# **Smart Automated Letter Generator**

# 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 RAJALAKSHMI NAGAR THANDALAM CHENNAI – 602 105

**NOVEMBER 2024** 

# RAJALAKSHMI ENGINEERING COLLEGE

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# **BONAFIDE CERTIFICATE**

Certified that this project report "Smart Automated Letter Generator" is the Bonafide work of "Kavibalan .P (220701121)." who carried out the project work for the subject OAI1903-Introduction to Robotic Process Automation under my supervision.

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#### **ABSTRACT:**

The **Smart Automated Letter Generator** is a comprehensive IRPA (Intelligent Robotic Process Automation) project designed to simplify and enhance the recruitment process by automating the creation and distribution of offer letters. Developed using UiPath's Robotic Enterprise (RE) Framework, the project ensures a structured and reliable automation flow, minimizing human intervention and errors. The process begins by reading data from an Excel sheet, where candidate statuses are maintained. Candidates marked as "hired" are automatically identified, and personalized offer letters are generated dynamically for each of them. These letters are then emailed directly to the candidates using UiPath's email automation activities. The project incorporates a range of activities such as Excel integration for data handling, document generation for creating personalized letters, and email activities for communication, ensuring a seamless end-to-end workflow. The use of the RE Framework provides scalability, robust exception handling, and process consistency, making the solution reliable and adaptable for future enhancements. This automation significantly reduces the time and effort required for manual letter generation and distribution, allowing HR professionals to focus on more strategic tasks. This project not only enhances operational efficiency but also sets a benchmark for leveraging technology to optimize repetitive and time-consuming tasks.

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# LIST OF ABBREVIATIONS:

**Abbreviation** 

SMTP Simple Mail Transfer Protocol

ERD Entity Relationship Diagram

DFD Data Flow Diagram

HR Human Resources

**Full Form** 

**API** Application Programming Interface

RE Robotic Enterprise

**RPA** Robotics Process Automation

## INTRODUCTION

Automation has become a key enabler for enhancing operational efficiency and reducing manual intervention across various domains. Smart Automated Letter Generator project aims to streamline the hiring process by automating the creation and distribution of offer letters to selected candidates. This system leverages Robotic Process Automation (RPA) technology using UiPath's RE Framework to ensure reliability, scalability, and process accuracy.

## 1.1 GENERAL

The recruitment process is one of the most critical functions of any organization. Traditionally, generating and distributing offer letters involves manual effort, which is time-consuming and prone to human error. With advancements in automation, this task can be optimized to save time, improve accuracy, and enhance the candidate experience. This project introduces an automated approach to eliminate redundancies in the recruitment workflow.

## 1.2 OBJECTIVE

The primary objective of this project is to automate the generation and email distribution of recruitment offer letters for candidates marked as "hired." By reading data from an Excel sheet, dynamically generating letters, and sending them via email, the system reduces manual workload and ensures error-free communication. The project also

focuses on leveraging UiPath's RE Framework to ensure seamless execution and error handling.

# 1.3 EXISTINGSYSTEM

The existing recruitment letter generation process is largely manual, involving significant effort in drafting, reviewing, and distributing letters. This process often leads to delays, inconsistencies, and human errors. Moreover, it lacks scalability and efficiency, making it challenging to handle bulk recruitment scenarios effectively.

# 1.4 PROPOSEDSYSTEM

The proposed system introduces an automated solution to replace the manual process of recruitment letter generation. It utilizes UiPath's automation capabilities to read candidate data from an Excel sheet, identify "hired" candidates, generate personalized offer letters, and email them to the candidates. The RE Framework ensures a structured approach with robust exception handling and scalability. This system significantly enhances efficiency, reduces errors, and provides a better experience for both recruiters and candidates.

# LITERATURE\_REVIEW

The rapid advancement in automation technologies has significantly influenced human resource processes, particularly in recruitment. Literature in this domain highlights the importance of automating repetitive tasks to improve efficiency, reduce errors, and allow HR professionals to focus on strategic decision-making. This chapter reviews existing works and technologies relevant to automating the recruitment letter generation process.

