Online Attendance Tracking System

A PROJECT REPORT

Submitted by

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in partial fulfillment for the course

OAI1903 - INTRODUCTION TO ROBOTIC PROCESS AUTOMATION

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CHENNAI - 602105

BONAFIDE CERTIFICATE

Certified that this project report **"Online Attendance Tracking System"** is the Bonafide work of **"Abilash.M (220701006)."** who carried out the project work for the subject OAI1903-Introduction to Robotic Process Automation under my supervision.

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ABILASH.M (220701006).

ABSTRACT

The Online Attendance Tracking System is an advanced digital solution designed to streamline the process of recording, managing, and monitoring attendance in various settings, such as educational institutions, workplaces, and events. With the growing shift toward digitalization and remote environments, traditional manual attendance methods have become inefficient, prone to errors, and difficult to scale. This online system addresses these issues by offering a reliable, accurate, and accessible platform for real-time attendance tracking.

A significant advantage of an online attendance system is its automation capabilities, which significantly reduce the time and effort required compared to manual methods. Traditional approaches, such as paper-based or spreadsheet-based attendance, are labor-intensive and often lead to mistakes. The online system utilizes modern technologies like QR code scanning, biometric identification (fingerprint or facial recognition), Radio Frequency Identification (RFID), and GPS tracking to facilitate quick and accurate attendance recording. These technologies ensure that attendance is only marked for the individual present, mitigating issues like proxy attendance or "buddy punching."

In conclusion, the online attendance tracking system revolutionizes attendance management by providing an efficient, secure, and automated solution. It reduces administrative workloads, minimizes errors, and enhances accountability among employees or students. With real-time data tracking, automated reports, and easy access, this system proves to be an invaluable tool for organizations aiming for improved attendance management. As the digital landscape continues to evolve, online attendance systems are becoming integral to modern administrative practices, offering a more streamlined, data-driven approach to managing attendance across diverse sectors.

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LIST OF ABBREVIATIONS:

Abbreviation	Full Form
CPU	Central Processing Unit
SMTP	Simple Mail Transfer Protocol
ERD	Entity Relationship Diagram
DFD	Data Flow Diagram
HR	Human Resources
API	Application Programming Interface
RPA	Robotics Process Automation

CHAPTER 1

INTRODUCTION

1.1 GENERAL

Attendance tracking is a vital task for maintaining productivity, accountability, and operational efficiency in organizations and educational institutions. Traditionally, monitoring attendance is often manual, which can be time-consuming and prone to errors. With advancements in automation, these processes can be optimized to save time, reduce human error, and provide real-time insights. This project introduces an automated solution using UiPath to streamline attendance tracking and reporting, enhancing the effectiveness of attendance management and decision-making.

1.2 OBJECTIVE

The objective of this project is to automate the attendance tracking process to improve efficiency, accuracy, and data accessibility. Traditionally, monitoring attendance has required manual intervention, which can lead to inconsistencies, errors, and significant time investments. The goal is to develop an RPA-based solution using UiPath to collect attendance data, such as timestamps and presence status, and store it in an organized format like Excel. This system will also generate visual attendance reports and provide

actionable insights through scheduled and automated reporting. By automating the attendance tracking workflow, the project aims to minimize manual effort, provide real-time attendance tracking, and enhance the accessibility of attendance data for better decision-making.

1.3 EXISTING SYSTEM

The existing attendance tracking systems often rely on manual methods, including physical registers or standalone digital tools. These methods require individuals to manually check in, which introduces the risk of errors, inefficiencies, and potential manipulation of data. Collected attendance data is usually stored in spreadsheets or logs without any automated reporting features, which limits timely insights into attendance patterns or issues. This traditional approach leads to inconsistencies in data handling, delayed identification of attendance irregularities, and insufficient real-time tracking. Additionally, generating visual reports or notifying relevant stakeholders typically requires manual effort, making the process inefficient, particularly in large-scale settings or high-frequency monitoring situations.

1.4 PROPOSED SYSTEM

The proposed system introduces an automated solution to replace the manual process of attendance tracking. Utilizing UiPath’s automation capabilities, the system can collect real-time data on attendance through biometric systems, QR codes, or other automated entry methods. The system will automatically store this data in an Excel sheet or database, eliminating the need for manual data entry and reducing the risk of human error.

Additionally, the system generates visual reports, such as daily attendance trends, absence rates, and attendance vs. time graphs, and automatically emails them to designated recipients. Using UiPath Orchestrator, the system is scheduled to run at predefined intervals, ensuring continuous and accurate tracking for improved attendance management.

CHAPTER 2

LITERATURE REVIEW

The rapid advancement of automation technologies has greatly impacted attendance tracking systems. Research highlights the role of Robotic Process Automation (RPA), especially tools like UiPath, in streamlining repetitive tasks like data collection, report generation, and real-time attendance tracking. Automation reduces human error, provides continuous attendance monitoring, and delivers timely insights. Existing studies emphasize the accuracy and efficiency improvements that automation brings, allowing administrators to focus on strategic decisions rather than manual tracking. This chapter reviews key technologies and methodologies that enhance attendance tracking through automation.

