

CONTRACT RENEWAL REMINDER BOT

A PROJECT REPORT

Submitted by

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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

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NOVEMBER 2024

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BONAFIDE CERTIFICATE

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ABSTRACT

Contract management is a critical process for organizations to ensure the continuity of essential services and partnerships. However, manually tracking contract expiration dates and renewal schedules can be error-prone and time-consuming. To address this challenge, the Contract Renewal Reminder Bot was developed using UiPath Studio's Robotic Process Automation (RPA) capabilities. This bot automates the process of sending timely renewal reminders by reading contract details from an Excel file, calculating the remaining days until expiration, and scheduling multiple reminder emails at predefined intervals. It also updates the status of sent emails within the Excel sheet for transparency and traceability. The system eliminates manual intervention, reduces the risk of missed renewals, and enhances operational efficiency. Integrated with UiPath Orchestrator for daily execution, the bot ensures consistent performance and adaptability. This project showcases the effective use of RPA in contract management, streamlining repetitive administrative tasks.

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ACKNOWLEDGEMENT

Initially we thank the Almighty for being with us through every walk of our 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, **Ms. Roxanna Samuel, M.E.**, Assistant Professor (SG), **Ms. U.Farjana, M.E.**, Assistant Professor and **Ms. S.Vinothini, M.E.**, 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. P.Revathy, M.E., Ph.D.**, Professor, **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.

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1. INTRODUCTION

1.1 General

Contract management is a crucial aspect of business operations, ensuring that agreements between stakeholders are executed effectively and on time. Organizations often manage multiple contracts with varying durations, renewal schedules, and terms, which can lead to inefficiencies if handled manually. Missing contract renewals may result in service disruptions, legal implications, or financial losses. With the advent of Robotic Process Automation (RPA), manual and repetitive tasks can now be automated, reducing errors and improving efficiency.

The Contract Renewal Reminder Bot leverages RPA technology to automate the tedious process of contract tracking and renewal reminders. Built using UiPath Studio, the bot reads contract data, identifies upcoming expiration dates, and sends timely email reminders to stakeholders, streamlining the contract renewal workflow.

1.2 Objective

The primary objective of the Contract Renewal Reminder Bot is to provide a seamless and automated system for managing contract renewals by:

- Sending timely email reminders to stakeholders before contract expiration.
- Reducing manual effort and errors in tracking contract renewal schedules.
- Improving operational efficiency and maintaining business continuity.
- Providing a transparent system with updated records of sent reminders.

1.3 Existing System

In many organizations, contract renewal tracking is done manually or using basic tools like spreadsheets. This system has several limitations:

- Manual Effort: Requires constant monitoring and updates by personnel.
- High Error Rate: Prone to human errors such as missed deadlines.
- Inefficiency: Consumes significant time and resources.
- Lack of Scalability: Difficult to manage a large number of contracts.

This existing system often results in missed renewals, affecting the organization's operations and reputation.

1.4. Proposed System

The proposed system automates the contract renewal process using UiPath Studio. Key features of the system include:

- **Automated Email Reminders:** The bot calculates remaining days to contract expiration and sends reminders at predefined intervals (e.g., 30 days, 15 days, and 1 day before expiration).
- **Dynamic Scheduling:** Automatically triggers daily execution to check contract statuses and send reminders.
- **Status Tracking:** Updates the Excel sheet with the status of sent reminders for better monitoring.
- **Integration:** Utilizes UiPath Orchestrator for seamless scheduling and scalability.

The proposed system addresses the inefficiencies of the existing system, providing a reliable and automated solution to manage contracts effectively.

2. LITERATURE REVIEW

2.1 General

The importance of contract management in business operations has been extensively documented in the literature. Contracts define the terms of business relationships, services, and deliverables, making their proper management critical for organizational success. Traditional approaches to contract management, while functional, often struggle to keep up with the complexities of modern-day agreements, especially in organizations dealing with a high volume of contracts.

Robotic Process Automation (RPA) has emerged as a transformative technology in recent years, revolutionizing industries by automating repetitive and rule-based tasks. By leveraging RPA tools like UiPath Studio, businesses can reduce manual intervention, improve accuracy, and enhance efficiency in various domains, including contract management.

Key studies and articles on contract management and RPA emphasize:

- **Challenges of Manual Systems:** Researchers have highlighted the inefficiencies of manual contract tracking, such as human error, delays, and increased administrative costs.
- **Impact of Automation:** Studies demonstrate that automated systems lead to significant improvements in compliance, operational speed, and resource allocation.
- **RPA in Contract Management:** Case studies illustrate the effective use of RPA in sending reminders, generating reports, and ensuring that contract obligations are met without delays.

The Contract Renewal Reminder Bot is a practical application of these insights. By automating the contract renewal process, the system aligns with research advocating the use of RPA for enhanced productivity and streamlined workflows in contract management.

3. SYSTEM DESIGN

3.1 General

The system design section outlines the structural and functional components of the Contract Renewal Reminder Bot. It provides a detailed description of the system's architecture, the flow of operations, and the sequence of activities that ensure timely contract renewal reminders. The system design ensures that the bot operates efficiently, accurately, and reliably, leveraging UiPath Studio's capabilities.