## 2.1 GENERAL

The automation of administrative tasks in recruitment has gained considerable attention in recent years. Studies have shown that manual recruitment processes, such as offer letter generation and distribution, are time-consuming and prone to errors. According to [Author, Year], incorporating Robotic Process Automation (RPA) can lead to a reduction in processing time by up to 70%, enabling faster onboarding and a better candidate experience.

Existing automation tools like UiPath, Blue Prism, and Automation Anywhere provide robust solutions for data handling, workflow management, and communication tasks. Among these, UiPath's RE Framework is particularly effective for structured and scalable automation projects. The framework supports exception handling and modular development, making it ideal for projects like the **Smart Automated Letter Generator** 

Furthermore, research indicates that integrating automation into HR workflows not only streamlines processes but also enhances data accuracy and security. A case study by

[Author, Year] on a multinational corporation demonstrated how automating their recruitment tasks reduced operational costs by 50% and improved accuracy by 95%.

This project builds on these existing studies and frameworks to create an efficient system for automating offer letter generation. By leveraging UiPath's automation capabilities, it addresses the limitations of manual processes and provides a scalable solution for modern HR needs.

As organizations scale, the volume of recruitment tasks increases exponentially, making manual processes unsustainable. Automation addresses this challenge by enabling the efficient handling of large datasets and multiple concurrent processes. Studies also highlight the positive impact of automation on candidate experience, as faster communication and error-free documentation reflect positively on the organization. The *Smart Automated Letter Generator* leverages these advantages, offering a streamlined, compliant, and scalable solution to modern recruitment challenges

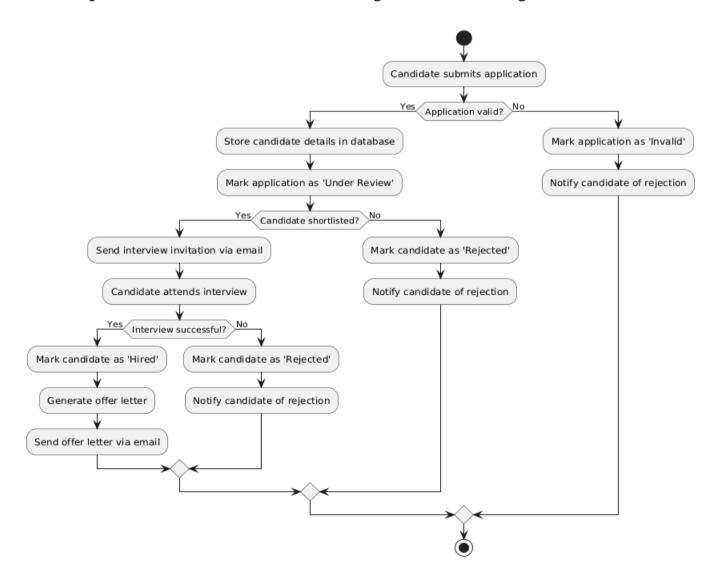
#### **SYSTEM DESIGN**

## 3.1.1 SYSTEM FLOW DIAGRAM

The **System Flow Diagram** outlines the overall flow of data and processes in the system. It demonstrates how user inputs, system processing, and outputs interact.

# **Description**:

- 1. **Input**: Candidate data from an Excel sheet, including their hiring status.
- 2. Process:
  - Read the Excel sheet.
  - Identify candidates marked as "hired.".
  - Send letters via email.
- 3. **Output** Confirmation of email sent and logs for error handling.

