

**AIRMAIL - FLIGHT BOOKING AUTOMATION**

**A MINI-PROJECT REPORT**

*Submitted By*

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## ABSTRACT

"AIRMAIL flight booking automation" is an innovative automation solution aimed at enhancing the flight booking process. By leveraging Robotic Process Automation (RPA) technology, this system automates the extraction, filtering, and presentation of flight information, improving both the user experience and operational efficiency. The primary goal is to streamline the entire process—from scraping flight data from online sources like MakeMyTrip, to analyzing and organizing the data, and finally sending timely email notifications to users with the relevant flight details.

The system first gathers flight details, such as price, source, and destination, based on user input. This data is then processed by advanced filtering techniques to provide the top flight options that best meet the user's criteria. The relevant flight information is stored in an Excel sheet for further tracking and records. To differentiate it from existing solutions, the project also focuses on providing email notifications that include the flights available, enabling users to make informed decisions.

By automating these tasks, the "Airmail" system minimizes manual intervention, reduces the likelihood of human error, and significantly accelerates the booking process. Furthermore, the project integrates with email services to send personalized alerts, ensuring that users receive real-time updates regarding the best flight options.

In summary, the "Airmail" project offers an automated, efficient, and user-friendly flight booking solution, which reduces the complexities of flight searches while delivering a seamless experience for end users. The application also showcases the potential of RPA in automating common yet time-consuming tasks, providing a practical solution for frequent travellers and businesses alike.

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### **LIST OF ABBREVIATIONS:**

<b>Abbreviation</b>	<b>Full Form</b>
<b>RPA</b>	<b>Robotic Process Automation</b>
<b>PDF</b>	<b>Portable Document Format</b>
<b>SMTP</b>	<b>Simple Mail Transfer Protocol</b>
<b>UI</b>	<b>User Interface</b>
<b>HTTP</b>	<b>HyperText Transfer Protocol</b>
<b>XML</b>	<b>eXtensible Markup Language</b>
<b>RE Framework</b>	<b>Robotic Enterprise Framework</b>

## **CHAPTER - 1 INTRODUCTION**

The "Airmail" project is an innovative Robotic Process Automation (RPA) solution designed to automate the flight booking process, aiming to provide a faster, more efficient, and errorfree experience for travelers. With the rise of multiple online travel platforms, finding the best flight deals has become a time-consuming task. This project addresses this challenge by leveraging UiPath to automate the extraction of flight data from popular travel websites, such as MakeMyTrip. The system scrapes essential information like flight prices, destinations, source and arrival points, and availability. It then filters and analyzes the data to identify the most cost-effective options that match the user's criteria. The filtered data is stored in an Excel sheet for easy access and future reference. Additionally, the system sends personalized email notifications to users, summarizing the top flight options. This project significantly reduces the time and effort required for manual comparison of flight prices, eliminates the potential for human error in data entry, and enhances overall productivity and user satisfaction. The "Airmail" system is ideal for frequent travellers and businesses seeking to streamline and



automate flight-related tasks, making the flight booking process more efficient and less prone to mistakes.

## **1.1 GENERAL**

Manual flight booking and price comparison processes are time-consuming and prone to errors, especially when dealing with multiple travel platforms and options. The "Airmail" project addresses these inefficiencies by leveraging Robotic Process Automation (RPA) to automate critical tasks, such as extracting flight details, generating organized data reports, and sending email notifications. By streamlining these processes, the system reduces manual intervention, enhances accuracy, and ensures timely delivery of information. This automated approach not only saves time but also makes the flight booking experience more user-friendly and efficient, allowing users to focus on making informed travel decisions.

## **1.2 OBJECTIVE**

AirMail aims to streamline and automate the process of managing and sending flight-related information through email notifications. By integrating web scraping techniques, the project gathers relevant data from flight booking platforms, such as MakeMyTrip, to capture real-time flight prices, routes, and availability. This information is then analysed to identify the most suitable flight options based on user preferences. The results are stored in an Excel sheet for easy tracking and are automatically sent to the user's email. The goal of this project is to provide a quick, automated solution for users seeking affordable and convenient flight choices, reducing manual effort and enhancing the overall experience for travellers.

## **1.3 EXISTING SYSTEM**

In the current landscape of flight booking and notification systems, the process of searching, comparing, and sharing flight details is largely manual and fragmented. Travelers

often rely on multiple sources to gather flight information, which can be time-consuming and inefficient. Existing systems typically require users to manually check flight prices, routes, and availability on various websites, and then manually compile and share the information with others. This process can be prone to human error and delays, as well as being labor-intensive. Moreover, many solutions lack real-time data scraping and automated notifications, leaving users to constantly track flight information themselves. The existing systems do not provide an integrated, automated, and seamless experience for booking and receiving flight updates. Thus, there is a clear need for an automated solution that can efficiently gather, analyze, and deliver relevant flight details directly to users in a timely manner, without the need for manual intervention.