3.1.1 System Flow Diagram

The System Flow Diagram represents the overall workflow of the Contract Renewal Reminder Bot, illustrating the key steps involved from data input to email notifications.

- **Data Input:** The process begins with reading contract data from an Excel file.
- **Data Processing:** The bot processes each contract to calculate the number of days left until expiration.
- **Condition Evaluation:** The bot evaluates conditions to determine which reminder email to send based on the calculated days left.
- **Email Notification:** Depending on the condition, the bot sends the appropriate reminder email.
- **Status Update:** The bot updates the Excel file with the status of the sent reminders.
- **Loop Continuation:** The process repeats for all contracts in the data.

3.1.2 Architecture Diagram

The Architecture Diagram provides a high-level view of the system components and their interactions. It showcases the integration of UiPath Studio, Outlook for email notifications, and Excel for data management.

- **UiPath Studio:** Central platform for developing and managing the automation workflow.
- **Excel:** Stores contract data and tracks the status of sent reminders.
- **Outlook:** Used to send reminder emails to stakeholders.
- **Triggers and Scheduler:** Configured in UiPath Orchestrator to run the bot at specified intervals.

Below is the flowchart representation:

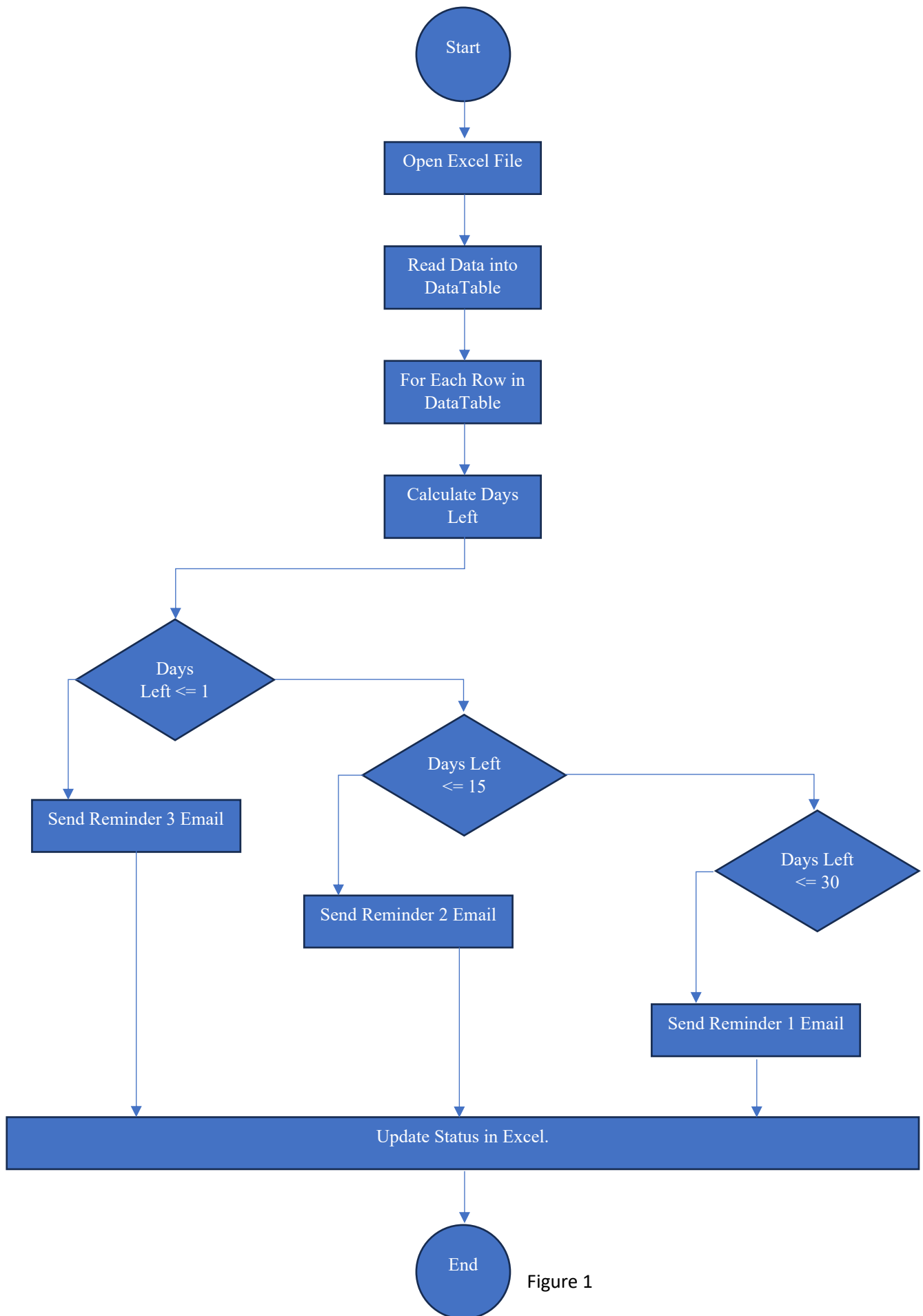


Figure 1

3.1.3 Sequence Diagram

The Sequence Diagram depicts the step-by-step interaction between the bot and the system components for sending contract renewal reminders.

