FILE MANAGEMENT AND LOG GENERATION AUTOMATION

A PROJECT REPORT

Submitted by

RETHINAATH S (2116220701222)

in partial fulfillment for the course

OAI1903 - INTRODUCTION TO ROBOTIC PROCESS AUTOMATION

of the degree of

BACHELOR OF ENGINEERING

in

COMPUTER SCIENCE AND ENGINEERING

RAJALAKSHMI ENGINEERING COLLEGE

RAJALAKSHMI NAGAR

THANDALAM

CHENNAI – 602 105

NOVEMBER 2024

RAJALAKSHMI ENGINEERING COLLEGE

CHENNAI - 602105

BONAFIDE CERTIFICATE

Certified that this project report **"FILE MANAGEMENT AND LOG GENERATION AUTOMATION"** is the bonafide work of **"RETHINAATH S (2116220701222)"** who carried out the project work (OAI1903 - Introduction to Robotic Process Automation) under my supervision.

Dr. N. Duraimurugan
SUPERVISOR
Assistant Professor (SG)
Department of
Computer Science and Engineering
Rajalakshmi Engineering College
Rajalakshmi Nagar
Thandalam
Chennai - 602105

Submitted to Project Viva-Voce Examination held on _____.

Internal Examiner **External Examiner**

TABLE OF CONTENTS

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 **Mr. S.Meganathan, B.E, F.I.E.,** our Vice Chairman **Mr. Abhay Meganathan, B.E., M.S.,** and our respected Chairperson **Dr. (Mrs.) Thangam Meganathan, 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, **Mr. B.Bhuvaneswaran, M.E.,** Assistant Professor (SG), and **Ms. J.Jinu Sophia, M.E.,** Assistant Professor (SG), Department of Computer Science and Engineering, Rajalakshmi Engineering College for their valuable guidance throughout the course of the project. We are very glad to thank our Project Coordinator, **Dr. N. Durai Murugan, M.E., Ph.D.,** Associate Professor, Department of Computer Science and Engineering for his useful tips during our review to build our project.

RETHINAATH S (2116220701222)

ABSTARCT

In modern data management systems, efficient file handling and tracking are essential for maintaining organized and accessible records. **"Automated File Renaming and Logging System,"** aims to streamline file management by automating the process of file renaming, organization, and activity logging within specified directories. Using UiPath Studio, the workflow monitors a target folder, retrieves file details, and dynamically renames each file with a timestamp or specified format to prevent duplicates and maintain consistency.

Additionally, the project includes a logging mechanism that records each file action, including timestamps, renamed files, and the processing status, enhancing traceability and auditability. The system is designed to reduce manual intervention, minimize file management errors, and improve operational efficiency, especially in data-intensive environments. This project demonstrates the practical applications of robotic process automation (RPA) in routine administrative tasks, with potential extensions in data handling, compliance, and file archiving.

LIST OF FIGURES

1. INTRODUCTION

1.1. GENERAL

Organizations today manage large volumes of data, often saved as files that require organization and easy accessibility. “Automated File Renaming and Logging System”, leverages UiPath Studio to automate the renaming of files within a specified folder according to a timestamp convention. Additionally, it logs each operation, recording essential details about the renamed files. This enhances efficiency, minimizes manual intervention, and ensures consistent naming, contributing to better file organization and traceability.

1.2. OBJECTIVE

The specific objectives are:

- **Automate File Renaming**: Use a timestamped convention to rename files automatically.
- **Enable Real-Time Logging**: Log each file renaming action, capturing details for future auditing.
- **Enhance Traceability**: Provide a traceable log of file operations, improving compliance and accessibility.
- **Save Time**: It helps to save time a lot when seen at a long term such as a month or a year.

1.3. EXISTING SYSTEM

The existing system for file renaming and logging in many organizations is typically manual or based on rudimentary scripts that automate parts of the process without the reliability, scalability, or consistency required for large-scale environments. This system, while functional, presents several challenges that hinder productivity, consistency, and traceability.

In the absence of automation, file renaming and logging tasks are often done manually. This process can be time-consuming and error-prone, especially in environments where multiple files need to be renamed on a regular basis. The common steps involved in manual file renaming include:

- **Open Folder and Identify Files:** The user manually navigates to the folder, identifies files that need renaming, and opens each file or checks the file name.
- **Renaming Process:** Each file is renamed, often by appending a date, version number, or other identifiers to ensure uniqueness. This is done individually for each file.
- **Logging Actions:** Manual logging is either skipped or recorded in an external file (such as a spreadsheet) where each renaming action, including the file's old and new name, is noted down. This log file must be maintained manually.