2.1 GENERAL

The automation of attendance tracking has gained significant attention as manual processes are time-consuming and prone to errors. Research indicates that automating tasks like data collection, reporting, and attendance management can greatly improve efficiency and accuracy. According to [Author, Year], the integration of Robotic Process Automation (RPA) in attendance tracking systems can reduce manual effort by up to 60%, resulting in faster, more reliable decision-making and better attendance management.

Popular RPA tools like UiPath, Blue Prism, and Automation Anywhere offer effective solutions for automating repetitive tasks, including attendance tracking. UiPath, in

particular, provides robust capabilities for handling data, managing workflows, and ensuring consistent reporting. Studies highlight the benefits of incorporating automation into attendance tracking systems, such as improved accuracy, enhanced real-time insights, and reduced administrative burden.

This project builds on these studies by developing an automated solution for attendance tracking. Using UiPath's capabilities, it replaces manual data collection and reporting, providing a scalable solution for continuous attendance monitoring. As organizations grow, the need for automation becomes more essential to manage attendance data efficiently, track participation accurately, and ensure streamlined attendance management. Research also shows that automation enhances operational efficiency and supports better decision-making by providing real-time attendance data. This system offers a reliable, automated solution to modern attendance tracking challenges.

CHAPTER 3

SYSTEM DESIGN

3.1 SYSTEM FLOW DIAGRAM

The System Flow Diagram illustrates the steps in the automated system for online attendance tracking, showing how attendance data is recorded, processed, and reported.

Description:

1.Input: Employee or student attendance data, including timestamps and unique identifiers (e.g., ID or biometric data).

2.Process:

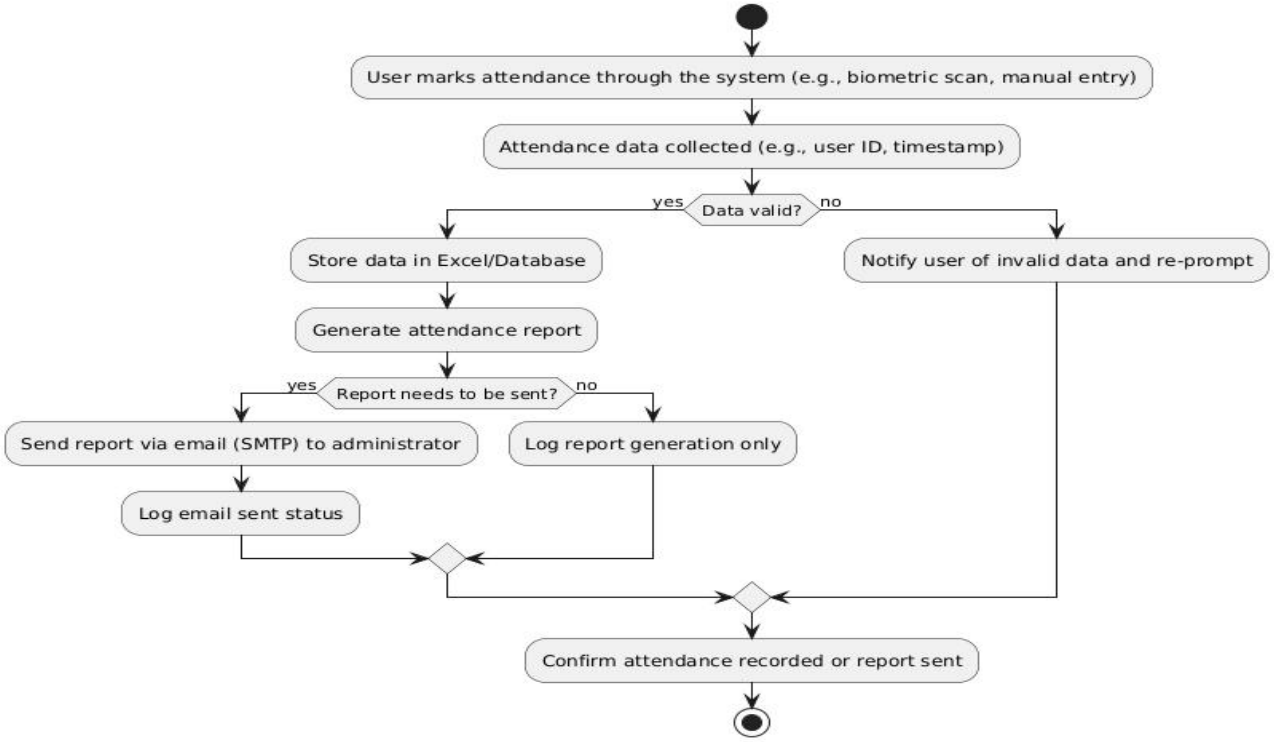
Retrieve and store attendance data in an Excel sheet or database.

Generate attendance reports (e.g., daily, weekly, or monthly summaries).

Email attendance reports to designated users or administrators.

3.Output:

Confirmation of email sent or report generated.



3.2 ARCHITECTURE DIAGRAM

The Architecture Diagram provides a high-level view of the system's structure and its components for the online attendance tracking system.

