HR LEAVE MANAGEMENT BOT

A PROJECT REPORT

Submitted by

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BONAFIDE CERTIFICATE

Certified that this project report **"HR Leave Management Bot"** is the bonafide work of **"DEEKSHA R (220701056)"** who carried out the project work for the subject OAI1903 - Introduction to Robotic Process Automation under my supervision.

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Submitted to Project and Viva Voce Examination for the subject OAI1903 - Introduction to Robotic Process Automation held on _____.

Internal Examiner **External Examiner**

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ABSTRACT

The HR Leave Management Bot is a comprehensive automation solution designed to revolutionize the way employee leave requests are managed. Built using UiPath, this bot automates the end-to-end process, ensuring efficiency, accuracy, and transparency. The system begins by automatically extracting leave requests sent by employees through email. Using an integrated Excel sheet, it verifies leave balances against company policies and seamlessly forwards the request to the relevant manager for approval.

Once the manager responds, the bot processes the decision, updates the leave records in real-time, and notifies the employee promptly. By eliminating manual intervention in repetitive tasks, this solution reduces errors, minimizes delays, and frees up valuable time for HR teams to focus on strategic activities.The HR Leave Management Bot is not just a tool for automation; it enhances collaboration between employees, HR, and managers by providing a structured, reliable, and error-free system. Its ability to handle large volumes of requests while maintaining accuracy ensures that organizations can scale their operations without compromising on efficiency or employee satisfaction. This innovative approach to leave management is a step forward in creating smarter workplace.

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LIST OF ABBREVIATIONS

ABBREVIATION	ACCRONYM
RPA	Robotic Process Automation
OCR	Optical Character Recognition
AI	Artificial Intelligence
API	Application Programming Interface
HR	Human Resources
SMTP	Simple Mail Transfer Protocol
IMAP	Internet Message Access Protocol

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

The “HR Leave Management Bot” is an innovative solution at the intersection of Robotic Process Automation (RPA) and workplace efficiency, designed to streamline and automate the process of managing employee leave requests. In modern organizations, handling leave requests manually often leads to delays, miscommunication, and errors, making it a time-consuming and inefficient process for HR teams. This bot, developed using UiPath, addresses these challenges by providing an intelligent and automated approach to leave management.

For HR departments and managers tasked with handling a high volume of leave requests, this bot introduces a transformative system that automates key steps such as extracting leave requests from emails, verifying leave balances, routing requests for manager approval, and notifying employees of the outcome. By integrating with Excel for leave tracking and leveraging automation workflows, the bot ensures accuracy, transparency, and consistency in the process.

UiPath plays a pivotal role in enabling this automation. It provides tools to automate repetitive tasks that would otherwise require manual effort. Using a combination of AI-powered computer vision, pre-built automation components, and APIs, UiPath simplifies processes like email extraction, data validation, and notification generation. Its built-in OCR engines (Google, Microsoft, ABBYY) enable the system to read and interpret email data, enhancing the bot's ability to handle requests efficiently.

The “HR Leave Management Bot leverages the UiPath Automation Platform, which includes a low-code development environment for designing workflows and client-side agents (Robots) to execute those workflows. By automating the leave management process, this bot not only reduces manual effort but also enhances productivity, minimizes errors, and fosters better communication between employees, HR teams, and managers, ensuring a seamless and efficient leave management system for modern workplaces.

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1.2 OBJECTIVE

The primary objective of the **HR Leave Management Bot** is to streamline and automate the process of managing employee leave requests. By leveraging Robotic Process Automation (RPA), the bot aims to eliminate the inefficiencies and errors associated with manual leave management processes. The project seeks to provide organizations with an efficient, accurate, and transparent solution for handling leave requests, ensuring seamless communication between employees, HR teams, and managers.

1.3 EXISTING SYSTEM

In many organizations, leave management is still a manual and cumbersome process. Employees submit leave requests through emails or written forms, which HR personnel must manually process and forward to managers for approval. Verifying leave balances, maintaining accurate records, and notifying employees of decisions can be time-consuming and error-prone. These manual workflows often result in delays, miscommunication, and inconsistencies, making it difficult for HR departments to manage leave requests efficiently, especially in large organizations. The absence of an automated system leads to a lack of transparency and reduced productivity.

1.4 PROPOSED SYSTEM

The **HR Leave Management Bot** is envisioned as an innovative and automated solution to overcome the challenges of manual leave management. Built using UiPath, the bot automates the entire leave management workflow, starting from extracting leave requests from employee emails. It integrates with an Excel sheet to verify leave balances

and forwards the requests to managers for approval. Once a decision is made, the bot updates the leave records and notifies employees of the outcome in real-time.

The proposed system significantly reduces the manual effort required for leave processing, enhancing both speed and accuracy. By providing a consistent and error-free approach, the bot ensures transparency and accountability in leave management. Additionally, it can generate detailed reports, including employee leave history and leave balance status, which can be utilized by HR teams for effective decision-making. This project aims to modernize leave management processes, offering a scalable and efficient solution for organizations of all sizes.

CHAPTER 2

LITERATURE REVIEW

2.1 Survey on Robotic Process Automation (RPA) in HR Processes:

Robotic Process Automation (RPA) is increasingly being adopted across industries, including Human Resources (HR), to optimize and automate repetitive tasks. In HR, RPA has shown significant promise in areas such as leave management, payroll processing, and recruitment. The literature reveals several applications of RPA in simplifying manual workflows, improving accuracy, and reducing administrative overheads. Below are some key research papers on RPA in HR processes:

[1] A study in the *Journal of HR Technology* highlights how RPA has revolutionized HR functions by automating mundane tasks, such as leave processing and timesheet management. The research demonstrates that RPA solutions not only enhance efficiency but also allow HR personnel to focus on more strategic tasks, such as employee engagement and development.

[2] A report from *ACM Transactions on Automation Science* discusses the integration of RPA in HR systems. The authors emphasize the cost-effectiveness of RPA in automating high-volume, rules-based processes, including leave management. They conclude that RPA enables organizations to achieve better compliance and operational efficiency in managing HR functions.