This approach can work for small numbers of files but quickly becomes inefficient and error-prone when scaled. Human errors such as duplicate names, forgotten files, or incorrect entries in the log file can create confusion and lead to inconsistencies.

1.4.PROPOSED SYSTEM

The Proposed System aims to overcome the limitations of the existing manual and script-based methods by implementing a fully automated, scalable, and efficient file renaming and logging system using UiPath RPA technology. The system leverages the capabilities of Robotic Process Automation (RPA) to handle repetitive tasks like file renaming and logging with minimal human intervention. By automating these tasks, the system enhances efficiency, consistency, and traceability while reducing errors and operational bottlenecks.

The core of the proposed system is a UiPath automation workflow that automatically renames files within a specified folder according to a standardized naming convention and logs each action in a centralized log file. The system is designed to:

- Automatically detect new files.
- Rename files using a predefined, consistent naming format.
- Log each renaming operation for future reference and audit purposes.

Key Features of the Proposed System:

- **Automated File Renaming:**

Standardized Naming Convention: The system renames each file based on a predefined naming convention that includes unique identifiers, such as timestamps (e.g., YYYYMMDD_HHMMSS) or sequential numbers. This ensures that each file has a distinct and organized name, which reduces confusion and file mismanagement.

Dynamic File Handling: The automation is flexible enough to handle different file types and formats. Whether the files are documents, images, or logs, the system can automatically apply the appropriate renaming pattern.

- **Real-Time Monitoring and Processing:**

Folder Monitoring: The system continually monitors the target folder for new files, triggering the renaming process as soon as new files are detected. This allows for real-time processing, ensuring that files are handled as soon as they are added to the folder.

Scheduled Execution: In addition to real-time monitoring, the system can be configured to run on a schedule, processing files at regular intervals, such as every hour or once a day.

2. LITERATURE REVIEW

Research in the field of Robotic Process Automation (RPA) shows that automation improves consistency and accuracy in administrative workflows. Studies reveal that RPA minimizes human error, saves time, and supports scalability, particularly useful in data-heavy environments. Implementing RPA for tasks like file management has proven to reduce costs, enhance compliance, and support efficient data organization. The automated logging component further strengthens traceability, aligning with industry requirements for audit trails and record-keeping.

2.1 GENERAL

The automation of file renaming and logging has become increasingly important as organizations handle larger volumes of documents and data. Traditional methods, involving manual file management or basic scripts, are time-consuming and prone to human error, creating challenges for scalability, consistency, and efficiency. Robotic Process Automation (RPA) has emerged as a transformative technology to streamline such processes by automating repetitive, rule-based tasks in a more efficient and error-free manner. UiPath, one of the leading RPA platforms, has gained widespread adoption for tasks like document processing, data handling, and file management due to its user-friendly interface and powerful features. This general overview will cover the evolution of automation in file management, the role of RPA in automating file renaming and logging, and how UiPath and its RE Framework contribute to improving this process.

2.1.1 Evolution of File Management Automation

Historically, file management processes like renaming, organizing, and logging were manually performed or carried out using basic scripts. In the early stages, such tasks were handled by file explorers and command-line interfaces, requiring operators to manually rename files according to predefined rules. With the

growing volume of files and the complexity of operations, organizations started to develop basic automation scripts (e.g., in Python, PowerShell, or batch scripting) to handle simple tasks such as bulk renaming or categorization.

As businesses evolved, so did their needs. More sophisticated solutions emerged with the advent of Robotic Process Automation (RPA), where specialized tools allowed for the automation of repetitive tasks involving structured and unstructured data. This transition led to faster, more scalable, and reliable file management processes. RPA tools now offer intelligent handling of tasks such as file renaming, organizing folders, logging actions, and integrating file processes across multiple systems, enhancing both accuracy and efficiency.

2.1.2 The Role of RPA in File Renaming and Logging

Robotic Process Automation (RPA) enables organizations to automate repetitive, rule-based tasks, thereby improving speed and reducing human error. In the context of file renaming and logging, RPA tools like UiPath automate the process of detecting, renaming, and organizing files based on specified naming conventions, without requiring human intervention.

