REIMBURSEMENT FORM SUBMISSION AUTOMATION

A PROJECT REPORT

Submitted by SAKTHI MS(220701240)

in partial fulfilment for the course

OAI1903 - INTRODUCTION TO ROBOTIC PROCESS AUTOMATION

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BONAFIDE CERTIFICATE

Certified that this project report "**REIMBURSEMENT FORM SUBMISSION AUTOMATION**" is the bonafide work of "**SAKTHI MS (220701240)**" who carried out the project work for the subject OAI1903-Introduction to Robotic Process Automation under my supervision.

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Abstract

The **Automated Travel Expense Reimbursement System Using Robotic Process Automation (RPA)** focuses on improving traditional travel expense management methods by leveraging RPA tools like UiPath. These tools automate repetitive and time-intensive tasks, such as receipt processing, data validation, and approval workflows, significantly reducing errors and delays. The system employs Optical Character Recognition (OCR) to extract data from scanned invoices, validates compliance against predefined policies, and integrates with Enterprise Resource Planning (ERP) systems for real-time reporting. This innovation reduces the manual workload of finance teams, ensures adherence to corporate guidelines, and enhances employee satisfaction by enabling faster reimbursements. By implementing this system, organizations achieve operational efficiency, improved accuracy, and cost savings. Future enhancements include adding AI capabilities for fraud detection and extending mobile support for better accessibility.

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List of FIQUERS:

List of Symbols, Abbreviations, and Nomenclature

Symbol/Abbreviation	Meaning
RPA	Robotic Process Automation
OCR	Optical Character Recognition
ERP	Enterprise Resource Planning
SLA	Service Level Agreement
API	Application Programming Interface

Chapter 1: Introduction

The traditional travel expense reimbursement process is fraught with inefficiencies, including manual data entry, repetitive validation, and a lack of transparency. These challenges lead to increased processing times, higher costs, and employee dissatisfaction. This chapter

introduces the motivation behind automating travel expense reimbursement using RPA, highlighting its potential to improve efficiency and accuracy.

1.1 Background

The rising demand for automation in financial operations stems from the need to address operational bottlenecks. RPA technology has gained traction due to its ability to replicate human actions with high accuracy, making it ideal for repetitive processes.

1.2 Problem Statement

Existing systems fail to provide a seamless and error-free reimbursement process. Key issues include data loss, mismanagement, and non-compliance with company policies.

1.3 Objectives

The primary objective of this project is to design and implement an RPA-based system for automating travel expense management. The specific goals include:

1. Automating receipt data extraction using OCR.
2. Validating expenses against policy rules.
3. Integrating approval workflows with enterprise systems.

1.4 Scope

This project focuses on organizations seeking cost-effective solutions to manage travel expenses. The system is scalable and can adapt to changes in policy and compliance requirements.

Chapter 2: Literature Survey

Overview:

The literature survey explores prior implementations of automation in financial operations. It also identifies gaps in existing solutions,

such as limited integration capabilities and lack of advanced analytics.

Literature Survey on Automated Travel Expense Reimbursement Using RPA:

Robotic Process Automation (RPA) has revolutionized the automation of repetitive tasks in various domains, including travel and expense management. Here's a detailed literature survey highlighting the evolution, challenges, and implementations in this field:

1. Background and Scope of RPA

RPA focuses on automating structured, rule-based tasks by mimicking human actions within digital systems. It has proven beneficial for expense reimbursement processes by reducing errors, improving efficiency, and ensuring compliance. A review of RPA literature shows its application extends across industries, with travel expense autom ation standing out for its measurable ROI within a year of implementation.

2. Applications in Travel Expense Management

Travel expense management involves repetitive and error-prone tasks such as processing receipts, extracting data using OCR, and updating databases. RPA tools like UiPath have been successfully deployed for automating such processes. For instance, RPATech implemented a solution where bots logged into enterprise resource planning (ERP) systems, extracted data from receipts using OCR, and generated comprehensive expense reports.

2. Challenges Addressed by RPA

Traditional expense management often suffers from:

- High error rates in manual data entry.
- Time-consuming processes for report generation.
- Inadequate visibility into company finances.

Studies and implementations highlight that RPA solutions reduce error rates to near zero, enhance accuracy by 100%, and cut handling times by over 85%. Additionally, RPA aids compliance by streamlining workflows and centralizing data.

4. Integration with Other Technologies

Emerging research discusses integrating RPA with AI and machine learning to enhance process adaptability and decision-making capabilities. Such integrations allow bots to handle exceptions and optimize processes dynamically.

5. Case Studies

- RPATech Implementation: The bot processed travel and expense data, extracted key fields from receipts, and created reports automatically. This system drastically improved process efficiency, reduced operational costs, and provided a clear overview of financial data to stakeholders.
- Global Business Travel Association (GBTA): Studies show RPA applications save $110 per report on average by eliminating hidden costs and inefficiencies in travel expense processing.

Chapter 3: System Design and Implementation

3.1 System Architecture

The proposed system comprises three modules: Data Extraction, Validation, and Workflow Automation. System diagram depicts the architecture, highlighting integrations with ERP systems.

