Introduction to Robotic Process Automation

EMAIL HANDLING BOT

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Abstract

- Email-handling bot play a crucial role in automating routine tasks like processing, categorizing, and extracting data from emails. By integrating Excel into these workflows, the bot can efficiently store and organize data such as sender information, subject lines, or attachments for further use. This setup allows for seamless automation of tasks like monitoring inboxes, extracting key details, routing tasks, and generating reports. For example, emails can be automatically sorted based on rules stored in Excel, and relevant data can be extracted and logged for analysis or decision-making. With tools like UiPath or Automation Anywhere, this integration ensures reduced manual effort, fewer errors, and faster email management processes, making it an essential solution for improving efficiency in RPA projects.

Need for the Proposed System

- The proposed system tackles the challenge of managing large email volumes by automating tasks like sorting, categorizing, and extracting data, ensuring faster and more accurate processing. Manual email handling is time-consuming and prone to errors, but an email-handling bot integrated with Excel streamlines this process. By systematically storing and organizing email data in Excel, businesses can automate tasks such as data extraction, attachment downloads, and follow-up actions, reducing employee workload and improving response times.

Advantages of the Proposed System

- **Time Efficiency**: Automates repetitive tasks, drastically reducing data entry time.
- **High Accuracy**: Eliminates human errors, ensuring precise and consistent data submission.
- **Scalability**: Capable of handling large datasets effortlessly, making it suitable for institutions of all sizes.
- **Cost-Effectiveness**: Reduces reliance on manual labor, saving administrative costs.
- **Reliability**: Operates continuously without fatigue, ensuring timely and error-free submissions.
- **User-Friendly**: Simple to set up and requires minimal technical expertise to use.
- **Focus on Core Activities**: Frees up staff to concentrate on strategic, value-driven tasks rather than mundane data entry.

Main Objective

- The main objective of this project is to automate the process of handling emails using Robotic Process Automation (RPA) with Excel as the central tool for managing and storing email data. By automating repetitive tasks such as sorting, extracting information, and organizing it into Excel, the goal is to reduce manual effort, improve accuracy, and speed up email management. This project aims to streamline workflows, allowing businesses to handle large volumes of emails more efficiently, while ensuring that important data is properly stored and easily accessible for further analysis and decision-making.