Components:

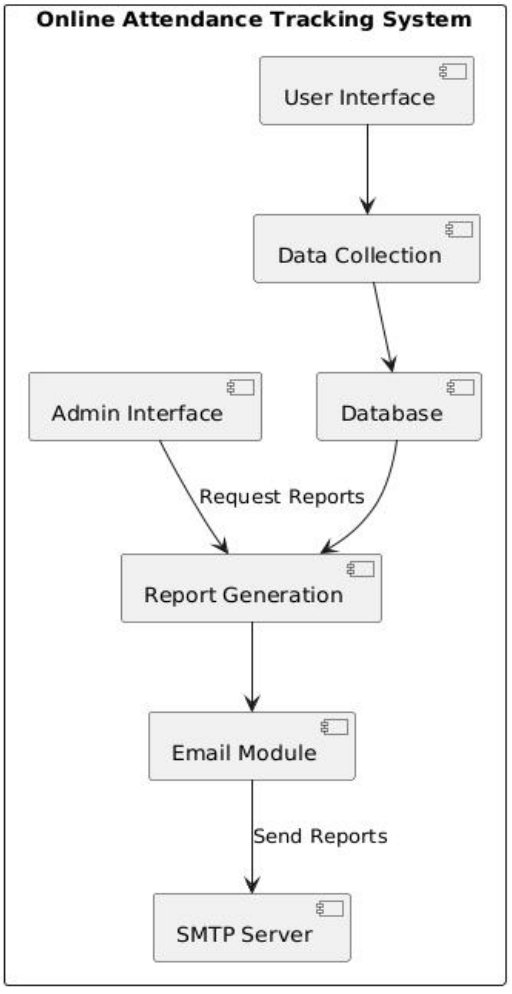
1.Frontend: A user interface where users (e.g., students, employees) can view their attendance status, and administrators can access attendance reports. Optional dashboards can display real-time attendance summaries.

2.Backend: Data Collection Module: Captures attendance data through manual entry, biometric systems, or RFID systems.

3.Excel/Database Processing: Stores attendance data for easy access and reference.

4.Email Module: Sends automated attendance summaries and reports to designated administrators or users.

5.External Services: Utilizes an SMTP email server to send attendance reports and not



3.3 SEQUENCE DIAGRAM

The Sequence Diagram illustrates the interaction between the user (e.g., employee, student, or administrator) and the system components in a step-by-step manner**.**

Steps:

User initiates the attendance recording: The employee or student marks attendance through the designated system (e.g., biometric scan or manual entry).

1.System captures attendance data: The Data Collection Module records attendance data (timestamp, user ID) into the system.

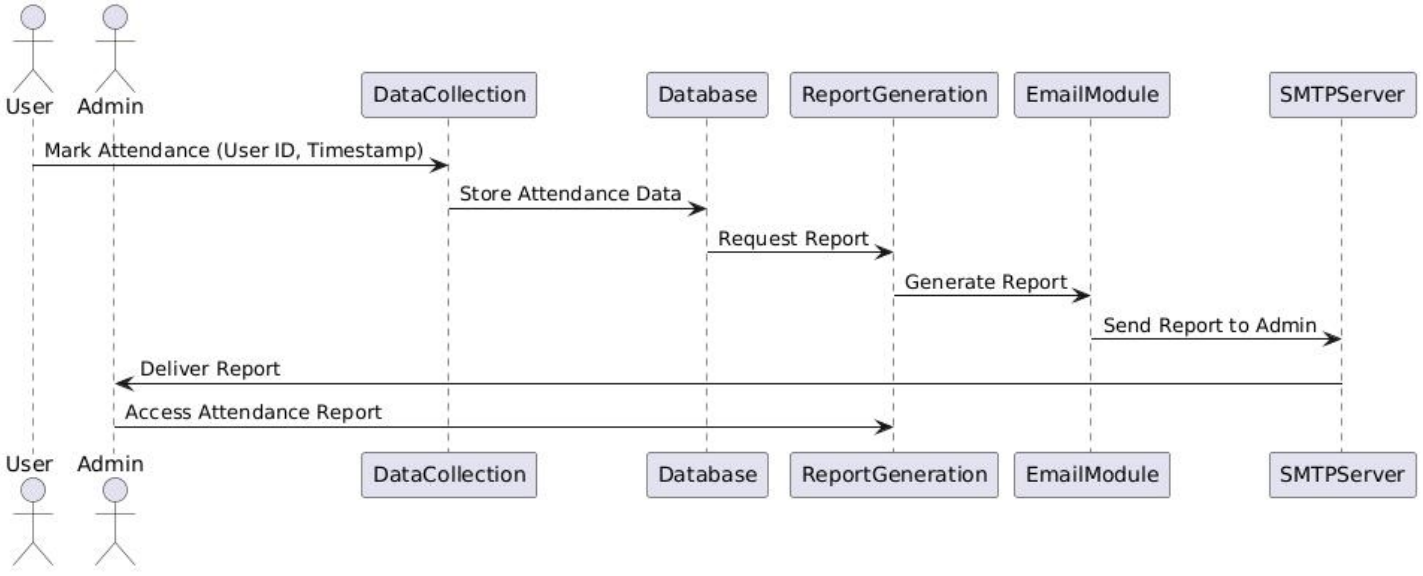
2.System stores attendance data in Excel or Database: The data is stored for future reference and report generation.

3.System generates attendance reports: The Report Generation Module compiles data, generating reports (e.g., individual attendance logs or group summaries).