## **1.4 PROPOSED SYSTEM**

The "Airmail Project" is designed to automate and optimize the process of flight ticket booking and notification delivery, addressing the manual and time-consuming aspects currently present in the travel booking industry. Leveraging the capabilities of UiPath's Robotic Process Automation (RPA), this system will scrape flight details from the MakeMyTrip platform, analyze flight data based on user preferences, and automatically generate the best available flight options. The proposed system aims to reduce human intervention in data extraction and processing, offering a seamless, efficient, and automated solution for users looking to book flights. It will send personalized email notifications to users, providing them with details such as flight options, prices, and booking instructions and flights for comparison. Through this project, we envision a

streamlined and userfriendly approach to flight booking that enhances customer experience and operational efficiency.

## **CHAPTER - 2 LITERATURE REVIEW**

### **2.1 GENERAL**

The increasing adoption of automation technologies has revolutionized various industries, including travel and logistics. Traditional methods of flight booking and price comparison often involve manual data collection, analysis, and communication, leading to inefficiencies, delays, and a higher likelihood of errors. Studies suggest that automation can improve processing speed by up to 70%, enhancing the efficiency and accuracy of these tasks.

Automation platforms like UiPath have emerged as transformative tools for tackling these challenges. UiPath's Robotic Process Automation (RPA) capabilities, particularly its RE Framework, provide a structured, scalable, and error-resilient approach to automating repetitive tasks. The "Airmail" project leverages these capabilities to automate the flight search, comparison, and reporting process. By integrating data scraping, analysis, and email communication, the system ensures a streamlined experience for users seeking the best travel options.

This project directly addresses the inefficiencies associated with manual flight booking processes, delivering faster and more accurate results. The automation of tasks such as extracting flight details from online platforms, analyzing costs, and generating personalized reports not only saves time but also ensures error-free operations and enhances user convenience.

With the growing demand for faster and more reliable travel solutions, the "Airmail" project exemplifies how automation can simplify complex processes, increase scalability, and improve user satisfaction. By reducing manual effort and providing precise and timely information, this project establishes a new standard for efficiency and reliability in the travel industry.

## **CHAPTER – 3 SYSTEM DESIGN**

### **3.1.1 SYSTEM FLOW DIAGRAM**

The System Flow Diagram illustrates the sequence of processes and data flow in the "Airmail" system. It showcases the interaction between user inputs, system processing, and outputs in the flight search and notification process.

**Description: 1.**

**Input:**

- The system begins by asking the user to specify the source, destination, and travel date for the flight search.

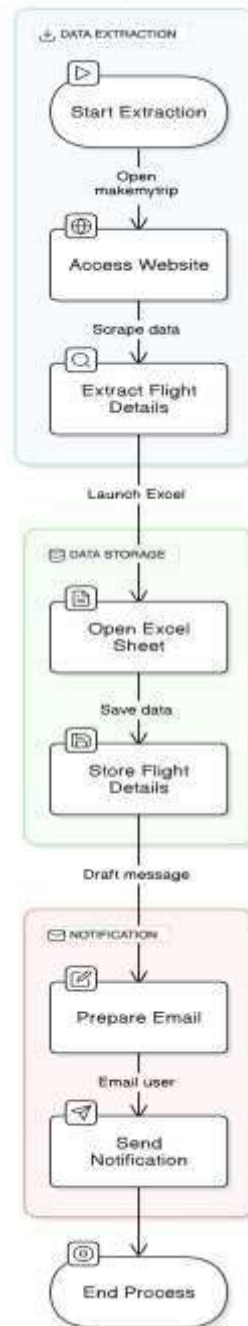
## **2. Process:**

- The system accesses the MakeMyTrip website to scrape flight details based on the provided input.
- It gathers data, including flight names, timings, and ticket prices, and stores this information in an Excel sheet.
- The processed results are formatted into a user-friendly email summary.

## **3. Output:**

- The system automatically sends the email to the specified recipient(s), attaching the detailed Excel report with the scraped and processed flight data.

### AirMail Flight Booking Automation



**Figure 3.1.1 SYSTEM FLOW DIAGRAM**

### 3.1.2 ARCHITECTURE DIAGRAM

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

#### Components:

##### 1. Frontend:

- Input Form: User interface to accept the source, destination, and travel date for flight searches.
- Configuration Panel: Allows the user to define email recipients and adjust search parameters.

##### 2. Backend:

- Web Scraping Module: Automates data extraction from the MakeMyTrip website for flight details.
- Email Notification Module: Composes and sends a detailed email with the report attached.

##### 3. External Resources:

- MakeMyTrip Website: Source of flight data.
- Excel File: Stores the scraped flight data in a tabular format.
- File System: Stores generated Excel files and temporary data.
- Email Server: Sends automated notifications with flight details to recipients.