- Bot Initialization: The bot starts the process based on the scheduled trigger.
- Read Excel Data: The bot reads contract data from the Excel file.
- Process Contract: For each contract, the bot calculates the days left until expiration.
- Evaluate Conditions: The bot checks the reminder conditions and determines which email to send.
- Send Email: The bot sends the appropriate reminder email via Outlook.
- Update Excel: The bot updates the Excel file to reflect the reminder email status.
- Loop to Next Contract: The process continues for the next contract until all are processed.

4. PROJECT DESCRIPTION

4.1 Methodology

The methodology section explains the approach adopted to develop the Contract Renewal Reminder Bot. This project follows a structured approach to ensure efficiency, reliability, and scalability. The development process is divided into clearly defined stages:

1. Requirement Analysis

- Gathered details of the contract data and determined the types of reminders required.
- Identified system integration points, such as Excel for data management and Outlook for email notifications.

2. System Design

- Designed the overall workflow, including data reading, processing, condition checking, email notifications, and updates to the Excel sheet.
- Created flow diagrams and architectural layouts to visualize the bot's functioning.

3. Development

- Utilized UiPath Studio for developing the bot's workflow.
- Integrated Excel Application Scope for handling contract data.
- Configured condition-based triggers for sending reminder emails.

4. Testing and Validation

- Tested the bot with different sets of contract data to ensure accurate calculations of reminder intervals and timely email dispatch.
- Validated the bot's ability to handle errors, such as missing data or email failures.

5. Deployment and Scheduling

- Published the bot to UiPath Orchestrator.
- Scheduled daily triggers to ensure consistent monitoring and reminders.

6. Maintenance

- Established monitoring and logging mechanisms to track the bot's performance.
- Periodically updated the bot to accommodate changes in the contract data format or new requirements.

4.1.1 Modules

The project is divided into the following modules:

1. Data Input Module

- Purpose: Reads contract data from an Excel file.
- Implementation: Utilizes the Excel Application Scope and Read Range activities in UiPath Studio.

2. Reminder Interval Calculation Module

- Purpose: Calculates the number of days left until contract expiration.
- Implementation: Uses the Assign activity to compute the difference between today's date and the expiration date.

3. Condition Checking Module

- Purpose: Evaluates predefined conditions to decide which reminder email to send.
- Implementation: Incorporates If and Else If activities for logical decision-making.

4. Email Notification Module

- Purpose: Sends reminder emails to stakeholders based on calculated intervals.
- Implementation: Configures the Send Outlook Mail Message activity with dynamic placeholders for recipient, subject, and body content.

5. Status Update Module

- Purpose: Updates the Excel sheet to indicate which reminders have been sent.
- Implementation: Uses the Write Cell activity to update specific rows and columns.

6. Scheduler and Trigger Module

- Purpose: Automates daily execution of the bot.
- Implementation: Configures triggers in UiPath Orchestrator to execute the bot at 8:00 AM daily.

5. CONCLUSIONS

5.1 GENERAL

The Contract Renewal Reminder Bot project successfully addresses the challenge of managing contract renewal reminders, ensuring that stakeholders are notified well in advance of the contract expiration dates. By automating this process, the bot reduces the manual workload and the risk of missing important contract renewals, which could lead to delays or missed opportunities for renegotiation.

Key findings from the development and implementation of the project include:

1. Automation Benefits:

The bot efficiently automates the process of sending reminders, eliminating the need for manual intervention. This leads to reduced administrative burden, increased accuracy, and timely reminders for stakeholders.

2. Scalability:

The system can be easily scaled to handle a large number of contracts, as it is designed to work with Excel files that can be easily updated or expanded. Additionally, the use of UiPath Orchestrator allows for seamless execution scheduling and monitoring, which ensures that the bot can handle contracts of varying volumes without performance degradation.

3. Flexibility and Customization:

The reminder intervals and frequency of email reminders can be customized according to the needs of the organization. The bot's flexible design allows for modifications to accommodate changes in the reminder system, such as adding more reminder stages or integrating with other platforms (e.g., Google Calendar or project management tools).

4. Error Handling and Monitoring:

The bot is designed with error handling capabilities, ensuring that if issues arise (e.g., email delivery failure or missing contract data), appropriate notifications or logs are generated for further analysis. This provides a level of reliability and transparency necessary for mission-critical operations.

5. Integration with UiPath Orchestrator:

By deploying the bot to UiPath Orchestrator and configuring a daily trigger, the process becomes fully automated and runs without any manual intervention. This integration also enables monitoring of the bot's performance and logs for auditing and troubleshooting purposes.

6. Improved Stakeholder Communication:

The timely and consistent reminders help maintain effective communication with stakeholders regarding upcoming contract renewals. This proactive approach enables decision-makers to take action well in advance, preventing last-minute surprises and ensuring continuity in business operations.

In conclusion, the Contract Renewal Reminder Bot not only streamlines the reminder process but also contributes to better time management, resource optimization, and effective contract management within the organization. The project showcases the potential of Robotic Process Automation (RPA) in automating administrative tasks and improving operational efficiency. Future enhancements may include further integrations with other software systems, expansion of email templates, and advanced reporting features to track and analyze contract renewal trends.

