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School of Computer Science and Engineering (SCOPE)

B.Tech – Computer Science and Engineering with Specialization in Artificial Intelligence and Robotics

Fall Semester 2022-23

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A project report on

Ticket Booking Automation using Voice Recognition

Submitted in partial fulfillment for the J Component project of

CSE2023 – Robotic Process Automation

by

P. Je Sai Kailash (20BRS1208)
Jajapuram Giridhar Reddy (20BRS1004)
Prithviraj Guntha (20BRS1188)

Prithvi Giridhar Kailash

Signature of the Candidate

V.Sakthivel

Sakthivel V

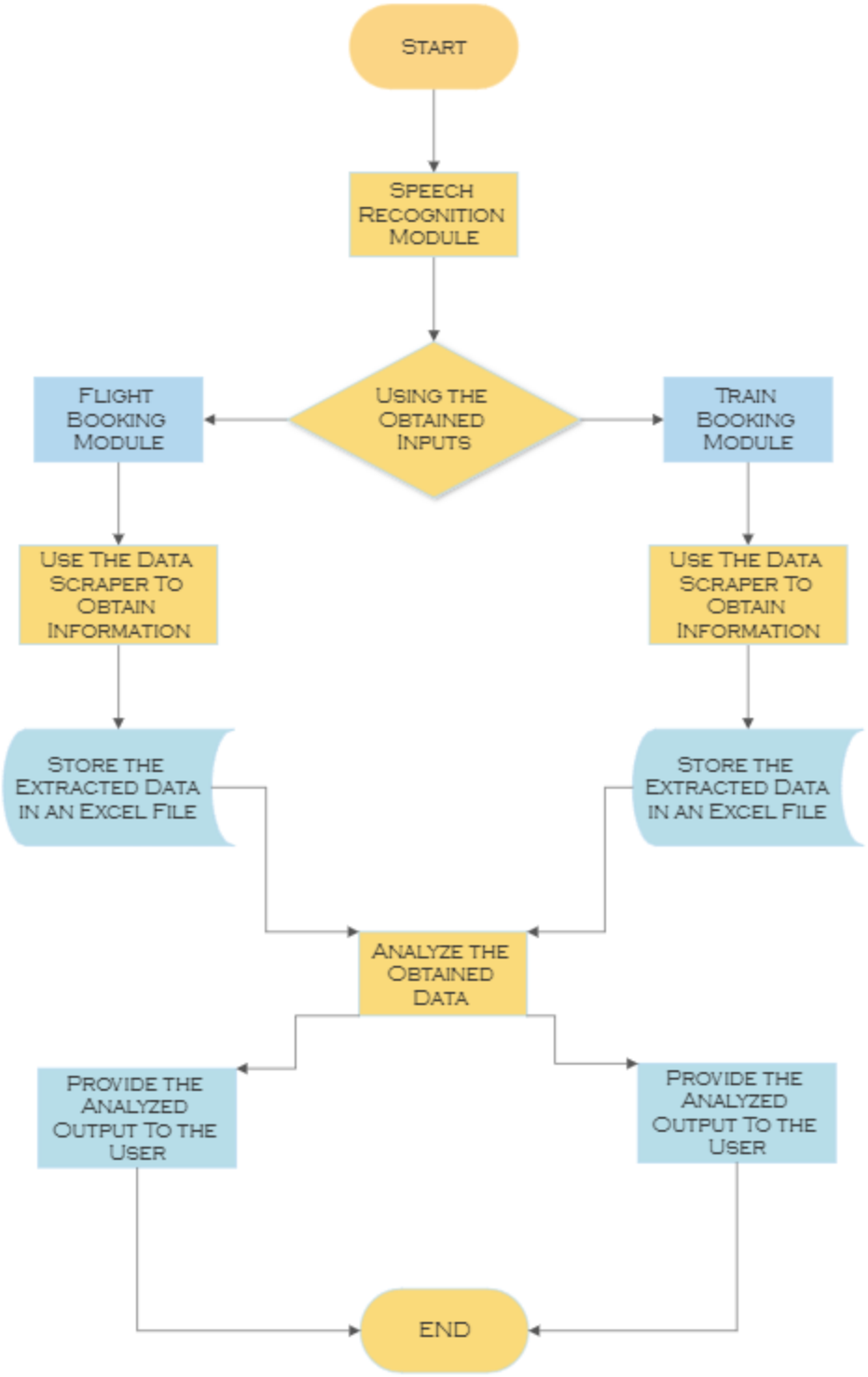
Signature of the Faculty
Dr.V.Sakthivel, AP(Sr.G)/SCOPE