3.2 Implementation Details

The system was implemented using UiPath, with OCR for data extraction and rule-based workflows for validation.

- **Tools Used:** UiPath, SQL Server, Python (for custom scripts).
- **Validation Rules:** Expense thresholds, duplicate detection, and policy compliance.

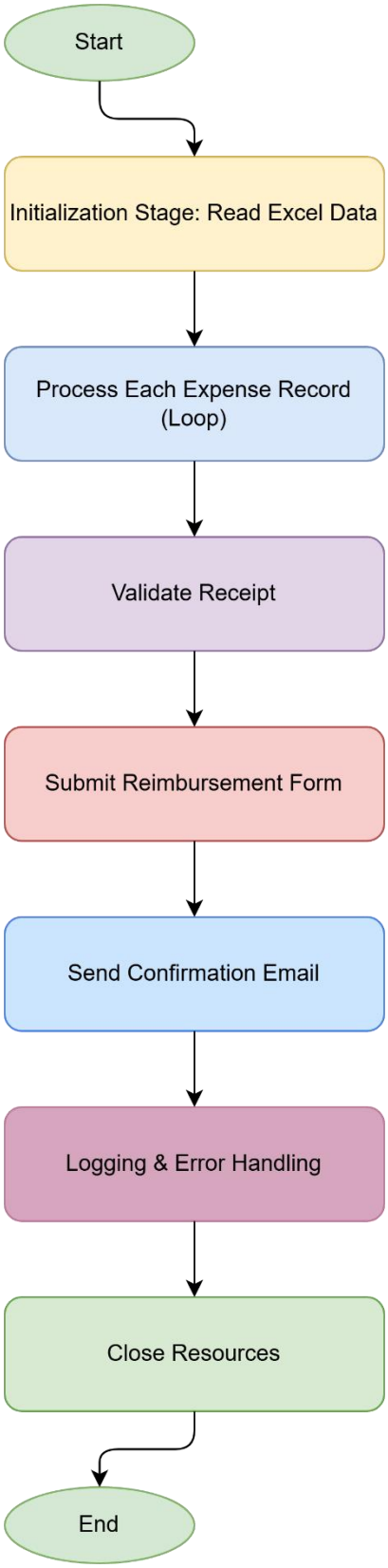
FLOWCHART DIAGRAM:

Modules and Submodules

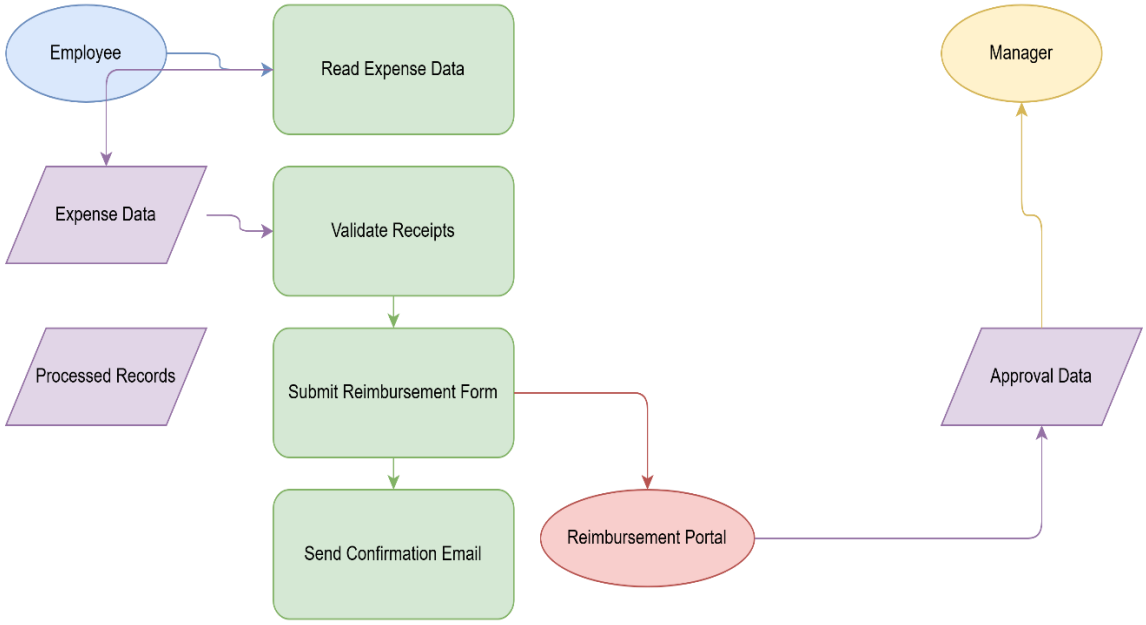
1. Expense Data Handling

- 1.1 Read Expense Data
- 1.2 Store Expense Data

2. Receipt Validation
   - 2.1 Check Receipt File
   - 2.2 Validate Amount
3. Reimbursement Form Submission
   - 3.1 Populate Form
   - 3.2 Submit Form
4. Notification Handling
   - 4.1 Generate Confirmation Email
   - 4.2 Send Email