Architecture
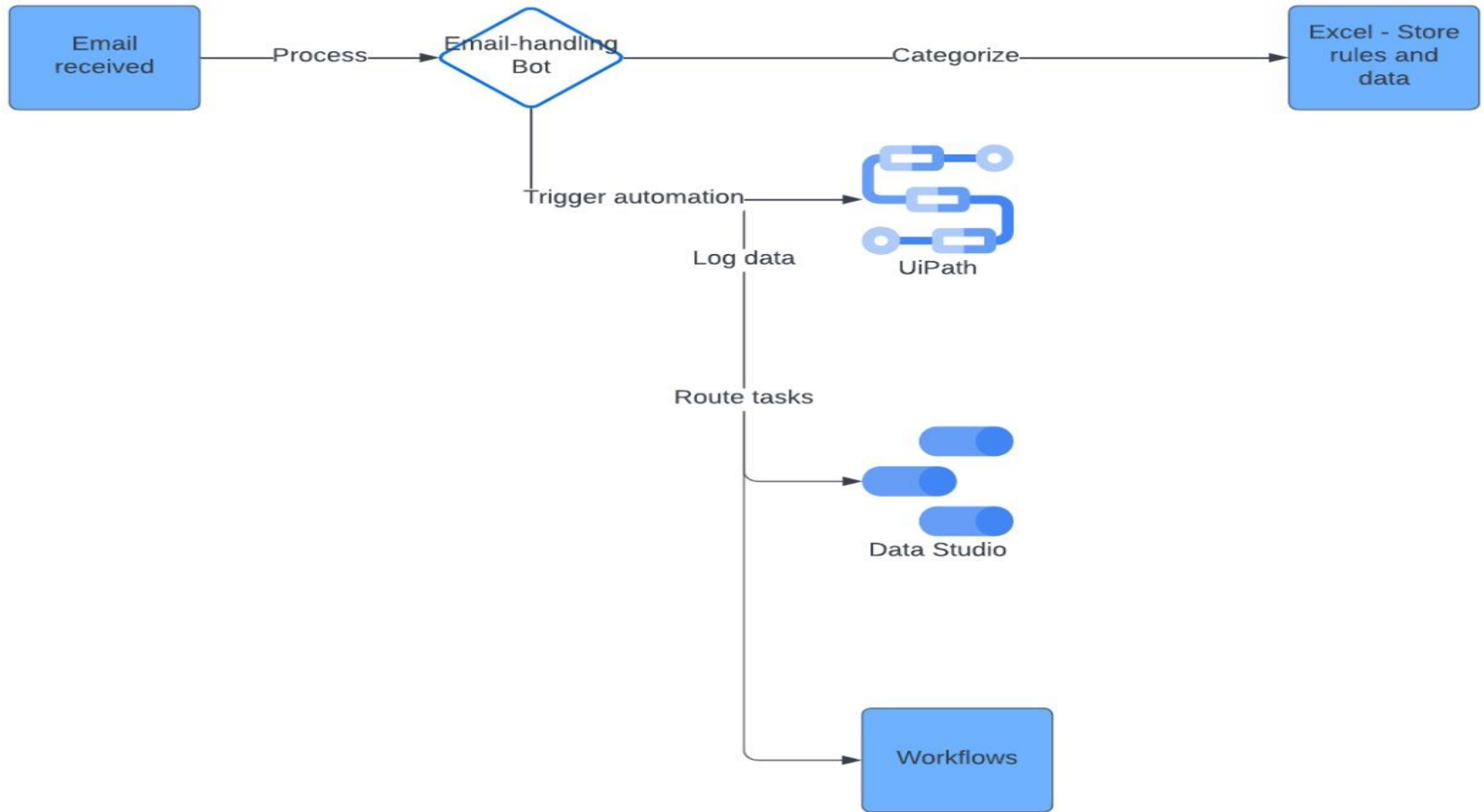
System Requirements

- **Hardware Requirements:**
- **Processor**: Intel i3 or higher (recommended Intel i5 or above).
- **RAM**: Minimum 4 GB (8 GB recommended for optimal performance).
- **Storage**: At least 10 GB free space.
- **Internet**: Stable connection for Google Form submissions.

- **Software Requirements:**
- **RPA Tool**: UiPath Studio (Community or Enterprise edition).
- **Browser**: Google Chrome with UiPath extension installed.
- **Data Source**: Microsoft Excel or other structured data formats.
- **Operating System**: Windows 10 or later (64-bit)