Introduction and Abstract Of The Project

Our project, automatic ticket booking using voice recognition would help users to book train tickets seamlessly. The user would first tell the source and destination rather than type them out, then the user would also give other information like date and seat type to the computer. Then, we would use python to implement a speech recognition algorithm to get the data spoken by the user. We would already have pre recorded data of sources and destinations which would be saved in an excel sheet. The automation would then search and match the data given by the user with the pre recorded data that's present. After the correct match is found, the automation would store that particular information in the form of a string. The automation would then open the browser, search for the website "IRCTC" and then click on to book a ticket. The automation would automatically enter the source and destination along with the other information like date and seat preference. Then the automation would search through the list of trains and try to book the ticket which would match the preference of the user. The automation would try to compare between different fare prices and try choosing the cheapest of all the available fares. Once the best option is chosen, the automation would then move on to book the required ticket. The booked ticket would then be sent to the user by email or by phone number depending on how that particular user has registered in the IRCTC portal.

System Architecture

The Aim of our Project is to be providing the user the best mode of way to travel. We store all the data after extracting in one place and later take the best of them through an AI process and then display the best options for the user to travel to his required destination. The details of the journey like Source, Destination and Travel Date are taken through voice input so that the user will have a seamless no interaction experience and he can control everything just through his voice.


START
SPEECH RECOGNITION MODULE
USING THE OBTAINED INPUTS
FLIGHT BOOKING MODULE
TRAIN BOOKING MODULE
USE THE DATA SCRAPER TO OBTAIN INFORMATION
USE THE DATA SCRAPER TO OBTAIN INFORMATION
STORE THE EXTRACTED DATA IN AN EXCEL FILE
STORE THE EXTRACTED DATA IN AN EXCEL FILE
ANALYZE THE OBTAINED DATA
PROVIDE THE ANALYZED OUTPUT TO THE USER
PROVIDE THE ANALYZED OUTPUT TO THE USER
END

Modules Implemented

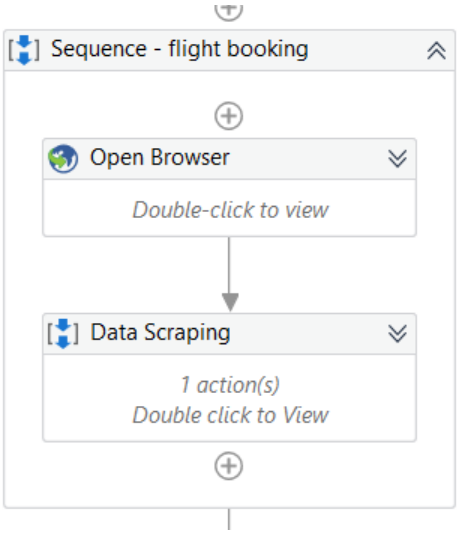
1. Input module:

This module is dedicated to take the details from the user like Source and Destination. For this, we start with INPUT DIALOGUE ACTIVITY to take the details i.e., Source, Destination, Travel date, preferred type for class of the train. The speech recognition module will provide the details through an excel sheet, so instead of the input dialogue box activity, we use READ RANGE ACTIVITY in order to get the details of the passenger through that excel sheet.

Then we use OPEN BROWSER ACTIVITY to open the browser and go to the link to makemytrip website. In that the details given will automatically be typed into the website and then the further automation is continued in the data extraction module.

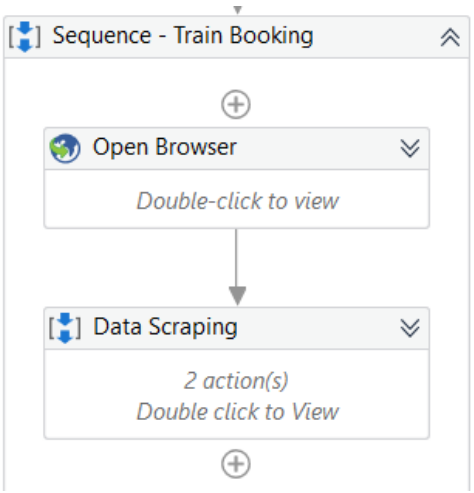
2. Flight Details Automation Module

This module will automate the process of entering the details of the user i.e., Source, Destination and travel date into the appropriate fields of the website and click the search button and the data extraction module will continue the process of extracting the data for getting prices of the flights. CLICK and TYPE INTO ACTIVITIES are used to type the details acquired from the input module into the appropriate fields in the website and pressing the search button. And then the data extraction module runs and will return to the train automation module.