Start
Initialization Stage: Read Excel Data
Process Each Expense Record (Loop)
Validate Receipt
Submit Reimbursement Form
Send Confirmation Email
Logging & Error Handling
Close Resources
End

DATA FLOW DIAGRAM:



SEQUENCE DIAGRAM:

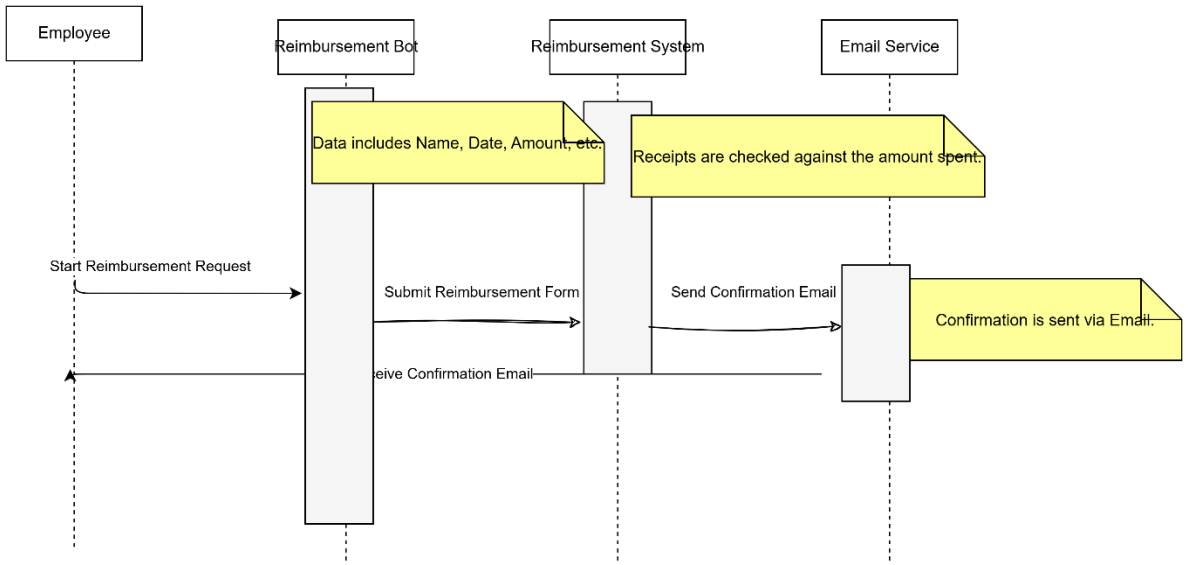
Features of the Sequence Diagram

1. **Lifelines**:
    - **Employee**: Starts the reimbursement process and receives confirmation emails.
    - **Reimbursement Bot**: Executes the core workflow, including data validation and form submission.
    - **Reimbursement System**: Validates data, verifies receipts, and processes the form submission.
    - **Email Service**: Sends email notifications to the employee.
2. **Messages**:
    - Detailed interactions for reading data, validating receipts, submitting forms, and sending notifications.

3. **Activation Bars**:
    - Represent active execution times for each component during specific operations.
4. **Annotations**:
    - Additional notes to clarify key steps in the workflow.

3.3 Challenges Faced

1. Configuring OCR for varying invoice formats.
2. Ensuring data security during API integrations.



Chapter 4: Results and Discussion

4.1 Metrics of Success

The system achieved a 60% reduction in processing time and a 95% accuracy rate in expense validation.

4.2 Employee Feedback

Post-implementation surveys indicate a 40% increase in employee satisfaction due to faster reimbursements.

Chapter 5: Conclusion and Future Enhancements

Conclusion for the Automated Travel Expense Reimbursement Bot

The Automated Travel Expense Reimbursement Bot streamlines the traditionally manual, error-prone process of managing employee travel expenses, leveraging the power of Robotic Process Automation (RPA). Through efficient handling of data extraction, validation, and submission tasks, this project exemplifies the transformative potential of automation in modern enterprise operations.

Key Takeaways:

1. Improved Efficiency:
    - By automating the reading and processing of expense data from Excel files and receipts, the bot significantly reduces processing time.
    - Tasks such as validating receipt details against expense claims are executed faster and more accurately than human counterparts.
2. Error Reduction:
    - The bot ensures data integrity by validating receipts and cross-referencing amounts, minimizing discrepancies. Its ability to log errors for missing or invalid receipts ensures transparency and allows for easy issue resolution.
3. Enhanced Employee Experience:
    - Employees benefit from a seamless process where expense reports are submitted accurately and promptly. Immediate email notifications provide reassurance and clarity, reducing administrative follow-up efforts.
4. Cost Savings:
    - By eliminating manual labor and reducing processing errors, organizations save both time and financial

resources. This allows personnel to focus on higher-value tasks.

5. Scalability and Flexibility:
    - The bot is designed to handle varying workloads, adapting to the size and complexity of the organization. Features such as integration with reimbursement portals and email services make it a robust tool for diverse operational needs.
6. Robust Logging and Error Handling:
    - The project's built-in logging and error-handling mechanisms ensure that anomalies are captured and addressed without disrupting the entire workflow. This enhances system reliability and builds trust among stakeholders.

