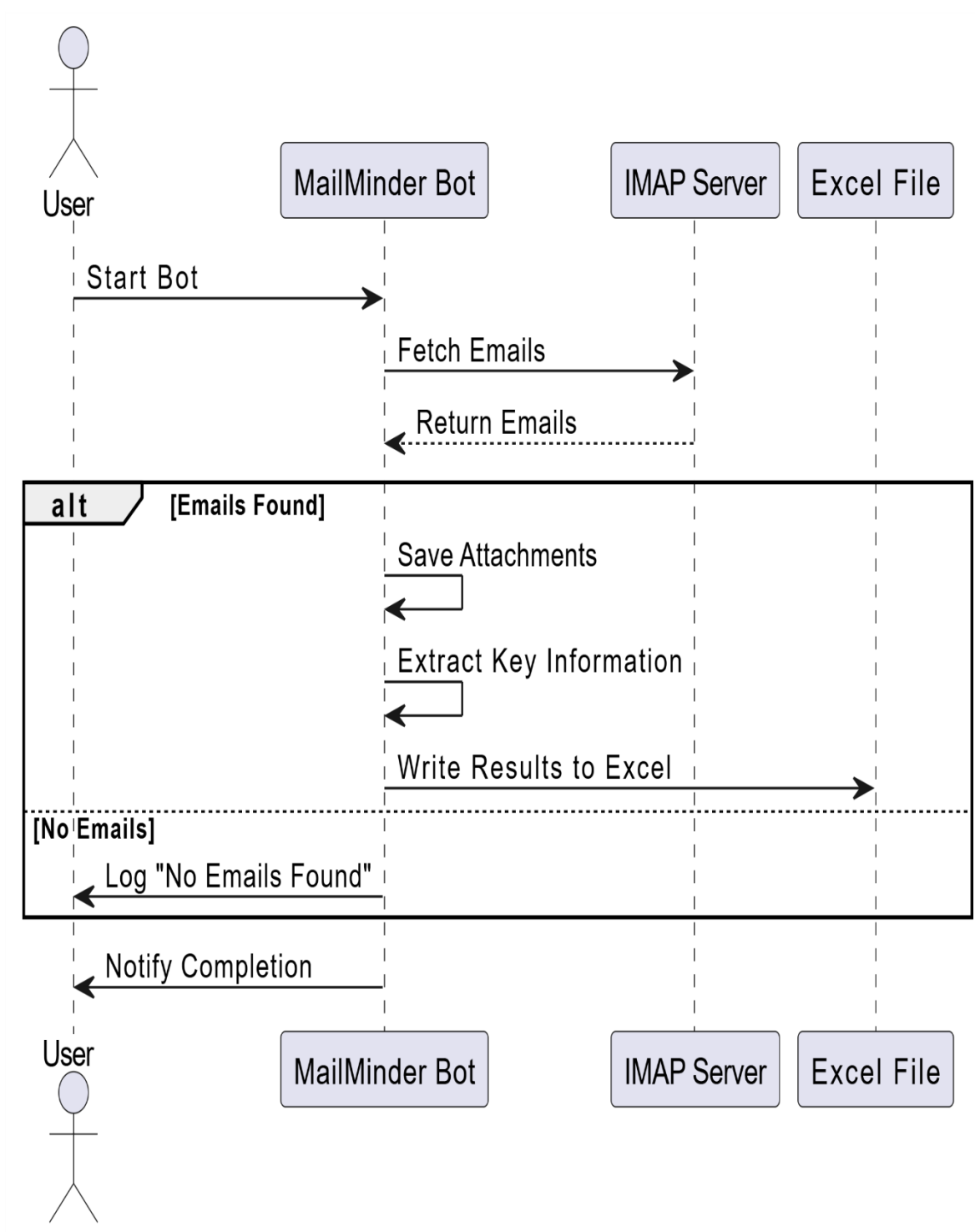


Fig 3.3 Sequence Diagram

CHAPTER 4

PROJECT DESCRIPTION

"MailMinder Bot" is an intelligent Robotic Process Automation (RPA) solution designed to streamline email management tasks and automate the extraction of critical data from invoices. Built using UiPath, the MailMinder Bot simplifies the process of sorting, categorizing, and extracting payment details from emails. By automatically moving important emails to designated folders and extracting relevant invoice data into an organized Excel report, this bot ensures efficiency and accuracy in handling a large volume of emails. It reduces manual work while ensuring that invoices and critical information are processed and stored properly.