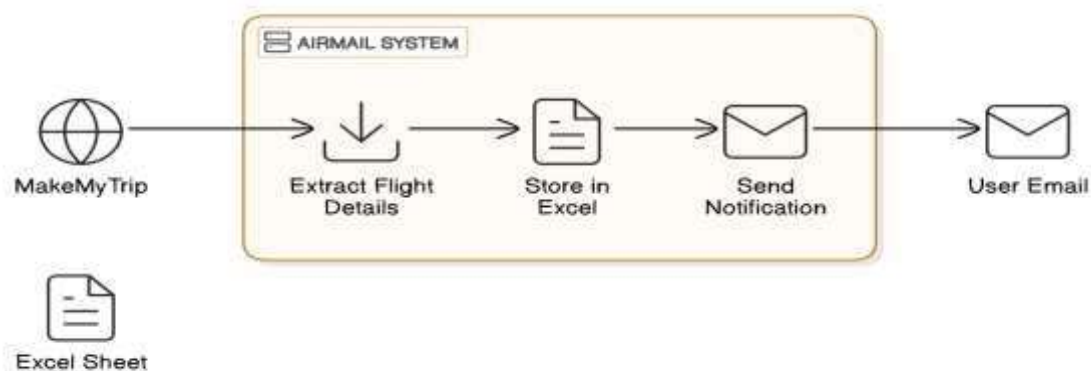


Figure 3.1.2 ARCHITECTURE DIAGRAM

### 3.1.3 SEQUENCE DIAGRAM

The diagram represents the **sequence of interactions** in the **Airmail Flight Booking Automation** process, as follows:

#### 1. User Interaction:

- The user initiates the flight booking process by providing required details such as the source, destination, and travel date.

#### 2. Fetching Flight Details:

- The Airmail System communicates with the MakeMyTrip platform to fetch flight details based on the provided input.

#### 3. Data Processing:

- Once flight details are successfully retrieved, the system processes the data.

#### 4. Confirmation:

- The system sends a confirmation of successful data processing back to the user.

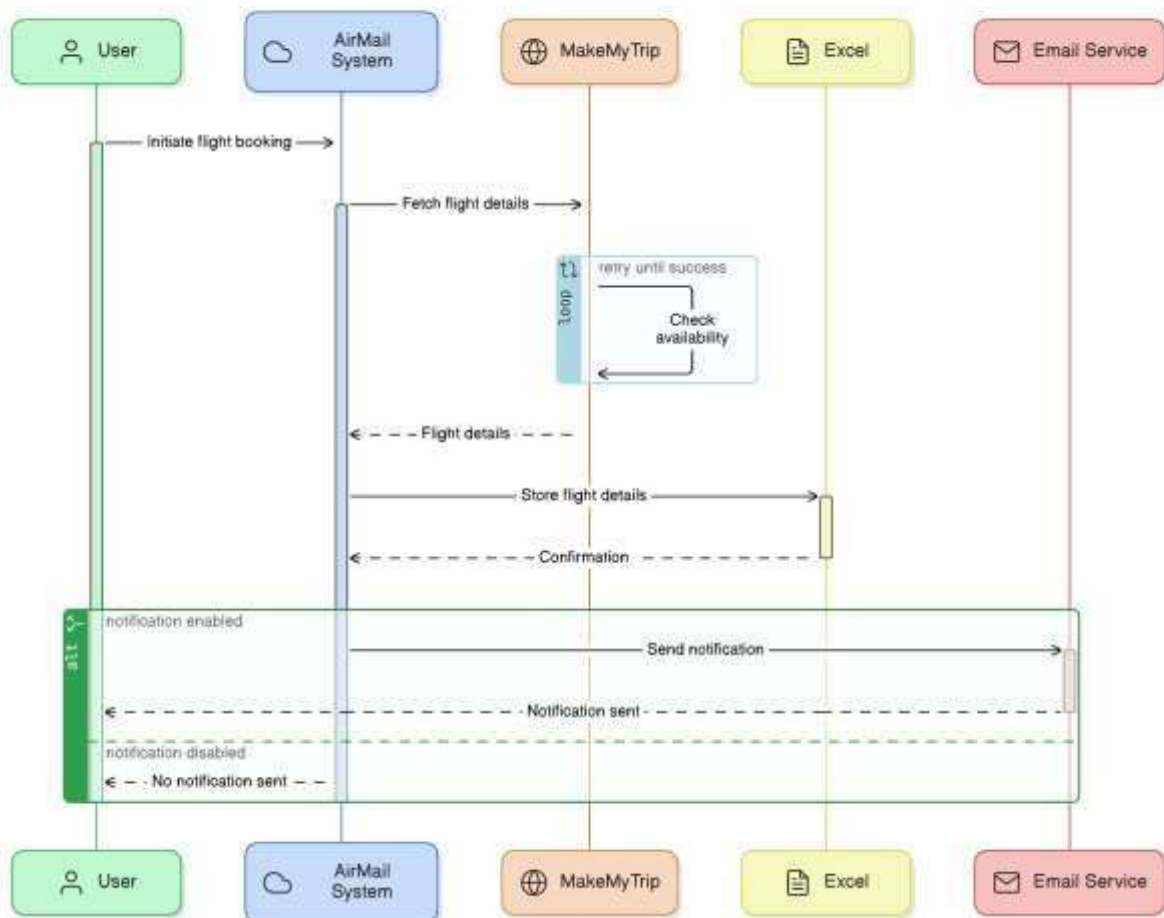
#### 5. Notification System:

- Based on the user's preference:
  - If notifications are enabled, the system composes an email, attaches the flight report, and sends it to the user.