Functional Description

- **Flow Diagram**
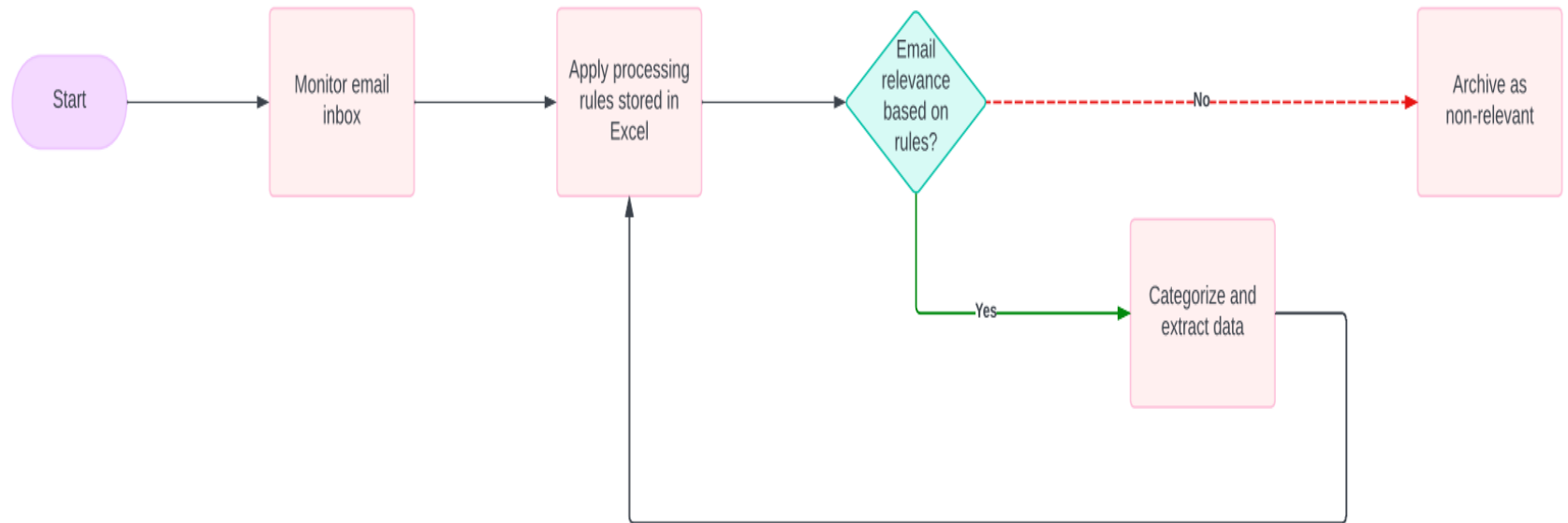