REFERENCES

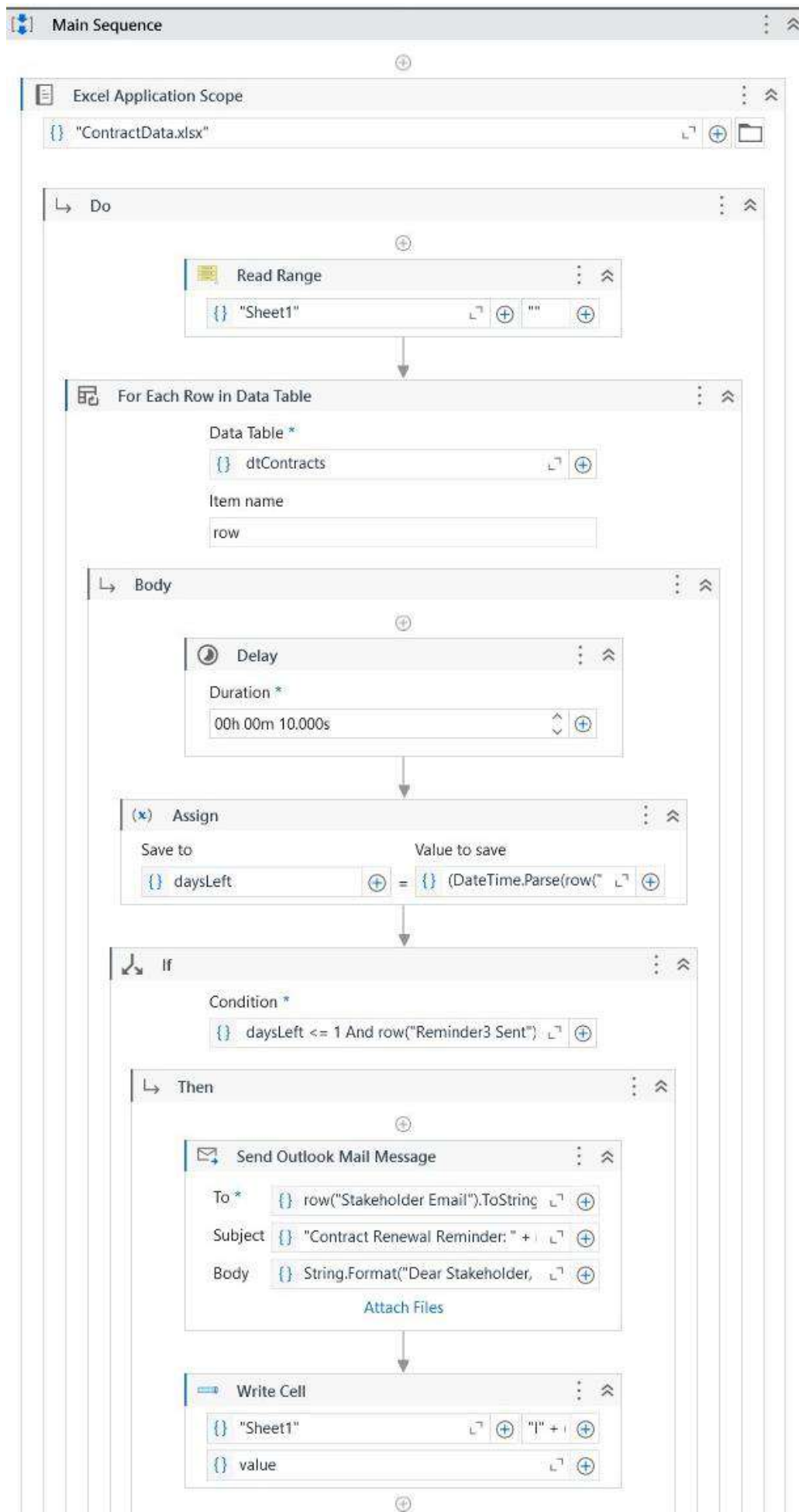
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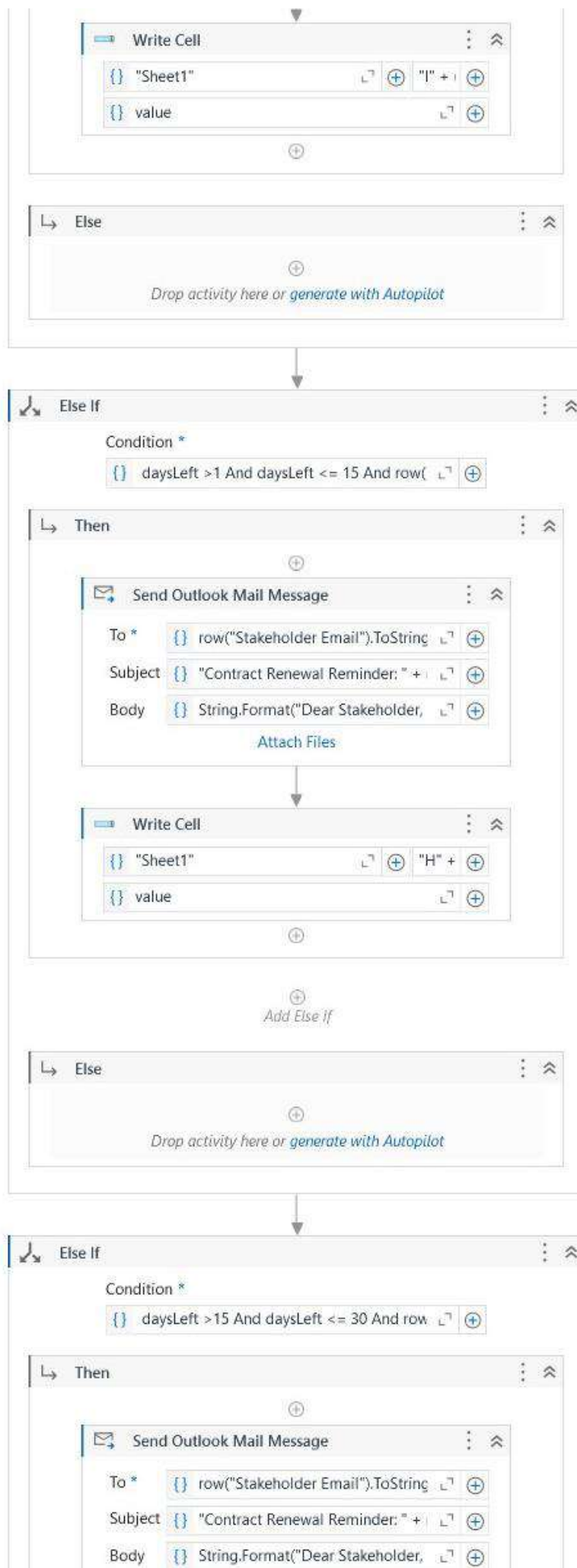
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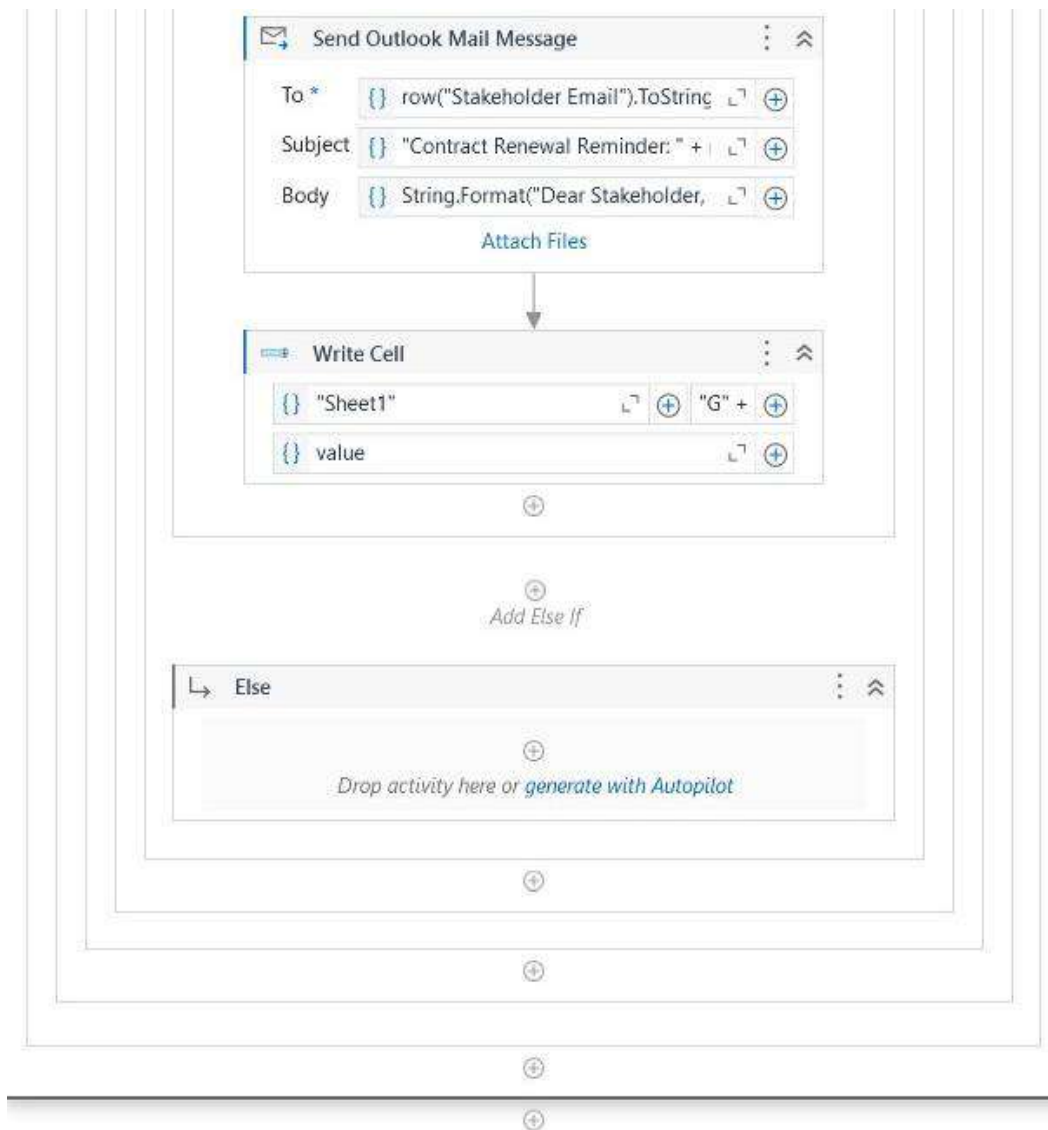
These references provide foundational knowledge on RPA, particularly focusing on automation tools like UiPath, contract management automation, and RPA's impact on business processes.

