ATTENDANCE TRACKING BOT

A PROJECT REPORT

Submitted by

NANDHA KUMAR P (220701180)

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RAJALAKSHMI ENGINEERING COLLEGE
RAJALAKSHMI NAGAR
THANDALAM
CHENNAI – 602 105

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RAJALAKSHMI ENGINEERING COLLEGE

CHENNAI - 602105

BONAFIDE CERTIFICATE

Certified that this project report **"ATTENDANCE TRACKING BOT"** is the bonafide work of **"NANDHA KUMAR P (220701180)"** who carried out the project work for the subject OAI1903 - Introduction to Robotic Process Automation under my supervision.

SIGNATURE

MRS.G.M.SASIKALA , M.E ,
SUPERVISOR,
Assistant Professor,
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 _____.

Internal Examiner **External Examiner**

ABSTRACT

The "Attendance Tracking Bot" is a robust and automated solution designed to streamline the process of managing attendance records and notifying individuals with low attendance. Built using UiPath, the bot begins by reading data from an Excel file, where each row corresponds to a record of an individual's attendance. It evaluates the attendance percentage and flags cases where the value falls below the predefined threshold of 75%. For flagged records, the bot dynamically creates a personalized notification using a Word template, replacing placeholders with the individual’s details. The document is then converted into a PDF file for consistency and professionalism.

To ensure prompt communication, the bot sends these PDF notifications to the respective individuals via an SMTP email activity, including a concise message about their attendance status. The workflow integrates multiple tools, such as Excel for data handling, Word for document generation, and email for notification delivery, creating a seamless process that minimizes manual intervention.

The "Attendance Tracking Bot" is an ideal tool for educational institutions and organizations, automating attendance tracking, reducing administrative workloads, and ensuring accurate and timely communication. Its ability to handle personalized notifications efficiently enhances operational productivity and fosters better compliance with attendance policies.

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LIST OF ABBREVIATIONS

ABBREVIATION	ACCRONYM
RPA	Robotic Process Automation
SMTP	Simple Mail Transfer Protocol
PDF	Portable Document Format
SQL	Structured Query Language
CSV	Comma-Separated Values

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

The "Attendance Tracking Bot" is an innovative solution designed to automate attendance management processes using the power of Robotic Process Automation (RPA). Built on the UiPath platform, this bot offers a streamlined approach to tracking attendance, notifying individuals with insufficient attendance, and generating customized documents, all with minimal human intervention.

Attendance management has traditionally been a time-consuming and error-prone process in educational and organizational settings. This bot addresses these challenges by automating the validation of attendance records from Excel sheets and efficiently notifying individuals through email. It ensures accuracy, saves time, and enhances transparency in attendance tracking.

The bot processes each record row-wise, evaluates attendance percentages, and identifies individuals with attendance below a predefined threshold. For such cases, it customizes a predefined Word document template, generates a PDF, and sends it as an email attachment, along with a detailed notification to the concerned individual.

UiPath, a leading RPA platform, simplifies the automation of such repetitive processes by integrating advanced tools like Excel handling, Word automation, and email notifications. With its low-code interface and built-in components, UiPath enables developers to design workflows that interact seamlessly with multiple applications, ensuring robust automation solutions.

The "Attendance Tracking Bot" represents a significant leap forward in leveraging automation for efficient resource management and communication.

1.2 OBJECTIVE

The primary objective of the **"Attendance Tracking Bot"** is to automate the monitoring and communication of student attendance records using Robotic Process Automation (RPA). The bot efficiently identifies students with attendance below a specified threshold (e.g., 75%) and automates the process of generating personalized notifications. This includes creating a Word document, converting it to a PDF, and sending it via email to the respective student. The project aims to streamline attendance tracking and improve communication between educators and students, ensuring timely intervention and promoting accountability.

1.3 EXISTING SYSTEM

In the current attendance management landscape, tracking and notifying students about attendance shortfalls is a manual, repetitive, and time-consuming process. Educators or administrators often review attendance records manually, identify students with attendance below the required threshold, prepare individual notifications, and send them via email or other means. This traditional approach is prone to human error, delays, and inefficiencies, making it challenging to ensure timely communication and accurate record-keeping.