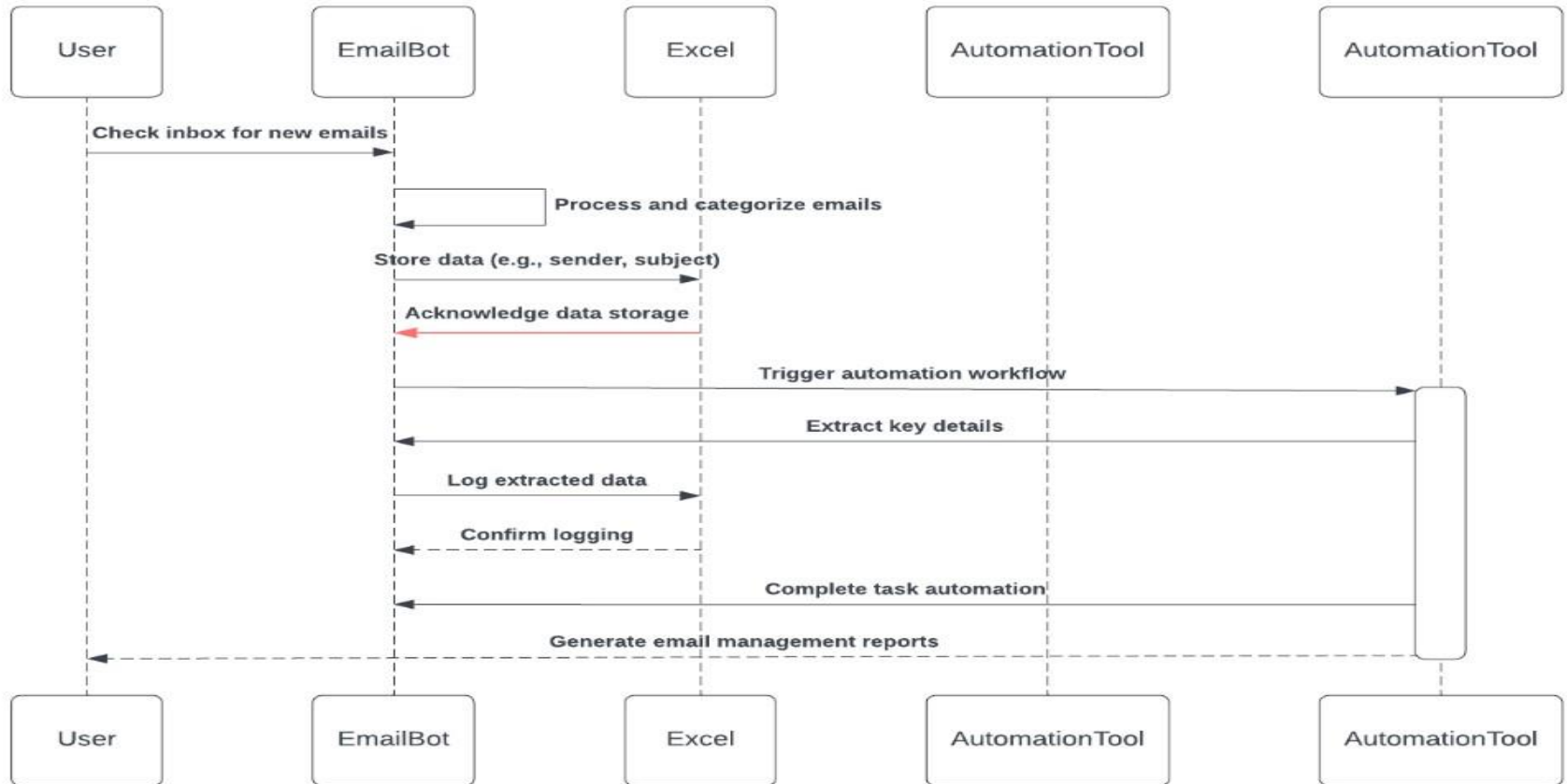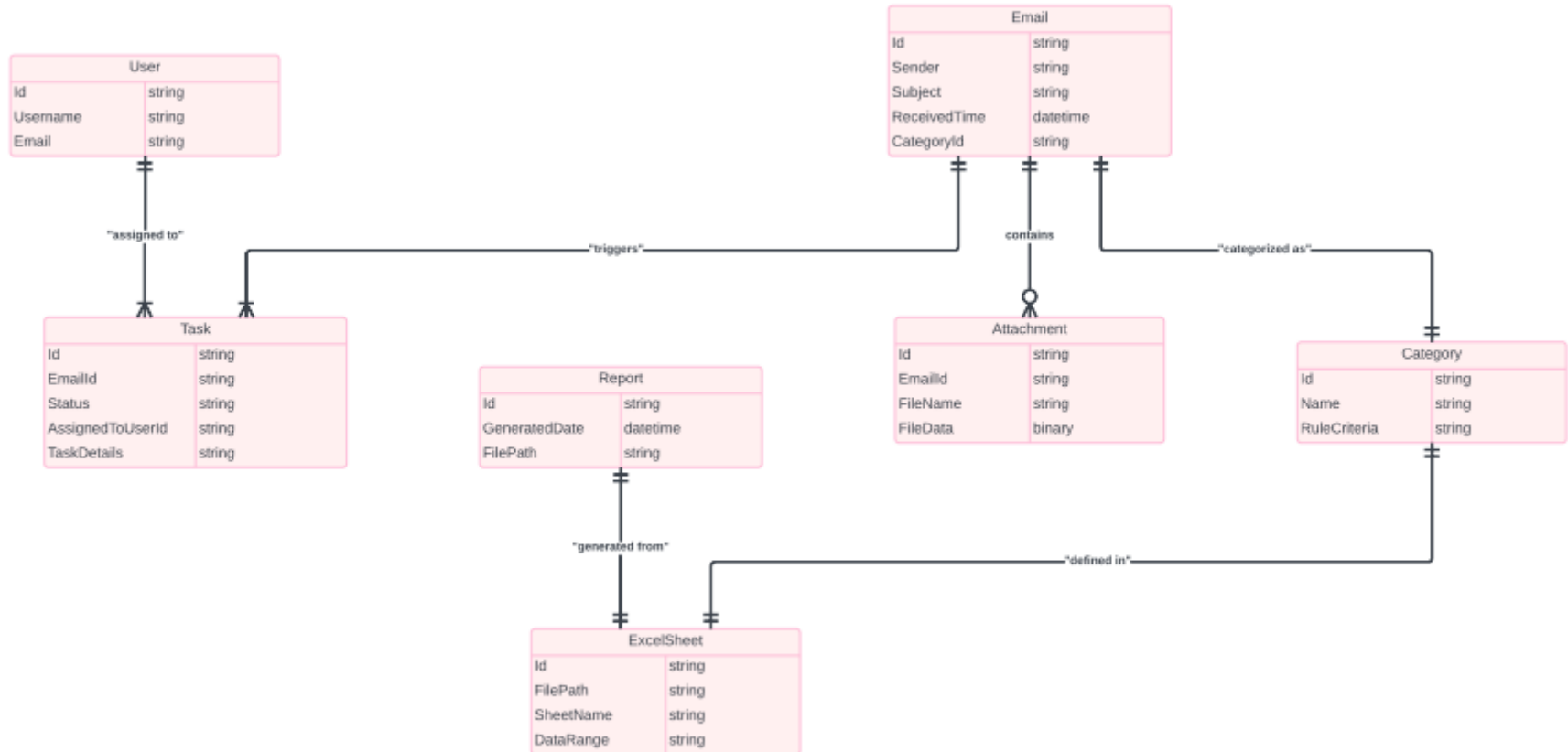# Functional Description

