INTRODUCTION TO ROBOTIC PROCESS AUTOMATION

AIRMAIL

CHARULATA.M.G

(220701053)

Mrs. J. JINU SOPHIA,

ASSISSTANT PROFESSOR(SG)

COMPUTER SCIENCE OF ENGINEERING

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.

NEED FOR THE PROPOSED SYSTEM:

The need for the proposed AirMail Flight Booking Automation system arises from the increasing complexity and time constraints in managing flight bookings manually. Traditional methods of flight booking and communication are often slow, error-prone, and require significant manual effort, which can lead to inefficiencies, delayed responses, and miscommunication. As the number of users (such as travelers or travel agents) increases, the challenge of processing flight information and handling customer communication becomes even more pronounced.

Currently, users must manually search for flights, compare prices, check availability, and send confirmations, which can be repetitive and time-consuming. Additionally, human errors in these processes can result in incorrect flight bookings, missed deadlines, or unsatisfied customers.By automating this workflow through the AirMail system, we can significantly reduce the time taken for flight bookings, ensure accurate information, and enhance customer experience by providing timely notifications. The system will automate key tasks such as fetching flight data from external platforms (e.g., MakeMyTrip), checking availability, storing flight details, and sending confirmation emails. Moreover, the AirMail system will ensure that notifications are only sent when necessary, allowing users to have real-time updates without manual intervention.

The automation of these processes with UiPath RPA technology will not only streamline the flight booking process but also make it more scalable and efficient. By reducing the manual workload, travel agents or customers can focus on other important tasks, increasing overall productivity and ensuring customer satisfaction. Thus, the need for the proposed AirMail system is critical for improving workflow efficiency, minimizing errors, and enhancing communication in the fast-paced travel industry.

ADVANTAGES OF AIRMAIL:

1.Increased Efficiency: The AirMail system automates the entire flight booking and notification process, significantly reducing the time required to check flight details, compare prices, and send confirmation emails. Automation eliminates the need for repetitive manual tasks, allowing for faster processing of flight bookings.
2.Accuracy and Consistency: By reducing human intervention, AirMail ensures that flight data is processed accurately and consistently. It minimizes the risk of errors, such as incorrect flight details or missed bookings, which are common in manual systems.
3.Real-Time Updates: AirMail provides real-time updates on flight availability and pricing. This allows users to make quick decisions and ensures that travelers receive up-to-date information without delays.
4.Cost Savings: The automation of flight booking tasks reduces the reliance on manual labor, leading to lower operational costs. By freeing up time for travel agents or customers, the system also allows them to focus on more value-added tasks, such as customer support or business development.
5.Improved Customer Satisfaction: With the AirMail system, customers receive immediate, accurate, and timely updates on their flight bookings. The automated emails provide detailed flight information and confirmation, improving the overall customer experience and fostering trust.
6.Time and Resource Optimization: By automating the process of flight data extraction, validation, and email notifications, AirMail saves considerable time and resources. This allows businesses or individuals to optimize their operations, reducing the burden on staff and increasing overall productivity.

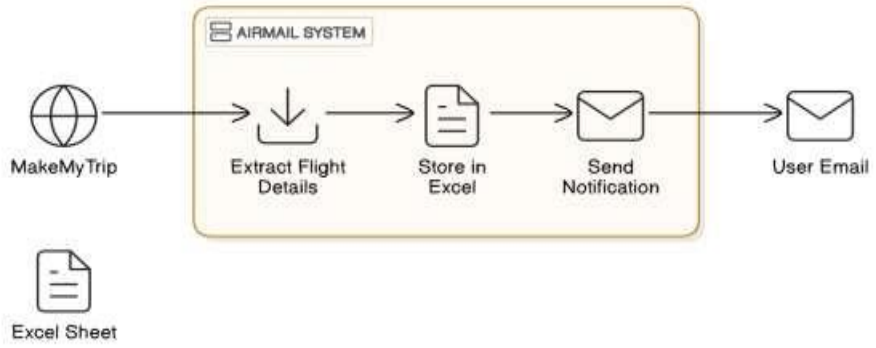
MAIN OBJECTIVE OF THE AIRMAIL PROJECT:

The main objective of the AirMail project is to automate the flight booking process by retrieving flight details, comparing prices, and sending personalized email notifications to users. The system is designed to streamline the booking workflow by utilizing Robotic Process Automation (RPA) with UiPath, ensuring efficient, accurate, and timely communication of flight options, price ranges.

By automating tasks such as data scraping, comparison, and notification generation, AirMail aims to improve the speed, accuracy, and overall User experience in flight bookings, ultimately reducing manual effort and enhancing operational efficiency.