1.4 PROPOSED SYSTEM

The "Attendance Tracking Bot" is designed as a comprehensive solution to address the inefficiencies of the current system. Using UiPath's RPA platform, the bot automates the entire attendance management process, starting from extracting data from Excel sheets to notifying students with low attendance. It systematically identifies students whose attendance is below the threshold (e.g., 75%) and generates personalized notifications using predefined Word templates.

These notifications are converted into PDFs and sent directly to students' email addresses, ensuring swift communication. Additionally, the bot minimizes human intervention, thereby eliminating errors and saving time. By leveraging automation, the proposed system ensures consistency, accuracy, and timely follow-ups, enabling educators and institutions to maintain effective attendance monitoring with minimal effort.

CHAPTER 2

LITERATURE REVIEW

2.1 Survey on Robotic Process Automation (RPA) in Attendance Management:

Robotic Process Automation (RPA) is increasingly utilized in educational management systems to streamline routine administrative tasks. In attendance tracking, RPA has shown significant potential in automating repetitive tasks like attendance analysis, reporting, and communication. Current research highlights the benefits of RPA in reducing the workload of educators and administrators by eliminating manual processes. Despite these advancements, the adoption of RPA in attendance systems still faces challenges, including system integration and customization for specific institutional needs.

Relevant research papers related to RPA in education include:

[1] A study discusses how digital technologies, including RPA, are transforming administrative workflows in education. By automating mundane tasks, such as attendance tracking and notifications, RPA empowers educators to focus on teaching while ensuring greater operational efficiency.

[2] A research paper from IJITEE showcases RPA's ability to streamline student management processes, such as tracking attendance and notifying stakeholders through automated workflows. This study emphasizes time-saving benefits and cost-effectiveness, making RPA an attractive solution for institutions with limited resources.

2.2 Survey on Automation in Student Notification Systems:

Automation of student notification systems is another area of focus, leveraging technologies like RPA and email automation. These systems reduce the manual effort required to communicate with students, ensuring timely and accurate messaging. However, existing systems face challenges such as scalability and ensuring personalized communication.

[1] Research highlights the role of automation in personalized student communication. Automated systems generate notifications based on predefined conditions, like attendance thresholds, ensuring consistency and reducing administrative burdens.

[2] A study explores the integration of RPA with email systems to send mass communications. It concludes that automation significantly improves the efficiency of processes.

2.3 Survey on Challenges in Attendance Monitoring and Proposed Integration with RPA:

Manual attendance tracking and reporting continue to pose significant challenges, including human error, inefficiency, and delayed communication. Research in this area emphasizes the need for automation to overcome

[1] A study reviews traditional attendance management systems and identifies common pain points, such as the time-consuming nature of manual processes. It advocates for the adoption of automated solutions to enhance operational efficiency.

[2] A paper discusses the limitations of current attendance monitoring tools and highlights RPA as a transformative technology for addressing these challenges.

2.4 Summary of the Intersection of RPA and Attendance Management:

The "Attendance Tracking Bot" integrates RPA technology to automate attendance monitoring and communication workflows. This innovative system identifies students with attendance below a specific threshold, generates personalized notifications, and delivers them via email—all with minimal human intervention.

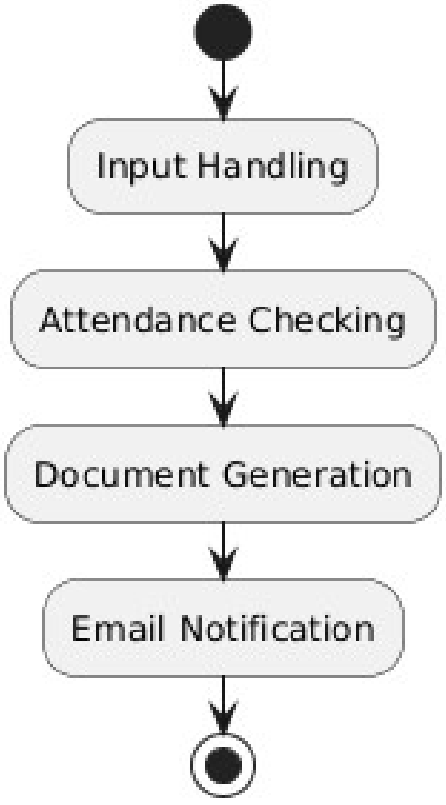
By bridging the gap between traditional attendance systems and modern automation, the project addresses inefficiencies in attendance management. It aligns with contemporary research and educational needs, offering a robust, scalable, and cost-effective solution. The integration of RPA in this context highlights the potential for automation to transform educational administration and enhance communication between educators and students.