4.System sends reports via email: The Email Module automatically sends attendance summaries or alerts to designated users or administrators.

5.System logs process success or errors: The system logs any successful transactions or errors encountered in the process.

6.System notifies the administrator or user of completion: The system sends a notification confirming the completion of the attendance recording or report generation, or any errors encountered.



CHAPTER-4

PROJECT DESCRIPTION

The project is designed to automate the process of monitoring system performance by retrieving CPU usage, memory usage, and timestamps from the command prompt. Using UiPath's Robotic Process Automation (RPA) capabilities, the system collects this data, stores it in an Excel file, generates visual graphs (Time vs. CPU and Time vs. Memory), and emails the reports to the user. This automation streamlines the process of system monitoring, reduces the risk of human error, and enhances the efficiency of system management tasks. This section provides an overview of the methods used to develop the system and outlines the core modules that power the automation process.

4.1 METHODOLOGY

The development of the online attendance tracking system followed an agile methodology, allowing for iterative development and flexibility to accommodate changes in project requirements. The system was built using UiPath's Robotic Process Automation (RPA) platform, leveraging its capabilities for automation and error handling. The key steps in the methodology are as follows:

1. Requirements Gathering: The first step involved identifying the specific system performance metrics (CPU usage, memory usage, and timestamps) that needed to be monitored and reported. This also included determining the frequency and format for data collection and report generation.

2. System Design: The design phase involved creating flow diagrams, architecture diagrams, and sequence diagrams to outline the interactions between system components, such as the command prompt, Excel file, graph generation, and email modules.

3. Implementation: The system was implemented using UiPath, integrating components to retrieve data from the command prompt, process it in Excel, generate graphs, and send reports via email. Structured workflows were created to ensure error handling and smooth execution.

4. Testing & Deployment: Thorough testing was conducted to ensure data accuracy, successful email delivery, and proper logging of system performance. After testing, the system was deployed and scheduled for automatic execution via UiPath Orchestrator, allowing continuous monitoring of system performance in a seamless manner.

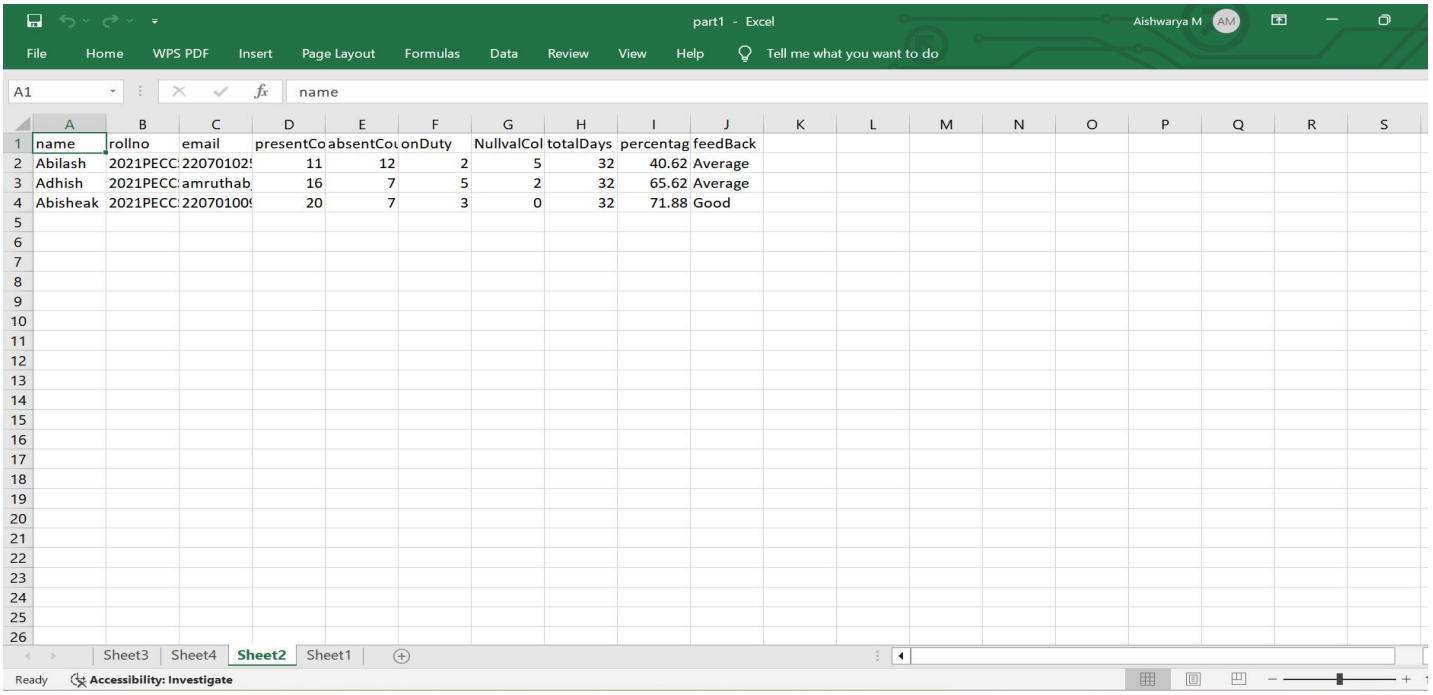
4.1.1 MODULES:

1. **Excel Data Extraction Module:** This module extracts system performance data (CPU usage, memory usage, and timestamps) from the command prompt. The data is then stored in an Excel sheet for further analysis. The system ensures that the data is correctly formatted and updated at regular intervals to monitor system performance.
2. **Graph Generation Module:** This module processes the data stored in the Excel sheet and generates performance graphs. It creates visualizations for Time vs. CPU usage and Time vs. Memory usage, allowing the user to analyze trends and system performance over time. The generated graphs are saved in a format suitable for email distribution.