4.1 MODULES:

4.1.1. INPUT HANDLING AND INITIALIZATION:

4.1.1.1. Email Account Setup:

- Receive user input for email account credentials through IMAP activities.
- Authenticate and connect to the email server to access the inbox.

4.1.1.2. Inbox Access and Email Fetching:

- Retrieve all incoming emails from the inbox.
- Provide the user with options to filter emails by date, sender, or subject.

4.1.1.3. Folder Management:

- List and allow the user to select folders for email organization (e.g., Important, Financial).
- Enable the user to create new folders to categorize emails as needed.

4.1.2. CONTENT ANALYSIS:

4.1.2.1. Invoice Detection and Storage:

- Identify emails that contain invoice attachments.
- Save the invoices to a designated folder for future reference and easy access.

4.1.2.2. Payment Details Extraction:

- Extract key payment details from the invoices, such as invoice numbers, amounts, and dates using text recognition and pattern matching. Using read with OCR and Regex matching activities data extraction is performed.
- Compile the extracted information into an Excel report for tracking and auditing purposes.

4.1.2.3. Important Email Categorization:

- Move important emails to a folder labeled "Important" for quick access.
- Classify emails based on urgency or sender priority using machine learning and natural language processing techniques.

4.1.3. RESULT MANAGEMENT:

4.1.3.1. Data Storage and Reporting:

- Systematically update an Excel report with extracted payment details, including invoice information.
- Provide dynamic generation of reports for transparency and record-keeping.

4.1.3.2. Real-time Updates:

- Display real-time progress of email processing, highlighting high-priority

emails or those requiring urgent attention.

- Notify users of any potential issues or flagged content, such as missing payment details or unprocessed invoices.

4.1.4. COMPLETION AND REPORTING:

4.1.4.1. Completion Message:

- Conclude the process with a message indicating the successful completion of the email categorization and data extraction task.
- Provide a summary report on the number of emails processed, invoices saved, and payment details extracted.

4.1.4.2. Email Archiving:

- Archive emails based on their categorization (e.g., invoices, important emails) into the appropriate folders.
- Maintain all processed email records for future reference or audit purpose.

4.1.5. RESULT MANAGEMENT:

4.1.5.1 Result Storage:

- Systematically update the Excel report with assessment results.
- Display real-time updates of the integrity verification process.
-

4.6. COMPLETION AND REPORTING:

4.6.1. Completion Message:

- Conclude the operation with a message indicating the successful completion of the integrity verification task.

CHAPTER 5

OUTPUT SCREENSHOTS

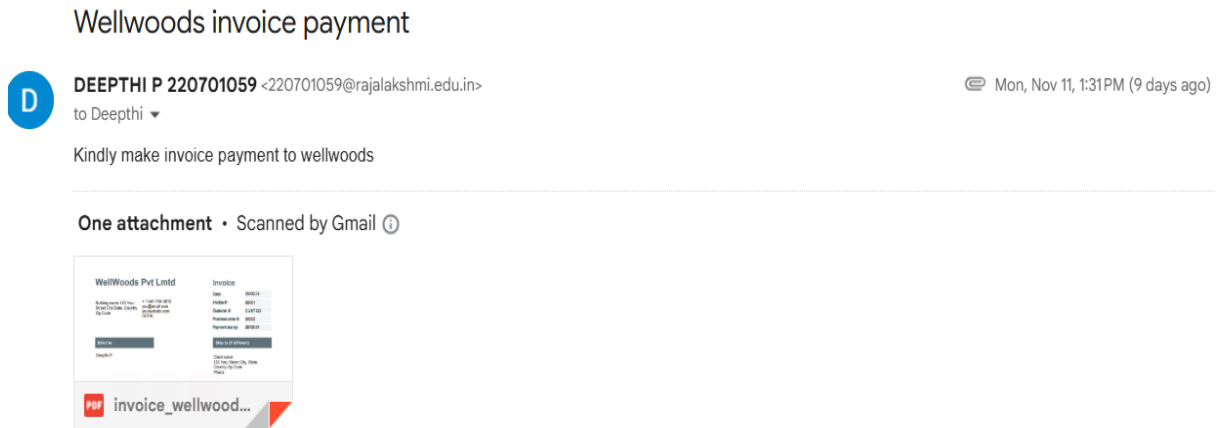


Fig 5.1 – Email input

Send mail with words urgent or important or invoice to desired email id and optionally attach a payment receipt