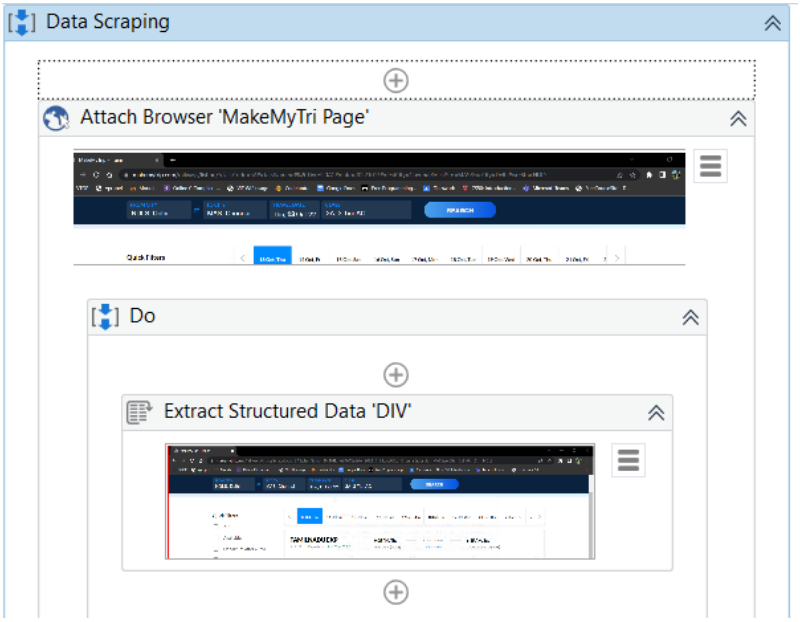
3. Train Details Automaton Module:

In this module we use the obtained input like Source, Destination and Date to get the details of the trains that are available for the journey and with the help of the Data Extraction module we get the prices of the train tickets. The CLICK ACTIVITY is used to click the appropriate fields and a TYPE INTO ACTIVITY is used to type the details of source and destination in the specified field and then a click activity is used to click the search button then the data extraction module is implemented next.



4. Data Extraction Module:

This module is to perform the extraction of details from the website and store it into an excel. From flights, the details that this module will extract are Flight name, Departure time, Arrival time, price of the ticket. And from trains, the details extracted would be Train name, Train number, Departure time, Journey time, arrival time, price of the ticket.