SCREENSHOTS

1. Workflow Screenshot

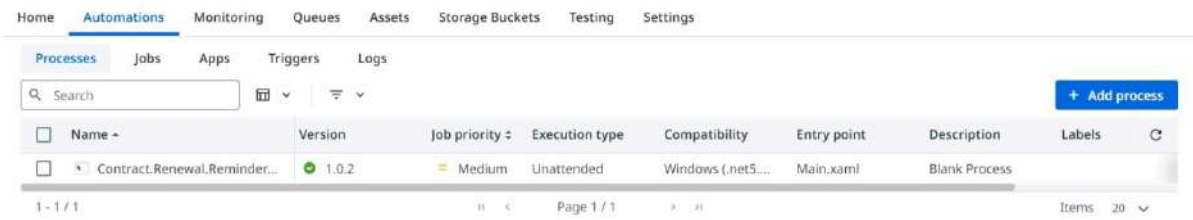






2. Orchestrator Screenshots

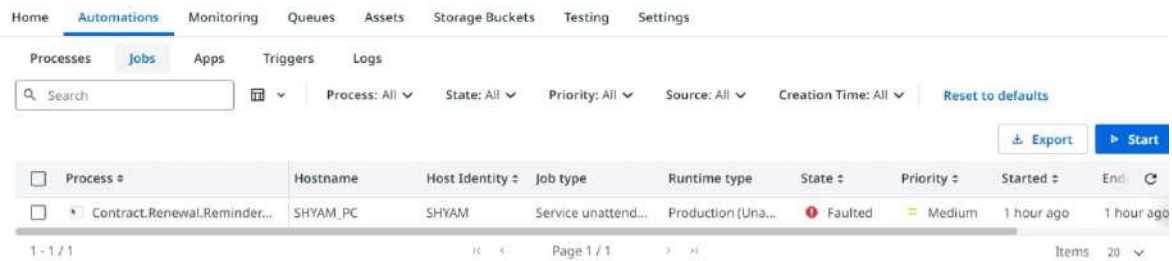
2.1. Process Screenshot



The screenshot shows the 'Processes' tab in the Orchestrator interface. The top navigation bar includes Home, Automations, Monitoring, Queues, Assets, Storage Buckets, Testing, and Settings. Below the navigation bar, there are tabs for Processes, Jobs, Apps, Triggers, and Logs. A search bar is present on the left. The main table lists processes with columns: Name, Version, Job priority, Execution type, Compatibility, Entry point, Description, and Labels. A single process is listed: 'Contract.Renewal.Reminder...' with version 1.0.2, medium priority, unattended execution type, and a blank process description. A '+ Add process' button is in the top right corner. The bottom of the page shows pagination: '1 - 1 / 1', 'Page 1 / 1', and 'Items 20'.

Name	Version	Job priority	Execution type	Compatibility	Entry point	Description	Labels
Contract.Renewal.Reminder...	1.0.2	Medium	Unattended	Windows (.net5....	Main.xaml	Blank Process	