2.2 Survey on Leave Management Challenges:

Leave management is a crucial aspect of HR operations, but it often involves numerous challenges such as manual processing errors, discrepancies in leave balances, and delays in approvals. RPA has been proposed as a solution to these challenges by automating leave requests, approvals, and balance tracking. Research in this area focuses on how RPA can improve accuracy, reduce administrative overhead, and streamline workflows. Below are the research papers related to leave management challenges and the role of RPA:

[3] A study published in *International Journal of HRM* explores the impact of RPA on leave management, demonstrating that RPA can eliminate manual errors and significantly speed up the approval process. The study also highlights the ability of RPA to track leave balances in real-time, ensuring more accurate reporting and faster decision-making.

[4] Research by *University of Melbourne* investigates the implementation of RPA in HR departments and its effect on leave management processes. The paper finds that RPA tools effectively reduce human errors in leave approvals and enhance transparency by providing real-time updates to employees about their leave status

2.3 Survey on AI and Automation in Leave Approval Systems:

The use of artificial intelligence (AI) and automation in decision-making, particularly in leave approval systems, has been an area of active research. AI algorithms, including machine learning (ML) models, are being used to analyze leave data, predict patterns in employee absenteeism, and optimize approval workflows. These technologies can assist HR departments in making faster and more informed decisions. Below are the research papers related to AI and automation in leave approval systems:

[5] A study from *The Journal of Artificial Intelligence Research* explores the integration of AI models in leave approval systems. The paper discusses how AI can predict leave patterns based on historical data, helping HR departments anticipate absenteeism and make proactive decisions on leave approvals.

[6] In a report by *IEEE Transactions on Automation*, the authors review various AI-driven tools used in HR departments to optimize leave approval processes. The study suggests that by leveraging AI and automation together, organizations can ensure faster processing times, reduce errors, and improve employee satisfaction with leave management systems.

2.4 Summary of the Intersection of RPA, AI, and Leave Management:

The **HR Leave Management Bot** project aims to address the challenges associated with leave management by integrating Robotic Process Automation (RPA) with Artificial Intelligence (AI) for smarter decision-making. The bot automates the entire leave approval process, from data extraction to sending notifications, ensuring efficient tracking of employee leave balances and approvals. Additionally, AI models are used to predict leave trends, ensuring that HR departments can plan and manage leave requests proactively. This integration of RPA and AI not only optimizes operational efficiency but also enhances the accuracy of leave management and approval processes.

The project's innovative approach reflects the ongoing transformation of HR departments, where automation and AI play a critical role in reshaping traditional HR operations. The **HR Leave Management Bot** serves as a timely solution to the challenges HR departments face in managing employee leave, improving compliance, and enhancing operational efficiency.

CHAPTER 3

SYSTEM DESIGN

3.1 SYSTEM FLOW DIAGRAM

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

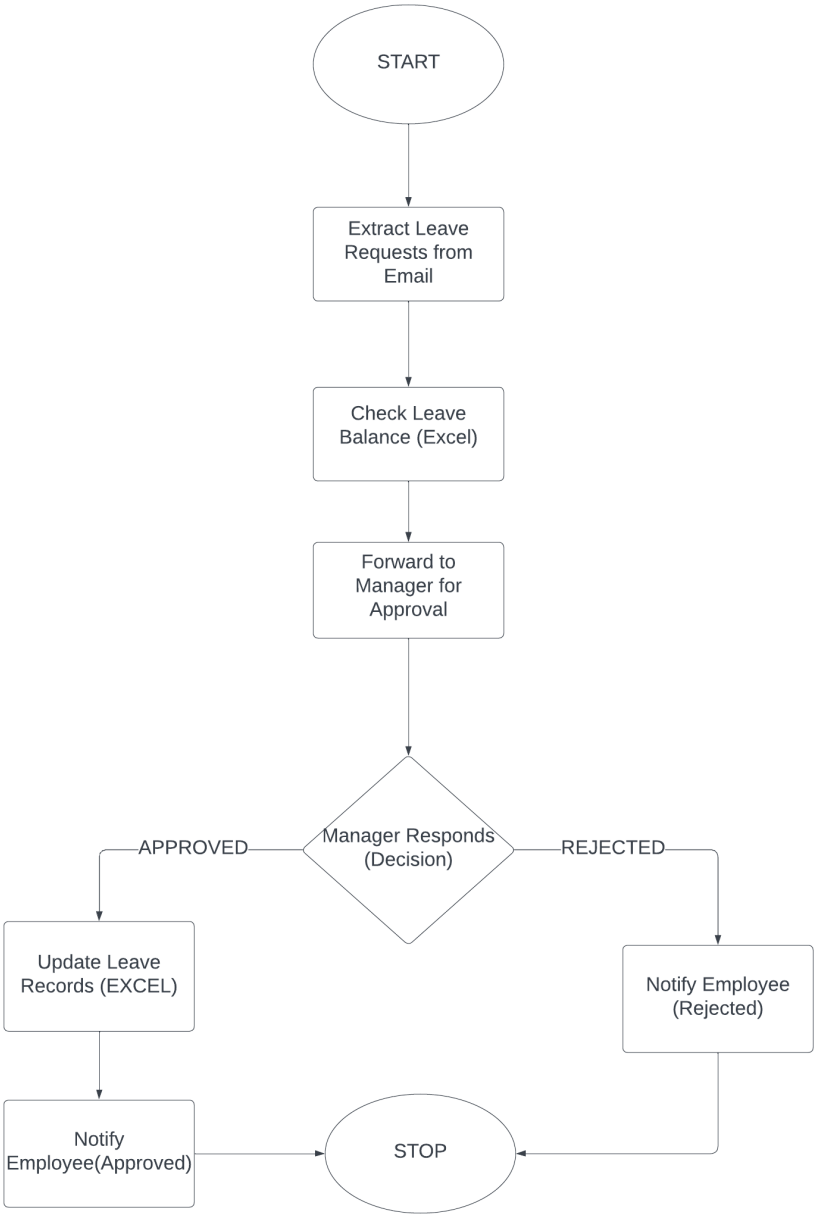


Fig 3.1 System Flow Diagram

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.