CHAPTER 3

SYSTEM DESIGN

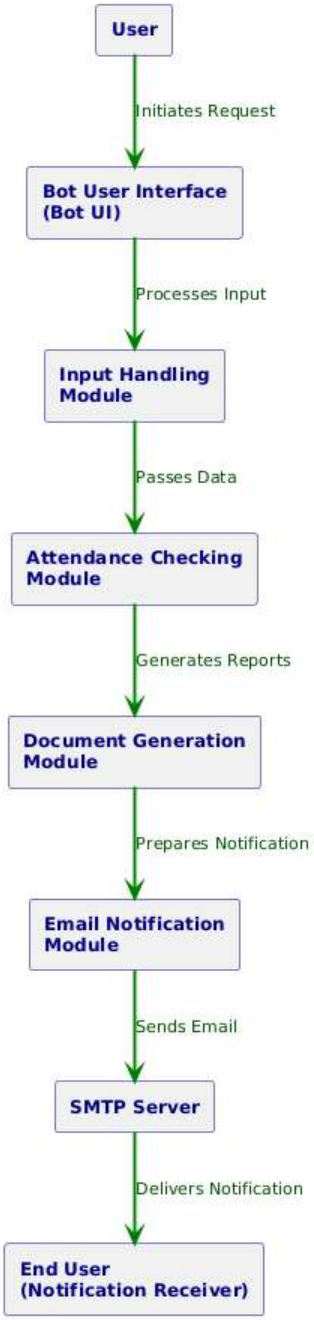
3.1 SYSTEM FLOW DIAGRAM

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.



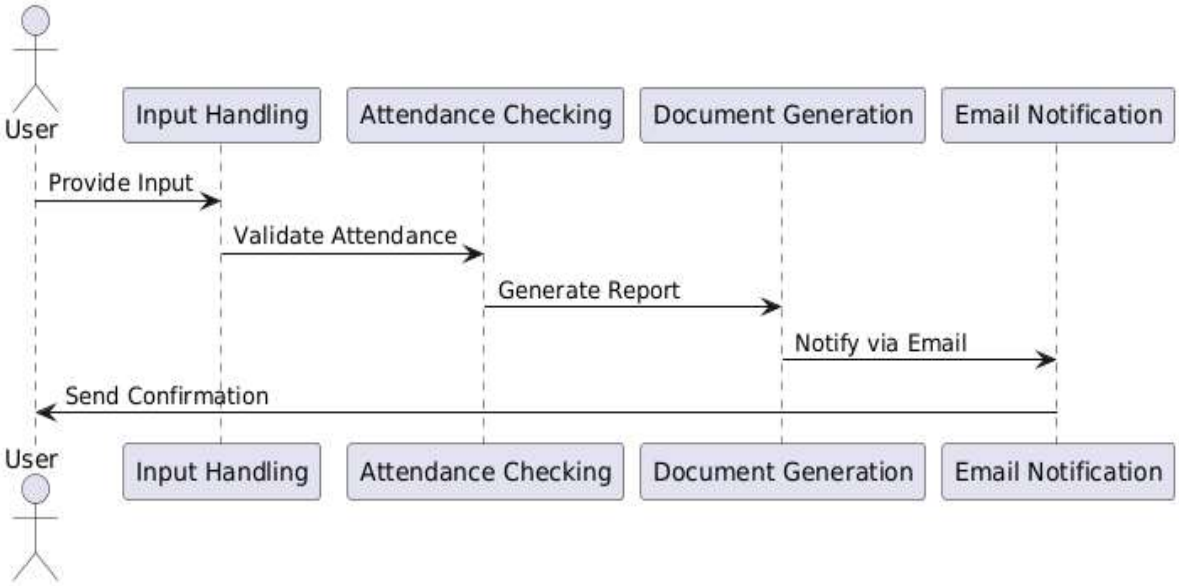
3.2 ARCHITECTURE DIAGRAM

An architecture diagram is a graphical representation of a set of concepts, that are part of an architecture, including their principles, elements and components.