Modules Yet to be Implemented

1. ### Speech Recognition module

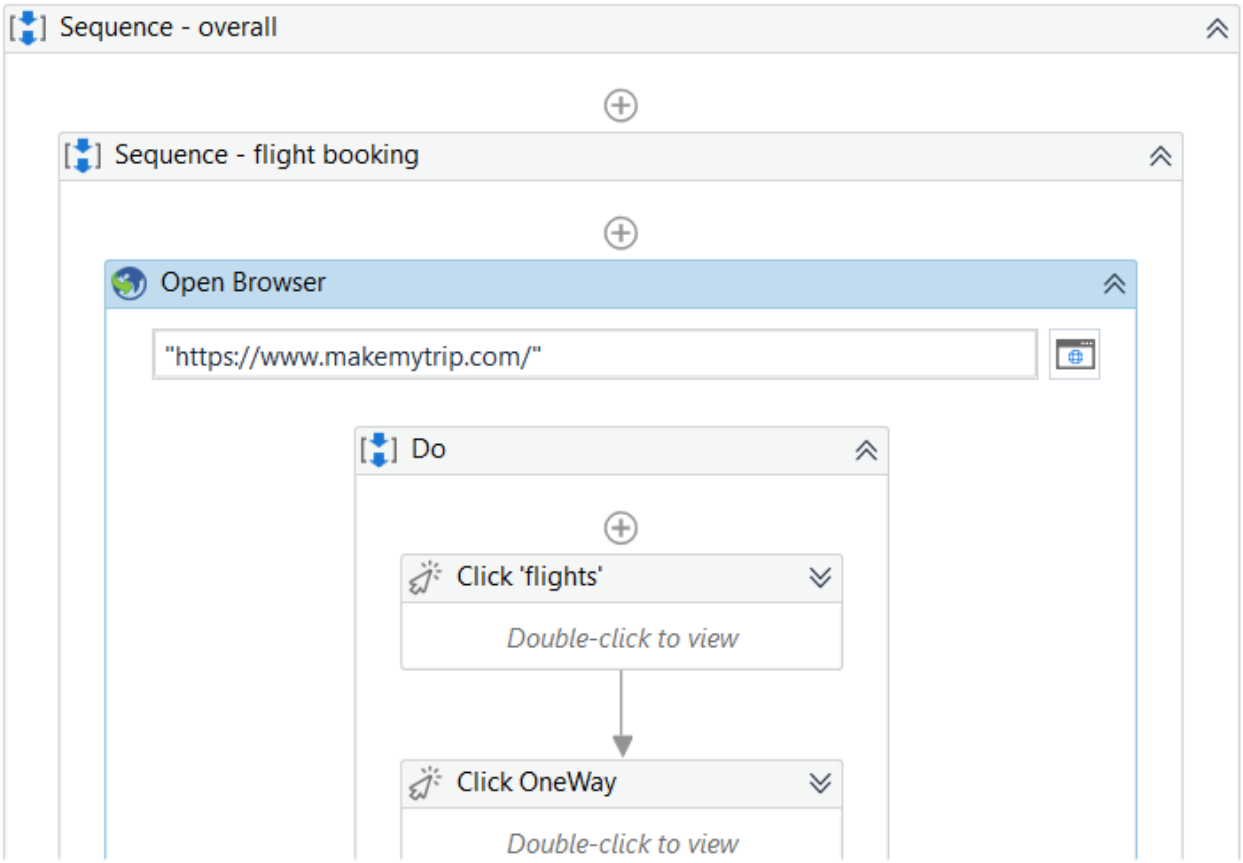
   From this module we are expecting the machine to run a speech recognition algorithm to identify the details given by the user. Initially an excel is maintained to store all the cities and places that are having airport or railway station and when the user gives the source and destination places then the algorithm will store the details in an excel and this excel is used by the UiPath in order to automate the process of extracting the prices and providing the best prices to the user.

2. ### Analyser Module

   This module is expected to compare the prices of flights and trains separately and display the best three cheapest prices to the user either by email.

Results And Screenshots of Modules Implemented

The partial implementation of the project has provided us with the data of the prices for the flights and trains for the destination provided. We have been successfully able to extract the data of the trains/flights available for the given Source, Destination and the Travel Date and stored in an Excel Sheet which we'll be using later to analyze the best mode of Travel.



Sequence - select source

4 action(s)
Double click to View

Sequence - select destinati

4 action(s)
Double click to View

Sequence - select date

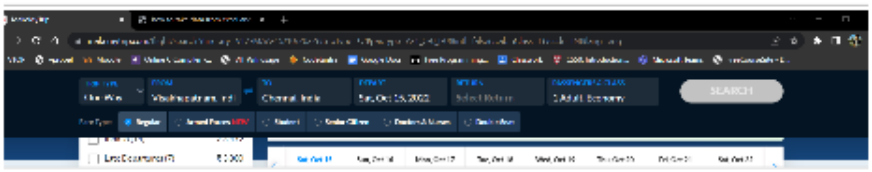
3 action(s)
Double click to View

Click - submit

Double-click to view

Data Scraping

Attach Browser 'MakeMyTrip Page'



Do

Do

Extract Structured Data 'DIV'

Write Range

"datasheets\data.xlsx"

"Sheet1" "A1"

ExtractDataTable

Sequence - Train Booking

Open Browser

"https://www.makemytrip.com/railways/"