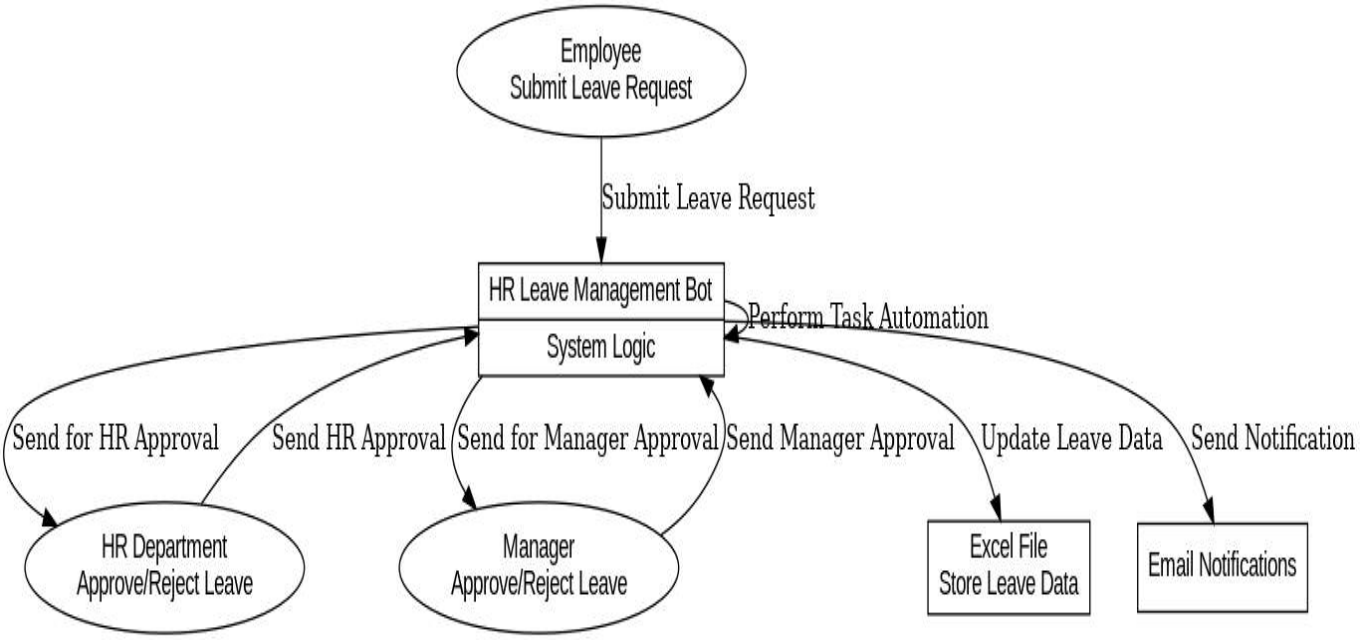


Fig 3.2 Architecture Diagram

3.3 SEQUENCE DIAGRAM

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

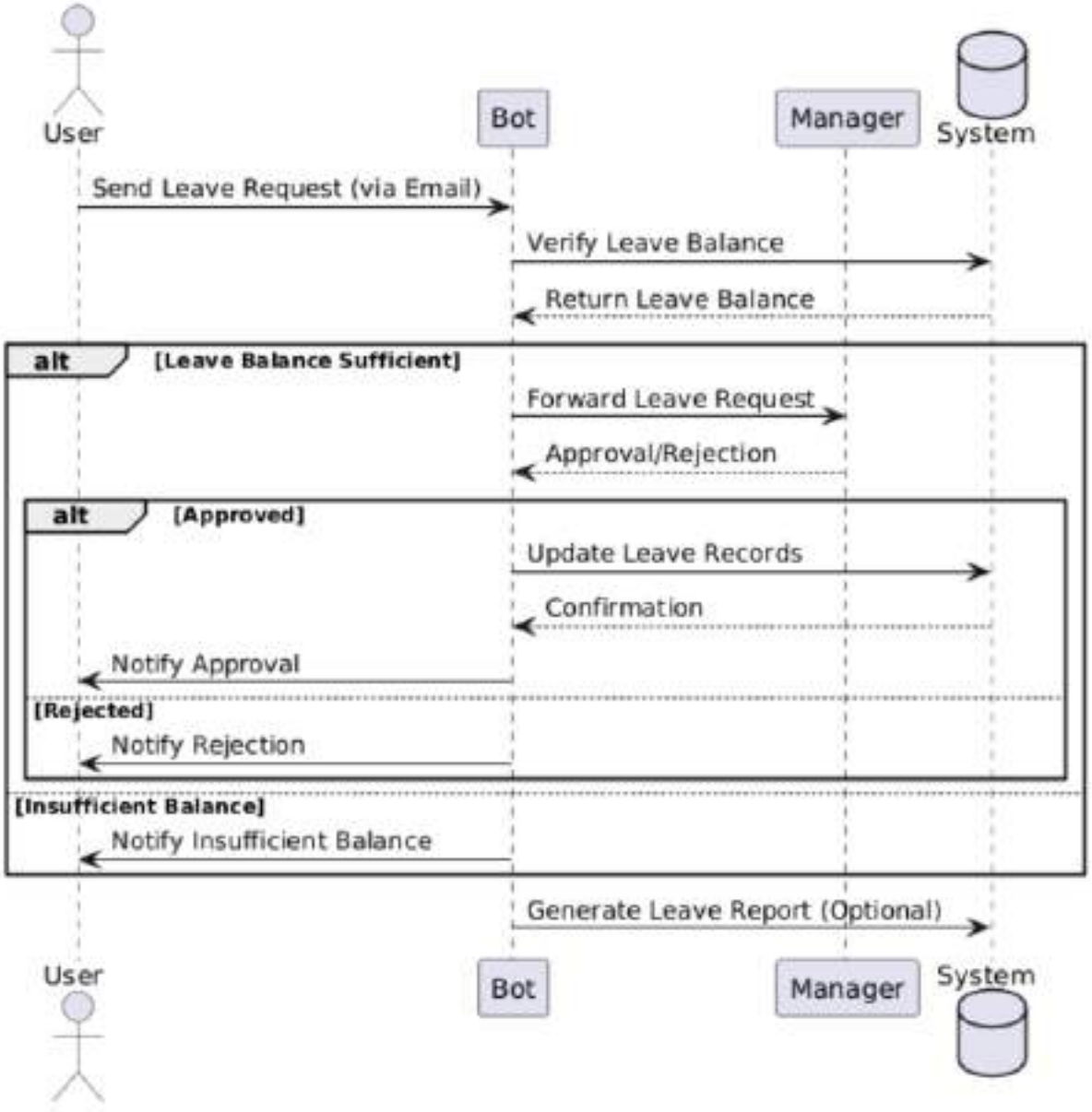


Fig 3.3 Sequence Diagram

CHAPTER 4

PROJECT DESCRIPTION

"HR Leave Management Bot" is an advanced Robotic Process Automation (RPA) project designed to automate and streamline the leave management process for organizations. Built using UiPath, this intelligent bot enhances efficiency, reduces manual errors, and provides an easy-to-use interface for managing employee leave requests.