3.3 SEQUENCE DIAGRAM

A sequence diagram is a type of interaction diagram because it describe and how in what order a group of objects works together.



CHAPTER 4

PROJECT DESCRIPTION

The "Attendance Tracking Bot" is an advanced Robotic Process Automation (RPA) project designed to automate attendance monitoring and communication processes in educational institutions. Built using UiPath, the bot eliminates the inefficiencies of manual attendance management by identifying low attendance cases, generating notification documents, and automating email communication.

4.1. MODULES:

4.1.1. INPUT HANDLING AND INITIALIZATION:

4.1.1.1. File Selection:

- Receive user input for the attendance Excel file path.

4.1.1.2. Data Initialization:

- Load the Excel file containing attendance records.
- Parse the data to identify headers and ensure compatibility.

4.1.2 ATTENDANCE CHECKING AND VALIDATION

4.1.2.1 Attendance Validation:

- Iterate through each row of the Excel sheet.
- Extract and analyze attendance data for each student.

4.1.2.2 Threshold Evaluation:

- Compare each student's attendance percentage with the predefined threshold (e.g., 75%).
- Flag students whose attendance falls below the threshold.

4.1.3 DOCUMENT GENERATION:

4.1.3.1 Notification Creation:

- Use a predesigned Word template to generate personalized attendance notifications for flagged students.

4.1.3.2 PDF Conversion:

- Convert the generated Word documents into PDF format for standardized communication.

4.1.4 EMAIL NOTIFICATION:

4.1.4.1 Email Preparation:

- Extract the student email addresses from the Excel file.
- Attach the generated PDF notification for each flagged student.

4.1.4.2 Email Dispatch:

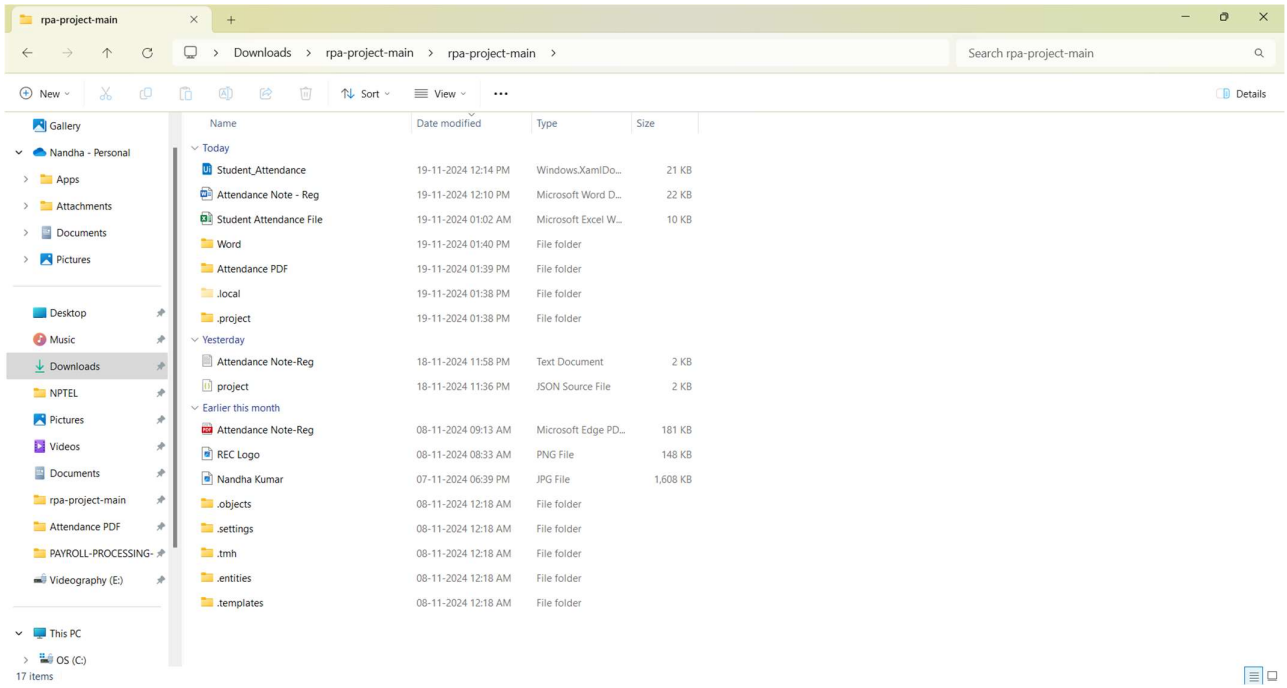
- Use SMTP services to send personalized emails to students with low attendance.
- Include a message summarizing their attendance shortfall and attach the notification PDF.