- **Sequence Diagram**

Table Design

- **Entity Relationship Diagram**

Process Design

- **Main Process: Automated Data Entry Workflow**

- **Initialize And Setup**
  The "Initialize and Setup" module establishes the foundational environment for the automated student data entry process. In this stage, key variables are initialized, including the file path for the student data (either in Excel or CSV format) and the URL of the Google Form to which data will be submitted.

- **Read Student Data**

  The "Read and Validate Email Data" module uses UiPath's Read Range activity to extract email data stored in an Excel file into a structured data table. Once the data is loaded, validation checks are performed to ensure that all required fields—such as sender details, subject, date, and email content—are present and correctly formatted.
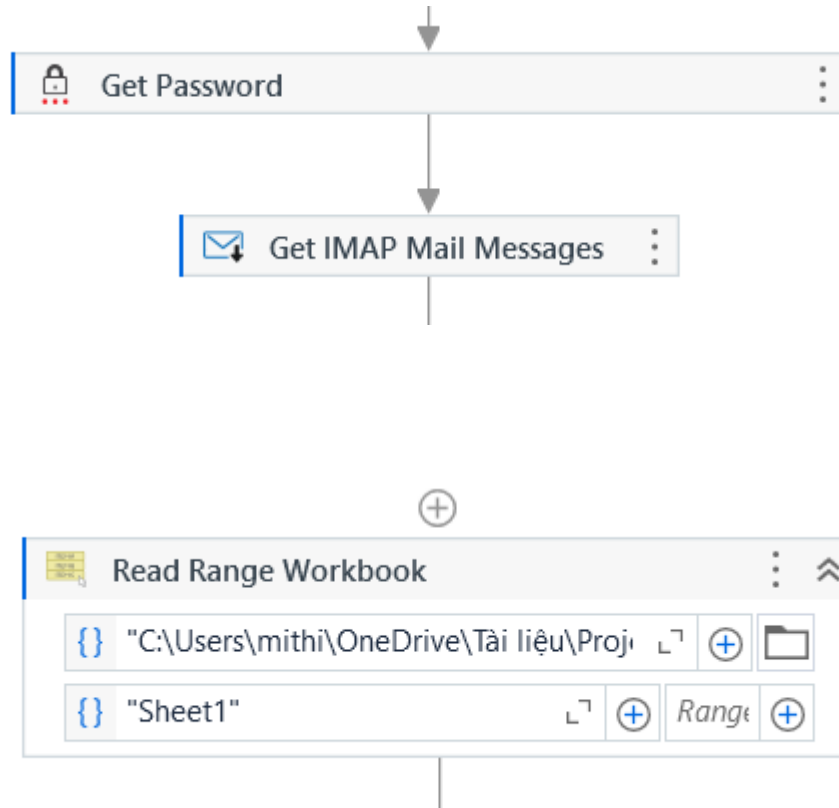
Implementation

- **Module 1: Initialize and Setup**
  The "Initialize and Setup" module establishes the foundational environment for the automated student data entry process. In this stage, key variables are initialized, including the file path for the student data (either in Excel or CSV format) and the URL of the Google Form to which data will be submitted. The Google Form is opened in a web browser, ensuring it is ready to accept inputs. The workflow checks that all configurations, such as browser settings, file access, and necessary libraries, are correctly set up to prevent any errors in the subsequent steps. This module sets the stage for reading, processing, and submitting data efficiently and accurately.