4.1. MODULES:

The project is divided into the following modules:

4.1.1. INPUT HANDLING AND INITIALIZATION:

4.1.1.1. Folder Selection:

- Accept user input for the path of the folder containing leave request files.

4.1.1.2. Subfolder Selection:

- List subfolders within the main folder.
- Allow the user to select the subfolder that contains specific employee leave request files.

4.1.1.3 Excel Report Generation:

- Dynamically create an Excel report titled **"Leave_Report"** in the chosen subfolder to track processed leave requests.

4.1.2 LEAVE BALANCE VERIFICATION:

4.1.2.1 Balance Retrieval:

- Fetch the employee's leave balance from the HR database or an Excel file.

4.1.2.2 Validation:

- Validate the leave request against the remaining balance.
- Identify and flag requests that exceed the available balance.

4.1.3 REQUEST PROCESSING:

4.1.3.1 Approval/Denial Decision:

- Automatically approve or deny leave requests based on leave balance and predefined rules (e.g., critical project deadlines).

4.1.3.2 Notification Generation:

- Generate automated notifications to inform employees about the status of their leave request (approved or denied).

4.1.4 NOTIFICATION AND REPORTING:

4.1.4.1 Real-Time Updates:

- Display real-time status updates of processed leave requests during the bot's execution.

4.4.4.2 Final Report:

- Save all leave request statuses (approved/denied) in the Excel report.
- Notify the HR manager upon completion with a summary of the processed requests.