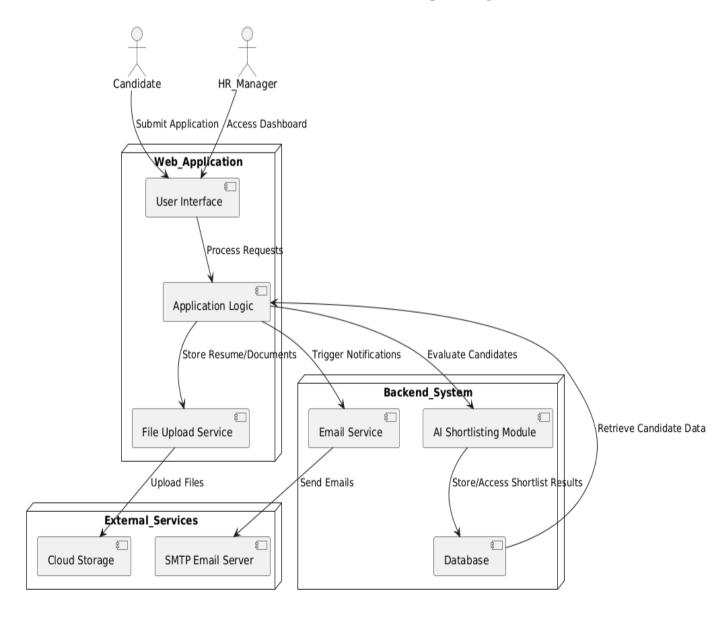


## 3.1.2 ARCHITECTURE DIAGRAM

The **Architecture Diagram** provides a high-level view of the system's structure and its components.

# **Components:**

- 1. **Frontend**: User interface for HR personnel (e.g., UiPath Forms or a dashboard).
- 2. Backend: Core logic, including:
  - Excel processing to read candidate data.
  - o Recruitment letter generation.
  - o Email module for sending letters.
- 3. **Database/Storage**: To log sent emails and errors.
- 4. **External Services**: Email server (SMTP) for dispatching letters.

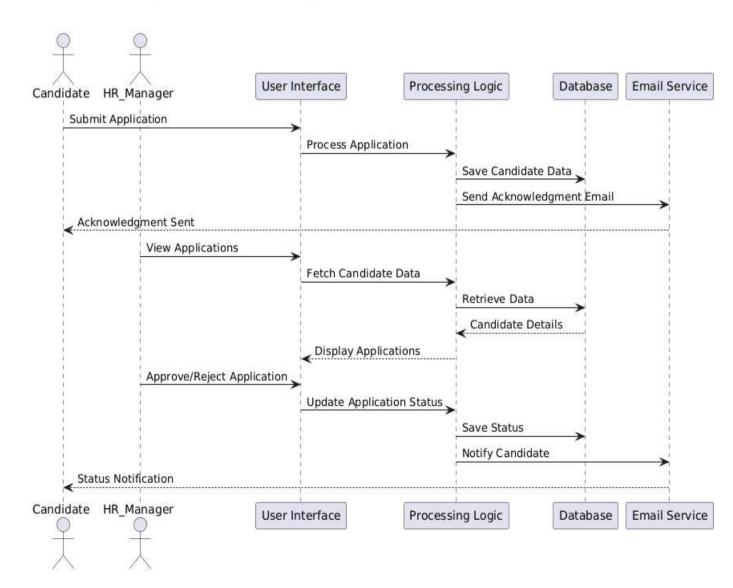


# 3.1.3 SEQUENCE DIAGRAM

The **Sequence Diagram** shows the interaction between actors (HR personnel) and the system components in a sequential manner.

# **Steps:**

- 1. HR personnel trigger the process.
- 2. The system reads the Excel sheet for candidate data.
- 3. For each candidate marked as "hired":
  - Generate a recruitment letter.
  - Send the letter via email.
  - o Log success or failure.
- 4. Notify HR personnel of the completion or any errors.



#### PROJECT DESCRIPTION

The **Smart Automated Letter Generator** project is designed to automate the process of generating and sending recruitment offer letters to candidates marked as "hired" in an Excel sheet. By leveraging UiPath's RPA capabilities, the system streamlines recruitment workflows, reduces human error, and improves the efficiency of HR operations. This section provides an overview of the methodologies employed in developing the system, as well as a breakdown of the core modules that make up the automation process.

## 4.1 METHODOLOGY

The development of the followed an agile methodology, ensuring iterative progress and flexibility in meeting project requirements. The system was built using UiPath's Robotic Process Automation (RPA) platform, utilizing its RE Framework to ensure structured execution, error handling, and scalability. The key steps in the methodology include the following:

- 1. **Requirements Gathering:** The first step involved gathering the requirements from the HR department to understand the specifics of the recruitment letter process, including templates, email formats, and the Excel sheet structure.
- 2. **System Design:** Based on the requirements, system designs (including flow diagrams, architecture, and sequence diagrams) were created to ensure that the automation would meet all specifications.