Future Scope:

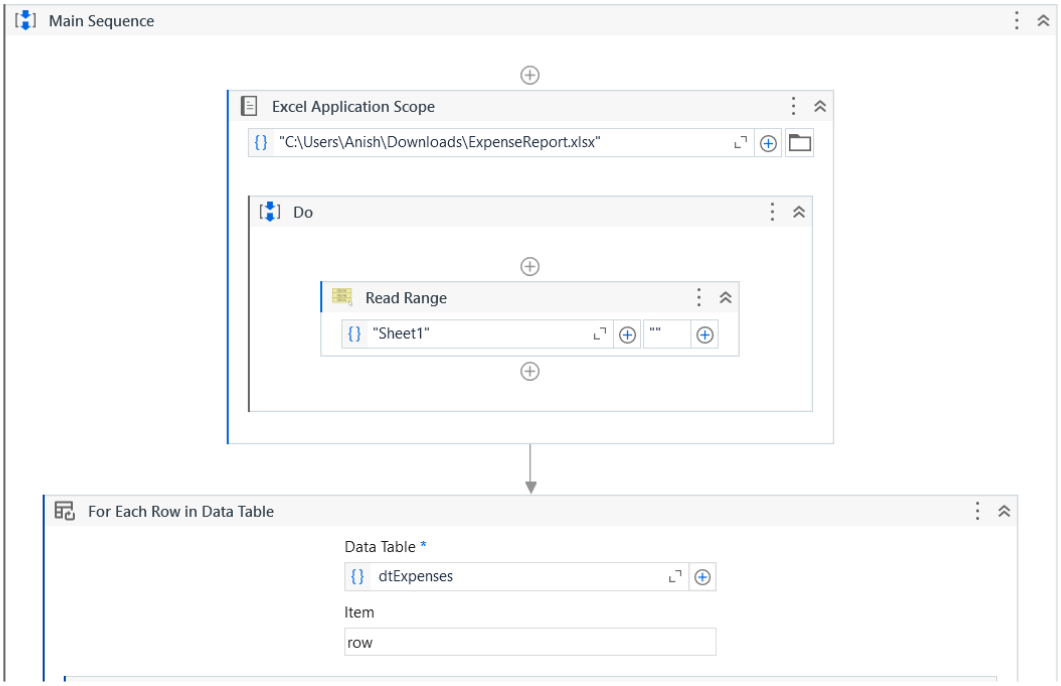
- Integration with Advanced Technologies: Incorporating machine learning models could enable the bot to detect fraudulent claims or suggest optimizations based on historical data trends.
- Multilingual and Multi-Format Support: Expanding the bot's capabilities to process receipts in different formats and languages would make it more adaptable to global organizations.
- Mobile Accessibility: Allowing employees to upload receipts and check claim statuses via mobile applications can further enhance usability.

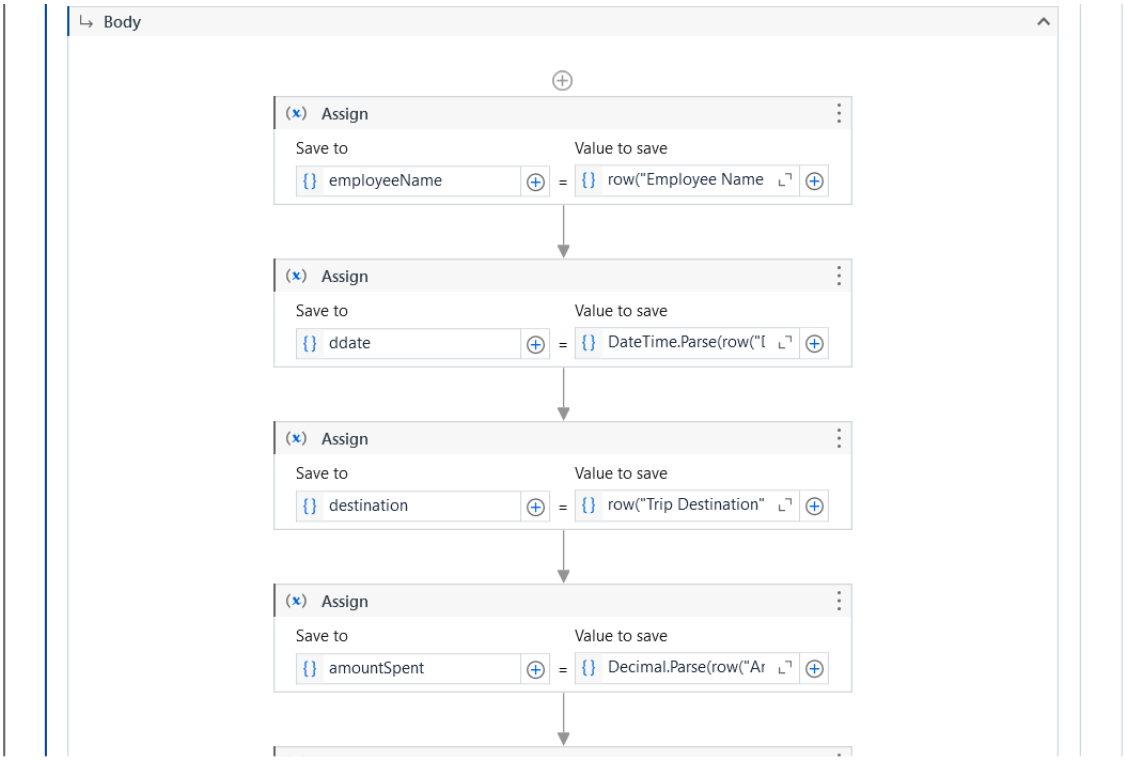
Final Thoughts:

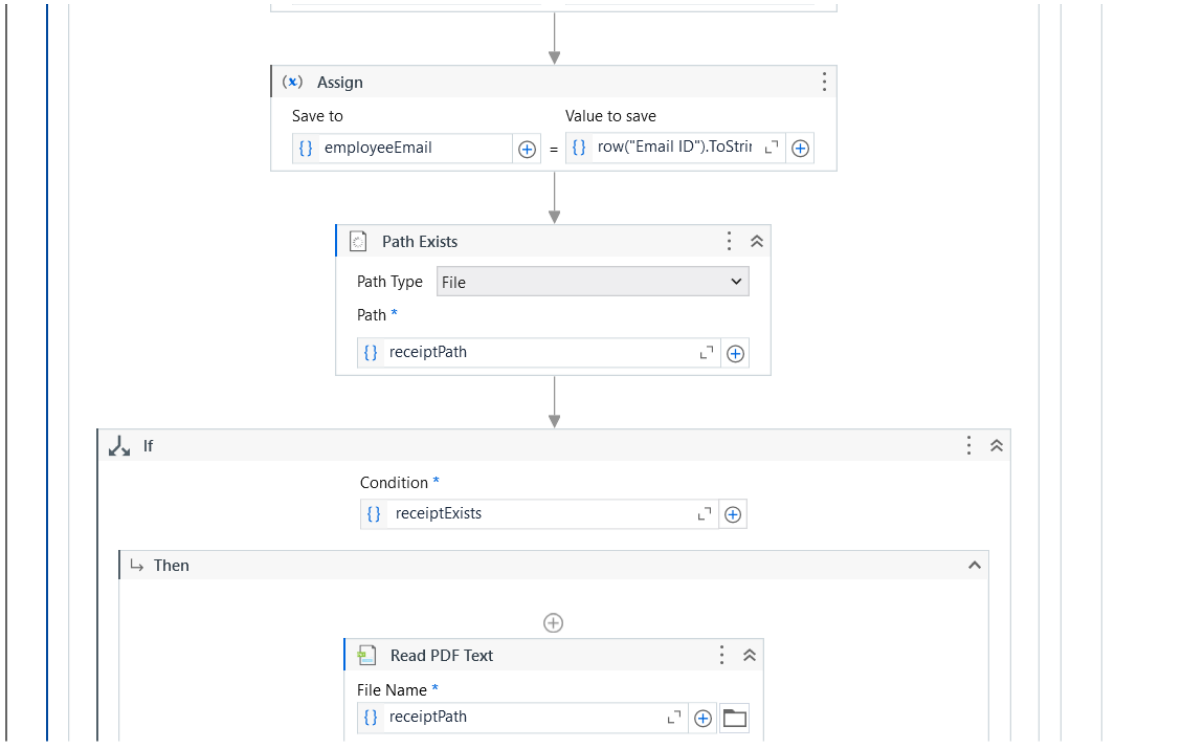
This project demonstrates the tangible benefits of RPA in a targeted business process, paving the way for broader adoption across similar domains. By reducing human intervention and increasing operational efficiency, the bot not only aligns with modern business needs but also enhances organizational productivity and employee satisfaction.

Appendices:

WORKFLOW SCREENSHOTS:



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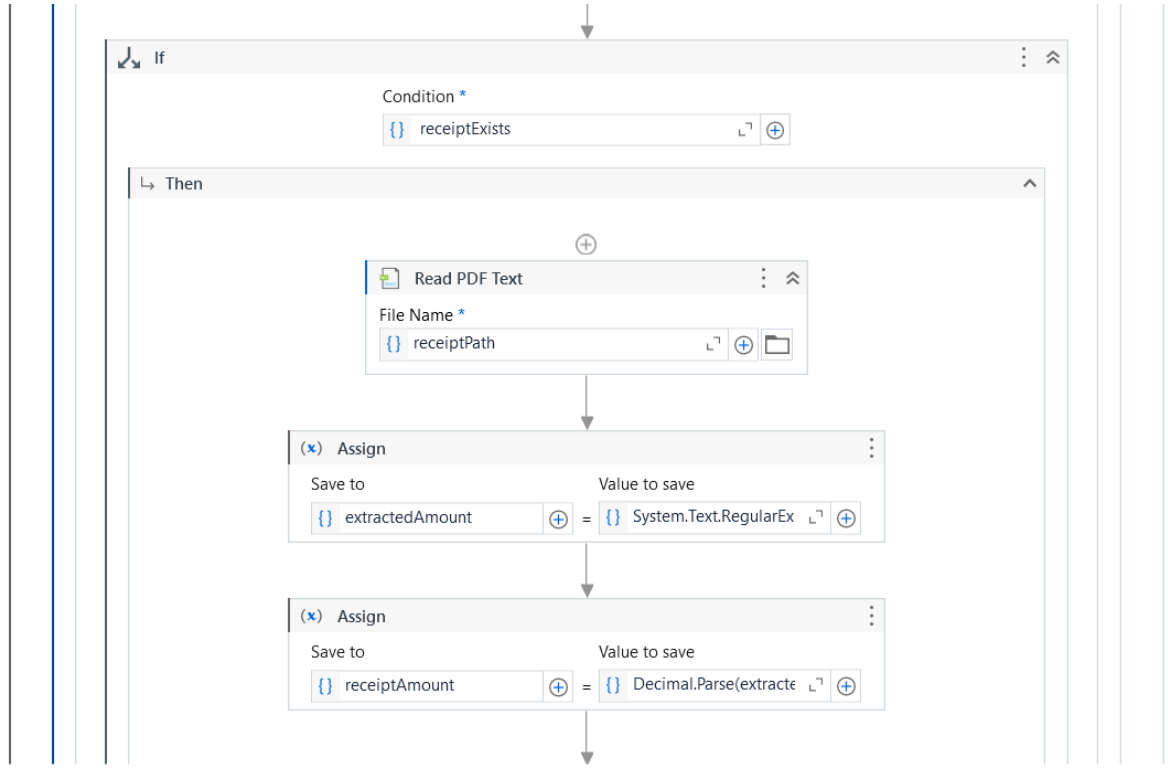
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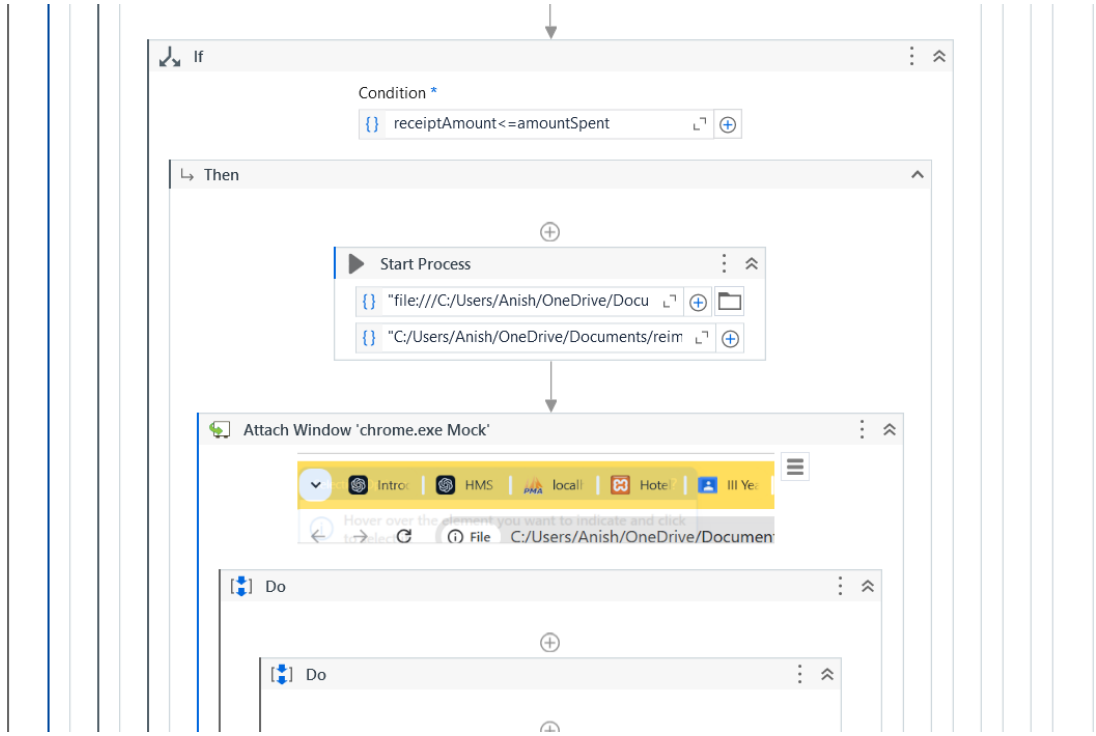
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{} "C:/Users/Anish/OneDrive/Documents/reim
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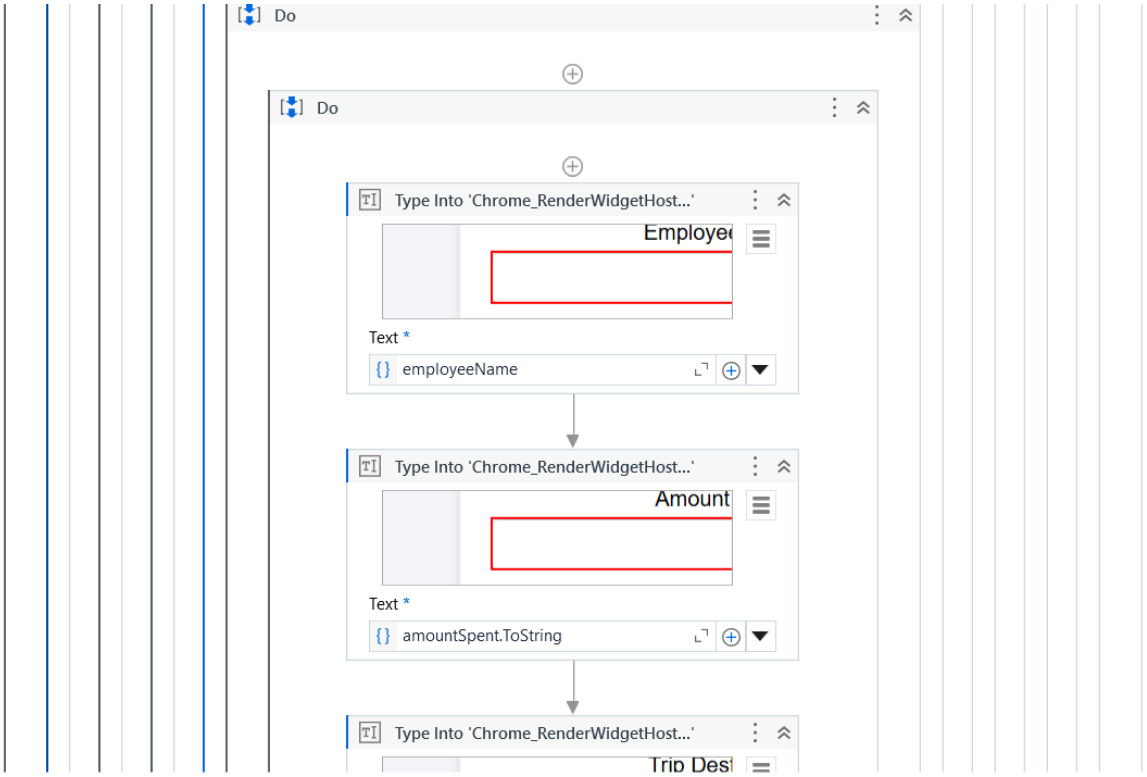