This workflow demonstrates the automated, user-centric, and robust design of the Airmail system, ensuring seamless interaction and efficient flight booking assistance.



### AirMail Flight Booking Automation



**Figure 3.1.3 SEQUENCE DIAGRAM**

## CHAPTER – 4 PROJECT DESCRIPTION

The "Airmail Flight Booking Automation" is a Robotic Process Automation (RPA) system developed using UiPath, designed to automate the process of retrieving, analyzing, and sharing flight booking details. The system enables users to input their travel details, such as source, destination, and date, to fetch flight information from the MakeMyTrip platform. The bot processes the retrieved data, and organizes the details in a structured Excel report. This report is then automatically sent to the user's email, providing a seamless and efficient flight booking assistance experience while minimizing manual effort.

### 4.1 METHODOLOGIES

The "Airmail Flight Booking Automation" project follows a streamlined approach to automation using UiPath's Robotic Process Automation (RPA) platform. The methodology is flexible and robust, ensuring scalability and seamless operation for different user inputs. The key steps in the methodology are:

1. **Requirement Gathering:** The project began with identifying the key needs, such as retrieving flight details based on user-provided travel data (source, destination, date), organizing the information, and sending results via email.
2. **System Design:** After understanding the requirements, the system's architecture and workflow were designed. This included creating modules for data input, fetching flight details, analyzing flight options, and generating an email report.
3. **Implementation:** The system was developed using UiPath, integrating key functionalities such as extracting flight data from the MakeMyTrip platform, filtering the available flights, storing the results in Excel, and sending them via email. The RE Framework was implemented to manage exceptions and ensure smooth execution.
4. **Testing & Deployment:** The system underwent thorough testing to verify its functionality, including edge cases for input data and error handling. After successful testing, the bot was deployed for practical use, ensuring a user-friendly and efficient automation solution.

#### 4.1.1 MODULES:

1. **Flight Search Input Module:** This module allows users to input travel details, including source, destination, travel date, and other preferences required for searching flights.
2. **Flight Data Extraction Module:** This module connects with MakeMyTrip to scrape flight details based on the user-provided input, retrieving information such as flight names, timings, and ticket prices.
3. **Data Filtering and Analysis Module:** This module analysis the scraped flight data, identifies the flights, and organizes the information into a structured format for reporting purposes.
4. **Excel Report Generation Module:** This module creates an Excel file to store the retrieved and processed flight details, ensuring a record of the results for reference.
5. **Notification Email Module:** This module generates a detailed email report containing flight information, and sends it to the user's email address.
6. **Logging and Monitoring Module:** This module tracks the progress of the automation process, logs all major actions, and monitors for any inconsistencies or errors during the operation.
7. **Error Handling and Recovery Module:** This module ensures the system handles issues such as connection failures, data retrieval errors, or email delivery problems gracefully, enabling retries or alternative solutions.

8. **User Interface Module:** This module provides an intuitive interface for users to input travel details, view real-time updates, and receive confirmations about process completion.

## CHAPTER – 5 OUTPUT SCREENSHOTS



Fig 5.1 – Input Dialog for source

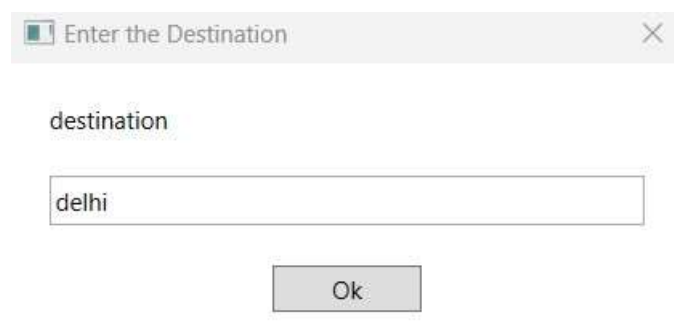
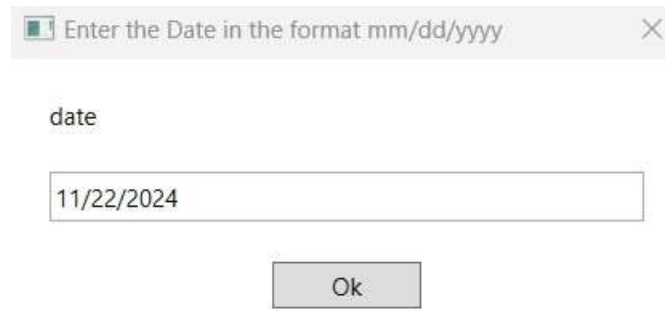