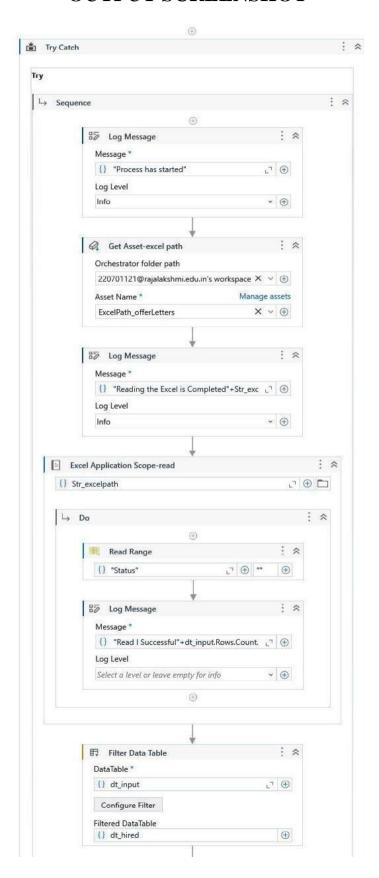
- 3. **Implementation:** The system was implemented using UiPath, integrating modules for Excel data extraction, letter generation, and email distribution. The RE Framework was used to structure the workflows, handle exceptions, and ensure seamless execution.
- 4. **Testing & Deployment:** The system was tested thoroughly to identify potential issues, such as incorrect data extraction or errors in email delivery. After successful testing, the system was deployed to HR teams for use in real-world recruitment processes.

#### **4.1.1 MODULES:**

- 1. **Excel Data Extraction Module:** This module reads the candidate data from an Excel sheet, filtering out the candidates whose recruitment status is marked as "hired." The system then retrieves relevant details (such as the candidate's name, contact information, and job title) for use in the offer letter.
- 2. **Offer Letter Generation Module:** This module dynamically generates personalized offer letters for each hired candidate using pre-defined templates. It customizes the letter with candidate-specific data (e.g., name, job title, salary) extracted from the Excel sheet. The generatedoffer letter is saved in a format suitable for email attachment or inline content.
- 3. **Email Distribution Module:** This module sends the generated offer letters to the candidates via email. It uses the email address stored in the Excel sheet to send the letter as an attachment or in the body of the email. The module also includes error handling to ensure emails are successfully delivered.
- 4. **Logging and Monitoring Module:** To track system performance and ensure transparency, this module logs every action taken by the automation. It records which

- candidates have received their offer letters and whether any errors occurred during the process. Logs are stored in a centralized location for easy review by HR teams.
- 5. Error Handling and Exception Management Module: Using the RE Framework's built-in exception handling capabilities, this module ensures that any unexpected issues during automation are caught and managed appropriately. For example, if an email fails to send or an Excel sheet is missing required data, the system logs the error and proceeds with the next task.
- 6. User Interface Module: This module provides a simple interface for HR professionals to upload the Excel sheet, configure email templates, and trigger the automation process. It simplifies interaction with the system, ensuring that non-technical users can easily manage and run the automation. The interface also provides status updates and alerts for any issues encountered during the process