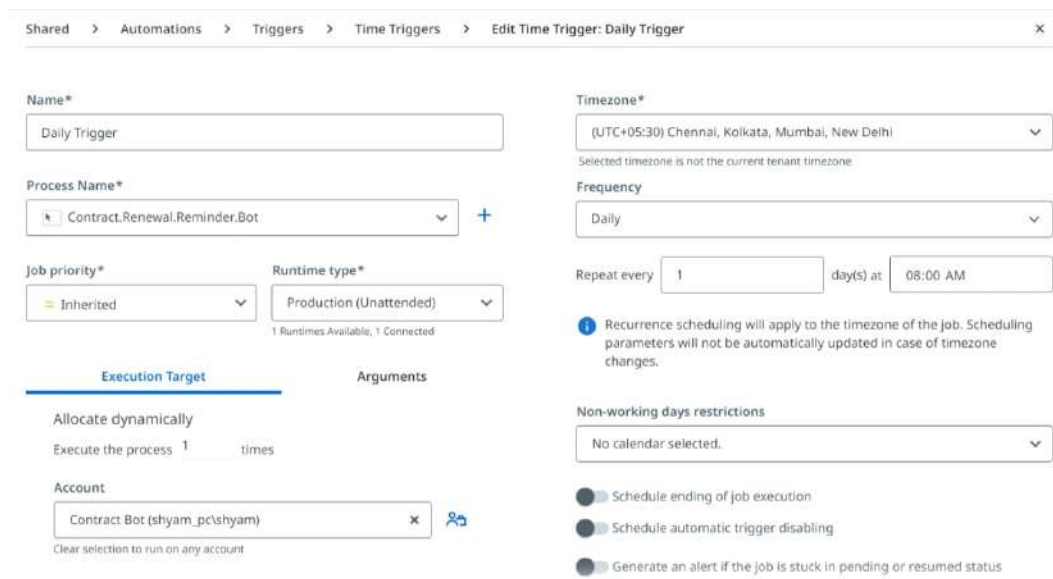
2.2. Jobs Screenshot



The screenshot shows the 'Jobs' tab in the Orchestrator interface. The top navigation bar is the same as the previous screenshot. Below the navigation bar, there are tabs for Processes, Jobs, Apps, Triggers, and Logs. A search bar is present on the left. The main table lists jobs with columns: Process, Hostname, Host Identity, Job type, Runtime type, State, Priority, Started, and End. A single job is listed: 'Contract.Renewal.Reminder...' on host 'SHYAM_PC' with identity 'SHYAM', job type 'Service unattend...', runtime type 'Production (Unattended)', state 'Faulted', priority 'Medium', and started '1 hour ago'. There are buttons for 'Export' and 'Start' in the top right corner. The bottom of the page shows pagination: '1 - 1 / 1', 'Page 1 / 1', and 'Items 20'.

Process	Hostname	Host Identity	Job type	Runtime type	State	Priority	Started	End
Contract.Renewal.Reminder...	SHYAM_PC	SHYAM	Service unattend...	Production (Unattended)	Faulted	Medium	1 hour ago	1 hour ago

2.3. Triggers Screenshot



The screenshot shows the 'Edit Time Trigger: Daily Trigger' configuration page. The top navigation bar includes Shared, Automations, Triggers, Time Triggers, and Edit Time Trigger: Daily Trigger. The form is divided into two main sections: 'Execution Target' and 'Arguments'. The 'Execution Target' section includes fields for Name (Daily Trigger), Process Name (Contract.Renewal.Reminder.Bot), Job priority (Inherited), Runtime type (Production (Unattended)), and Account (Contract Bot (shyam_pc\shyam)). The 'Arguments' section includes fields for Timezone (UTC+05:30) Chennai, Kolkata, Mumbai, New Delhi, Frequency (Daily), Repeat every (1) day(s) at (08:00 AM), and Non-working days restrictions (No calendar selected). There are also checkboxes for 'Schedule ending of job execution', 'Schedule automatic trigger disabling', and 'Generate an alert if the job is stuck in pending or resumed status'.

Execution Target

Name*
Daily Trigger

Process Name*
Contract.Renewal.Reminder.Bot

Job priority*
Inherited

Runtime type*
Production (Unattended)

Account
Contract Bot (shyam_pc\shyam)

Arguments

Timezone*
(UTC+05:30) Chennai, Kolkata, Mumbai, New Delhi

Frequency
Daily

Repeat every 1 day(s) at 08:00 AM

Non-working days restrictions
No calendar selected.

☐ Schedule ending of job execution

☐ Schedule automatic trigger disabling

☐ Generate an alert if the job is stuck in pending or resumed status

Home	Automations	Monitoring	Queues	Assets	Storage Buckets	Testing	Settings
Processes	Jobs	Apps	Triggers	Logs			
Time Triggers	Queue Triggers	Event Triggers	API Triggers				
Q Search	State: All	Job priority: All	+ Add a new trigger				
<input type="checkbox"/> Name	Process	Trigger Details	Job priority	Next Run Time	Stop After		
<input type="checkbox"/> Daily Trigger	Contract.Renew...	At 08:00 AM	<input type="radio"/> Inherit...	in 17 hours			
1 - 1 / 1		Page 1 / 1		Items 20			

2.4. Logs Screenshot

Home

Automations

Monitoring

Queues

Assets

Storage Buckets

Testing

Settings

Processes

Jobs

Apps

Triggers

Logs

Q Search

Time: Last day

Level: Trace (All)

Machine: All

Process: All

Host Identity: All

Export

Time	Level	Process	Hostname	Host Identity	Message
11/18/2024, 7:12:50 AM	Info	Contract.Renew...	SHYAM_PC	SHYAM_PC\SHYA...	Contract.Renewal.Reminder.Bot execution ended
11/18/2024, 7:12:47 AM	Error	Contract.Renew...	SHYAM_PC	SHYAM_PC\SHYA...	Write Cell: Failed setting the current sheet to: Sheet1 in workbook: C:\Use
11/18/2024, 7:12:14 AM	Info	Contract.Renew...	SHYAM_PC	SHYAM_PC\SHYA...	Contract.Renewal.Reminder.Bot execution started
11/17/2024, 12:46:57 PM	Info	Microsoft Bing S...	SHYAM_PC	SHYAM_PC\SHYA...	Microsoft Bing Search Automate execution ended
11/17/2024, 12:46:48 PM	Info	Microsoft Bing S...	SHYAM_PC	SHYAM_PC\SHYA...	Microsoft Bing Search Automate execution started
11/17/2024, 12:46:03 PM	Info	Microsoft Bing S...	SHYAM_PC	SHYAM_PC\SHYA...	Microsoft Bing Search Automate execution ended
11/17/2024, 12:46:03 PM	Error	Microsoft Bing S...	SHYAM_PC	SHYAM_PC\SHYA...	Click 'scrcpy.exe SM-A305F': Multiple similar matches found. Could not un
11/17/2024, 12:45:06 PM	Trace	Microsoft Bing S...	SHYAM_PC	SHYAM_PC\SHYA...	Audit: Using Desktop App. App: C:\Users\SHYAM\Downloads\scrcpy-win6
11/17/2024, 12:45:03 PM	Info	Microsoft Bing S...	SHYAM_PC	SHYAM_PC\SHYA...	Microsoft Bing Search Automate execution started
11/17/2024, 10:30:32 AM	Info	Contract Renew...	SHYAM_PC	SHYAM_PC\SHYA...	Contract Renewal Reminder Bot execution ended
11/17/2024, 10:29:28 AM	Info	Contract Renew...	SHYAM_PC	SHYAM_PC\SHYA...	Contract Renewal Reminder Bot execution started