Fig 5.2 – Input Dialog for destination



Enter the Date in the format mm/dd/yyyy

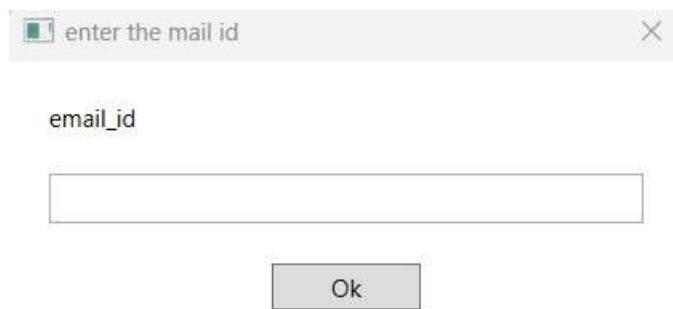
date

11/22/2024

Ok

This is a screenshot of a Java Swing dialog box. The title bar contains a green icon, the text 'Enter the Date in the format mm/dd/yyyy', and a close button (X). The main area of the dialog has a label 'date' followed by a text input field containing the text '11/22/2024'. At the bottom center is an 'Ok' button.

Fig 5.3 – Input Dialog of date of travel



enter the mail id

email\_id

Ok

This is a screenshot of a Java Swing dialog box. The title bar contains a green icon, the text 'enter the mail id', and a close button (X). The main area of the dialog has a label 'email\_id' followed by an empty text input field. At the bottom center is an 'Ok' button.