ARCHITECTURE DIAGRAM:

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



SYSTEM REQUIREMENTS FOR AIRMAIL PROJECT:

1.Hardware Requirements:

1.Processor (CPU):
- Minimum: Intel Core i3 (or equivalent)
- Recommended: Intel Core i5 or higher

2.Memory (RAM):
- Minimum: 4 GB
- Recommended: 8 GB or higher

3.Storage:
- Minimum: 10 GB of free disk space
- Recommended: 20 GB or higher for smooth operation and data storage

4.Network:
- Stable Internet connection (for web scraping, email services, and flight data retrieval)

2. Software Requirements:

1.Operating System:

- Windows 10 (64-bit) or higher

2.UiPath Studio:

- UiPath Studio (latest stable version)
- Required for developing and running automation workflows

3.UiPath Orchestrator (optional, for large-scale deployments):

- Web-based application for managing, scheduling, and monitoring automation processes

4.Web Browser:

- Google Chrome, Mozilla Firefox, or Microsoft Edge (for web scraping of flight details)
- Required for interacting with flight booking websites (e.g., MakeMyTrip)

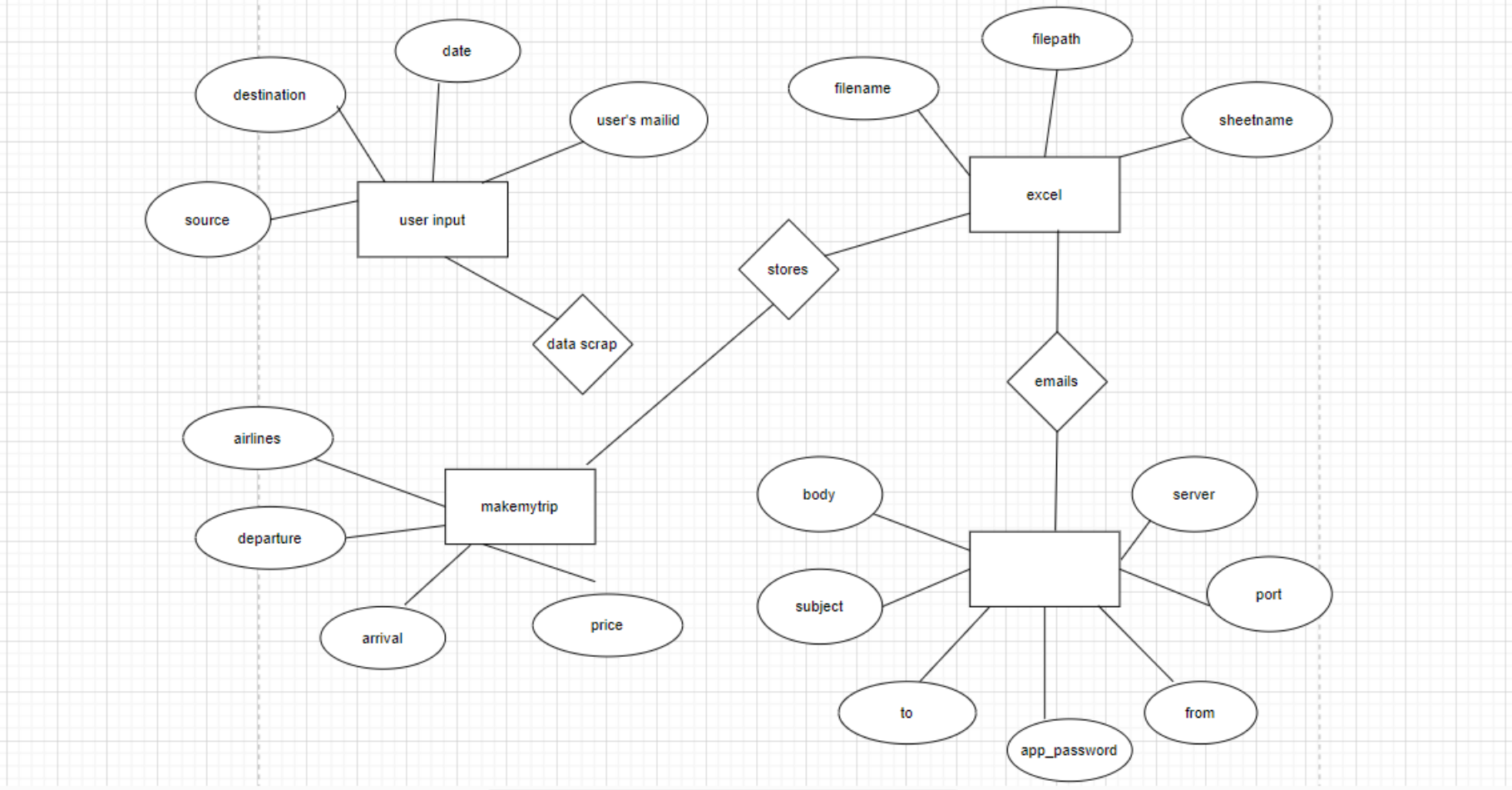
5.Microsoft Excel:

- Microsoft Excel 2016 or higher (for data extraction and reporting)
- Required for processing flight data, storing results, and generating reports

6.Email Client:

- Outlook, Gmail, or any SMTP/IMAP-compatible email client for sending flight details via email

ER-DIAGRAM:


date
destination
user's mailid
source
user input
data scrap
filepath
filename
sheetname
excel
stores
emails
airlines
makemytrip
departure
arrival
price
body
server
subject
port
to
from
app_password

MAIN PROCESS:

•**Initiate Process:**
•User inputs flight search details (e.g., source, destination, date) or uploads an Excel file.
•**Extract Flight Data:**
•The bot scrapes data from flight websites or APIs (e.g., MakeMyTrip).
•**Process Data:**
•The bot filters and sorts flights based on user preferences (e.g., price, airline).
•**Generate Report:**
•The bot creates an Excel report with the flight details.
•**Compose Email:**
•The bot prepares an email containing flight information and the generated report.
•**Send Email:**
•The bot sends the email to the user.
•**Completion:**
•The bot logs the successful completion of the process