1 - 11 / 11

Page 1 / 1

Items 20

APPENDICES

Appendix 1: Sample Excel Sheet (ContractData)

Table 1: Sample Contract Data

Contract ID	Contract Name	Start Name	Expiration Date	Renewal Frequency	Stakeholder Email	Reminder 1 Sent	Reminder 2 Sent	Reminder 3 Sent	Email Sent
C203	Apple	17-01-2020	18-11-2026	Annually	shyamseenufirst@gmail.com	No	No	No	No
C204	Samsung	17-11-2021	24-11-2030	Monthly	shyamseenufirst@gmail.com	No	No	No	No
C205	IT Infrastructure	01-01-2023	30-11-2024	Annual	shyamseenufirst@gmail.com	No	No	No	No
C206	Web Hosting	15-05-2023	04-12-2024	Biennial	shyamseenufirst@gmail.com	Yes	No	No	No
C207	Software License	17-11-2022	11-12-2024	Biennial	shyamseenufirst@gmail.com	Yes	No	No	No
C208	Facility Management	17-11-2021	16-12-2024	Triennial	shyamseenufirst@gmail.com	Yes	No	No	No

Appendix 2: Send Outlook Email Message Configuration

The following outlines the configuration for sending reminder emails within the UiPath project. This configuration ensures emails are dynamically populated with contract data and sent to the respective stakeholders:

Subject:

"Contract Renewal Reminder: " + row("Contract Name").ToString

Body:

String.Format("Dear Stakeholder,

This is a reminder that the contract '{0}' (ID: {1}) will expire on {2}.

You have {3} days left before the contract expires.

Best regards,

Contract Management Team",

row("Contract Name"), row("Contract ID"), row("Expiration Date"), Math.Round(daysLeft))

Recipient:

row("Stakeholder Email").ToString

Appendix 3: UiPath Activities Used

1. Excel Application Scope - Used to interact with the Excel file containing contract data.
 - Input: File path of ContractData.xlsx
 - Output: Access to the Excel data table.
2. Read Range - Reads the entire data from the Excel sheet and outputs it as a DataTable.
 - Input: Excel sheet name (e.g., "Sheet1")
 - Output: DataTable variable (e.g., dtContracts)
3. For Each Row - Loops through each row in the DataTable.
 - Input: dtContracts
 - Output: Each row processed in the loop.
4. Assign - Used to calculate the number of days remaining before the contract expiration.
 - Input: Formula to calculate the days difference.
 - Output: Days left stored in the daysLeft variable.
5. If - Conditional logic used to check when to send reminder emails based on the expiration date and the "Reminder Sent" column status.
 - Input: daysLeft <= 1 And row("Reminder3 Sent").ToString = "No"
 - Output: Executes the email sending logic when the condition is met.
6. Send Outlook Mail Message - Sends email to the respective stakeholder.
 - Input: Stakeholder email, contract details, reminder text.
 - Output: Email sent to the stakeholder.
7. Write Cell - Updates the "Reminder Sent" columns in the Excel file after sending an email.
 - Input: Updates the specific "Reminder Sent" column (e.g., "G", "H", or "I")
 - Output: Excel file updated with "Yes" indicating the reminder was sent.

Appendix 4: Sample Email Reminder

Subject: Contract Renewal Reminder: Apple

Body:

Dear Stakeholder,

This is a reminder that the contract 'Apple' (ID: C203) will expire on 18-11-2026.

You have 30 days left before the contract expires.

Best regards,

Contract Management Team

Appendix 5: Screenshots of UiPath Studio Activities

- Workflow Overview: A screenshot showing the sequence of activities used in UiPath Studio, including the Excel Application Scope, Read Range, For Each Row, If conditions, Send Outlook Mail, and Write Cell.
- Send Email Configuration: A screenshot showing the configuration of the Send Outlook Mail Message activity.
- Excel Data Update: A screenshot showing how the "Reminder Sent" columns are updated after sending the email reminders.

Appendix F: Cloud Trigger Configuration

- Trigger Type: Daily Trigger
- Frequency: Every 1 day
- Start Time: 08:00 AM
- Action: Execute the Contract Renewal Reminder Bot on a daily schedule to check and send reminders.