Fig 5.4 – Input Dialog of the mail to get notified

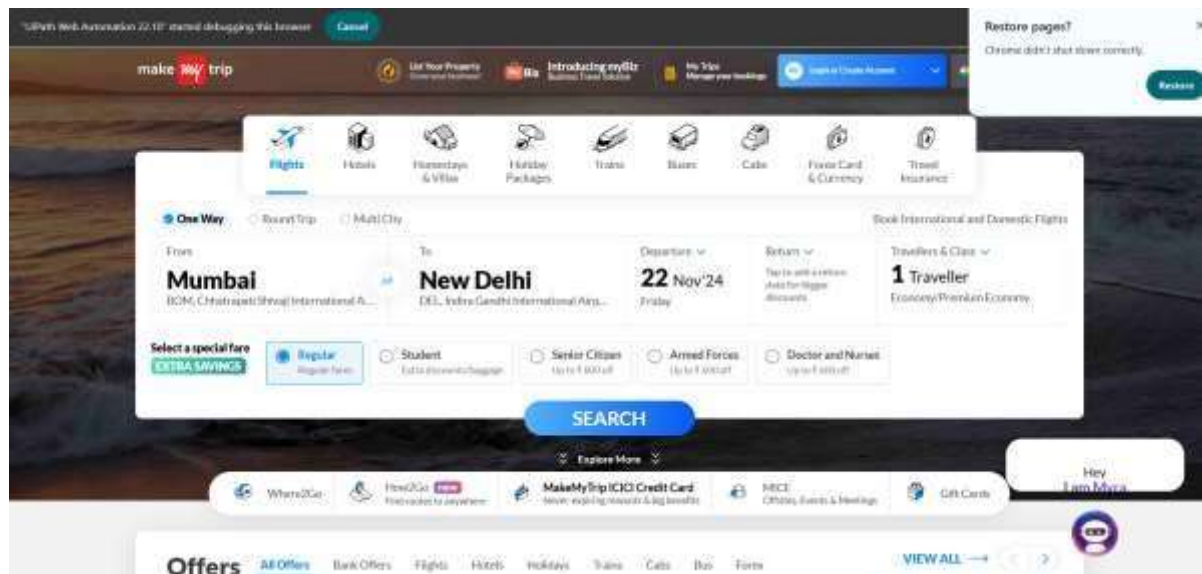


Fig 5.5 – MakeMyTrip webpage

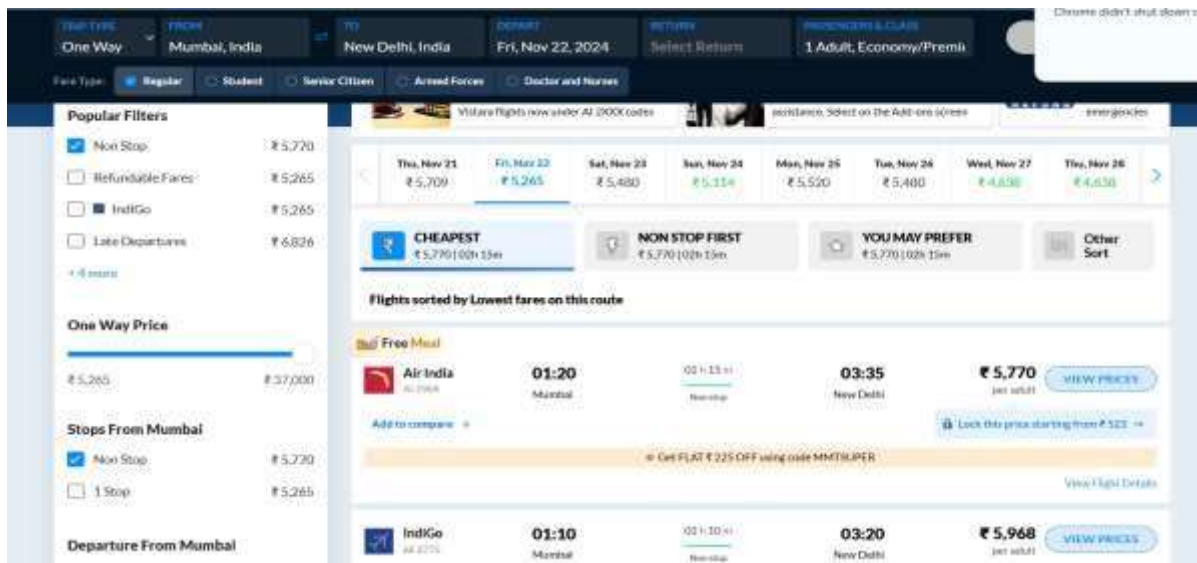


Fig 5.6 – MakeMyTrip page



Fig 5.7 – mail received

	A	B	C	D	E	F
1	Airlines	Departure	Arrival	Price		
2	IndiGo	01:10	03:20	per adult ₹ 5,480		
3	IndiGo	03:00	05:10	per adult ₹ 5,480		
4	IndiGo	05:00	07:10	per adult ₹ 5,480		
5	IndiGo	12:00	14:10	per adult ₹ 5,480		
6	Akasa Air	12:55	15:15	per adult ₹ 5,480		
7	IndiGo	13:05	15:10	per adult ₹ 5,480		
8	IndiGo	15:00	17:10	per adult ₹ 5,480		
9	IndiGo	16:00	18:15	per adult ₹ 5,480		
10	IndiGo	23:30	01:45	per adult ₹ 5,520		
11	Air India	01:20	03:35	per adult ₹ 5,520		
12	Air India	01:30	03:45	per adult ₹ 5,520		
13	Air India	11:50	14:05	per adult ₹ 5,520		
14	Air India	15:45	18:10	per adult ₹ 5,520		

Fig 5.8 – flight details in excel sheet



## **CHAPTER – 6 CONCLUSIONS**

### **6.1 GENERAL**

The "AirMail Flight Booking Automation" project streamlines the process of flight booking by leveraging UiPath's Robotic Process Automation (RPA). By automating tasks such as fetching flight details, identifying the most cost-effective options, storing information in structured Excel reports, and sending personalized email notifications, the system significantly reduces the time and effort required for these tasks while ensuring accuracy and consistency.