CHAPTER 5

OUTPUT SCREENSHOTS

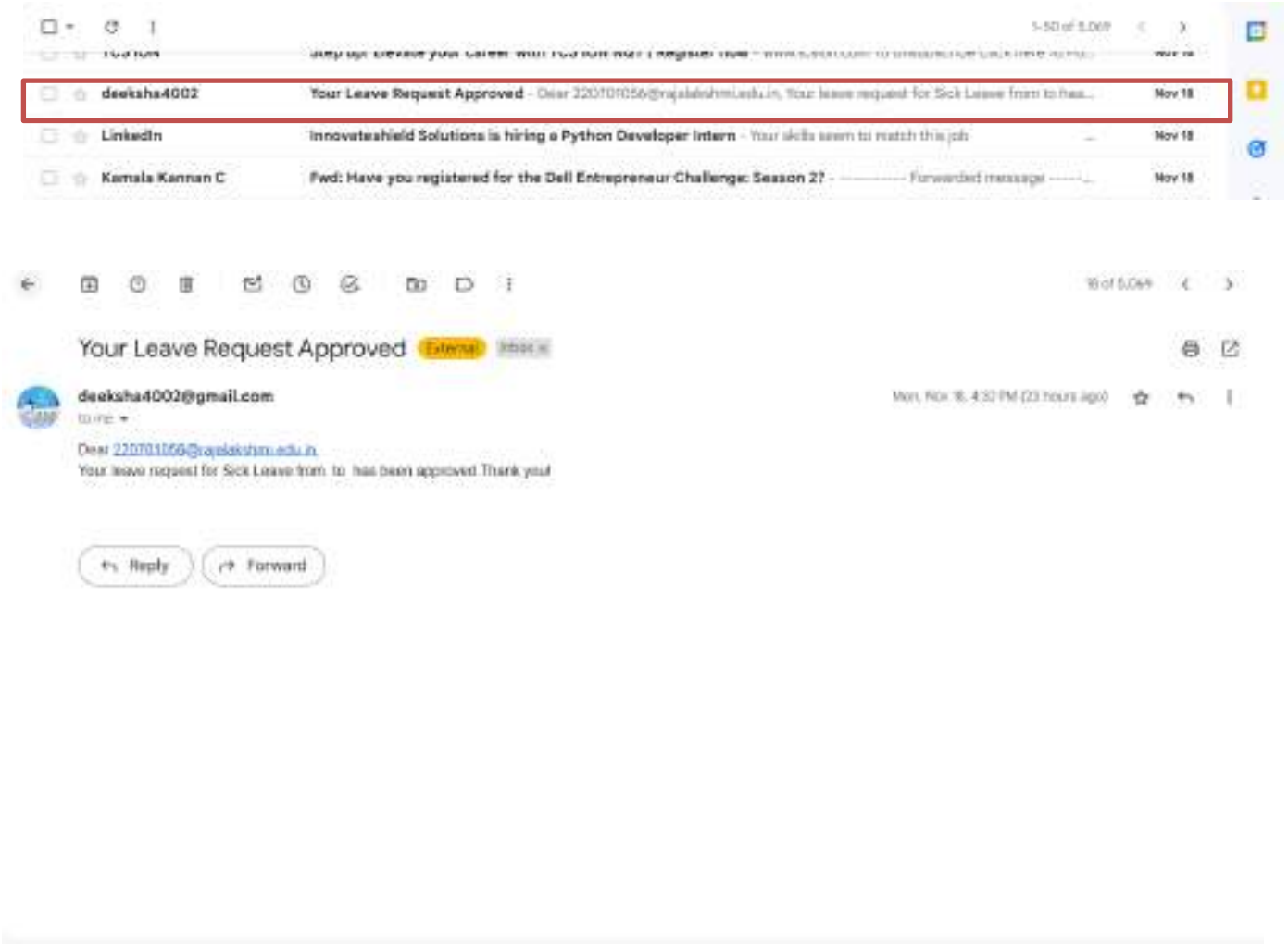
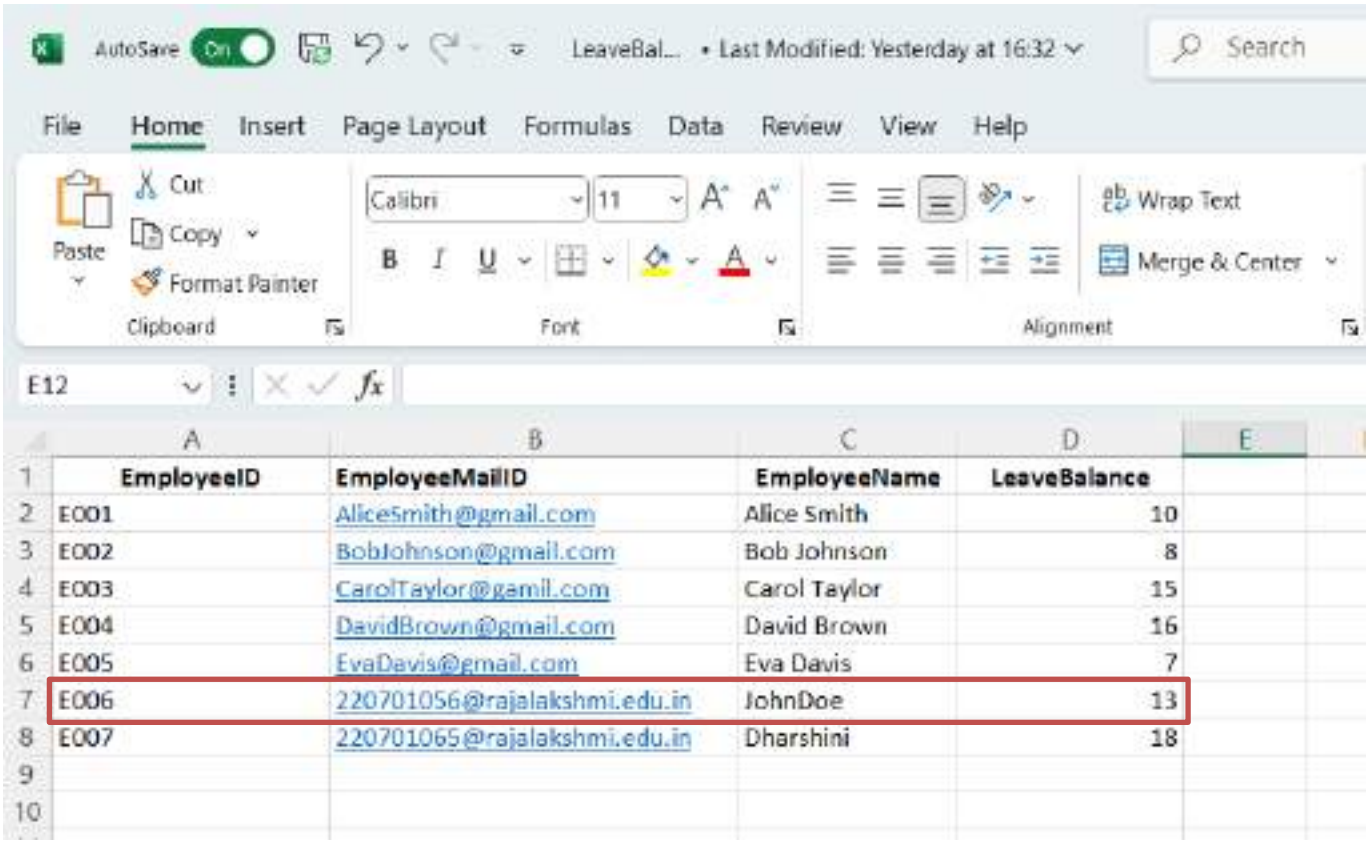
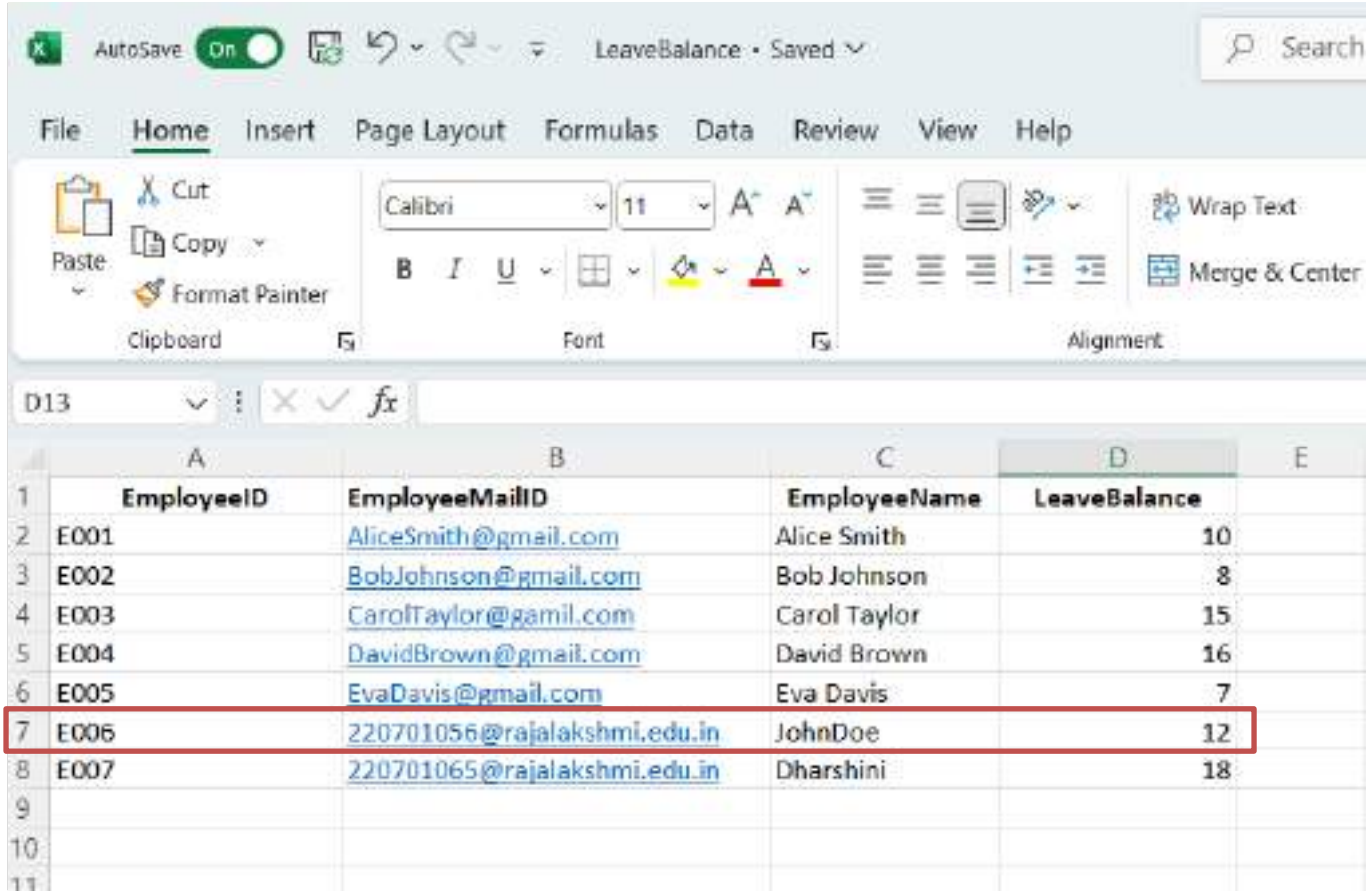