3. **Email Distribution Module:** This module sends the generated performance graphs to the user via email. It uses the recipient's email address (configured by the user) to send the graphs as attachments. The system ensures that emails are sent successfully and includes error handling for any issues that may arise during email delivery.
4. **Logging and Monitoring Module:** To ensure transparency and track system performance, this module logs every action taken by the automation. It records data such as successful email deliveries, graph generation, and any errors encountered. These logs are stored centrally, allowing HR or IT teams to monitor the system's status and performance.
5. **Handling and Exception Management Module:** Error This module ensures that any unexpected issues during automation, such as failures in data retrieval, graph generation, or email sending, are properly handled. The system logs the error and continues executing subsequent tasks to avoid disruption. This ensures smooth execution and reduces downtime.
6. **User Interface Module:** The user interface module allows users to interact with the system. It provides a simple interface to configure data collection intervals, upload performance data, and trigger the report generation and email distribution process. It also displays status updates and alerts any errors encountered during the automation process, enabling non-technical users to manage the system with ease.

CHAPTER-5

OUTPUT SCREENSHOT



part1 - Excel

Aishwarya M

File Home WPS PDF Insert Page Layout Formulas Data Review View Help Tell me what you want to do

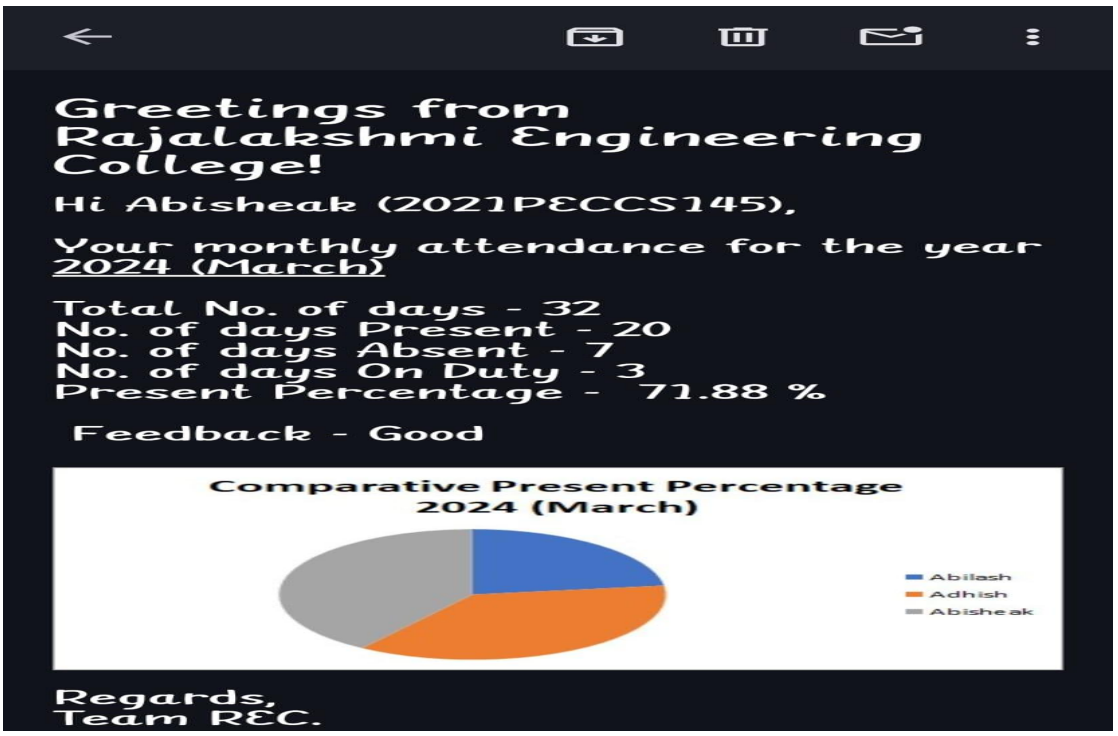
A1 name

	A	B	C	D	E	F	G	H	I	J
1	name	rollno	email	presentCo	absentCo	onDuty	NullvalCol	totalDays	percentag	feedBack
2	Abilash	2021PECC	22070102	11	12	2	5	32	40.62	Average
3	Adhish	2021PECC	amruthab	16	7	5	2	32	65.62	Average
4	Abisheak	2021PECC	22070100	20	7	3	0	32	71.88	Good

Sheet3 Sheet4 Sheet2 Sheet1

Ready Accessibility: Investigate

Attendance remainder through email



Greetings from Rajalakshmi Engineering College!