This project enhances operational efficiency by eliminating the need for manual searches and data handling, enabling users to focus on decision-making rather than repetitive tasks. The system's ability to dynamically identify the available flights and deliver them to the user in a clear, automated report ensures that the process is not only efficient but also user-centric and informative. Its capacity to handle varying datasets and adapt to different user inputs makes it a scalable solution for travel management.

While the system provides a robust and automated solution, it may face challenges in integrating with changes in third-party websites like MakeMyTrip or handling unexpected variations in user inputs. Regular updates and enhancements to the automation workflow and integration mechanisms will be essential to ensure its long-term reliability and effectiveness.

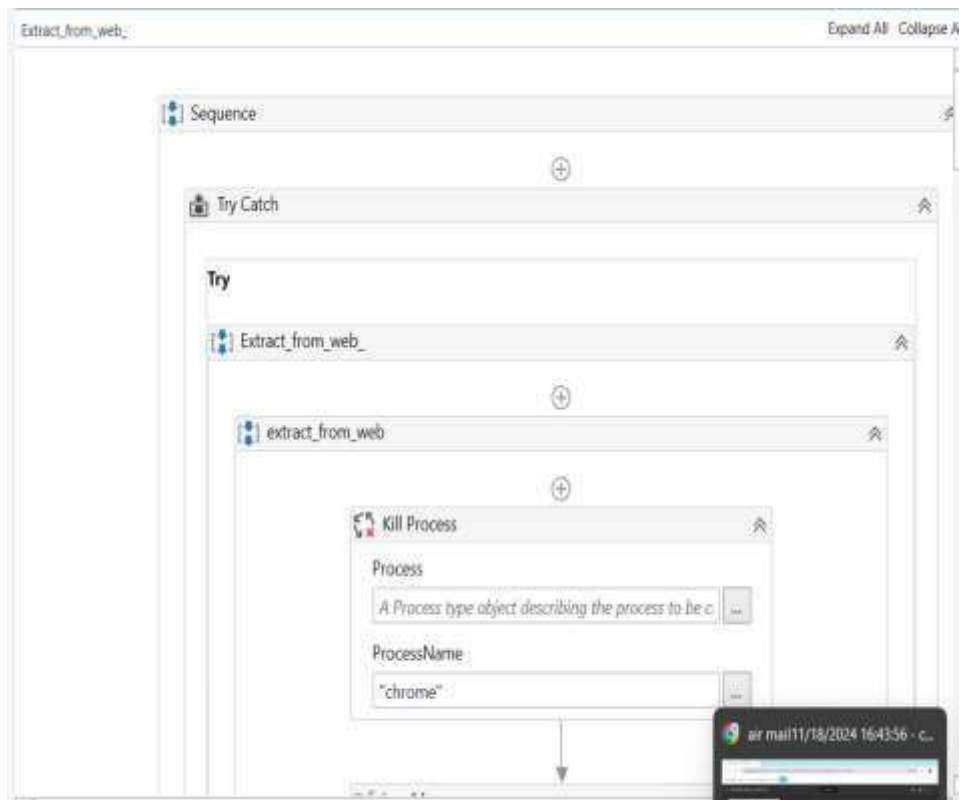
Despite potential challenges, the successful implementation of AirMail demonstrates the transformative potential of RPA in travel management, offering a scalable and user-friendly solution. By automating complex workflows and improving data accuracy, the project exemplifies how technology can optimize routine processes, reduce human error, and enhance the overall user experience.