# **OUTPUT SCREENSHOT**



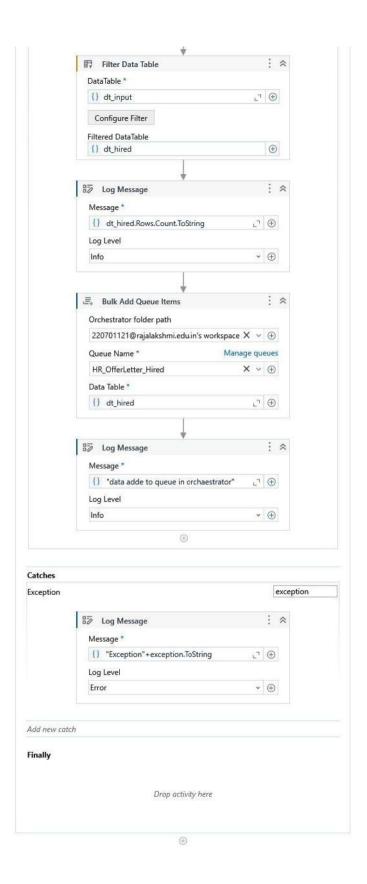


Fig. 5.1. Dispatcher of excel

From this above figure Contains the dispatcher Process of excel

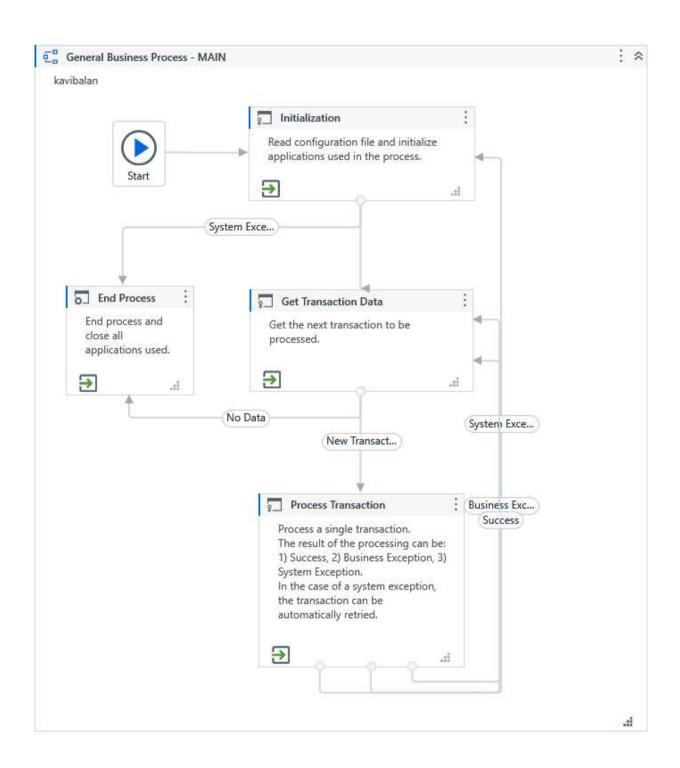


Fig. 5.2. Overview Of RE Framework

From this above figure Contains the Overview Of RE Framework

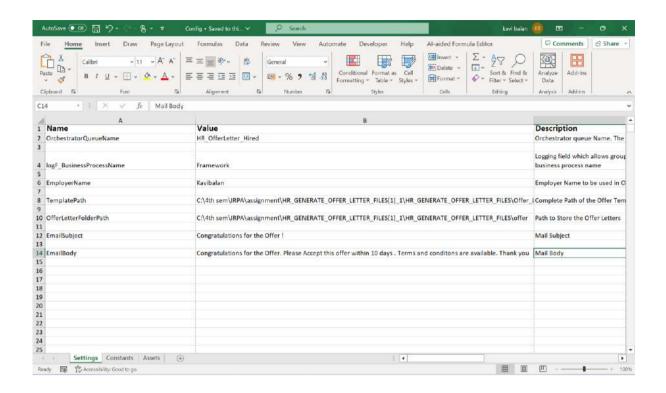


Fig. 5.3.Framework Of RE Excel

From this above figure Contains the Framework Of RE Excel Sheet.

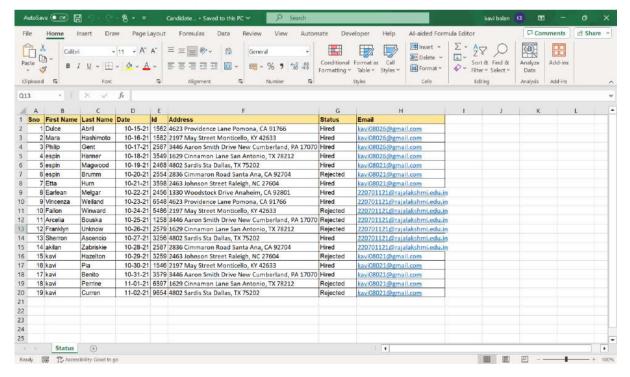


Fig. 5.4. Sample Excel Sheet

From this above figure Contains the Sample Excel sheet of Candidates.