4.1.4.3 Completion Notification:

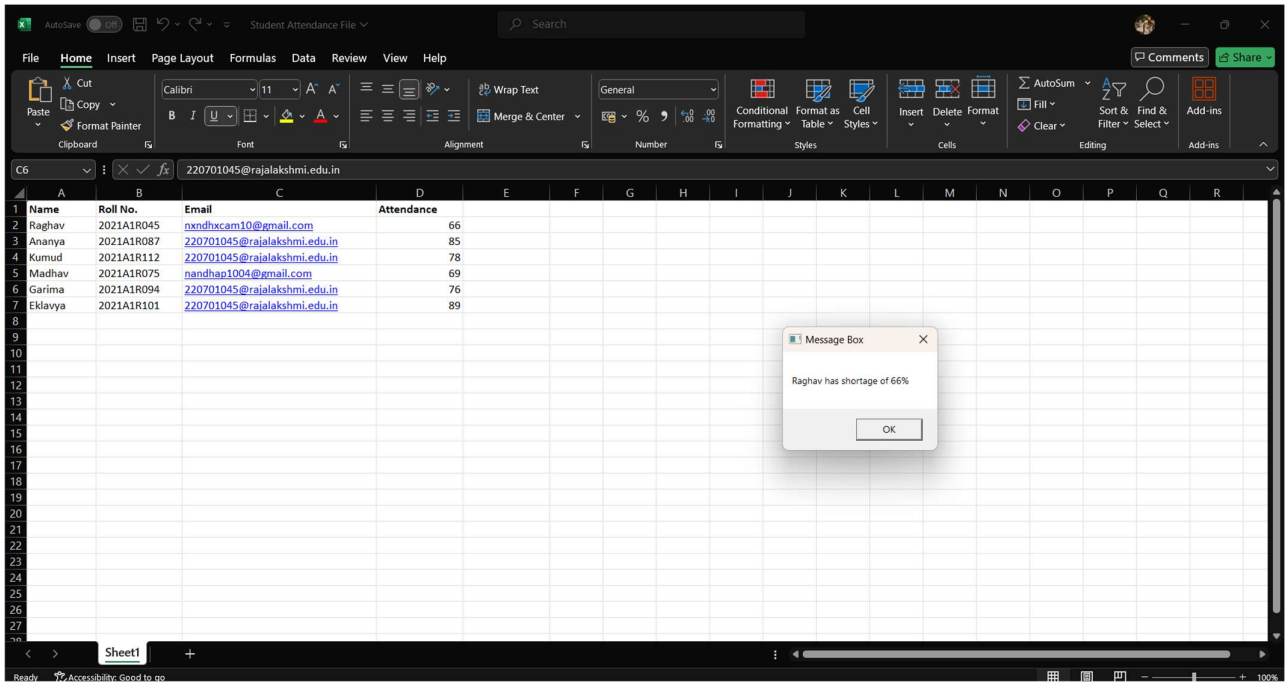
- Display a completion message upon successful email dispatch for all flagged students.