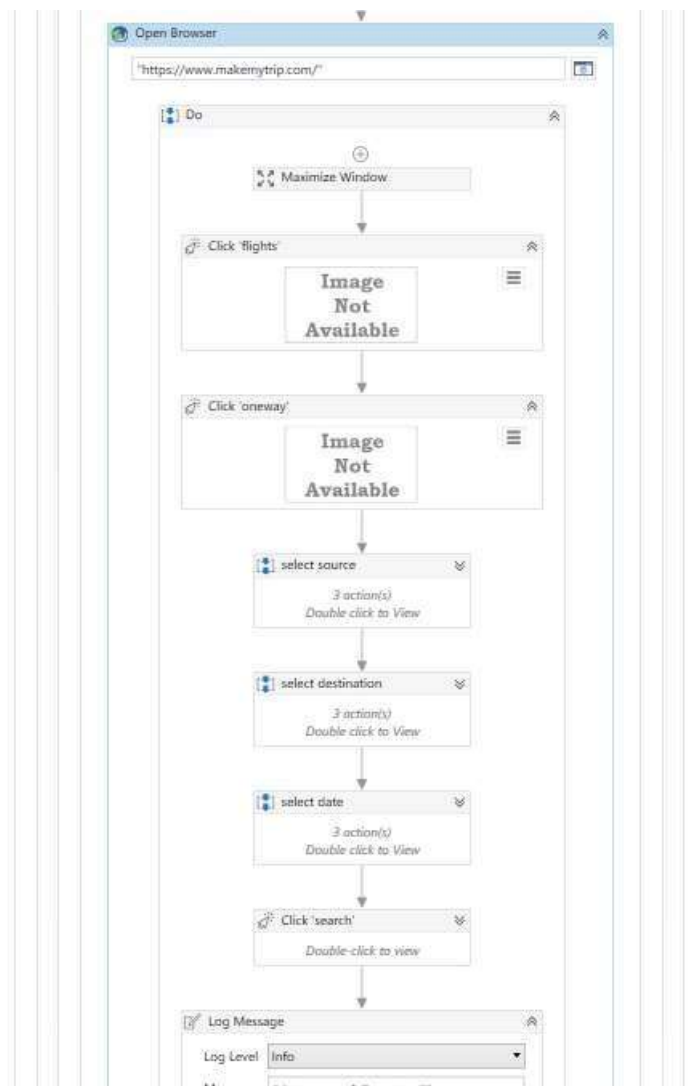


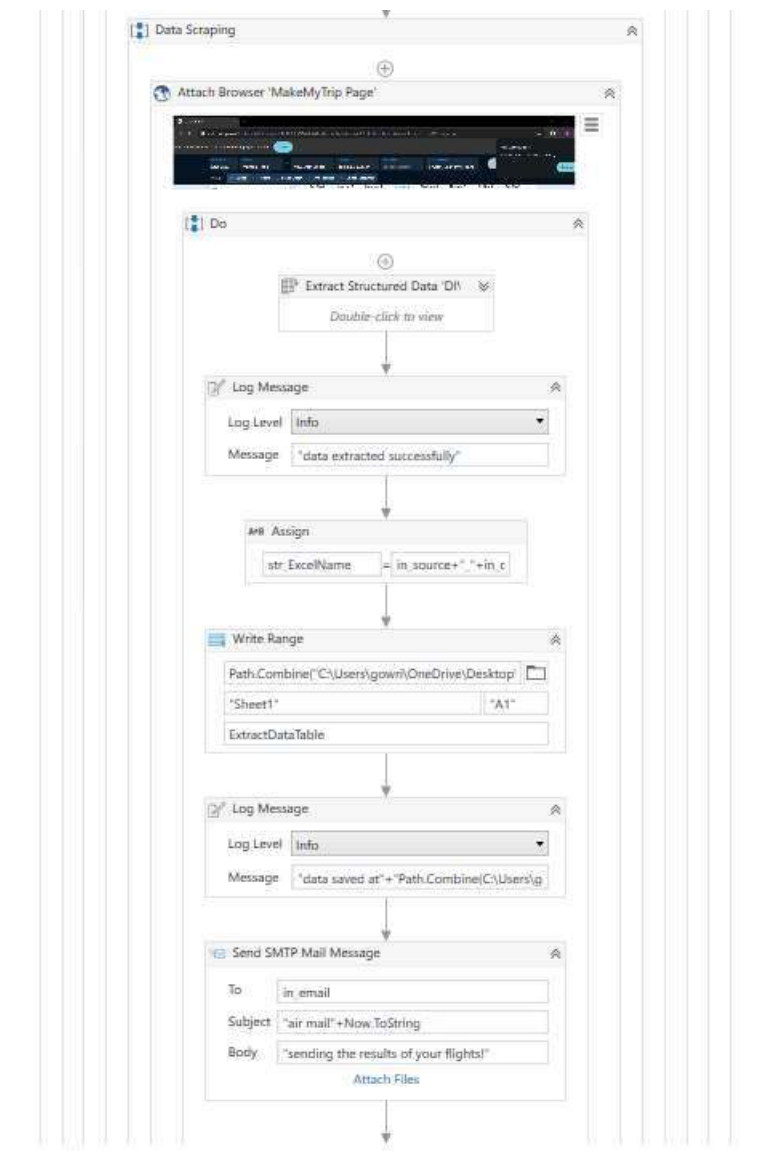
## APPENDIX

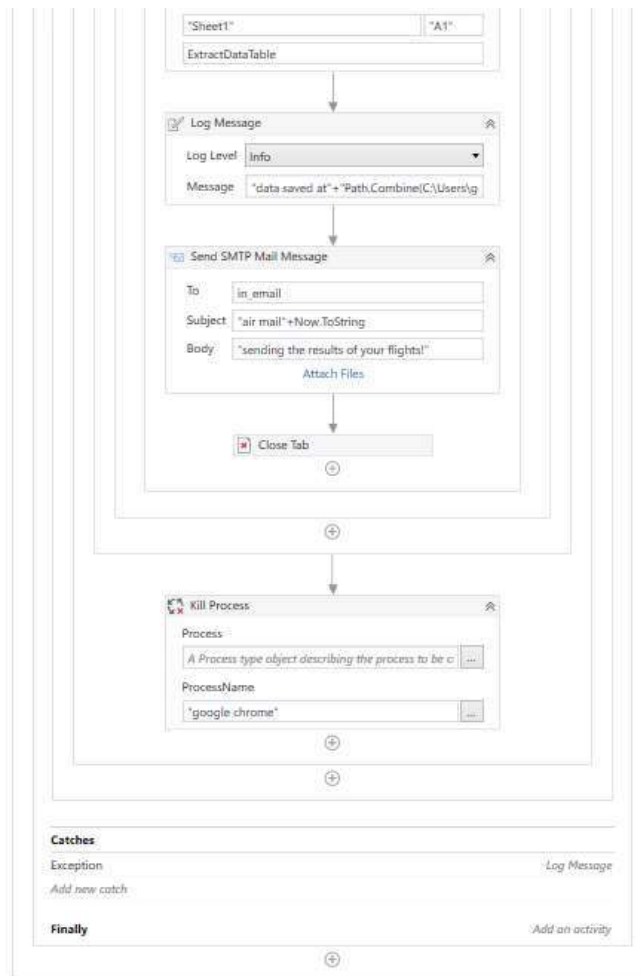
### PROCESS WORK FLOW











## APPENDICES

### Appendix 1: Key Code Snippets

This appendix provides code snippets for essential functionalities in the AirMail Flight Booking Automation system, including:

1. Scraping Flight Details: Code for extracting flight details such as price, availability, and timing from the MakeMyTrip website.
2. Storing Data in Excel: Snippet for dynamically storing scraped flight details into a structured Excel file.
3. Sending Notifications: Code for automating the email dispatch of flight information.

### Appendix 2: Process Overview

This appendix includes a process overview diagram generated by UiPath, illustrating:

1. Workflow for Data Collection: Steps for retrieving flight details from MakeMyTrip, with retry mechanisms for error handling.
2. Excel Integration: Automation of data storage in Excel, ensuring real-time updates and structured reports.
3. Email Automation: Seamless generation and dispatch of email notifications, detailing flight options and summaries.

### Appendix 3: Testing Logs

This appendix contains records of the testing process, detailing:

1. **Test Case IDs:** Unique identifiers assigned to test scenarios for flight data scraping, Excel storage, and email notifications.



2. **Test Steps:** Description of the steps executed during testing, such as initiating the bot, verifying data accuracy, and validating email dispatch.
3. **Expected vs. Actual Results:** Comparisons between predicted outcomes and observed results for each test case.

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6. URL: <https://forum.uipath.com>