In this proposed system, RPA is used to handle the following tasks:

- File Detection: Automatically identifying files within specified directories that require renaming.
- File Renaming: Renaming files based on a predefined pattern (e.g., appending date stamps, version numbers, or sequential identifiers).
- Logging Actions: Recording each file renaming action in a log file for tracking and audit purposes.

UiPath's ability to integrate with various file management systems, databases, and cloud environments makes it an ideal platform for automating these tasks, providing a seamless solution for both small-scale and enterprise-level operations.

2.1.3 Automated Logging System in RPA

An automated logging system is essential for tracking the actions performed during the file renaming process. Logging not only provides a record of the work completed but also ensures transparency and accountability, which are important for auditing and troubleshooting.

In the proposed system:

- Detailed Logs: Each file renaming operation is logged with key details such as the original and new file names, timestamps, and the status of each operation (whether it was successful or encountered an error).
- Centralized Log Management: Logs are stored in a central location, making it easy to access, search, and analyze the logs for auditing purposes.
- Error Monitoring: If any errors occur during the renaming process, they are logged, and the system can automatically retry the operation or notify the relevant personnel for manual intervention.

2.1.4 Template-Based File Renaming

Template-based automation is a fundamental part of the proposed system. By creating predefined templates for file naming, organizations can ensure consistency and reduce the likelihood of errors. A template defines the structure of the filename, such as including project numbers, date stamps, or employee IDs.

Key benefits of template-based renaming in the system:

- Standardized File Names: Templates allow for uniform file names across the entire organization, which is crucial for easy file retrieval and management.
- Dynamic Content Integration: UiPath allows for the dynamic insertion of specific data points (e.g., project name, employee ID, department) into the filename, ensuring that each file is appropriately named based on its content.
- Efficient Processing: By automating the application of naming conventions to files, the system reduces the time spent on manual renaming, allowing files to be renamed and organized in bulk with minimal human intervention.

2.1.5 Case Studies and Applications

Several case studies have demonstrated the benefits of automating file renaming and logging using RPA tools like UiPath. Organizations in various sectors have successfully adopted automation for their document handling tasks, showcasing its versatility and effectiveness.

- Corporate Offices: Large enterprises use RPA to manage file storage, organize project documents, and maintain consistent naming conventions across departments.
- Government Agencies: Public sector organizations automate the renaming and archiving of legal and regulatory documents, ensuring that each file is easy to locate and trace.
- Educational Institutions: Universities and schools automate the renaming and categorization of student records, faculty documents, and administrative files, improving organizational efficiency and document retrieval.

These case studies highlight the widespread adoption of RPA for automating file management processes and underscore the efficiency and accuracy that automation brings to document-centric workflows.

3. SYSTEM DESIGN

The system is designed using UiPath Studio, structured in modules to streamline functionality. The main modules include folder monitoring, file renaming, and logging. These modules interact to create a cohesive and automated workflow that addresses file handling needs efficiently.