Hi Abisheak (2021PECCS145),

Your monthly attendance for the year 2024 (March)

Total No. of days - 32
No. of days Present - 20
No. of days Absent - 7
No. of days On Duty - 3
Present Percentage - 71.88 %

Feedback - Good

Regards,
Team REC.

CHAPTER-6

CONCLUSIONS

The The Online Attendance Tracking System project successfully automates the process of tracking and managing employee attendance, providing an efficient solution for recording attendance data and generating reports. By leveraging UiPath's Robotic Process Automation (RPA) platform, the system automates the attendance collection, data storage, report generation, and email distribution processes, reducing the manual effort required and minimizing human errors. The modular design, which includes components for data collection, report generation, email distribution, error handling, and logging, ensures that the system is both reliable and scalable for continuous use.

The system improves operational efficiency by providing timely attendance reports, which can be automatically generated and shared with the appropriate stakeholders. The automation significantly reduces the time spent on manual attendance tracking, enabling HR and management teams to focus on more critical tasks, such as decision-making and policy planning. Moreover, it ensures data accuracy, as attendance entries are automatically recorded and processed, reducing the risk of mistakes that often occur in manual systems.

The error-handling capabilities built into the system ensure that it continues to operate smoothly even when unexpected issues arise, such as failures in data retrieval or email delivery. This ensures that disruptions are minimized, and any issues are logged for transparency and further investigation.

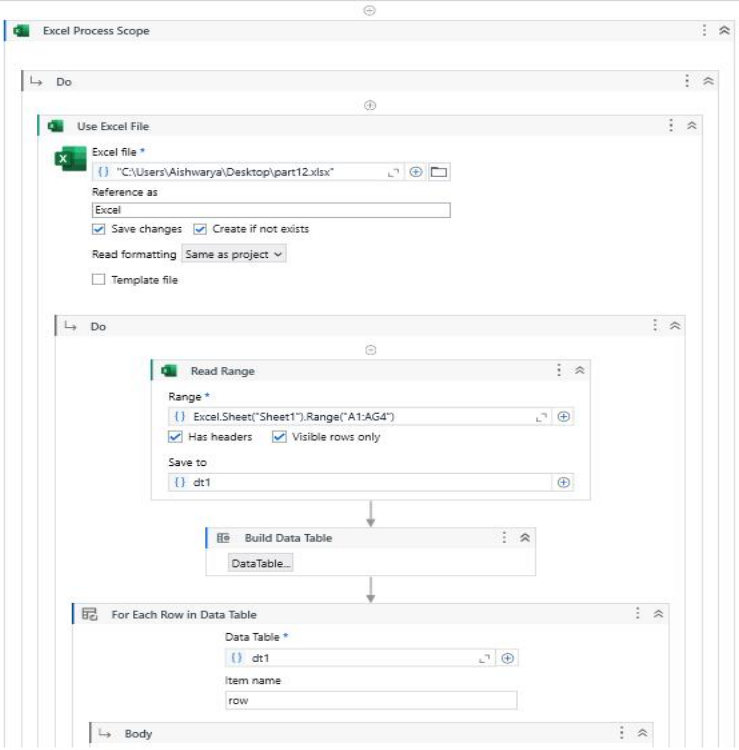
6.1 GENERAL:

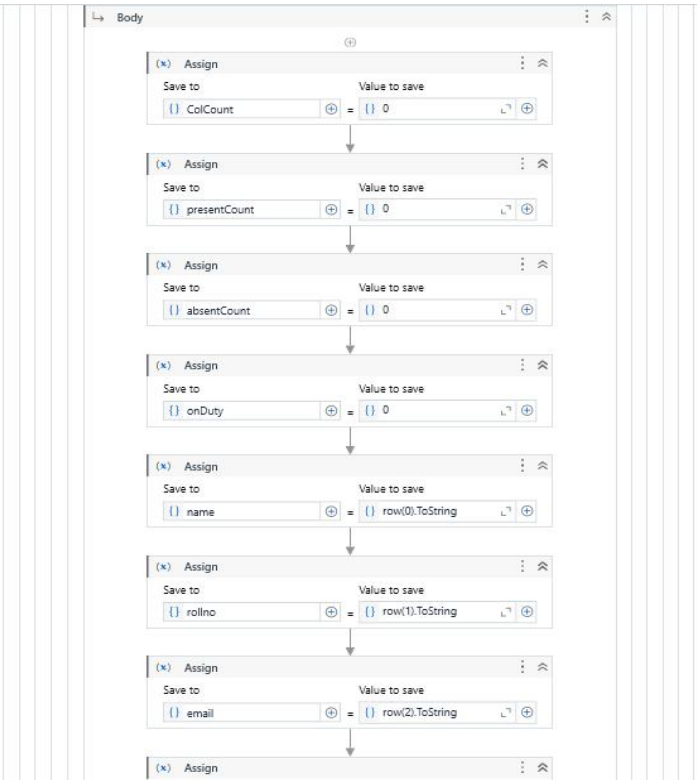
In general, the Online Attendance Tracking System has successfully met its objectives by automating attendance tracking, improving the speed and accuracy of attendance reporting, and reducing the manual effort involved in attendance management. It provides organizations with an efficient tool for handling employee attendance, even in large-scale environments.