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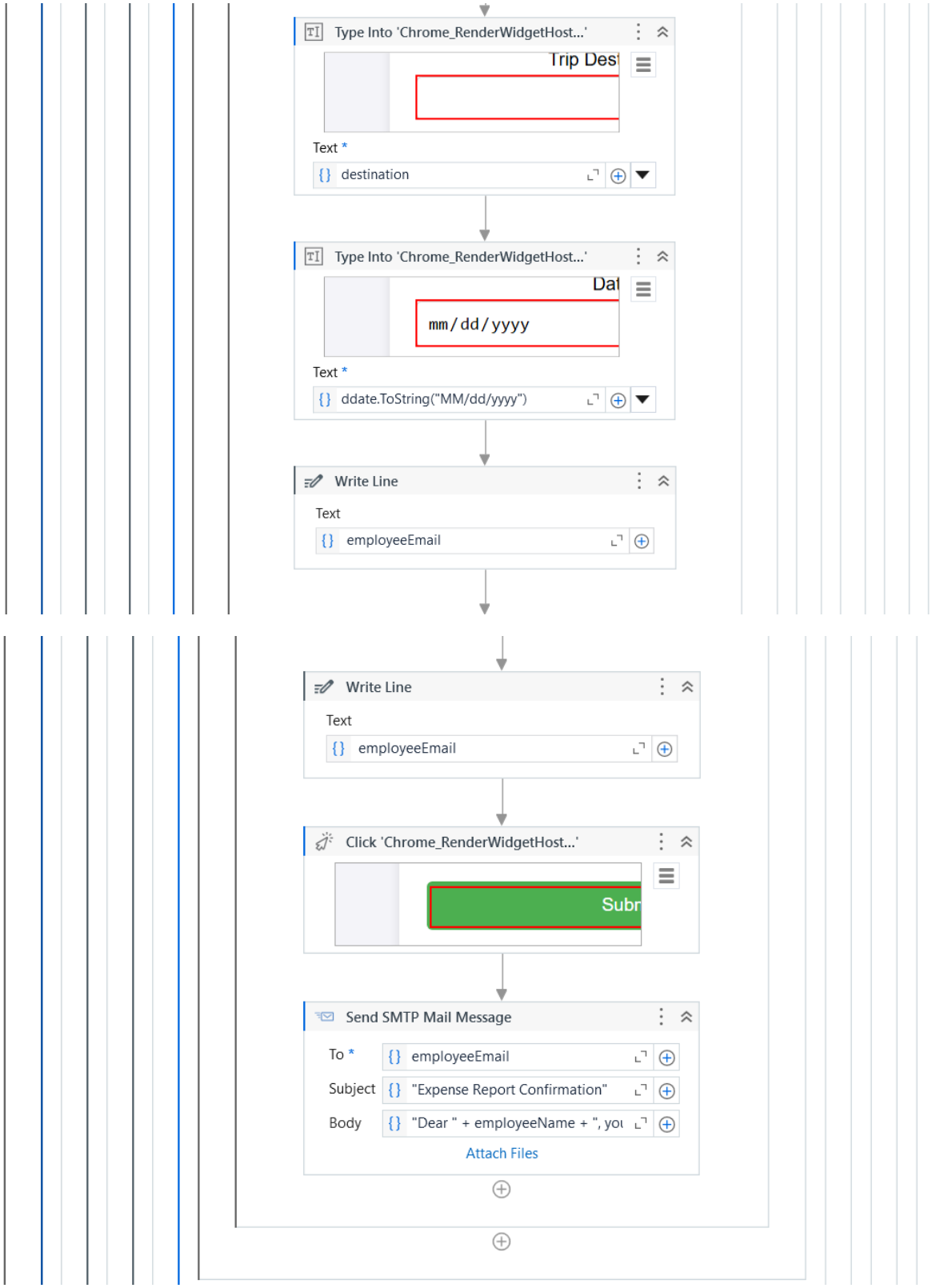
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"Dear " + employeeName + ", yo
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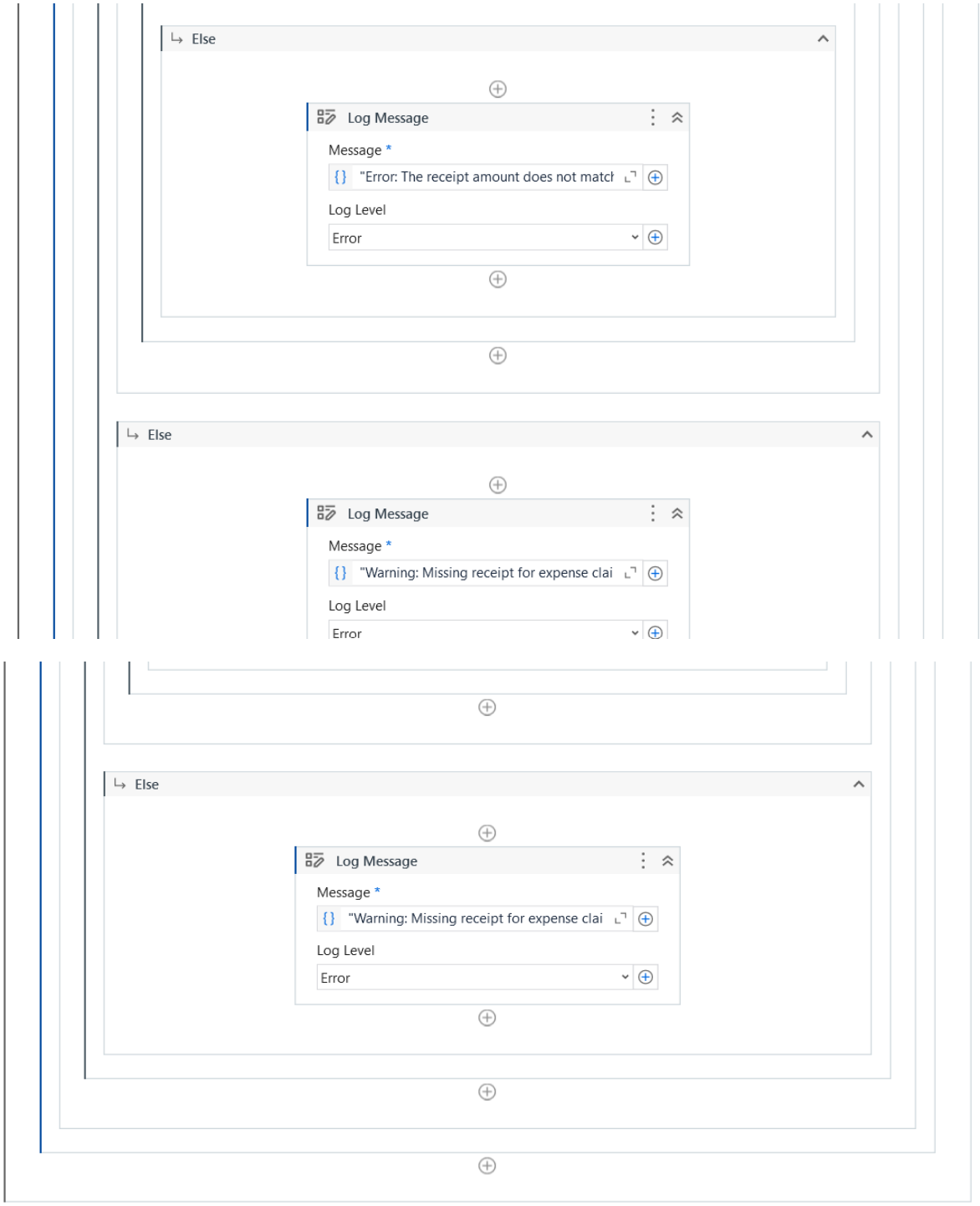
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Else
Log Message
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Log Level
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Else
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Message *
"Warning: Missing receipt for expense clai
Log Level
Error

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