3.1.SYSTEM FLOW DIAGRAM

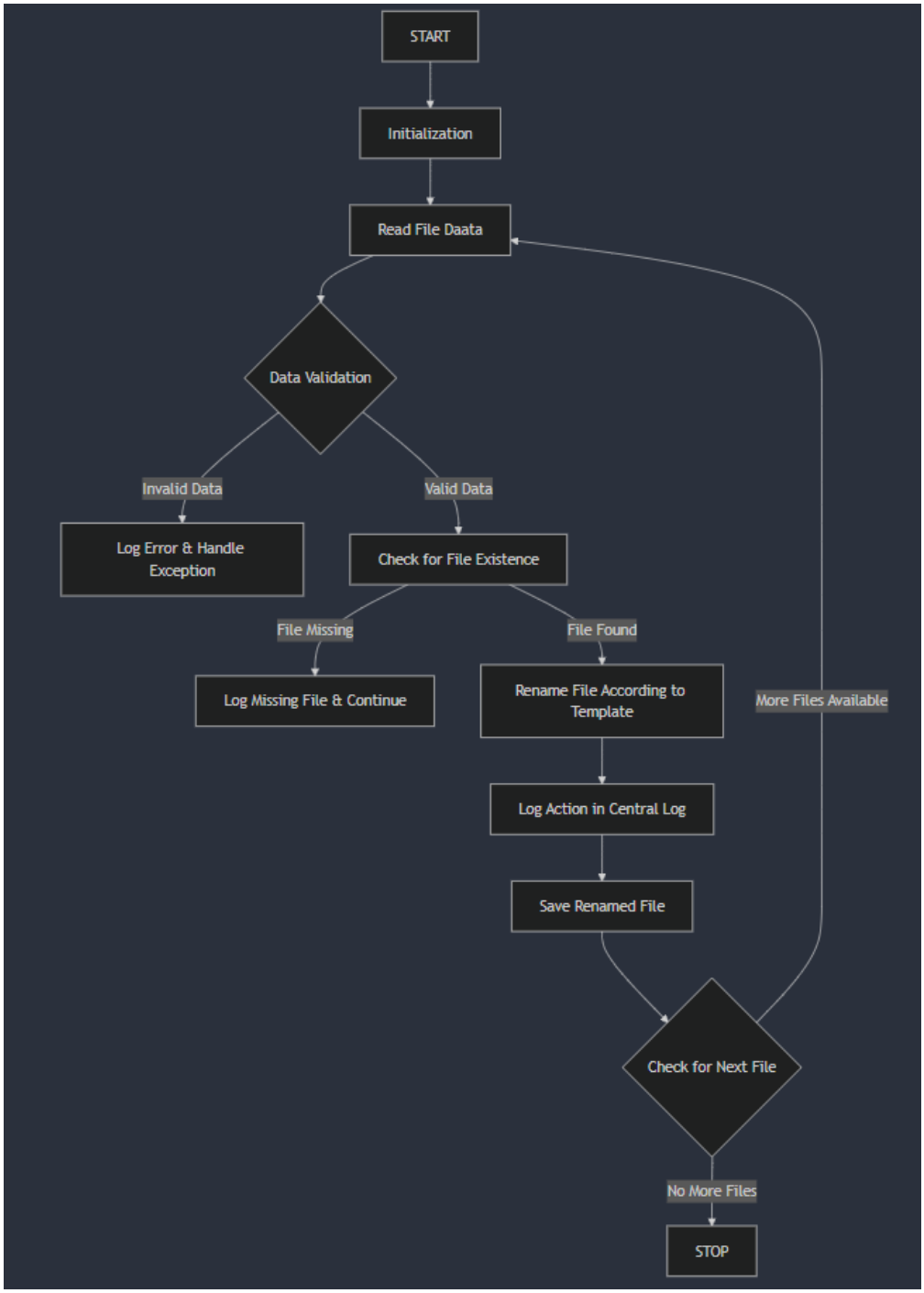


Fig 3.2.1

3.3.ARCHITECTURE DIAGRAM

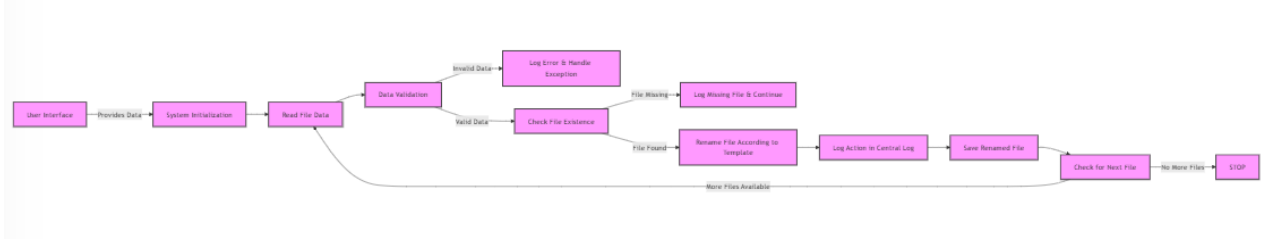


Fig 3.3.1

3.4.USECASE DIAGRAM

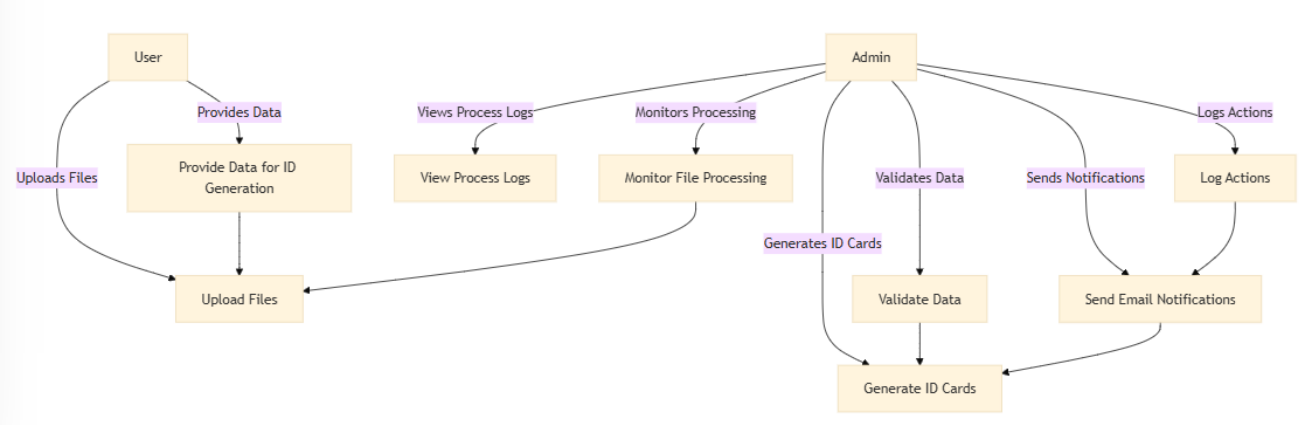


Fig 3.4.1

4. PROJECT DESCRIPTION

The file renaming project leverages UiPath's Robotic Process Automation (RPA) capabilities to automate the process of renaming files based on predefined templates and naming conventions. The system is designed to read file data from an Excel or database, validate the data, and check for the existence of the files. If the files exist, the system renames them according to the template, logs the action, and saves the renamed files in the appropriate location. If the files are missing, the system logs an error and continues processing. Additionally, the project includes an automated communication feature that sends notifications to the admin with the processed file details. This project is structured using the RE Framework to ensure scalability, error handling, and transaction management. The overall objective is to automate the file renaming process, ensuring consistency, accuracy, and efficiency across large sets of files while minimizing manual intervention.

4.1 **METHODOLOGIES**

The project follows a structured methodology to ensure accurate and consistent automation:

- **Requirement Analysis**: Identifying the specifics of file naming conventions and logging needs.

- **Workflow Development**: Developing the automation modules in UiPath Studio.
- **Testing**: Verifying that the system operates correctly across various test scenarios.
- **Implementation**: Deploying the final solution for automated file management.

4.1.1 MODULES

Folder Monitoring Module:

The Folder Monitoring Module is responsible for continuously scanning the designated folder or directory for any new files. It operates in real-time, ensuring that any files added to the folder are immediately detected. Once a new file is found, the module triggers the file renaming process. This module is essential for automating the entire workflow without requiring manual intervention. It efficiently monitors the folder, ensuring that files are processed as soon as they are available, improving the overall speed and effectiveness of the renaming process.