FIG 5.1: Email from HR confirming the acceptance of the employee's leave request.



	EmployeeID	EmployeeMailID	EmployeeName	LeaveBalance
2	E001	AliceSmith@gmail.com	Alice Smith	10
3	E002	BobJohnson@gmail.com	Bob Johnson	8
4	E003	CarolTaylor@gamil.com	Carol Taylor	15
5	E004	DavidBrown@gmail.com	David Brown	16
6	E005	EvaDavis@gmail.com	Eva Davis	7
7	E006	220701056@rajalakshmi.edu.in	JohnDoe	13
8	E007	220701065@rajalakshmi.edu.in	Dharshini	18

FIG 5.2: Employee's leave balance in the Excel file before the leave request was processed and approved



	EmployeeID	EmployeeMailID	EmployeeName	LeaveBalance
2	E001	AliceSmith@gmail.com	Alice Smith	10
3	E002	BobJohnson@gmail.com	Bob Johnson	8
4	E003	CarolTaylor@gamil.com	Carol Taylor	15
5	E004	DavidBrown@gmail.com	David Brown	16
6	E005	EvaDavis@gmail.com	Eva Davis	7
7	E006	220701056@rajalakshmi.edu.in	JohnDoe	12
8	E007	220701065@rajalakshmi.edu.in	Dharshini	18

FIG 5.3: Employee's leave balance in the Excel file after the leave request was approved and the balance was updated.

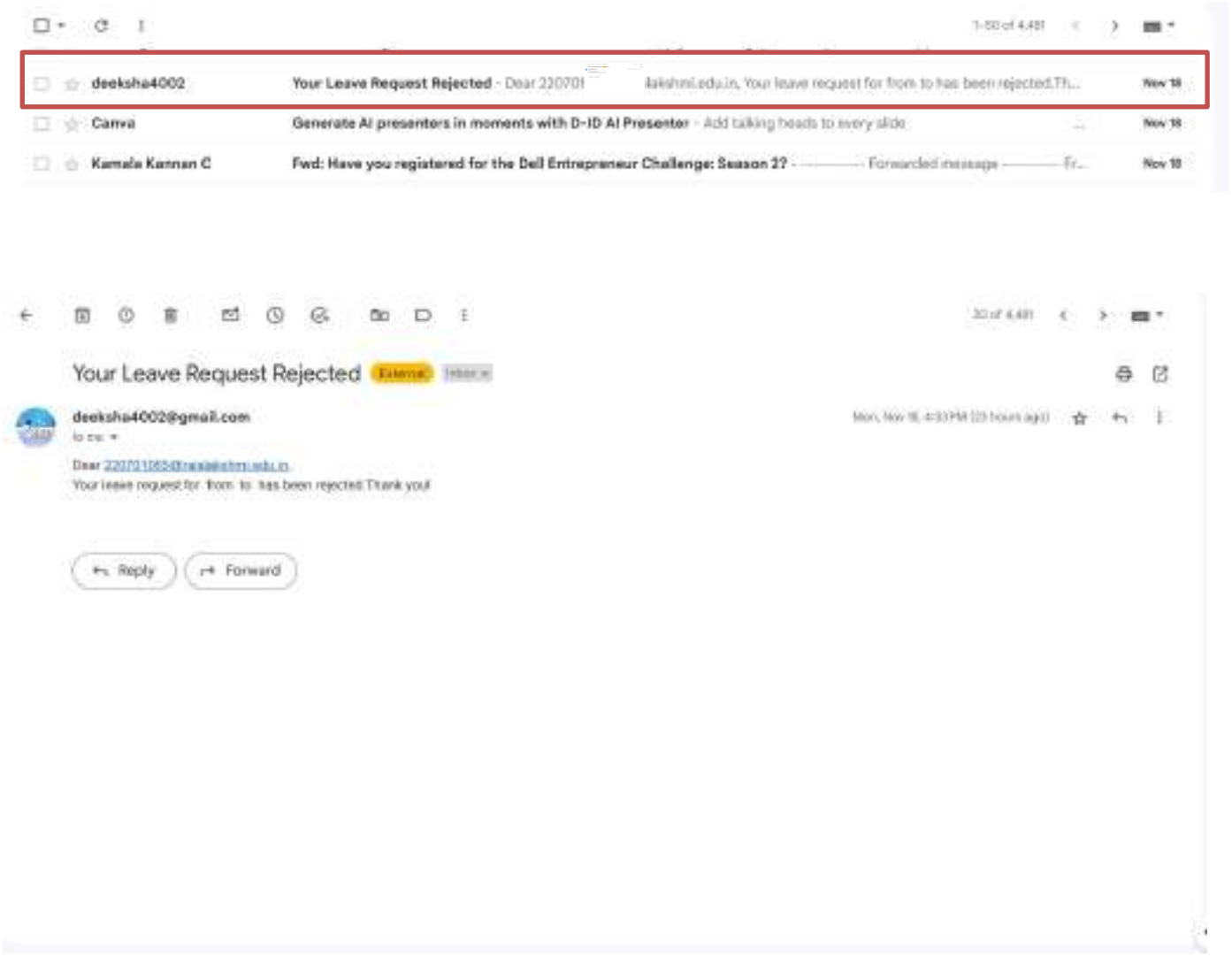


FIG 5.4: Email from HR confirming the rejection of the employee's leave request.