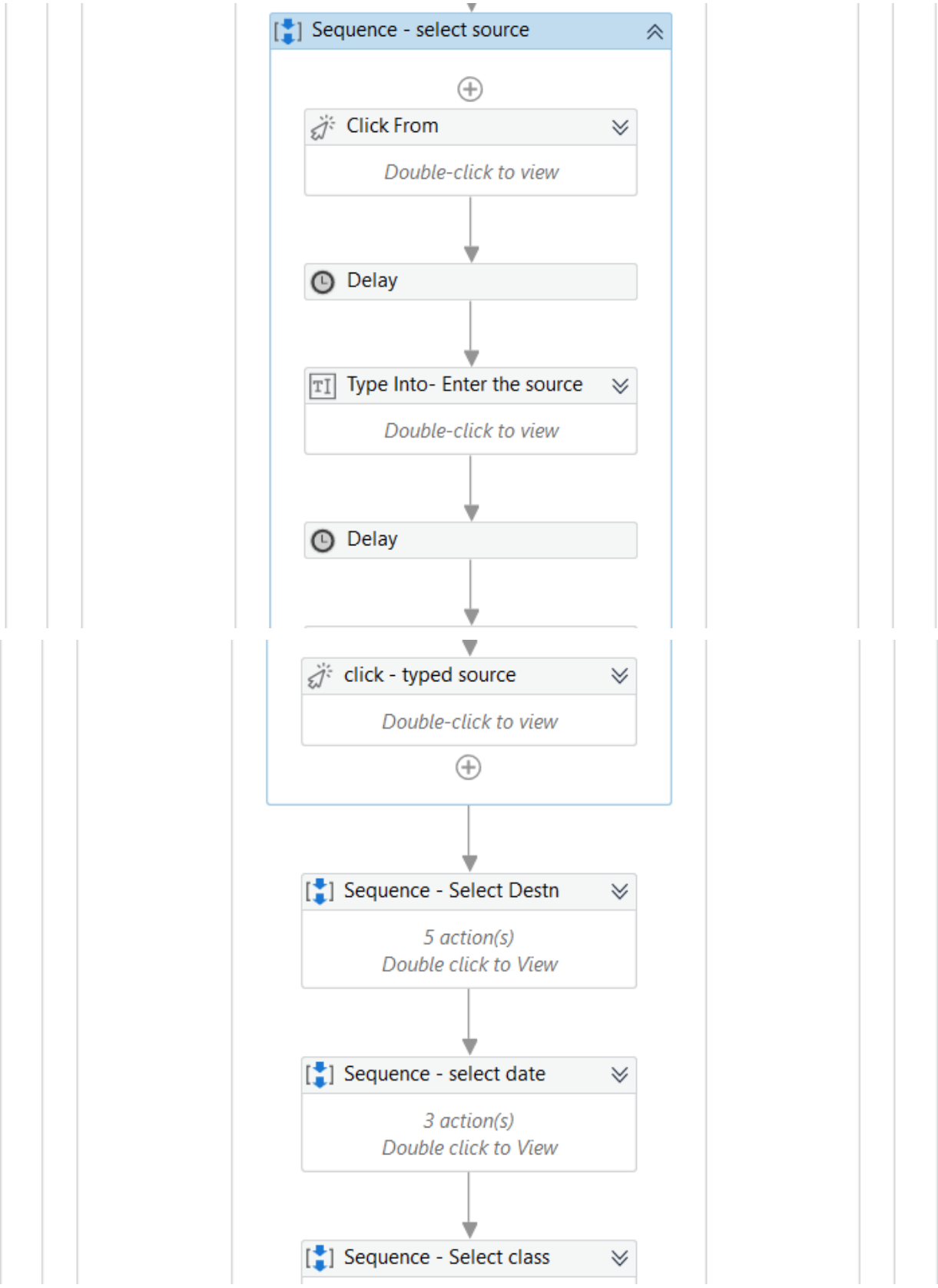
Do

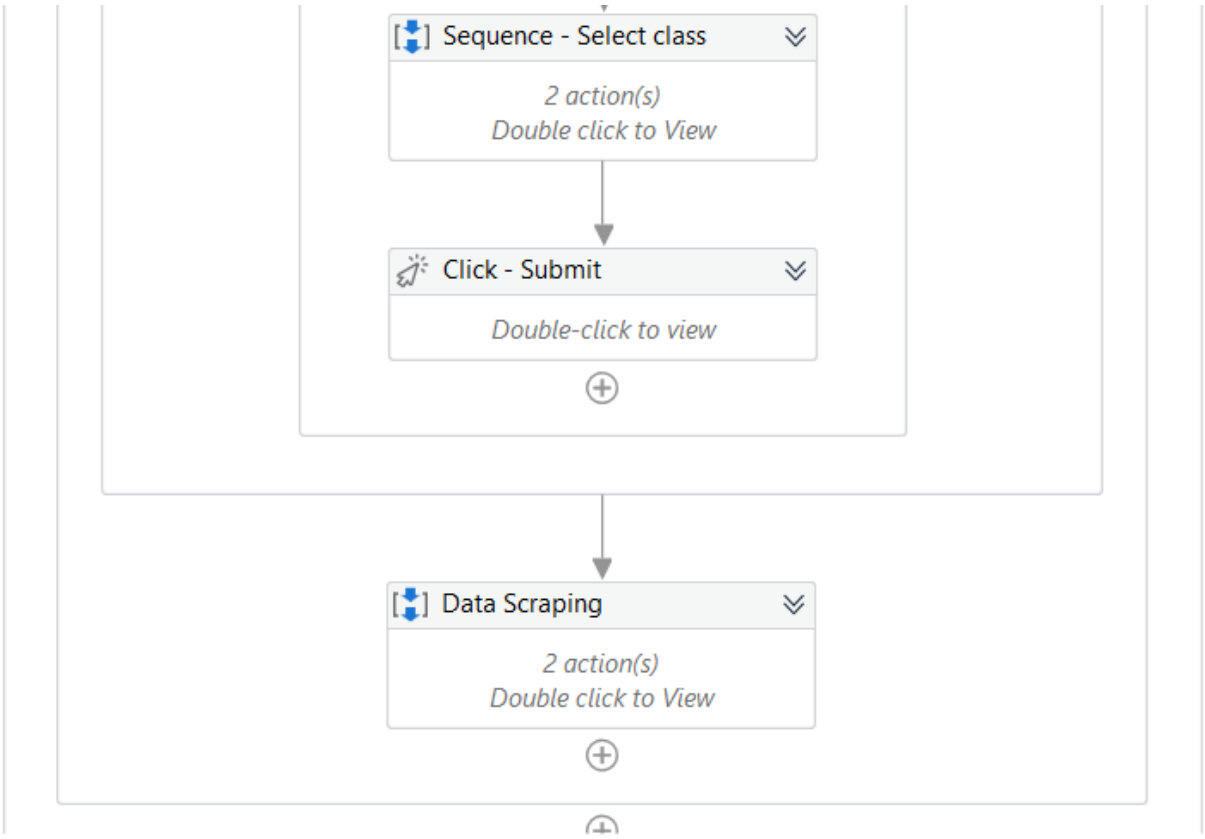
Click - on screen

Double-click to view

Click - Trains

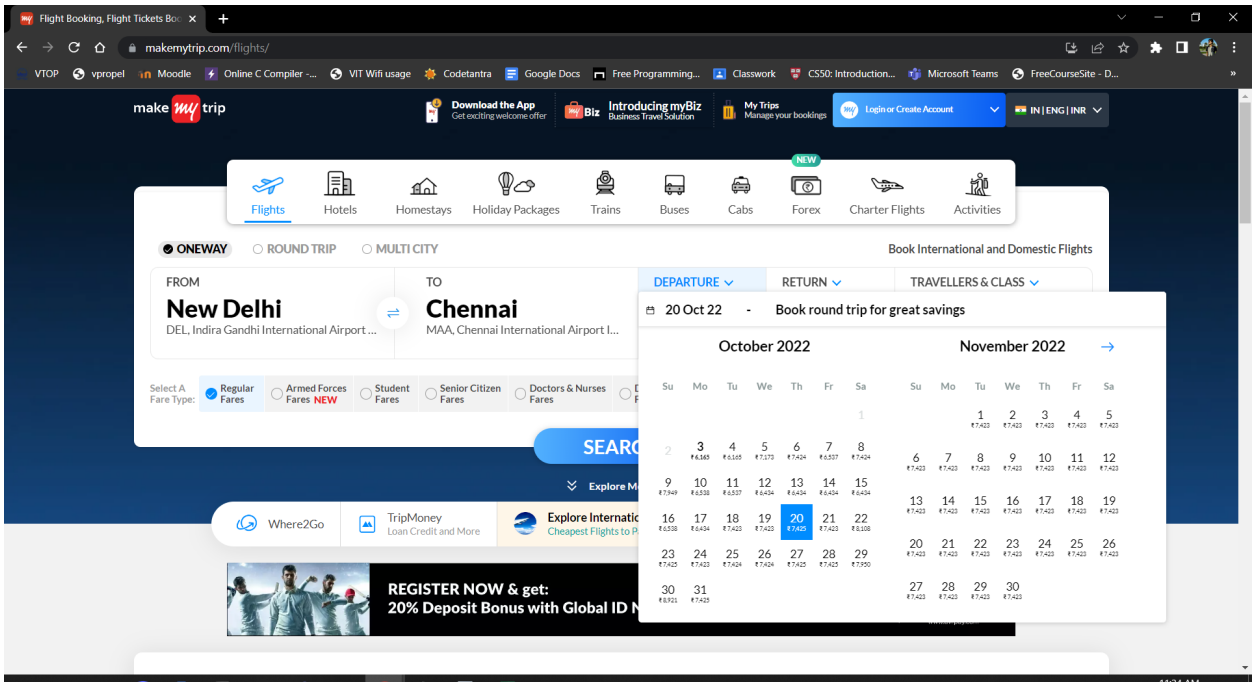