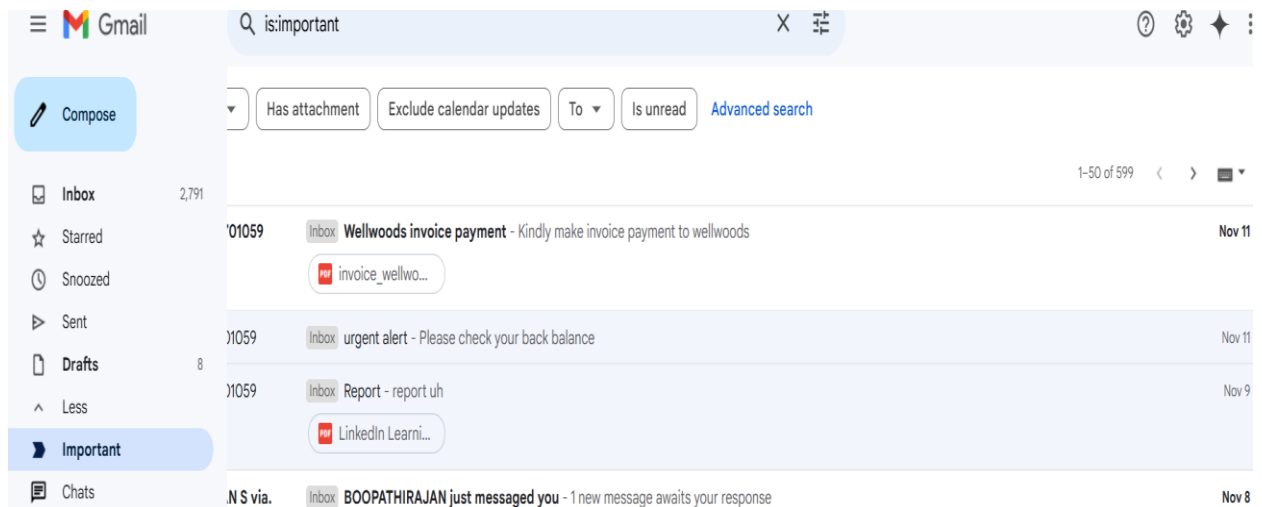


Fig 5.2 – Email Automation

Mail is moved to important folder -Sorting emails in important categories

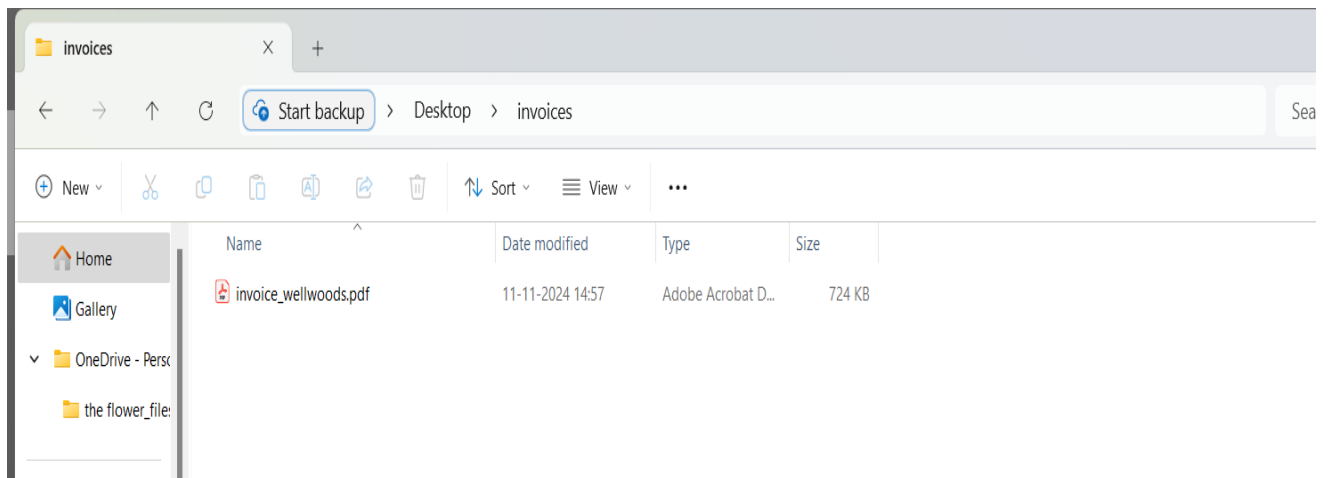


Fig 5.3 – Saving Attachments- Save all invoices to invoice folder

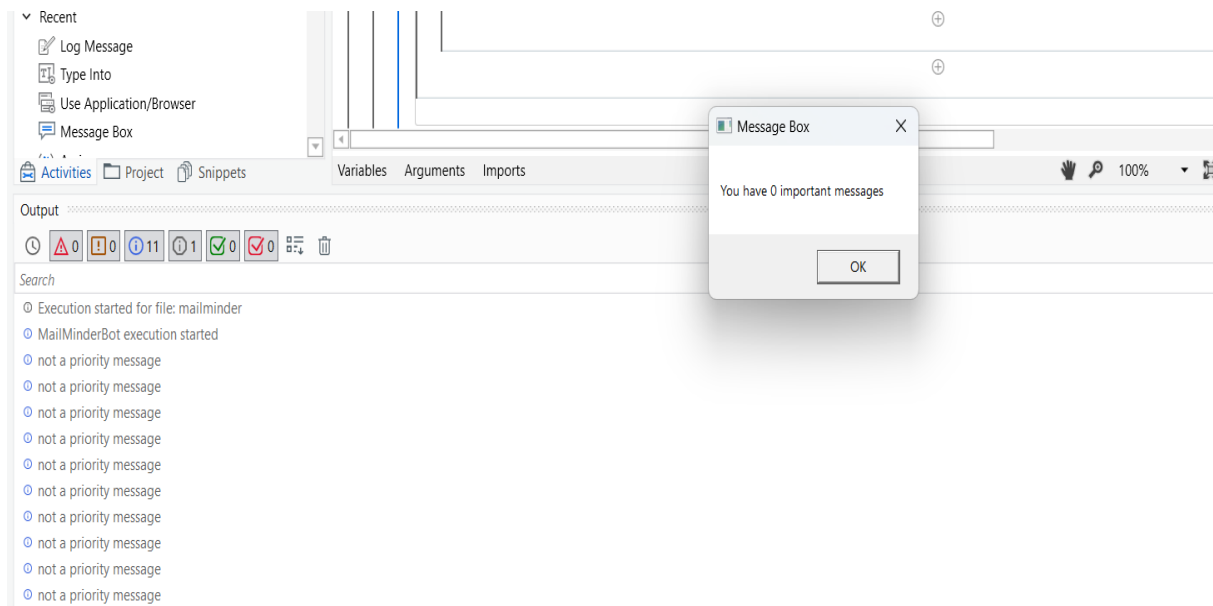