Subprocesses:

1.Flight Data Retrieval (Scraping/API).
2.Report Generation
3.Email Composition
4.Email Sending

IMPLEMENTATION OF MODULE 1

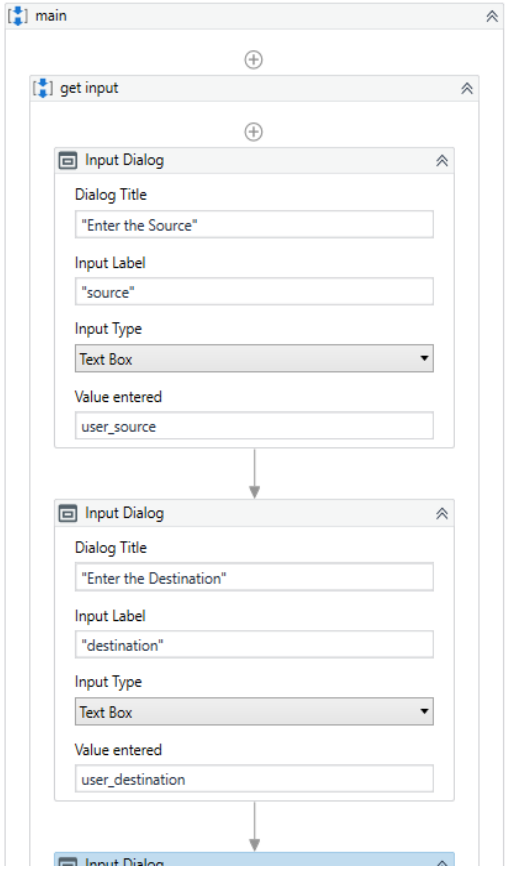
MODULE 1:

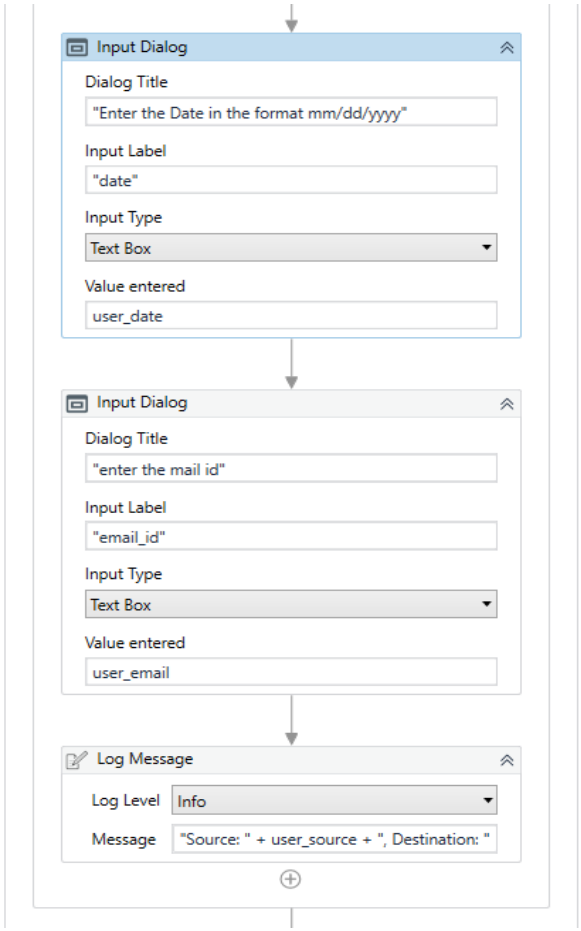
Module 1 is dedicated to collecting essential user inputs required for processing and generating the email notifications. The system provides an intuitive interface for users to enter critical information manually. The details collected in this module include:

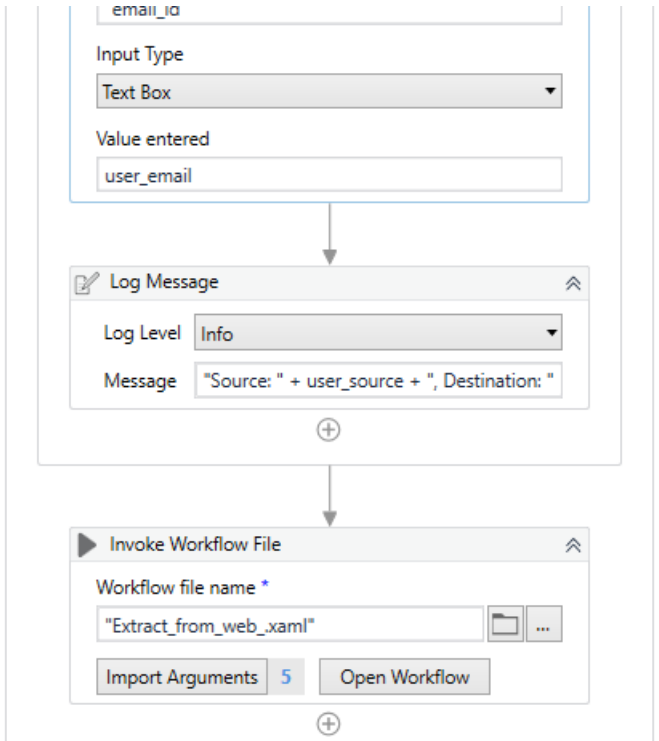
- **Source Location:** The starting point of the travel.
- **Destination Location:** The endpoint of the travel.
- **Travel Date:** The desired date of the journey.
- **Recipient's Email Address:** Used for delivering the generated Airmail report.