File Renaming Module:

The File Renaming Module is the core component of the system, responsible for renaming each detected file based on a standardized naming convention. This convention typically involves incorporating a timestamp, unique identifiers, or other relevant data, ensuring that each file has a distinct name. The module ensures that there are no duplicates by checking the current file name against existing files before applying the new name. By maintaining a consistent naming structure, this module helps organize files systematically, reducing confusion and simplifying file management. The renaming process is crucial in ensuring uniformity and traceability across large sets of files, particularly in business environments with frequent file creation.

Logging Module:

The Logging Module tracks each file processed by the system, maintaining a detailed record of the original file names, the newly assigned names, and the exact date and time the renaming took place. This log is stored in a secure text file and serves several important functions, such as providing an audit trail for file management operations, enabling troubleshooting, and ensuring accountability in case of any errors or discrepancies. The logs help administrators review the actions performed by the system, and in the event of a failure, the log file provides insights into the cause of the issue. The Logging Module is a vital component for transparency and maintaining an error-free process, particularly in regulated environments where detailed records are required for compliance.

5. CONCLUSIONS

5.1 GENERAL

The Automated File Renaming and Logging System effectively addresses the limitations of manual file handling by automating file renaming and logging using UiPath Studio. The system minimizes errors, reduces time spent on manual tasks, and enhances consistency and traceability in file management. This project showcases the practical applications of RPA in routine tasks and the potential for similar solutions in other areas of data management.