Fig 5.4 – Important Email Alerts – Alert payment and other important messages

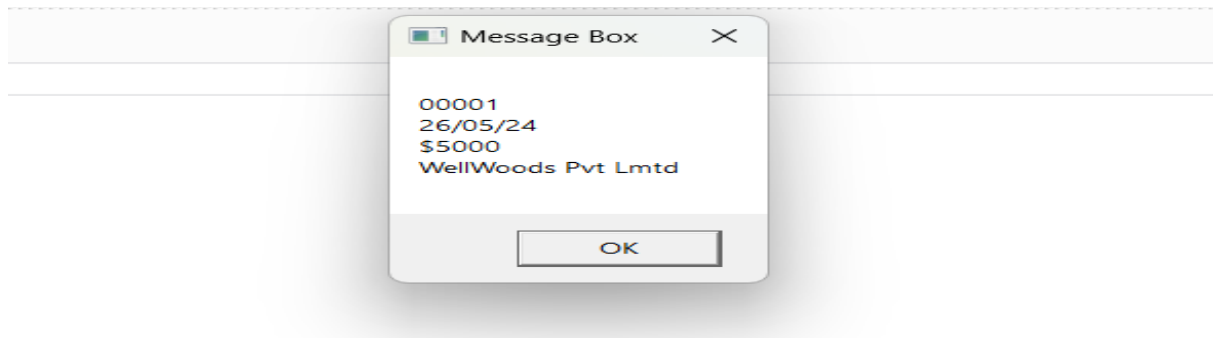


Fig 5.4.1 –

Important Email Alerts – Alert payment and other important messages

A	B	C	D
invoice number	invoice duedate	invoice amoun	invoice company
1	26/05/24	₹5,000	WellWoods Pvt Lmtd