CHAPTER 5

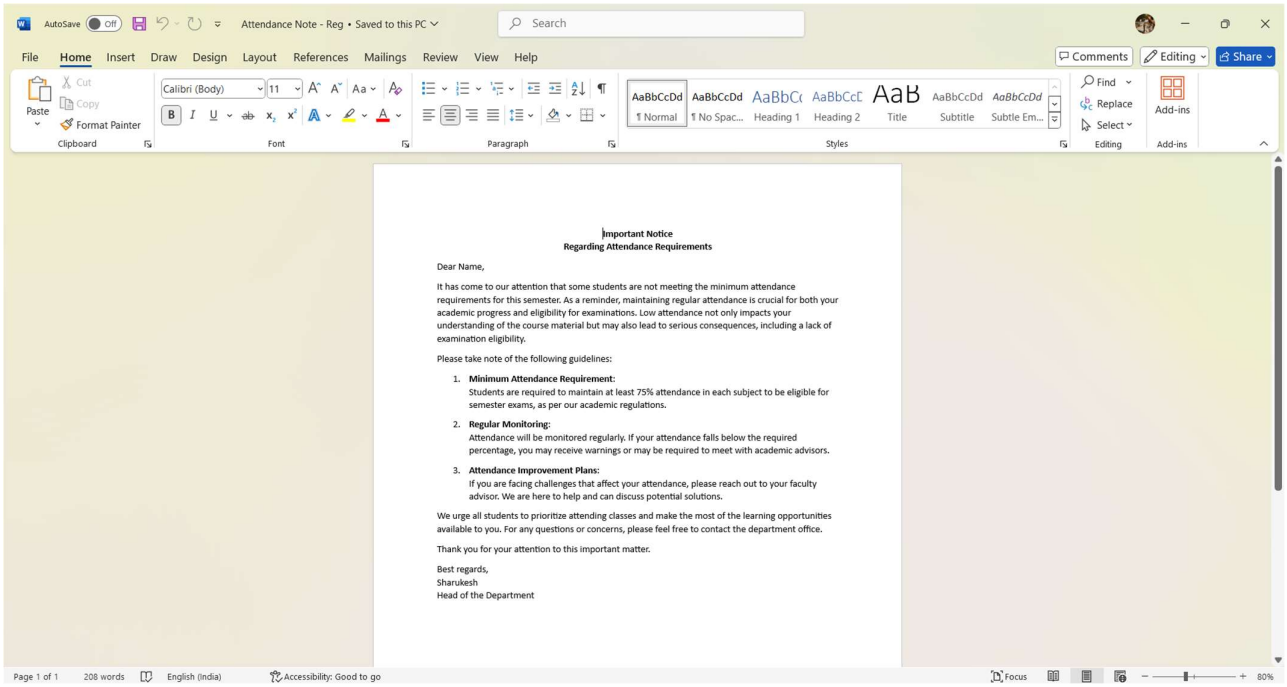
OUTPUT SCREENSHOTS



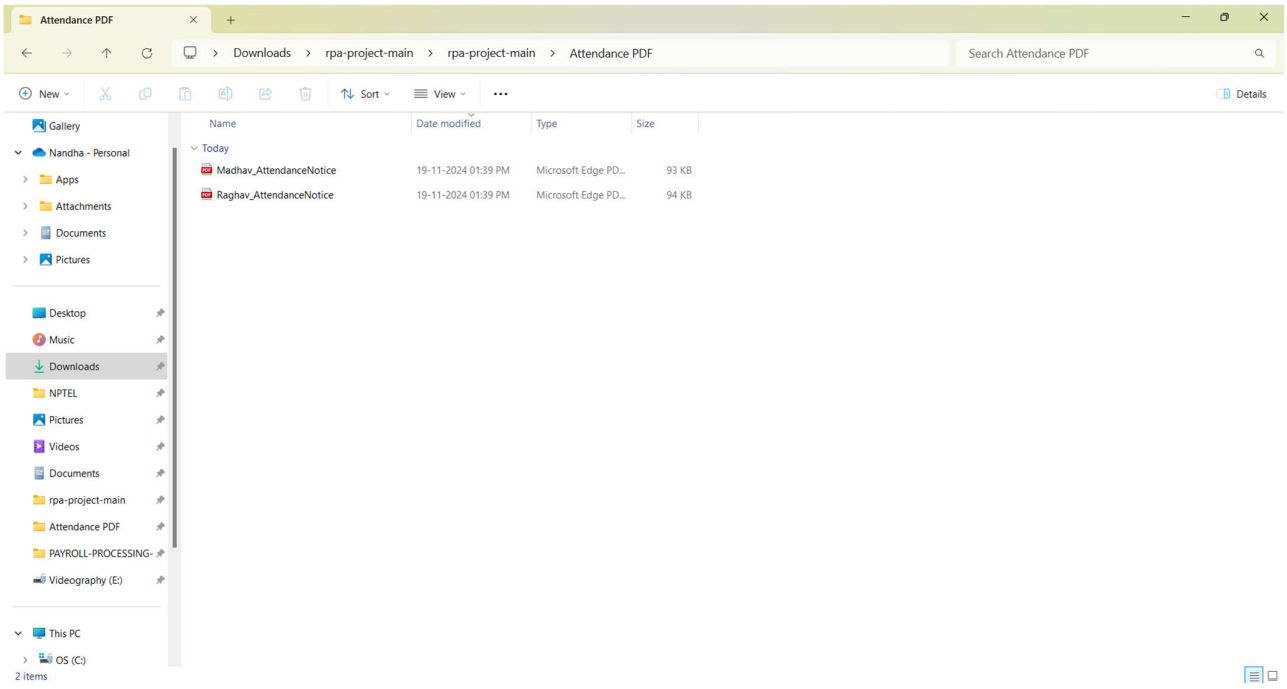
The Data is fetched from the student attendance file and processed to calculate Attendance < 75%.