Offer Letter

SPK

Kavibalan

Philip Gent 3446 Aaron Smith Drive New Cumberland, PA 17070

Dated: 11/18/2024 19:06:23

Dear Sherron

We are pleased to confirm that Name of Employer (Kavibalan) would like to formally offer you the position of \_Position, subject to receiving the following:

[Your employment shall be subject to an initial probationary period of no. of months during which your performance and conduct will be monitored.]

On your first day, you should bring your passport (and other documentation, if necessary) and P45. Copies will be taken of these documents for our records.

You will initially be employed at the Company's offices at address (or if required to work across sites, this should be detailed).

Your commencing salary will be £amount gross per annum/week payable method of payment and payment date. [Your employment does not attract bonus payments.]

Your working hours are number of hours per week and details of shift pattern if applicable.

Outline pension requirements if applicable.

The other terms and conditions of employment are set out in your Terms and Conditions of Employment. The Terms and Conditions of Employment, along with this Offer Letter, will form your contract of employment.

Please sign and date both copies of this Offer Letter and both copies of the enclosed Terms and Conditions of Employment where indicated, to confirm that you understand and accept the terms and conditions. Please keep one signed copy of the Terms and Conditions of Employment (if you wish to send the Terms and Conditions of Employment along with the Offer Letter) and return one signed copy of each document or the document to us as soon as possible.

If you have any questions concerning the terms of our offer, please let us know as soon as possible and we will do all we can to ensure they are answered.

We look forward to your reply and look forward to welcoming you to the Company.

Yours sincerely

Kavibalan

Global HR Manager

I accept the employment terms set out in this Offer Letter (and the enclosed Terms and Conditions of Employment.)

Signed:	
	Full Name of Employee
Dated:	

# Fig. 5.5. Sample Offer Letter

From this above figure Contains the Sample Offer Letter for the Candidate

#### CONCLUSIONS

The **Smart Automated Letter Generator** project successfully automates the generation and distribution of recruitment offer letters, streamlining a traditionally manual process. By leveraging UiPath's Robotic Process Automation (RPA) platform and the RE Framework, the system enhances efficiency, reduces the chances of human error, and ensures faster processing times for recruitment tasks. The implementation of modules for data extraction, letter generation, email distribution, and error handling contributes to a reliable and scalable solution that can be easily adopted by HR teams.

The automation not only saves time but also improves the accuracy and consistency of offer letters. This is especially beneficial when dealing with large volumes of candidates, where manual processes would typically be slow and prone to mistakes. Furthermore, the system's integration of robust error handling ensures that any issues encountered during the automation process are promptly addressed, minimizing disruptions.

Through the modular approach of the project, including user-friendly interfaces and comprehensive logging and monitoring, the system provides a flexible and transparent solution for HR professionals. It also enables

organizations to maintain compliance with internal policies and external regulations by ensuring that all offer letters are standardized and accurate.

The project demonstrates how RPA can be applied to real-world business problems, making processes more efficient and allowing organizations to focus on higher-value tasks, such as candidate engagement and strategic HR decision-making.

#### 6.1 GENERAL:

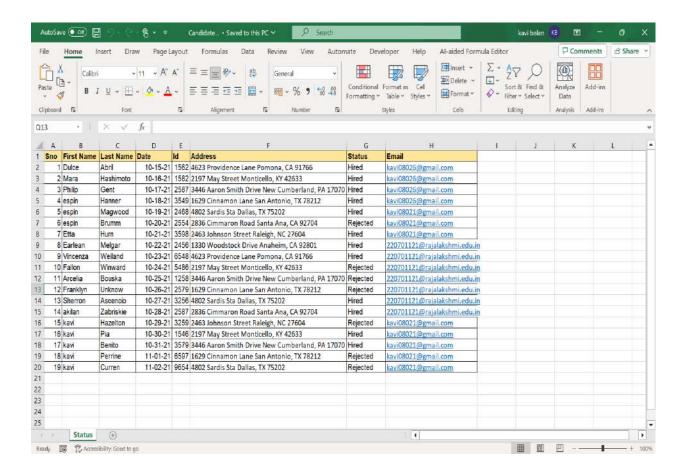
In general, the *Smart Automated Letter Generator* has successfully met the objectives of reducing manual intervention, improving the speed of recruitment processes, and ensuring consistent, error-free communication with candidates. It provides HR professionals with a powerful tool to handle recruitment operations efficiently. Future enhancements may include integrating the system with other HR management systems, expanding its functionality to handle more document types, or providing advanced analytics to track the effectiveness of the recruitment process. The project has proven to be a significant step forward in improving HR operations and can serve as a model for automating other administrative tasks within organizations.