This module ensures accurate data collection, forming the basis for efficient flight searches, ticket analysis, and report generation in the Airmail system.

IMPLEMENTATION MODULE 1:

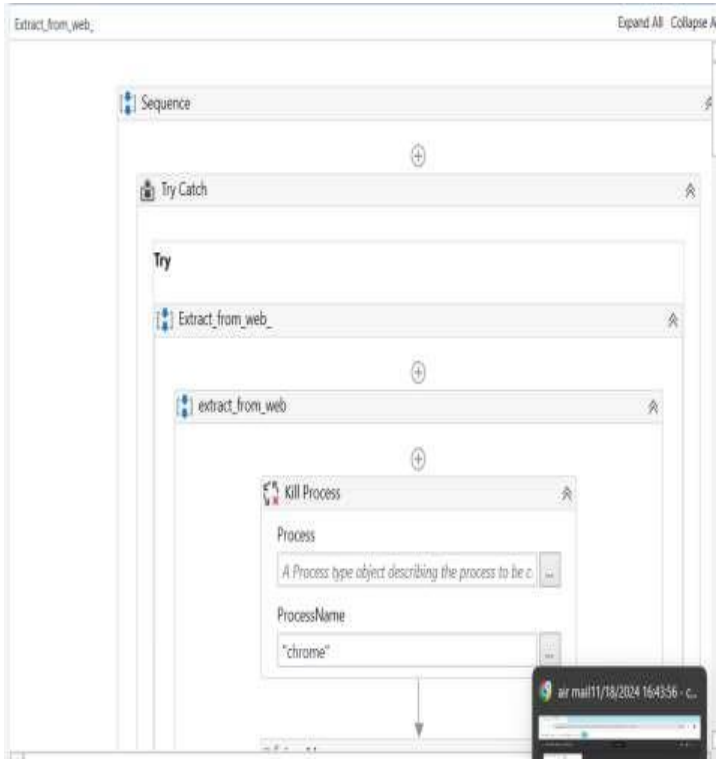


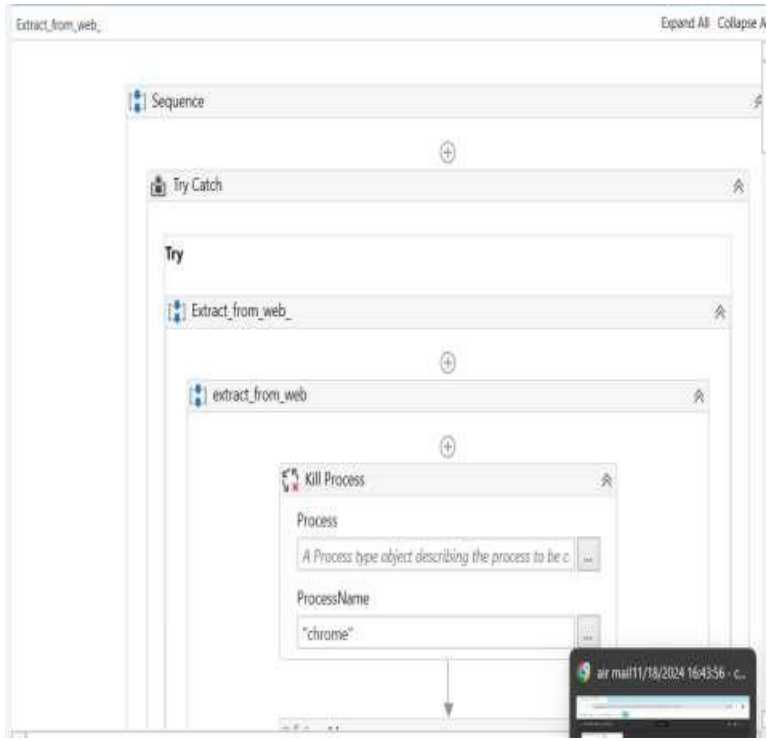


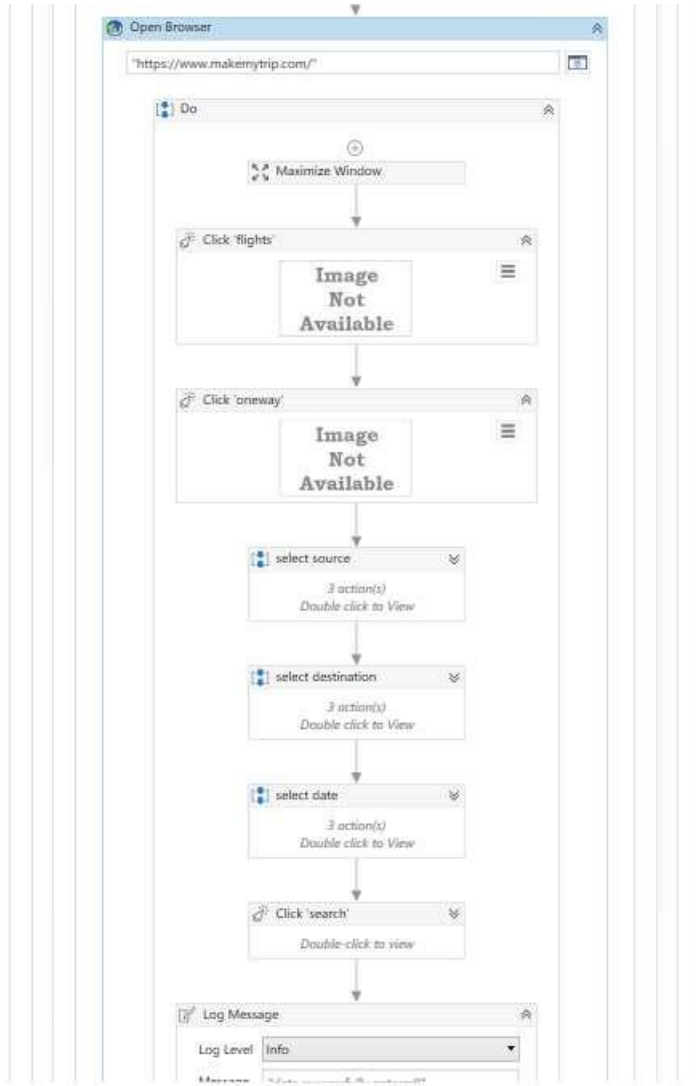


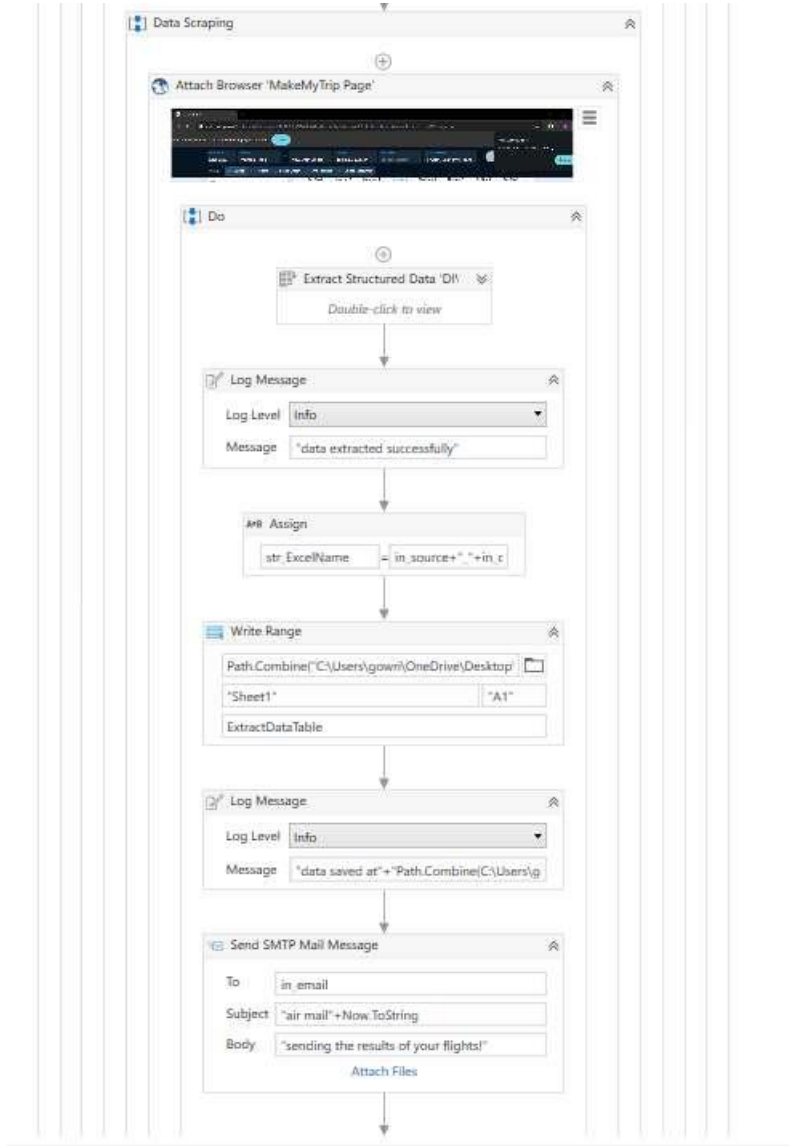
IMPLEMENTATION :
Module 2:

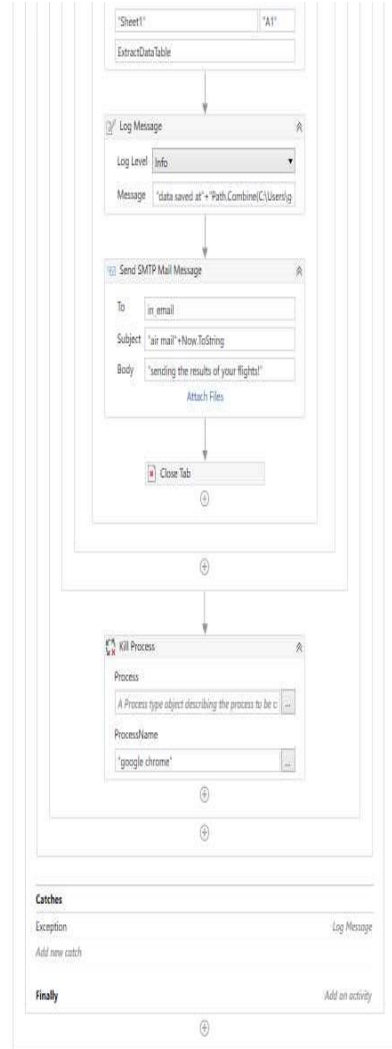
This module will extract the flight details, store it in an excel sheet a and send it to the user’s emailas a notification
The system will extract this data, validate it for accuracy and completeness, and proceed to generate personalized Airmail reports. By automating the extraction and processing of data from Excel files, this module ensures scalability and reduces manual input errors.




Extract_from_web_
Expand All
Collapse A
Sequence
Try Catch
Try
Extract_from_web_
extract_from_web
Kill Process
Process
A Process type object describing the process to be c
ProcessName
"chrome"
air mail11/18/2024 16:43:56 - c...


Open Browser
"https://www.makemytrip.com/"
Do
Maximize Window
Click 'flights'
Image Not Available
Click 'oneway'
Image Not Available
select source
3 action(s)
Double click to View
select destination
3 action(s)
Double click to View
select date
3 action(s)
Double click to View
Click 'search'
Double-click to view
Log Message
Log Level
Info

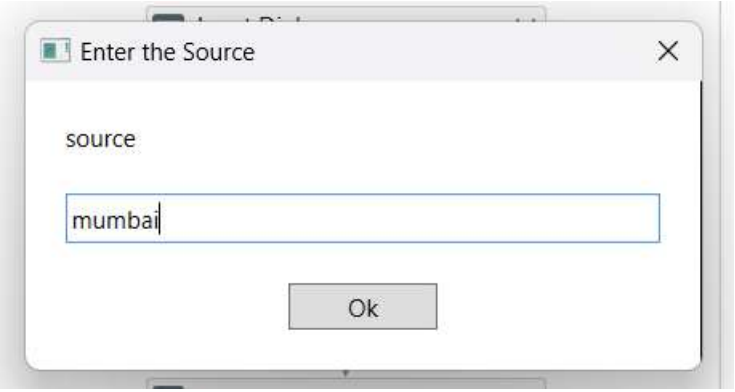

Data Scraping
Attach Browser 'MakeMyTrip Page'
Do
Extract Structured Data 'DI
Double-click to view
Log Message
Log Level
Info
Message
"data extracted successfully"
Assign
str_ExcelName
= in_source+"_"+in_c
Write Range
Path.Combine("C:\Users\gown\OneDrive\Desktop
"Sheet1"
"A1"
ExtractDataTable
Log Message
Log Level
Info
Message
"data saved at"+"Path.Combine(C:\Users\g
Send SMTP Mail Message
To
in_email
Subject
"air mail"+Now.ToString
Body
"sending the results of your flights!"
Attach Files

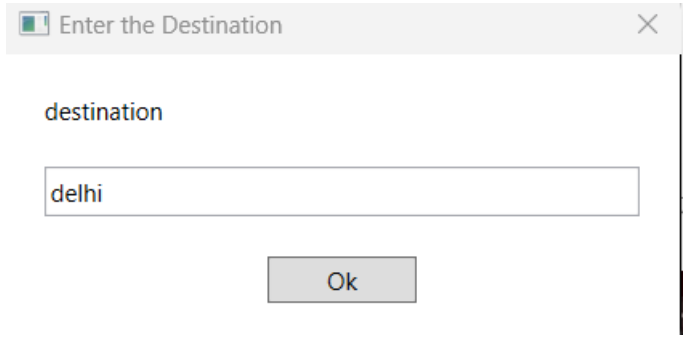

"Sheet1"
"A1"
ExtractDataTable
Log Message
Log Level
Info
Message
"data saved at"+"Path.Combine(C:\Users\g
Send SMTP Mail Message
To
in_email
Subject
"air mail"+Now.ToString
Body
"sending the results of your flights!"
Attach Files
Close Tab
Kill Process
Process
A Process type object describing the process to be c
ProcessName
"google chrome"
Catches
Exception
Log Message
Add new catch
Finally
Add an activity

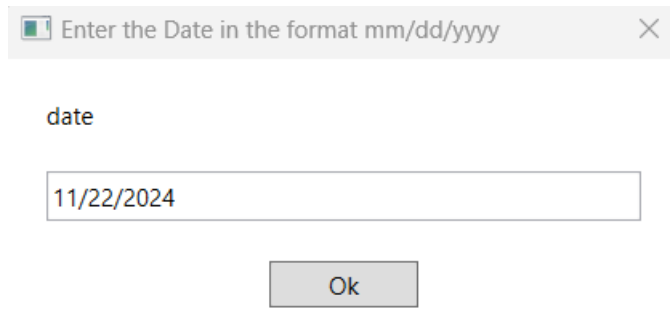
TESTING:

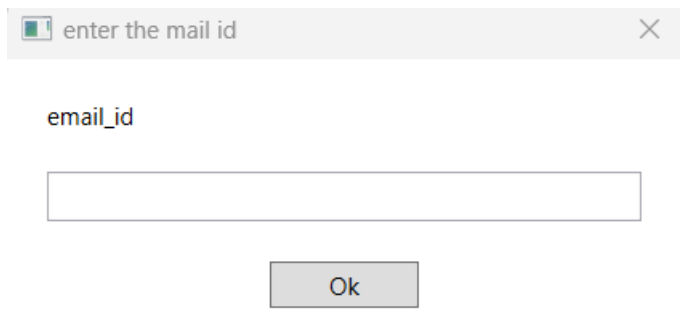
Module 1

The testing of Module 1 focuses on the manual input and validation of user-provided details. The inputs include essential fields such as the source location, destination location, travel date, user's full name, and email address. During the testing process, valid data is entered into all required fields to ensure the system can accurately capture and validate the inputs. The expected outcome is that the system seamlessly accepts the provided details without any errors and progresses to the next step, such as fetching and processing the flight details, thereby confirming the module's functionality and reliability.




Enter the Destination
destination
delhi
Ok

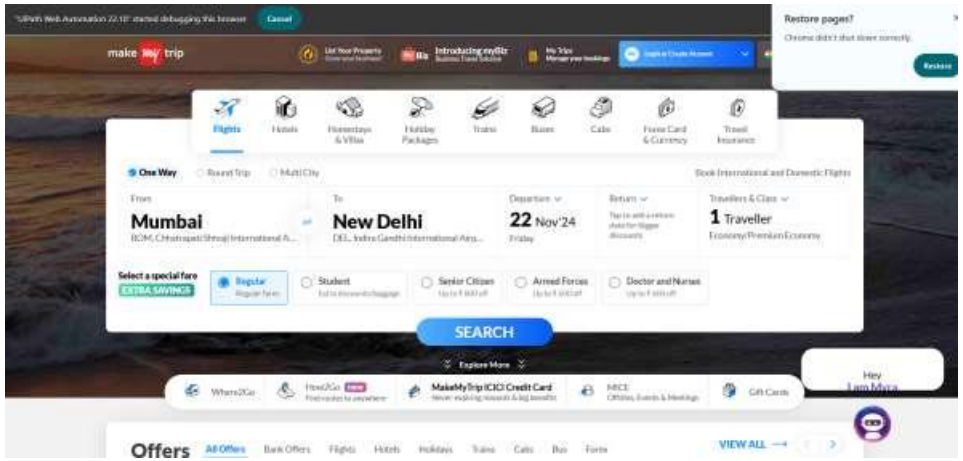

Enter the Date in the format mm/dd/yyyy
date
11/22/2024
Ok

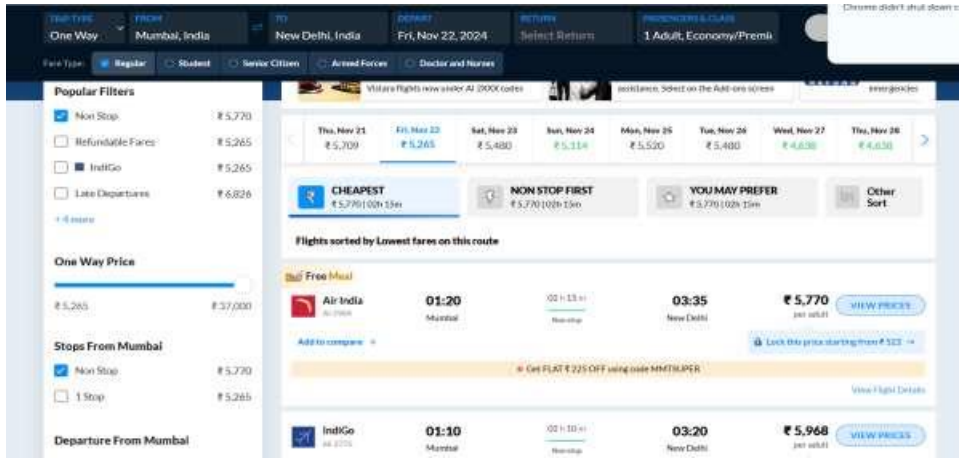

enter the mail id
email_id
Ok

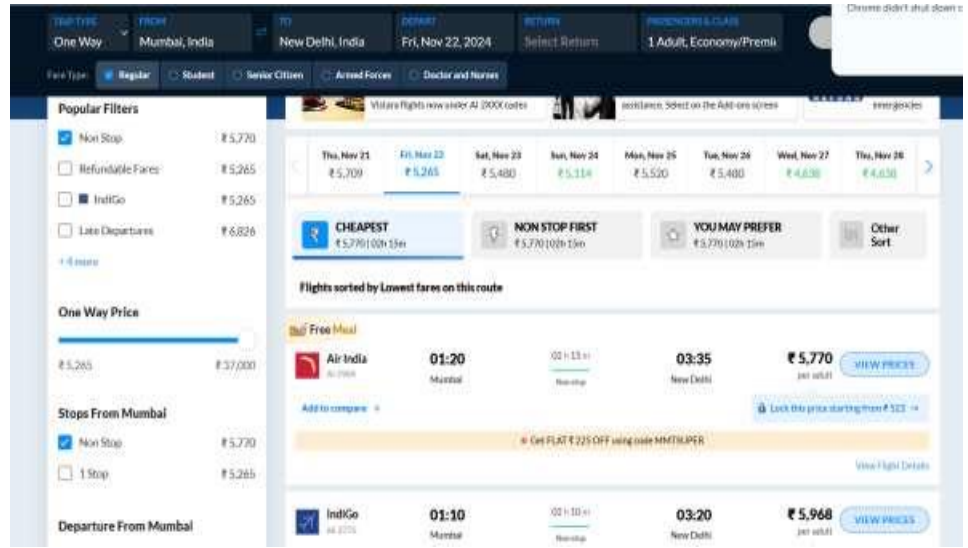
TESTING :