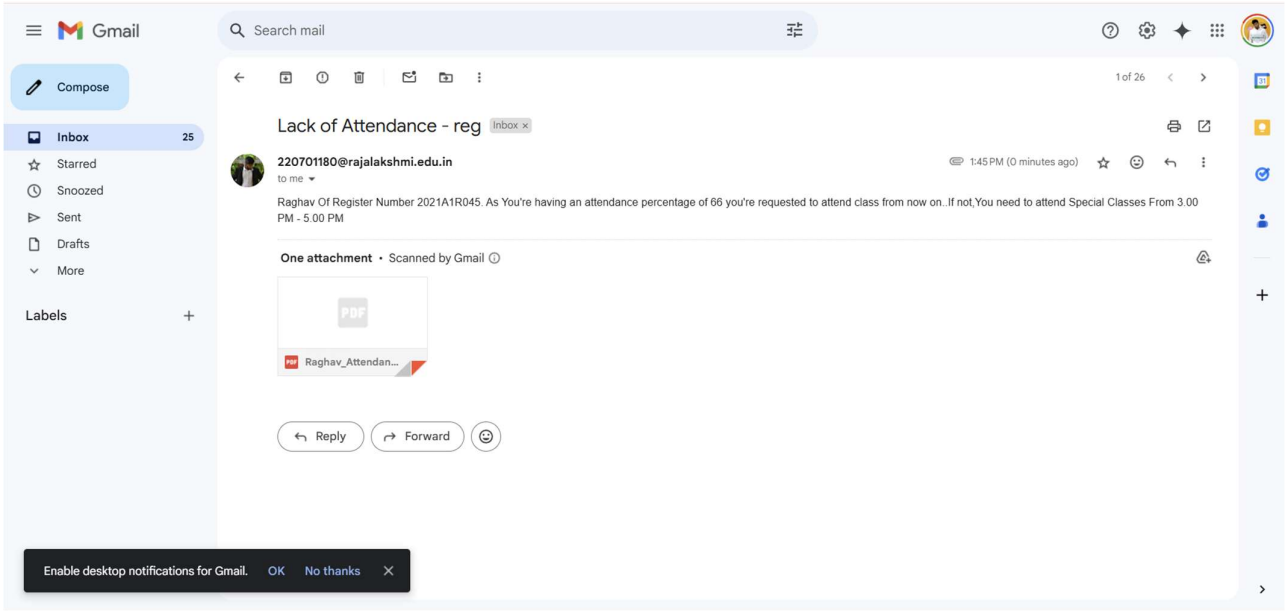
Automation is performed in an Excel sheet, displaying the names along with their attendance percentages in a message box.



The Word document replaces names with attendance less than 75% using the Word Application Scope and the Replace activity.



After replacing name, saved as a PDF file with the 'Save as PDF' activity



An email is sent with the attached PDF containing their name, which is retrieved from Excel, and the email is sent to their address using the SMTP activity.