Fig 5.5 –

Excel Report – extract payment details mentioned in attachments
Using Regex pattern matching

CHAPTER 6

CONCLUSION

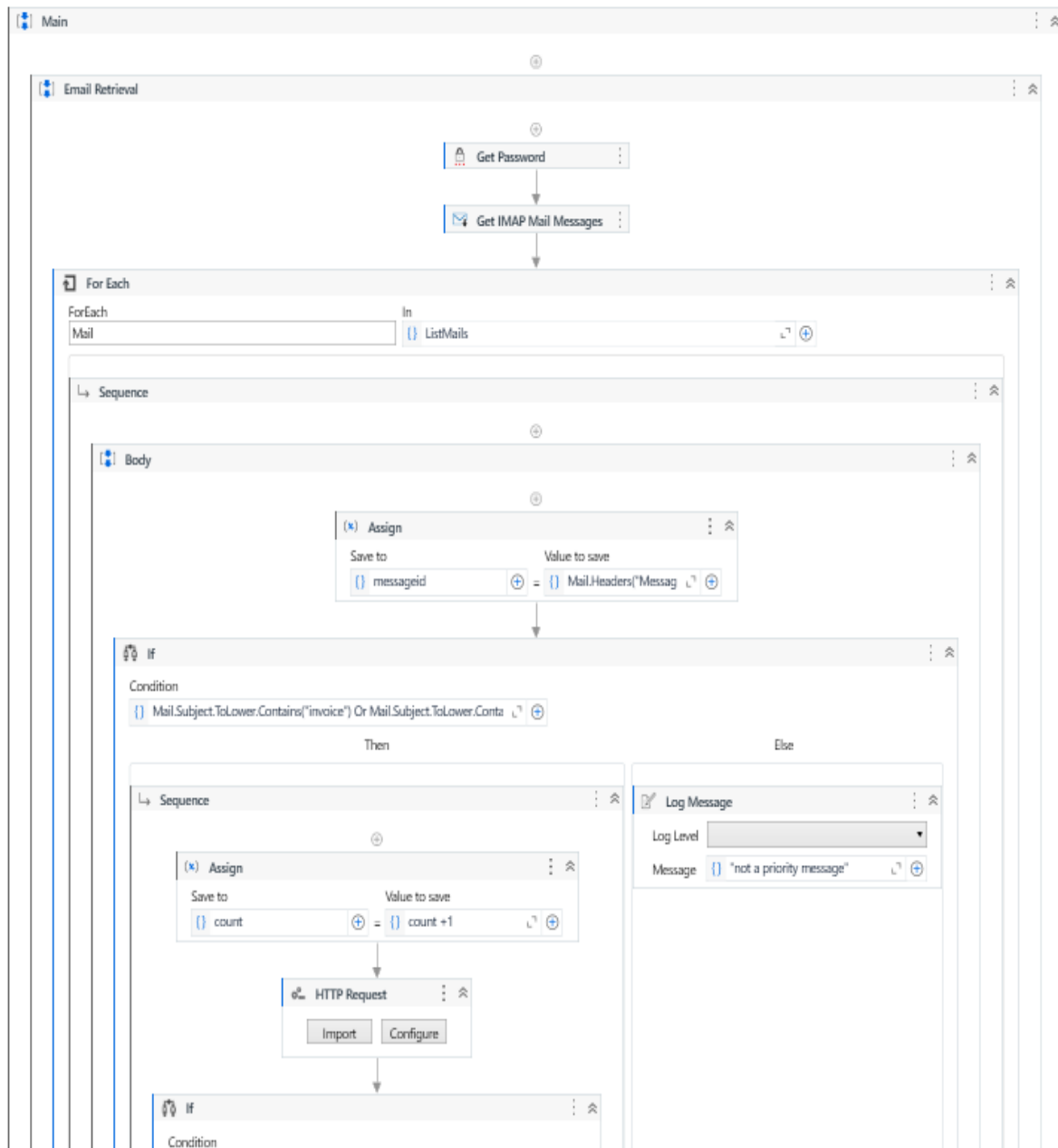
In conclusion, **MailMinder: The Intelligent Email Management Bot** provides a robust and efficient solution for modern email management challenges. By automating repetitive and time-intensive tasks such as extracting payment details, organizing emails, and documenting critical information, MailMinder significantly reduces manual effort while maintaining accuracy and reliability. Its intelligent algorithms and seamless integration with external services ensure precise data handling, making it an invaluable tool for individuals and organizations seeking to streamline their email workflows.