Module-2

The testing of module-2 focuses on extracting flight details from the makemytrip website and store it in an excel sheet and notifies to the user through email







air mail11/18/2024 16:43:56

AirMail

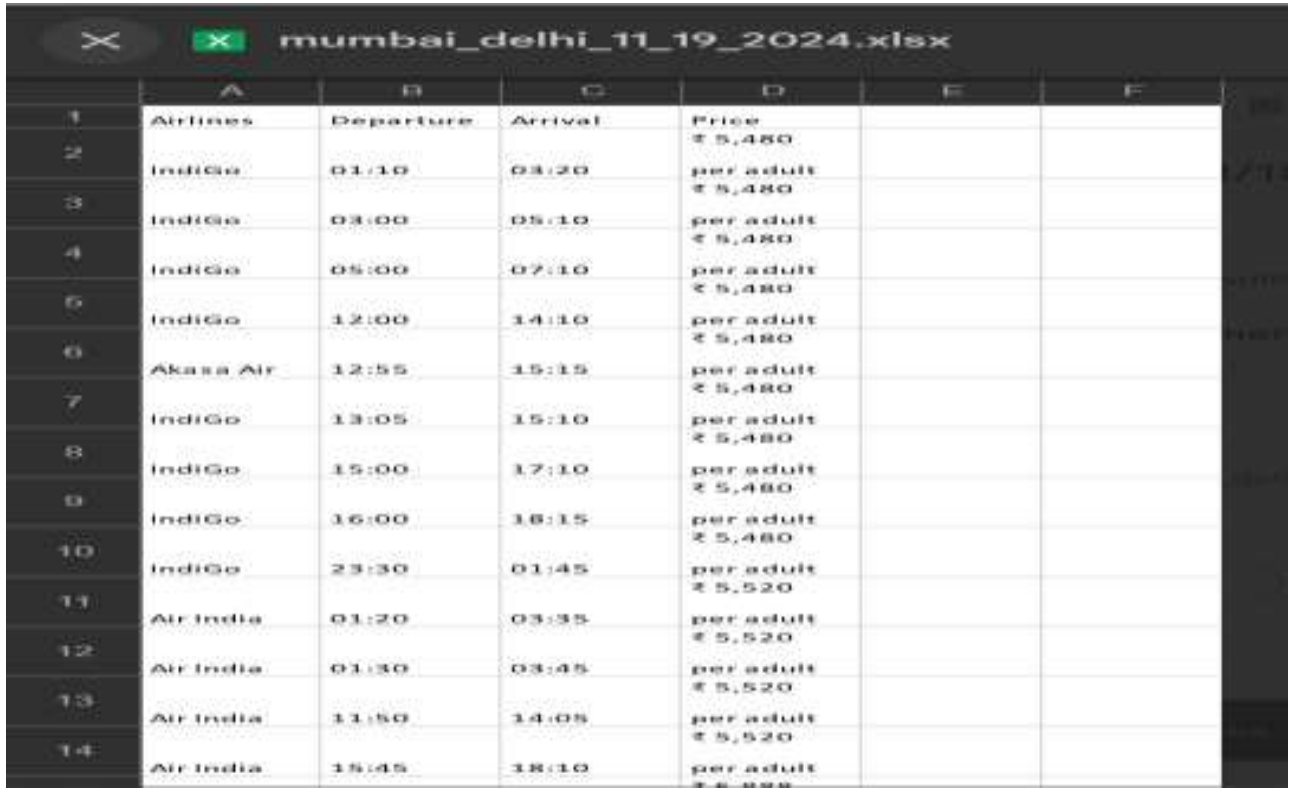
to me

sending the results of your flights!

One attachment • Scanned by Gmail

Reply Forward

OUTPUT:



mumbai_delhi_11_19_2024.xlsx

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

CONCLUSION:

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.

FUTURE ENHANCEMENT:

The Airmail project has been designed to automate the process of generating and delivering flight details via email efficiently. However, there is potential for further enhancements to improve its scalability, functionality, and user experience. Below are some suggested future enhancements:

1. Integration with Multiple Communication Platforms
2. Real-Time Tracking and Notifications
3. Mobile Application Development
4. AI-Powered Document Validation

REFERENCES

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2. URL: https://www.makemytrip.com
3. URL: https://docs.uipath.com/activities/docs/excel-automation
4. URL: https://docs.uipath.com/activities/docs/send-smtp-mail-message
5. URL: https://academy.uipath.com
6. URL: https://forum.uipath.com