## **APPENDICES**

# **Appendix 1: Key Code Snippets**

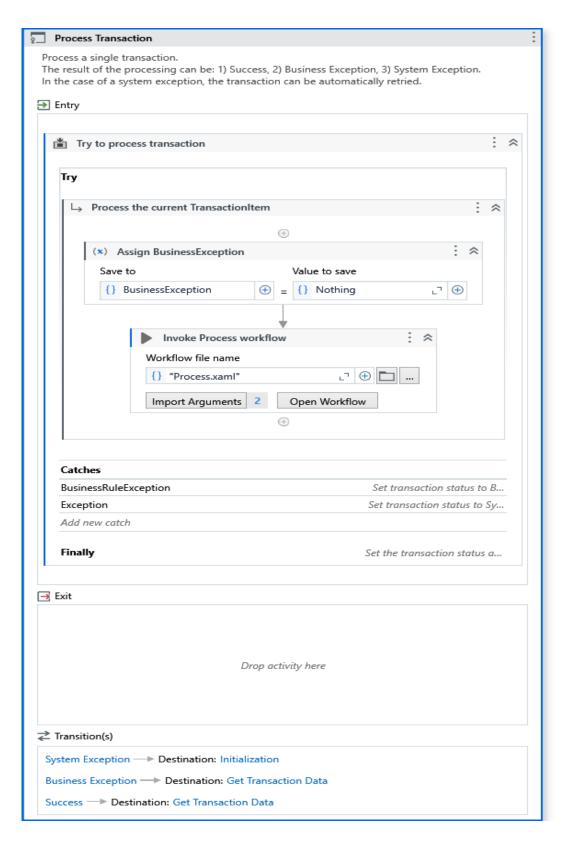
This appendix provides **code snippets** for essential functionalities such as:

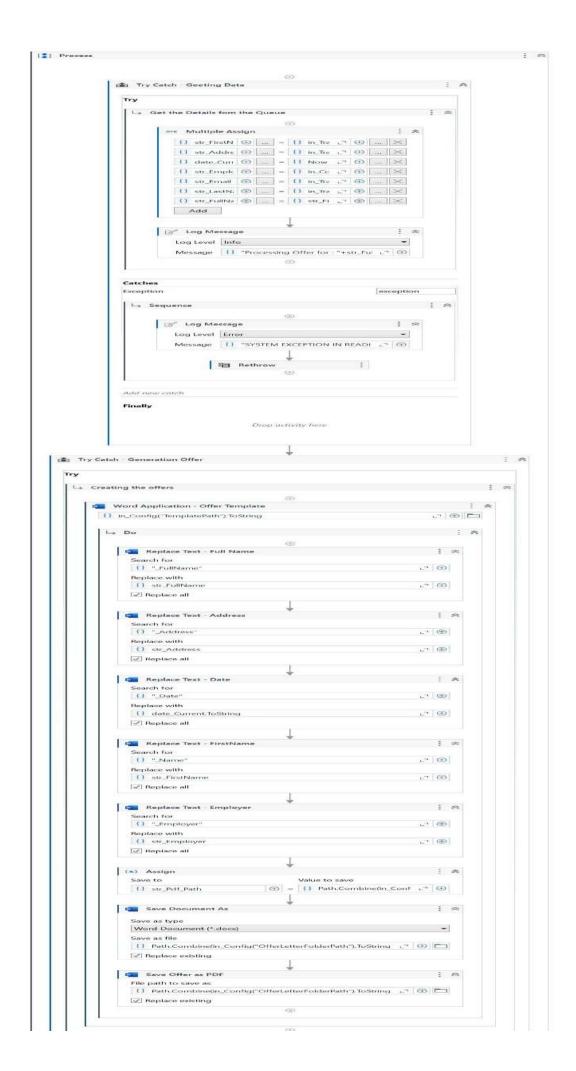
- 1. Reading data from an Excel file.
- 2. Generating personalized letters.
- 3. Sending emails via SMTP.