The bot not only saves time but also enhances productivity by prioritizing important communications and delivering structured insights through comprehensive reports. By leveraging the power of UiPath and RPA, MailMinder exemplifies how automation can address everyday challenges, empowering users to focus on strategic and high-priority tasks. This innovative solution marks a step forward in intelligent communication management, setting a standard for efficiency, organization, and productivity in the digital age.

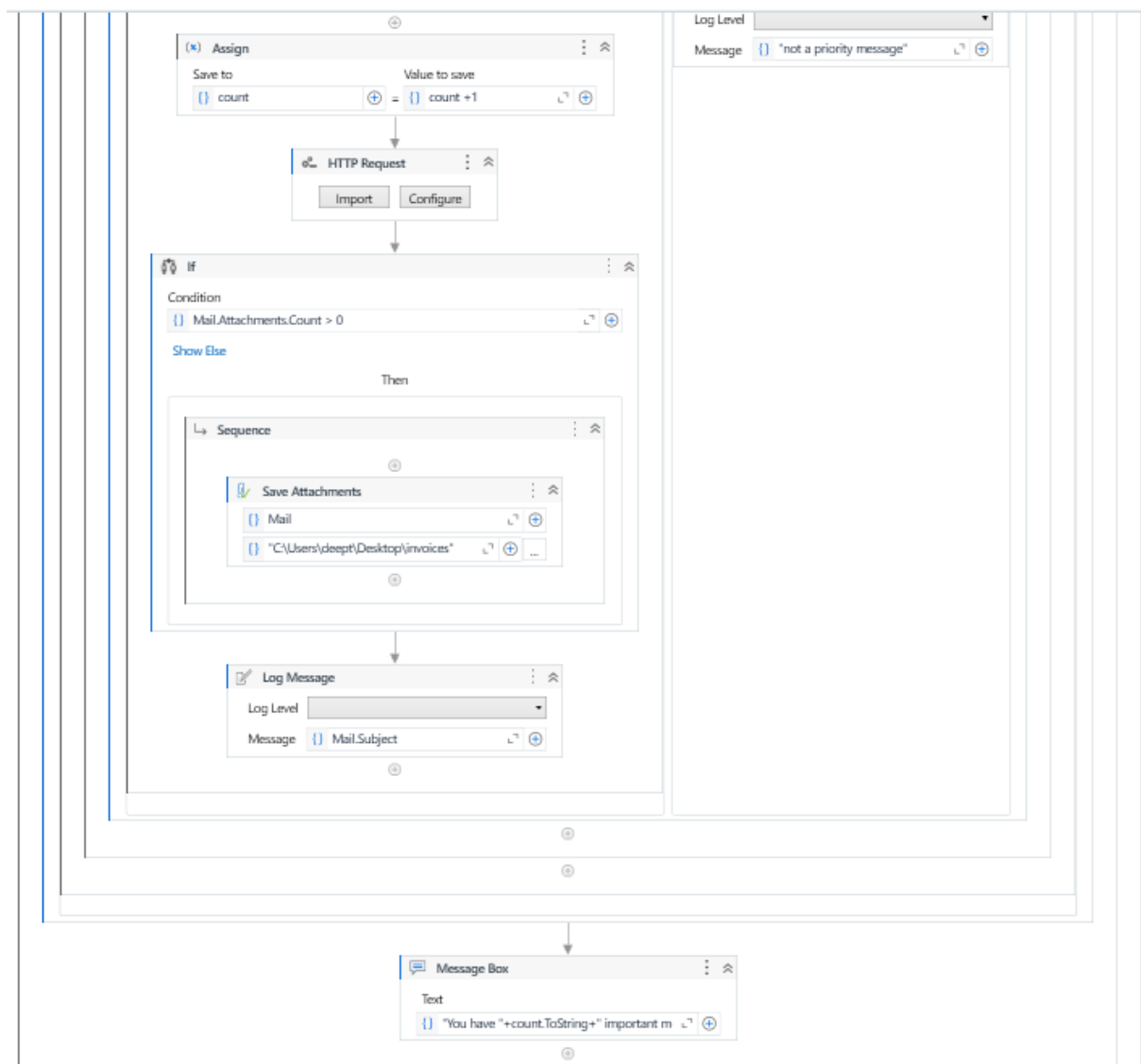
Furthermore, **MailMinder** demonstrates the transformative potential of automation in reducing errors and ensuring consistency across processes that traditionally rely on manual intervention. Its ability to handle diverse email scenarios—whether extracting critical payment details, categorizing emails, or. By fostering a structured and organized approach to email management, MailMinder not only enhances operational efficiency but also reduces stress associated with cluttered inboxes and overlooked priorities. This innovation underscores the growing role of RPA in simplifying complex workflows and empowering users to stay ahead in an increasingly interconnected world.