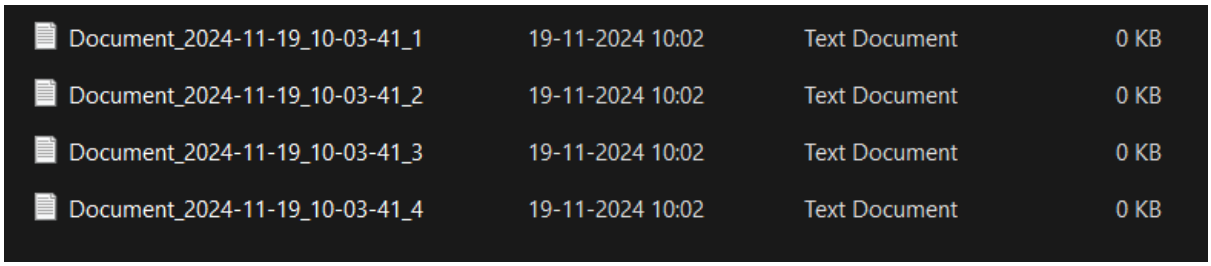
Key Achievements:

1. **Automated Workflow**: The implementation of a fully automated workflow for file renaming eliminated the need for manual intervention, drastically reducing processing time and the risk of human error. The system automatically detects, processes, and renames files, ensuring continuous operation without manual monitoring.
2. **Accuracy**: By leveraging a standardized naming convention and timestamp-based renaming, the system ensures that each file is renamed consistently and without duplication. This guarantees the integrity and

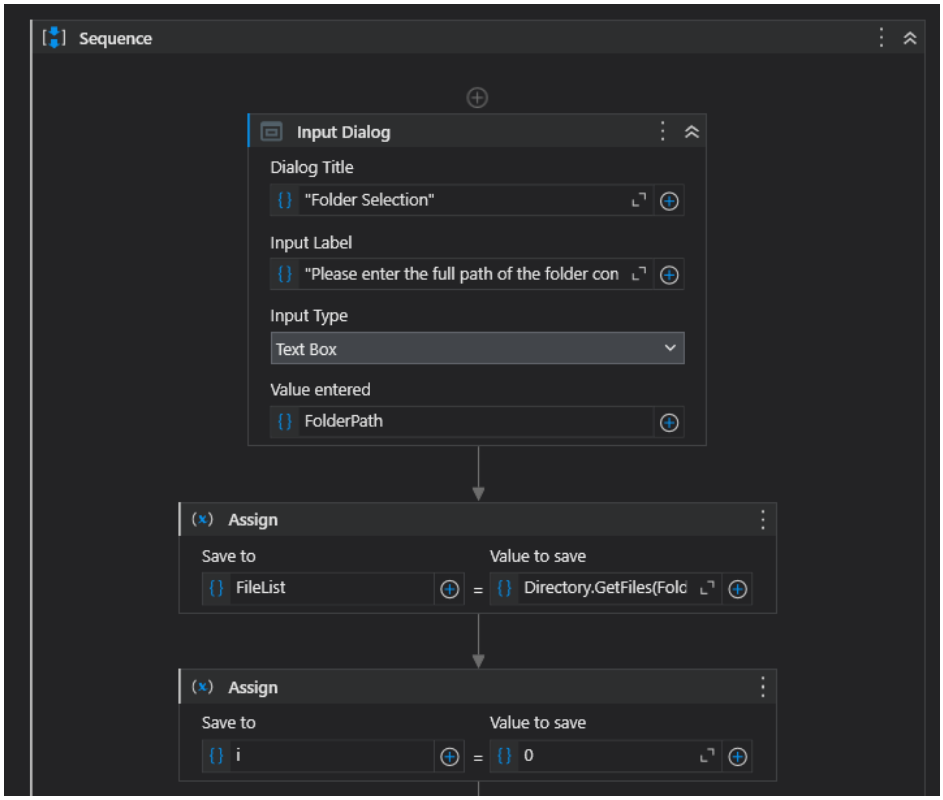
organization of files, reducing the possibility of misfiled or mislabeled documents.