CHAPTER 6

CONCLUSION

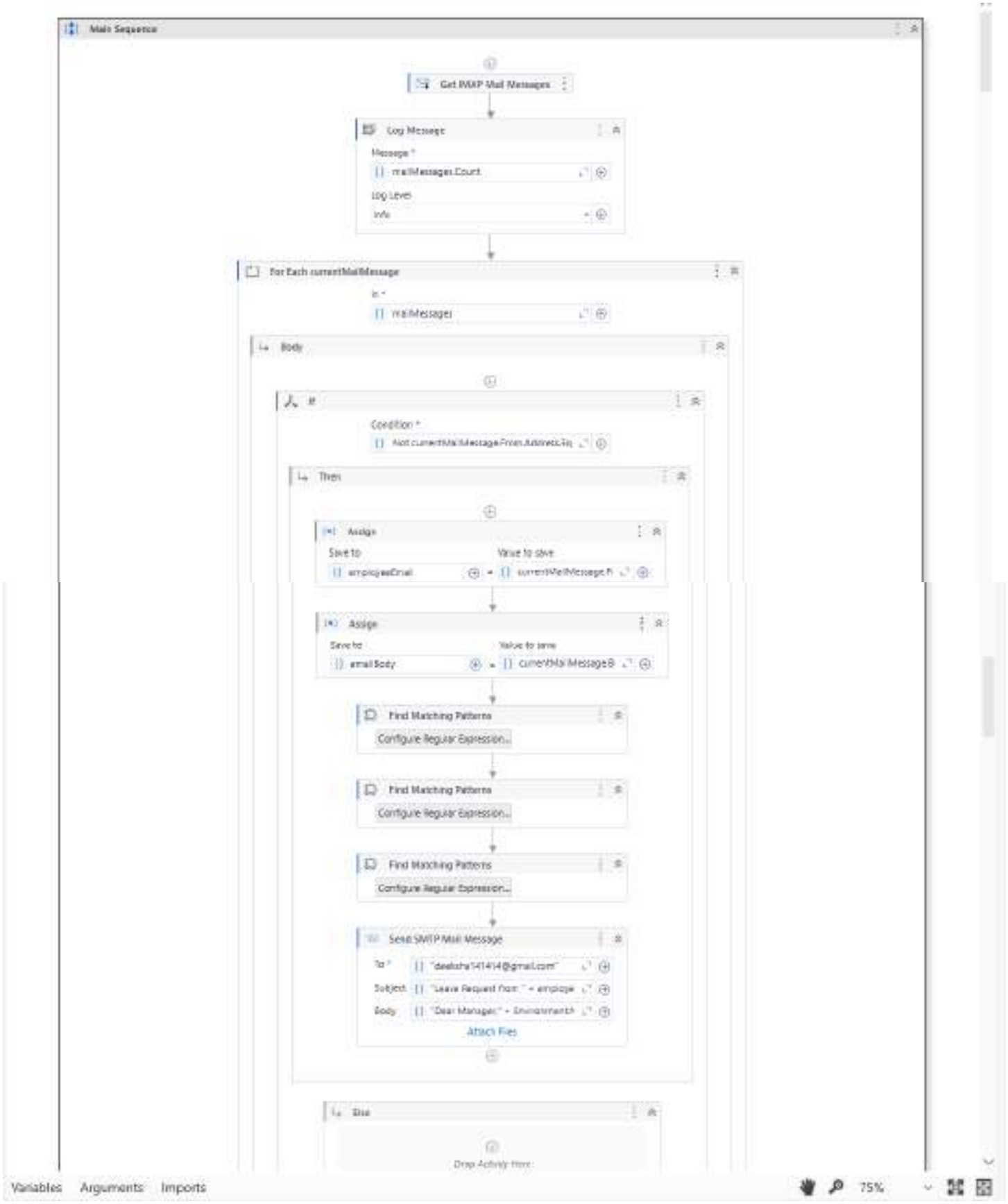
"The HR Leave Management Bot" streamlines the leave request and approval process by utilizing UiPath's Robotic Process Automation (RPA) to automate tasks such as leave request submission, approval handling, and updating leave balances. This innovative solution addresses common challenges in managing employee leave requests, improving efficiency and reducing the risk of errors.

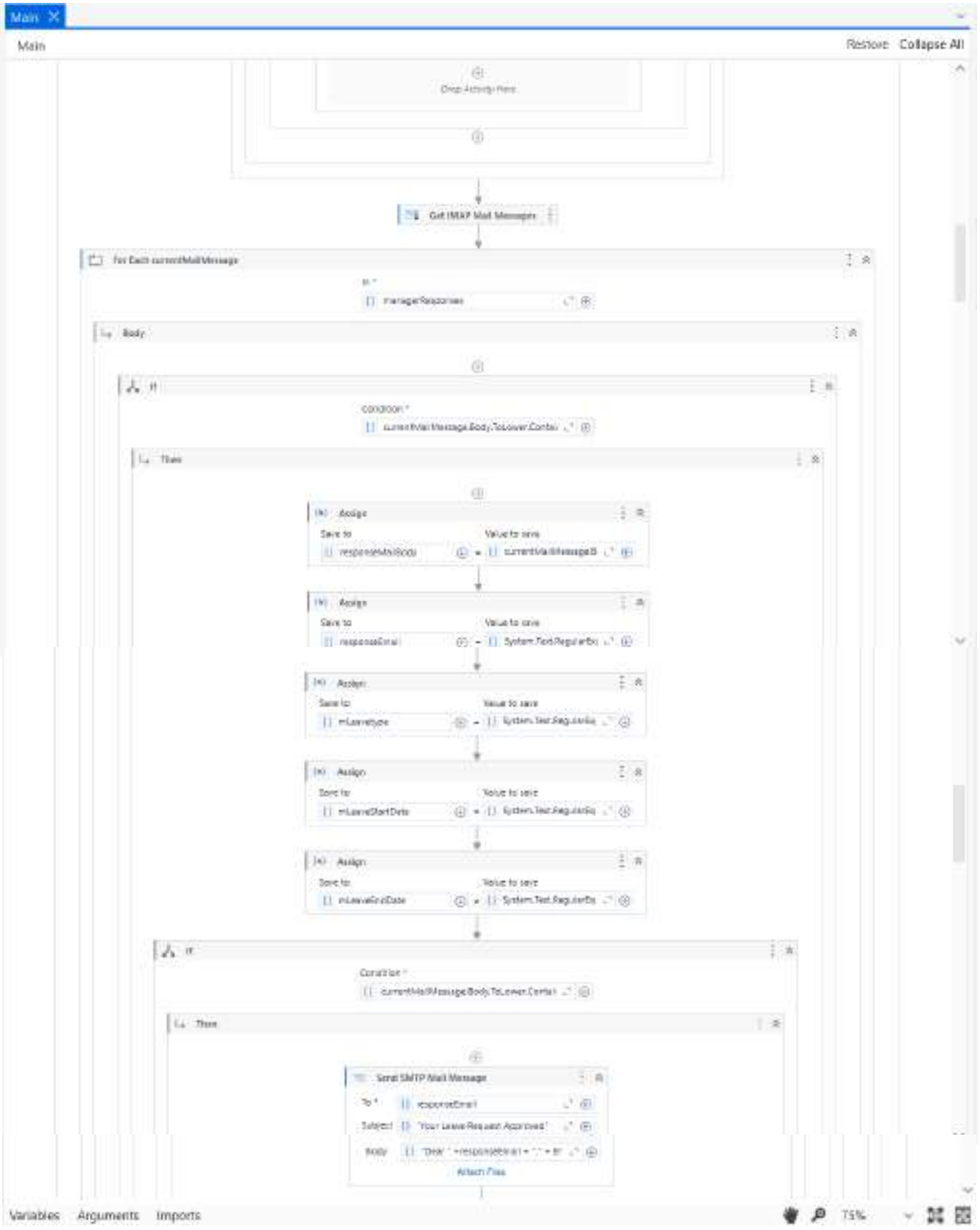
The project enhances communication between employees, HR, and managers, ensuring timely and accurate updates through email notifications and real-time Excel report generation. By automating routine tasks, the bot enables HR professionals and managers to focus on higher-level decision-making and personalized employee support.