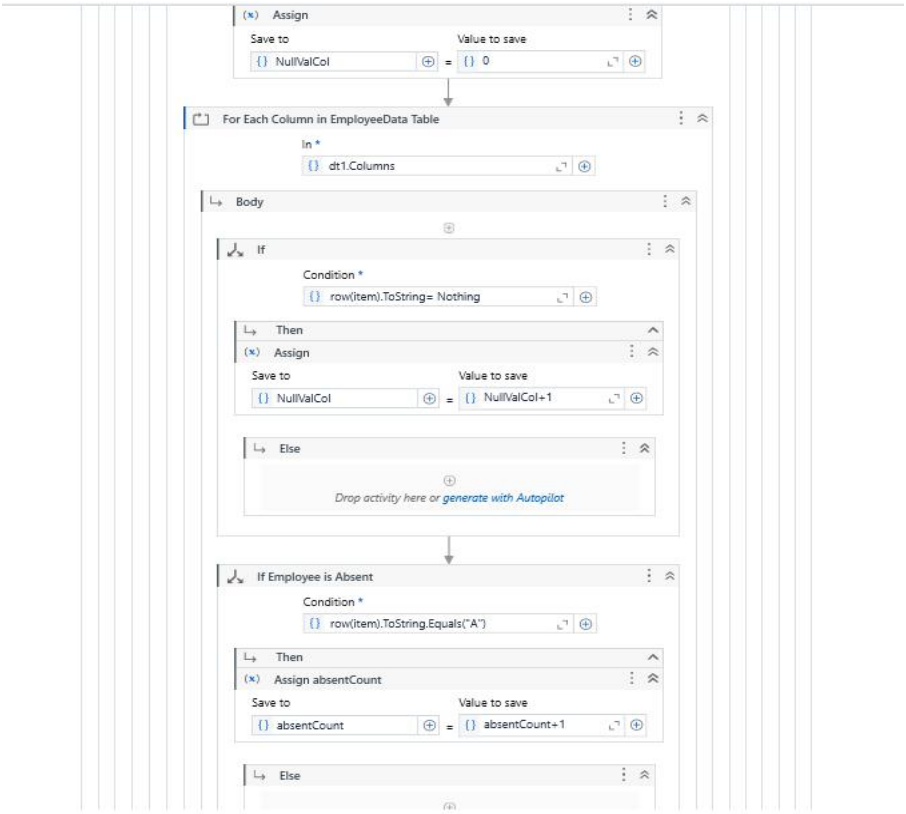
Future enhancements could include integrating real-time attendance tracking, adding features like biometric authentication, implementing customizable alerts for absenteeism or lateness, and expanding the system's reporting capabilities to include more detailed analytics. The system can also be integrated with other HR management systems for better synchronization of attendance with payroll and performance data.