APPEDIX

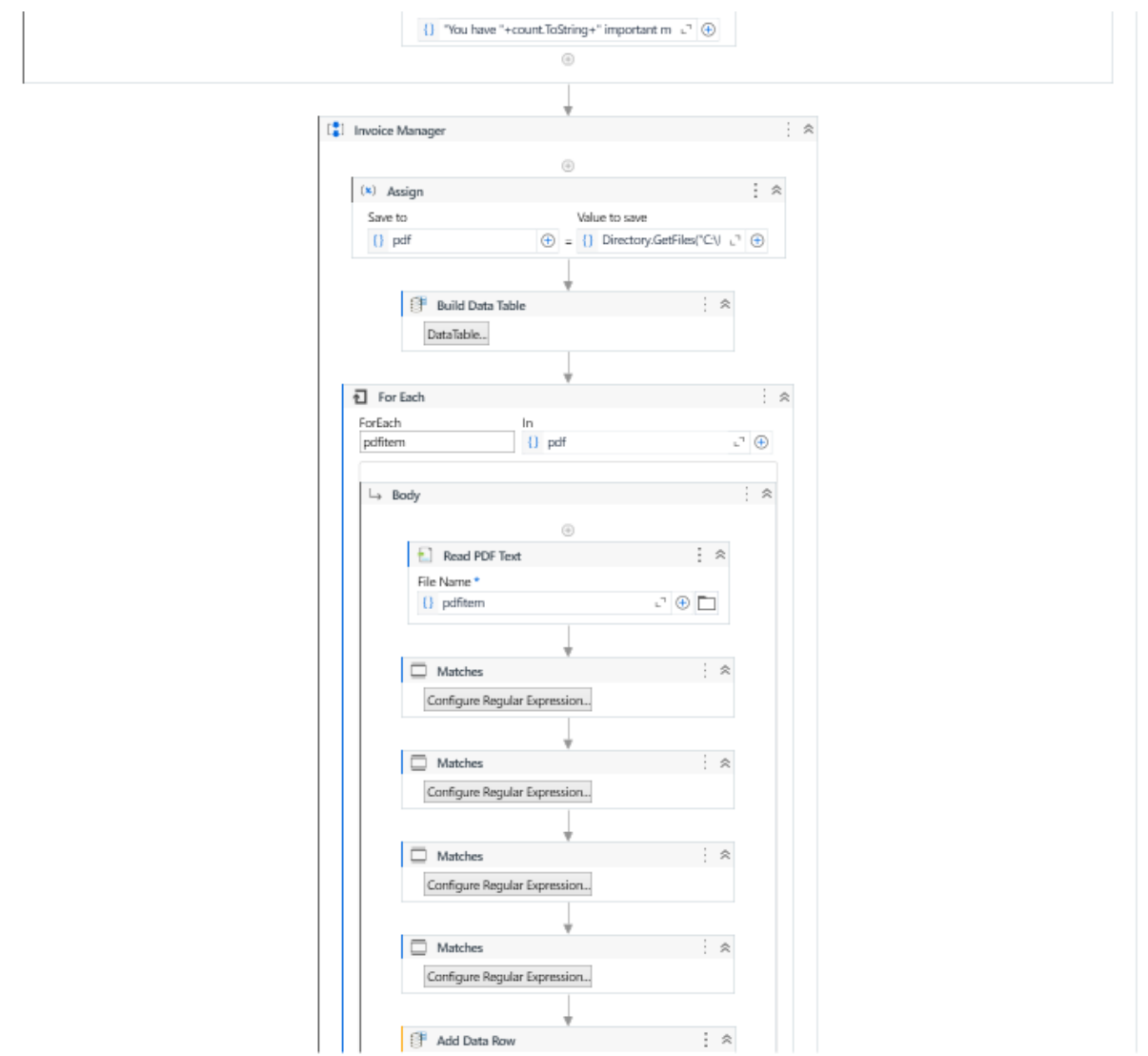
WORK FLOW



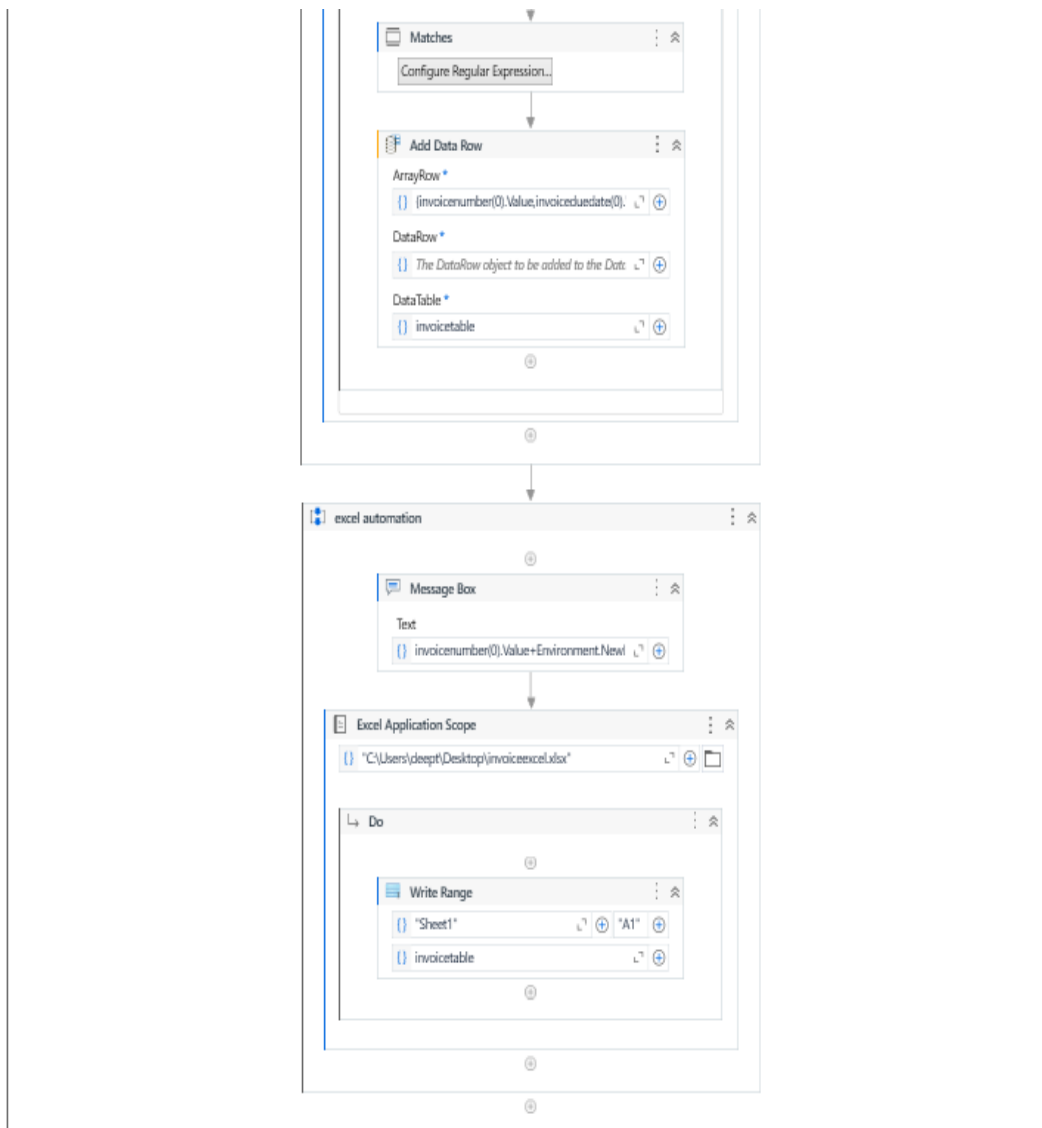
APPENDIX 1 – Fetch mails using IMAP , sort them using HTTP Protocol



APPENDIX 2 – Incase it's an important email maintain count and long the mail message while saving invoice attachment to invoices folder and configure final alert message



APPENDIX 3— Configure a Regex Matching pattern for each detail you’re trying to extract from the invoice and add it to a data table



APPENDIX 4— Extract Details and put it into an Excel Sheet

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