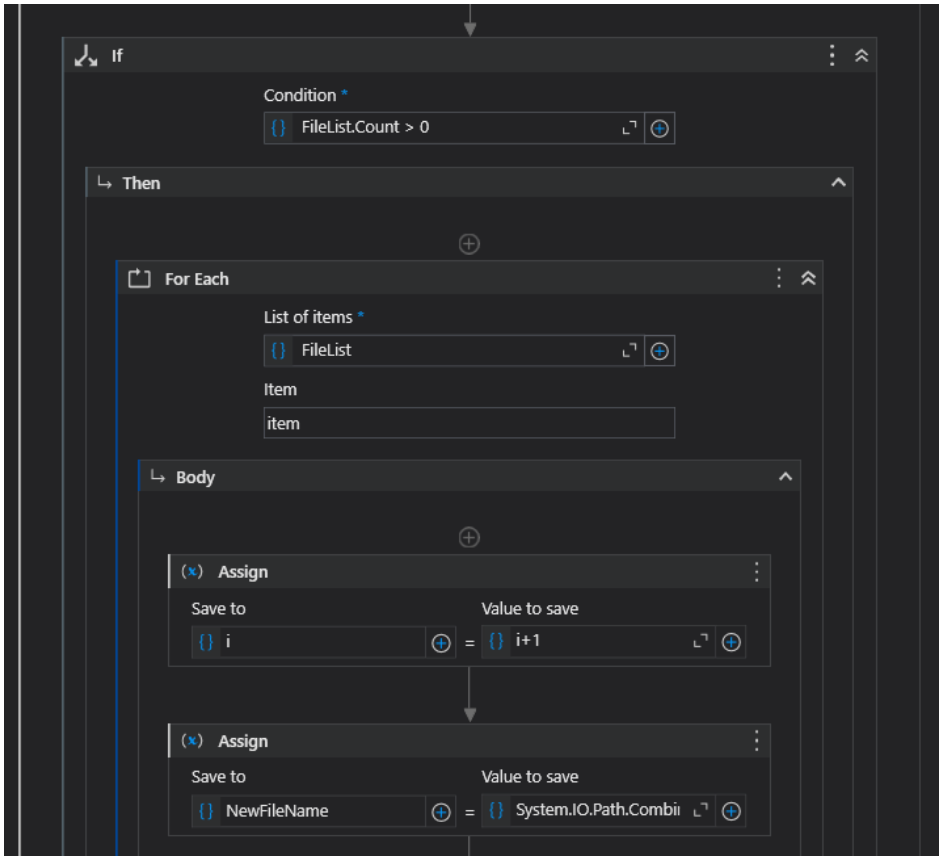
3. **Efficiency**: The project effectively streamlined the file renaming process, handling large volumes of files in a fraction of the time it would take to manually rename them. The system processes files quickly and efficiently, enabling faster access and management of files while using minimal computational resources.