Implementation

- **Screen Shots**

Implementation

- **Module 2: Read and Validate Email Data from Excel**
  The "Read and Validate Email Data" module uses UiPath's Read Range activity to extract email data stored in an Excel file into a structured data table. Once the data is loaded, validation checks are performed to ensure that all required fields—such as sender details, subject, date, and email content—are present and correctly formatted. This step ensures that any incomplete or incorrectly formatted records are flagged for review. For example, emails with missing sender information or invalid email formats are identified and marked for further action. This validation ensures that only accurate and complete data is used for further processing, such as categorizing emails or generating reports. Once validation is complete, the workflow proceeds to process the data and store it in the appropriate locations or actions, maintaining the integrity of the email information throughout the process.

Implementation

- **Screen Shots**

sender	folder			
engage.ca	Canva			
rajalakshm	Developers Club REC			
classroom	Classroom			

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| Read Range Workbook	⋮ ≫
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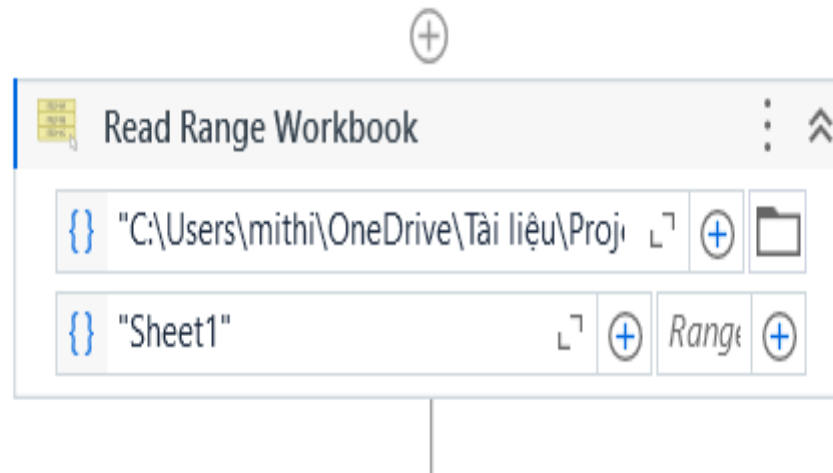
Testing

- **Testing of the Automated Email Handling Project**
  Testing of the "Automated Email Handling using RPA and Excel" project involves several stages to ensure the workflow functions efficiently and accurately. Initially, unit tests are conducted on each individual module, such as email data extraction, validation, and categorization, to ensure that each task is executed correctly. These tests verify that email data, including sender details, subject lines, and attachments, are extracted accurately from the email client and stored correctly in Excel. Next, integration testing is performed to confirm that all modules work together as intended, ensuring smooth data flow from email retrieval to categorization and storage. This step involves checking if the data is properly categorized, formatted, and stored in the correct Excel sheet or folder. Any issues, such as incorrect categorization, missing data, or errors in formatting, are identified and fixed. The testing process ensures that the automated system operates seamlessly, accurately handling emails and maintaining data integrity throughout the process.