CHAPTER 6

CONCLUSION

The "Attendance Tracking Bot" represents a transformative approach to attendance management by leveraging UiPath's Robotic Process Automation (RPA) capabilities. This innovative solution addresses the inefficiencies of manual attendance monitoring, ensuring a streamlined, accurate, and automated process.

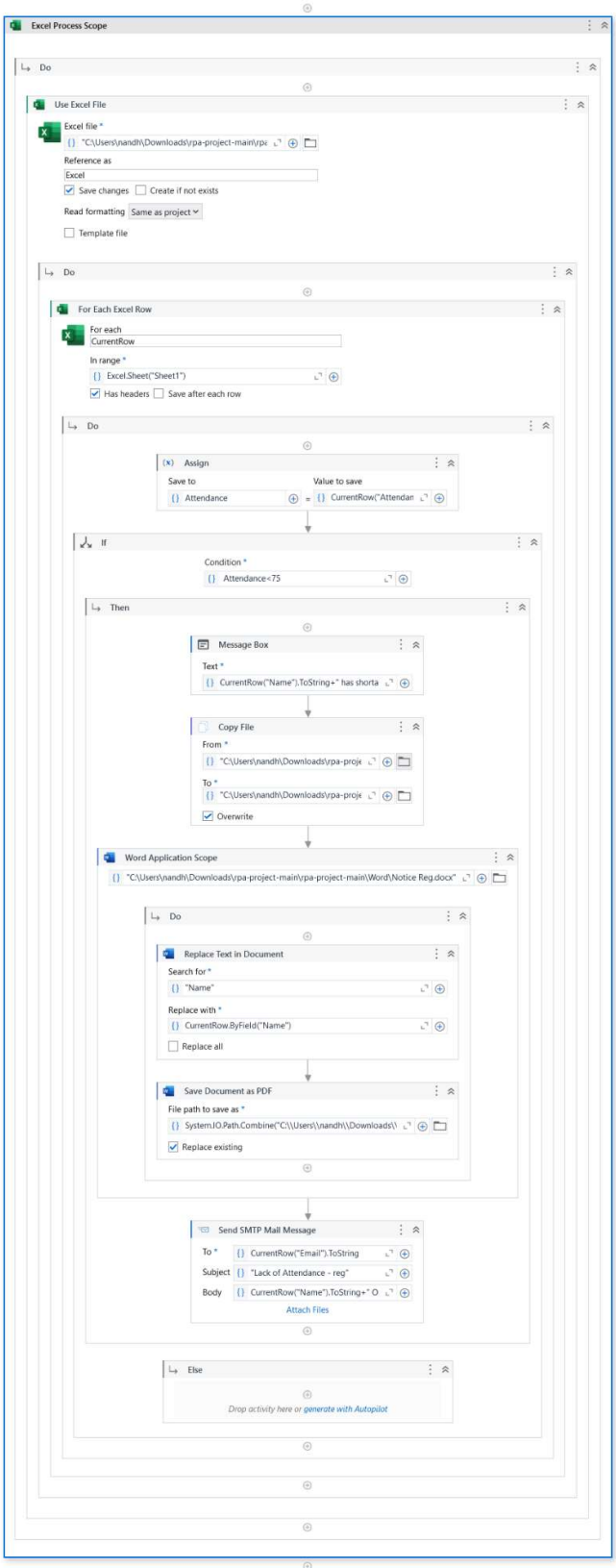
The bot simplifies attendance tracking by automating key steps, from identifying low attendance cases to generating personalized notifications and dispatching emails. With real-time updates and systematic documentation, it enhances transparency and provides educators with an efficient, user-friendly tool to manage student attendance.

While the bot automates repetitive tasks effectively, challenges may arise in handling unique or complex cases that require manual judgment. Continued refinement and updates are essential to adapt to the evolving needs of educational institutions.

Despite these challenges, the **"Attendance Tracking Bot"** marks a significant milestone in modernizing attendance management. Its successful implementation demonstrates the potential of RPA to enhance administrative efficiency, reduce errors, and support timely interventions, contributing to the overall effectiveness of educational workflows.

APPENDIX

PROCESS WORK FLOW



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