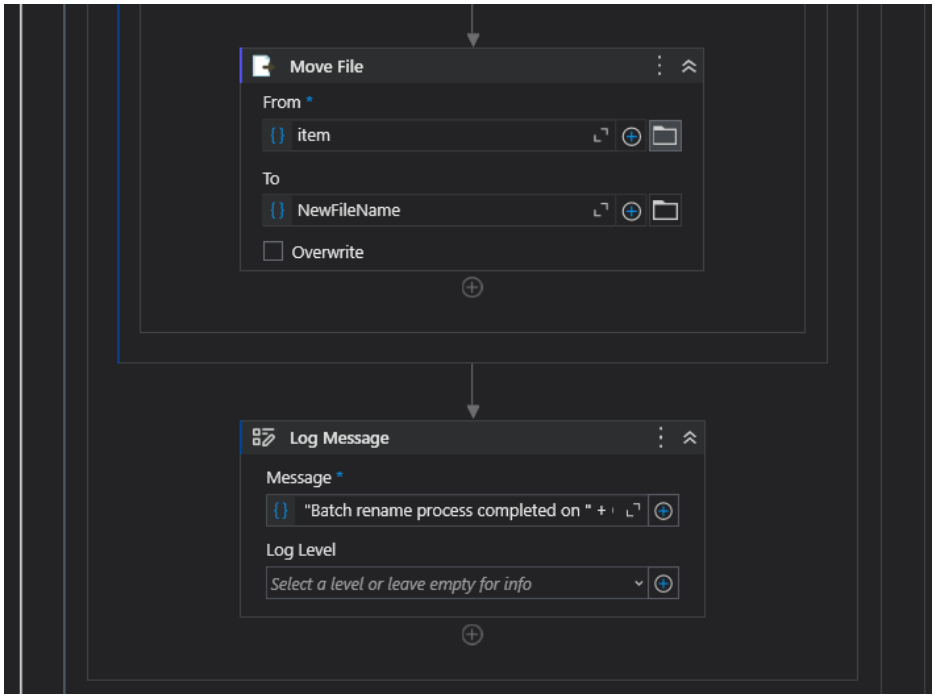
OUTPUT SCREENSHOTS

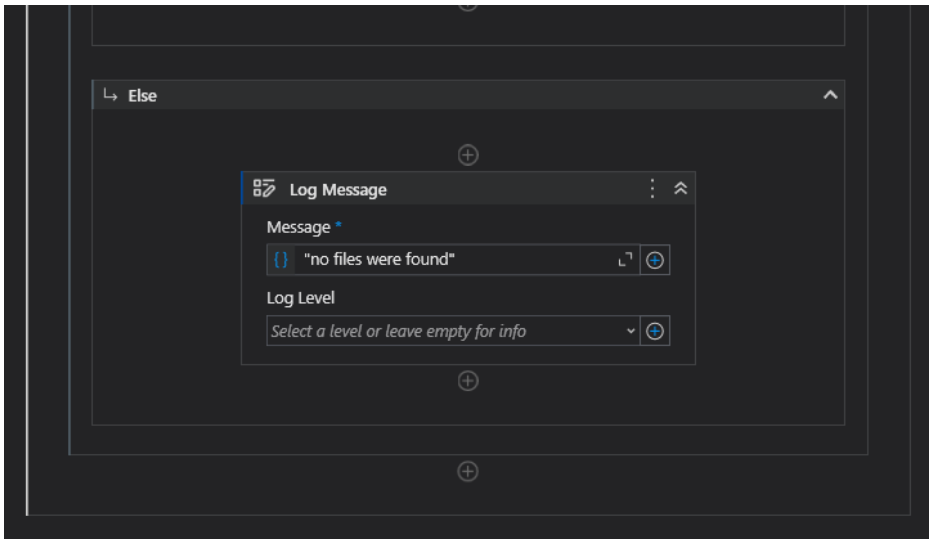


APPENDICES


Sequence
Input Dialog
Dialog Title
"Folder Selection"
Input Label
"Please enter the full path of the folder con
Input Type
Text Box
Value entered
FolderPath
Assign
Save to
Value to save
FileList
Directory.GetFiles(Folc
Assign
Save to
Value to save
i
0


If
Condition *
FileList.Count > 0
Then
For Each
List of items *
FileList
Item
item
Body
Assign
Save to
Value to save
i
i+1
Assign
Save to
Value to save
NewFileName
System.IO.Path.Combi


Move File
From *
item
To
NewFileName
Overwrite
Log Message
Message *
"Batch rename process completed on " +
Log Level
Select a level or leave empty for info


Else
Log Message
Message *
"no files were found"
Log Level
Select a level or leave empty for info

REFERENCES

Include all references that were consulted or utilized during the project. This may involve documentation, technical guides, and other sources that helped in the implementation or theoretical understanding. Here's a sample format for references:

UiPath Academy: "UiPath RE Framework Course." UiPath Academy, 2024.

Accessed for understanding the RE Framework implementation and best practices in RPA workflows.

UiPath Documentation: "Working with Files and Folders in UiPath." UiPath Documentation, 2024.

Utilized to explore methods for file monitoring, data handling, and automating file renaming processes using UiPath activities.

Microsoft Excel Automation: "Automating Excel Data Extraction with UiPath." Microsoft Office Automation Guide, 2024.

Consulted for techniques related to reading data from Excel files and integrating this data into the automation process for file renaming.

RPA Best Practices: John Doe, "Best Practices for Robotic Process Automation," RPA Journal, 2023.

Referenced to ensure the correct approach to RPA workflow design, focusing on optimization, scalability, and error handling.

File Management Strategies: "Automating File Management with RPA." Automation World, 2023.

Provided insight into efficient file renaming strategies and solutions for file system organization using automation tools.

Error Handling in RPA: "Best Practices for Error Handling in UiPath." Automation Today, 2024.

Used to implement robust error handling and exception management within the automation process, ensuring reliable file renaming and logging.