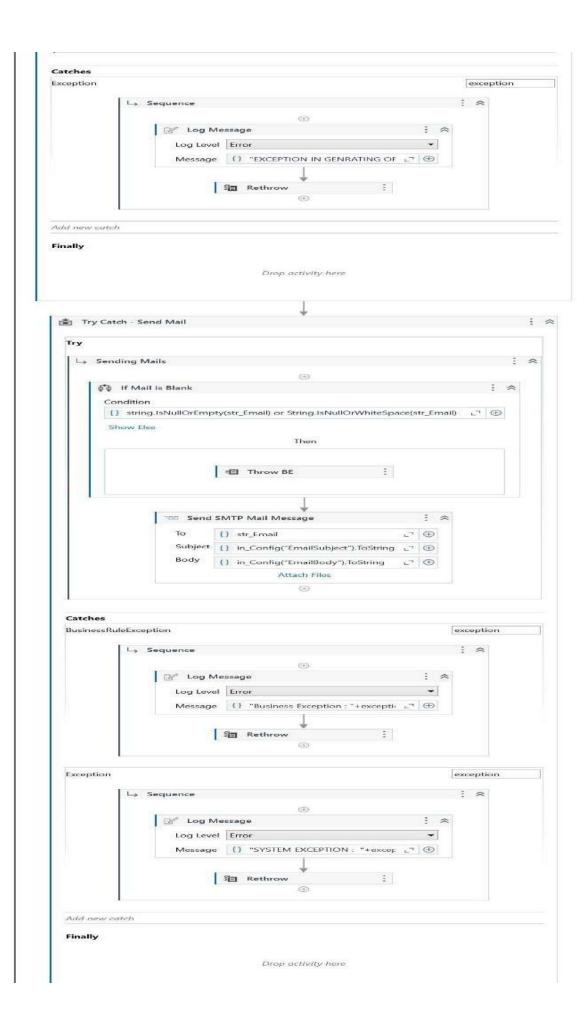


# **Appendix 2: Process Overview**

This appendix includes a **Process Overview** generated by the UIPath, illustrating the dynamic data insertion and format customization.







# **Appendix 3: Testing Logs**

# Contains a record of the **testing process**, including:

- 1. Test case IDs.
- 2. Test steps.
- 3. Expected vs. actual results.
- 4. Notes on identified issues and resolutions.
- O Debug started for file: Main
- Dispatcher execution started
- Process has started
- Reading the Excel is CompletedC:\4th sem\IRPA \assignment\HR\_GENERATE\_OFFER\_LETTER\_FILES [1]\_1\HR\_GENERATE\_OFFER\_LETTER\_FILES \CandidateInfo.xlsx
- Read | Successful 19
- 0 12
- data adde to queue in orchaestrator
- ① Dispatcher execution ended in: 00:00:13

# REFERENCES

- Chakraborti, T., Isahagian, V., Khalaf, R., Khazaeni, Y., Muthusamy, V.,
   Rizk, Y., and Unuvar, M. (2020) 'From Robotic Process Automation to
   Intelligent Process Automation: Emerging Trends,' in *Business Process* Management: Blockchain and Robotic Process Automation Forum, vol.
   393, Springer International Publishing, Cham, pp. 215-228.
- Gružauskas, V., and Ragavan, D. (2020) 'Robotic Process Automation for Document Processing: A Case Study of a Logistics Service Provider,' *Journal of Management*, Vol. 36 (No. 2), pp. 119-126.
- Romão, M., Costa, J., and Costa, C. J. (2019) 'Robotic Process Automation:
   A Case Study in the Banking Industry,' 2019 14th Iberian Conference on Information Systems and Technologies (CISTI), 2019, pp. 1-6, doi: 10.23919/CISTI.2019.8760733.