Testing

- **Screen Shots**
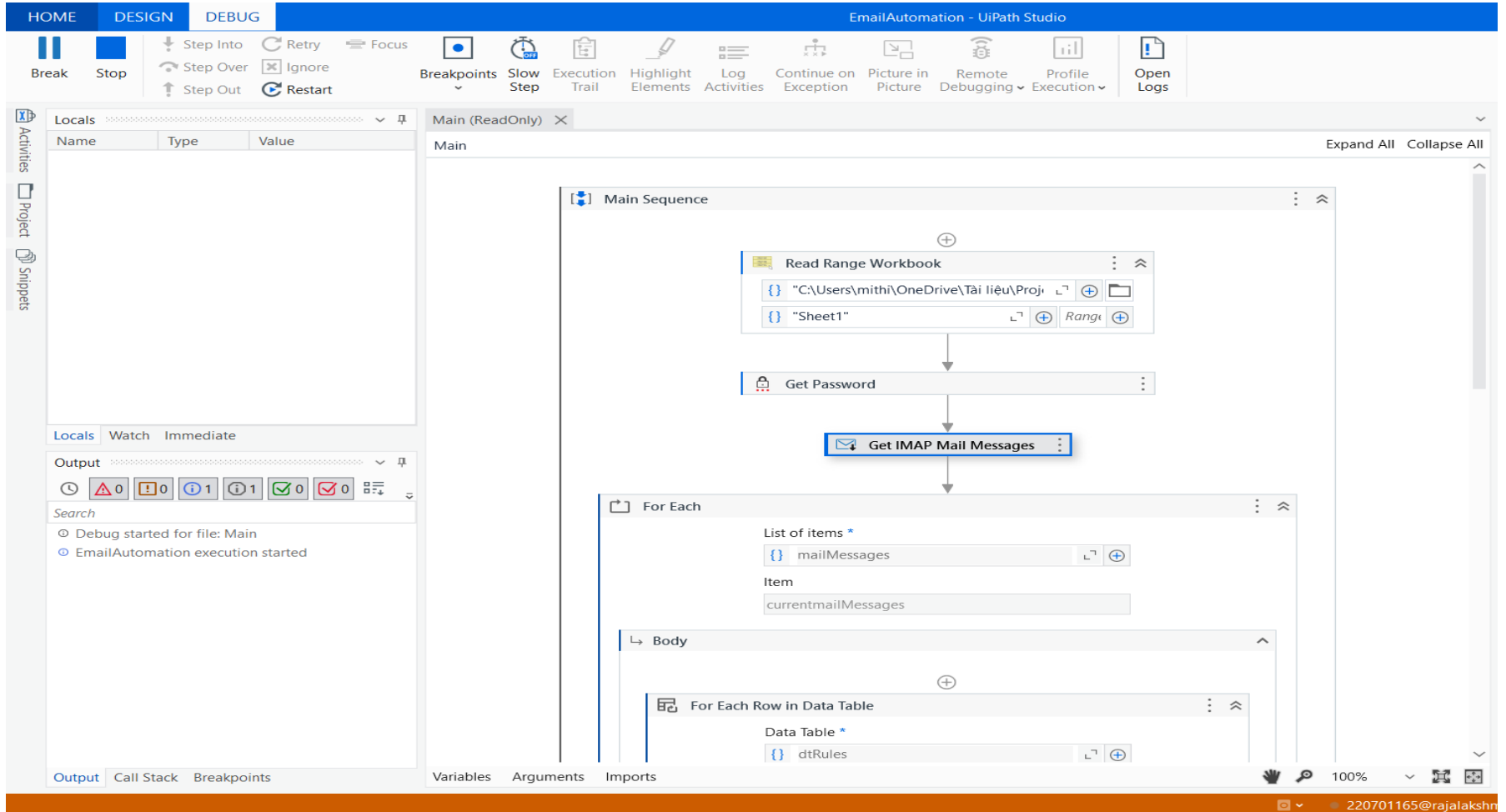
Conclusions

- The Automated Email Handling project has effectively demonstrated how Robotic Process Automation (RPA) can streamline email management tasks. By leveraging UiPath and Excel, the system automates the extraction, categorization, and storage of email data, significantly reducing manual effort and minimizing human errors. The comprehensive testing process confirmed the system's reliability and accuracy, ensuring that the extracted data was processed and stored correctly. With its modular approach, the project allowed for easy identification and resolution of issues, ensuring smooth operation. This automated solution not only improves operational efficiency but also allows businesses to manage large volumes of emails more effectively. It successfully meets the objective of saving time and costs, while improving accuracy. Future enhancements could include integrating AI for more advanced email categorization or expanding the system to handle more complex email formats, further increasing its capabilities and impact.

References

- **Referrals**
- **IEEE Transactions on Automation Science and Engineering**
- **IEEE Access**
- **IEEE Transactions on Industrial Informatics**
- **IEEE International Conference on Robotics and Automation**

Thank You