While the bot greatly improves operational efficiency, challenges may arise in handling complex leave scenarios or exceptions that require human intervention. Continuous updates and refinements will be necessary to adapt to evolving organizational policies and user needs. Nevertheless, this project represents a significant step forward in automating administrative tasks, contributing to improved workflow and greater accuracy in managing employee leave. The successful implementation of the HR Leave Management Bot marks a notable advancement in optimizing HR operations and enhancing overall organizational productivity.

APPENDIX

PROCESS WORK FLOW

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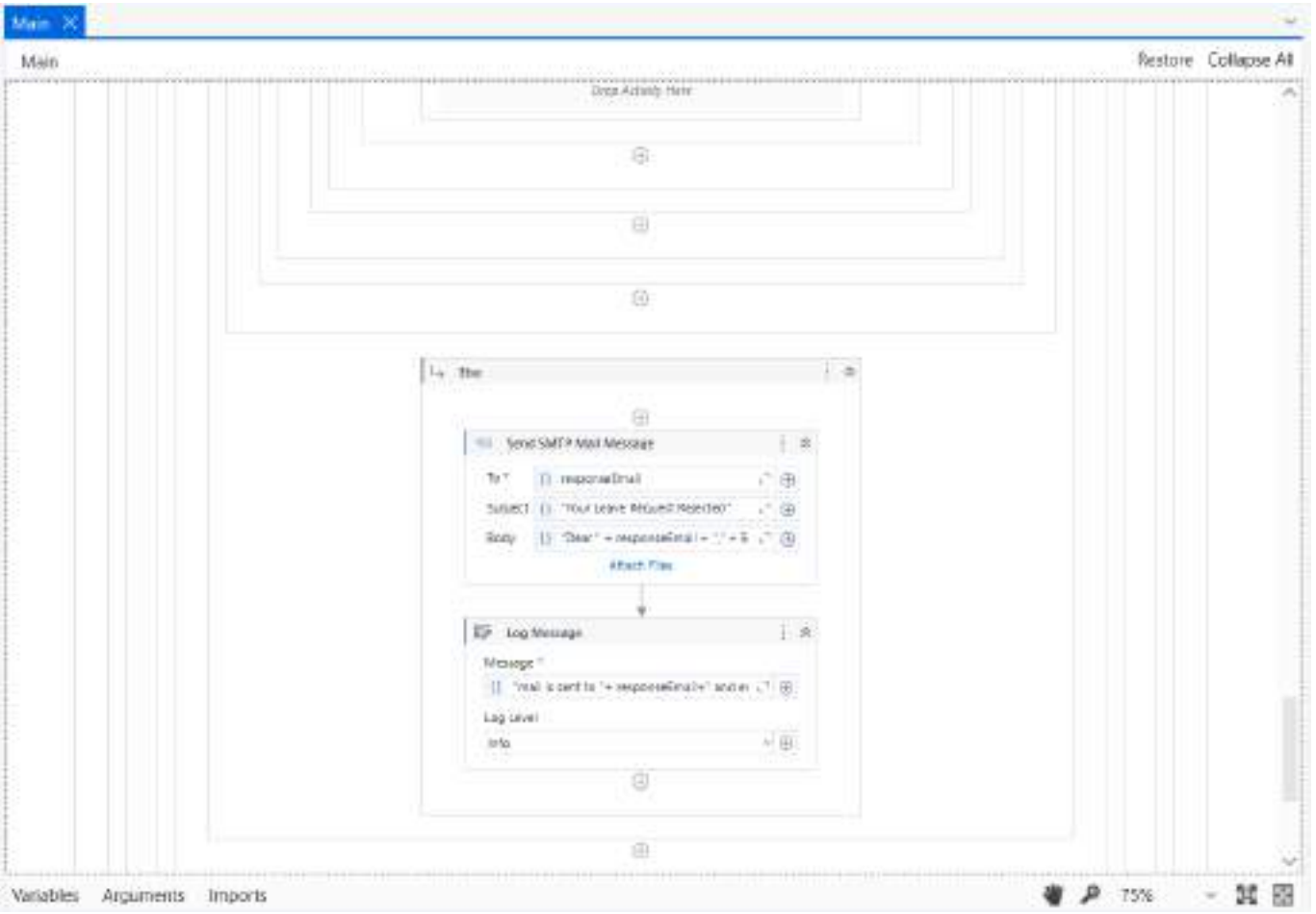
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