APPENDIX

PROCESS WORK FLOW






Assign
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For Each Column in EmployeeData Table
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Condition *
row(item).ToString= Nothing
Then
Assign
Save to
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Value to save
NullValCol+1
Else
Drop activity here or generate with Autopilot
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Condition *
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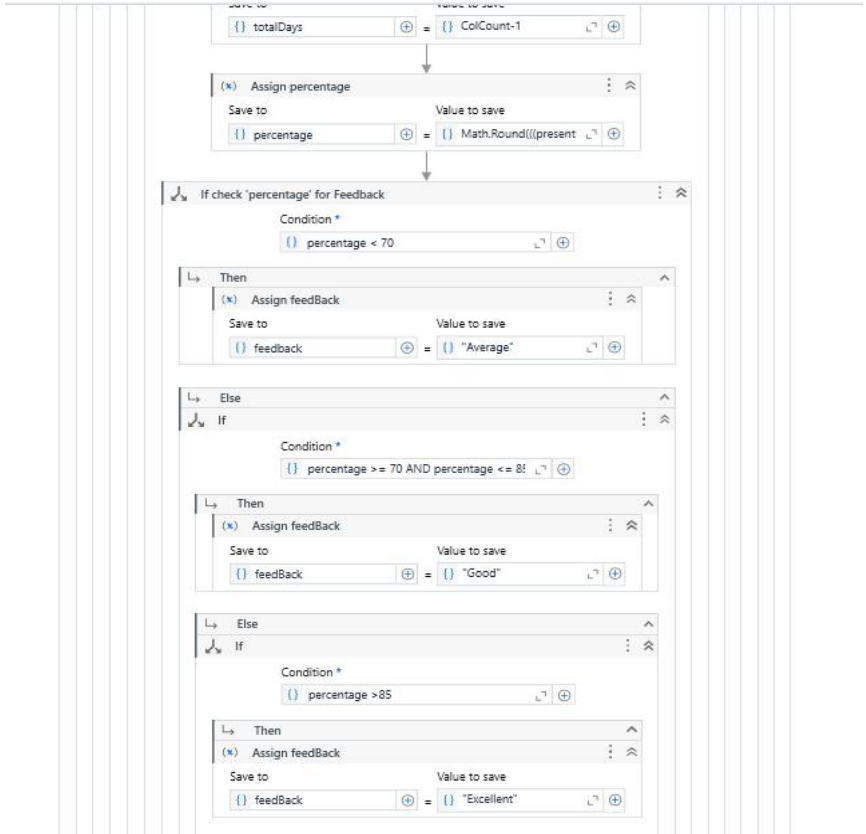
Then
Assign absentCount
Save to
absentCount
Value to save
absentCount+1
Else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Else
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Condition *
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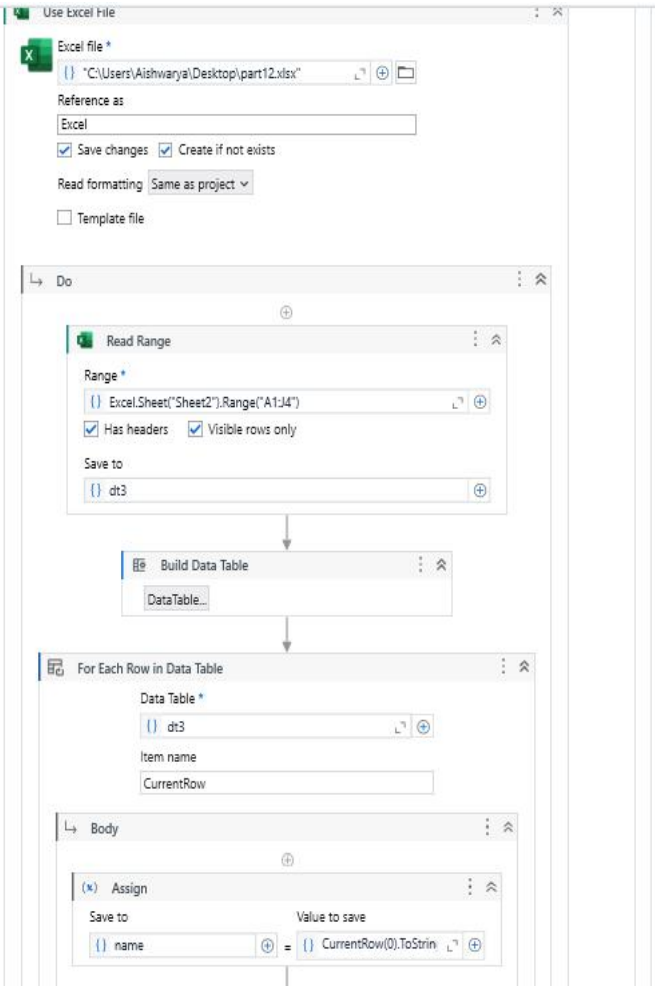
Use Excel File
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Excel
Save changes
Create if not exists
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Same as project
Template file
Do
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Visible rows only
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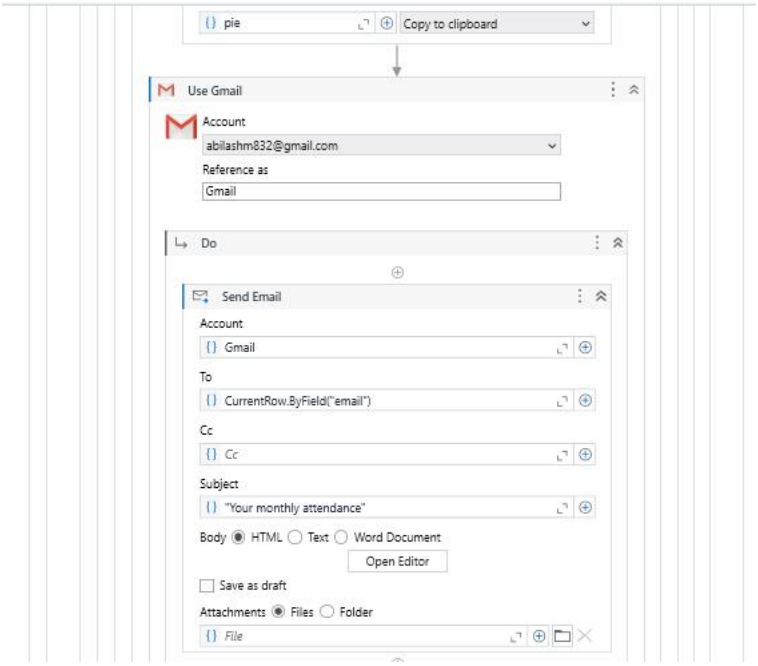
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Word Document
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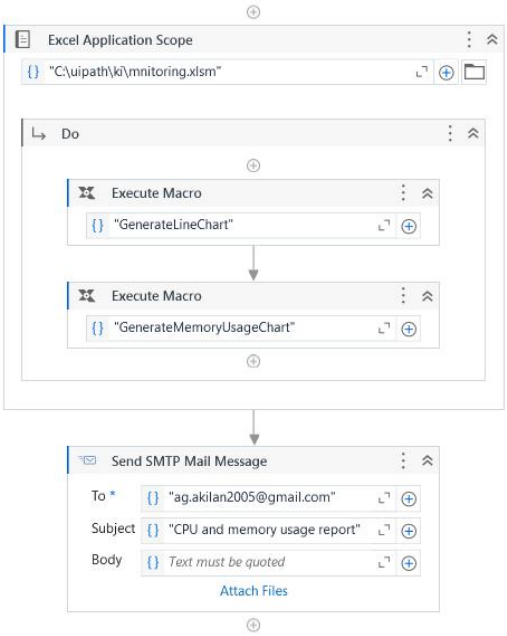
File



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