Double-click to view

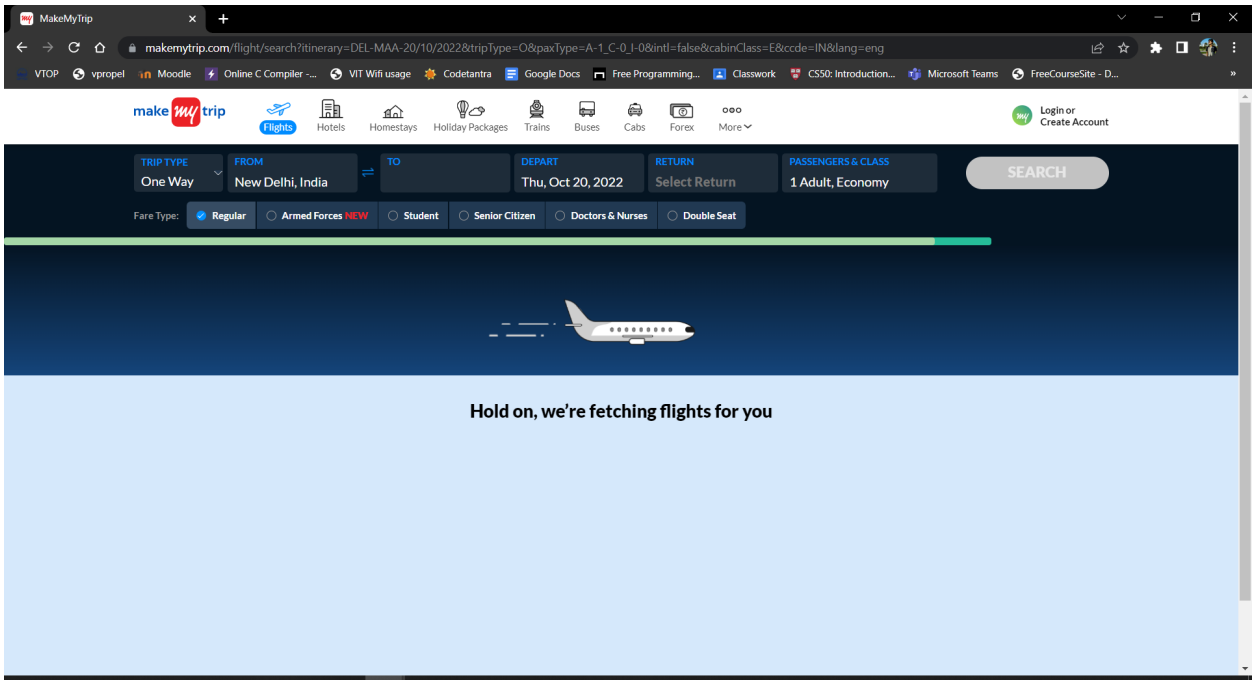

Sequence - select source
Click From
Double-click to view
Delay
Type Into- Enter the source
Double-click to view
Delay
click - typed source
Double-click to view
Sequence - Select Destn
5 action(s)
Double click to View
Sequence - select date
3 action(s)
Double click to View
Sequence - Select class

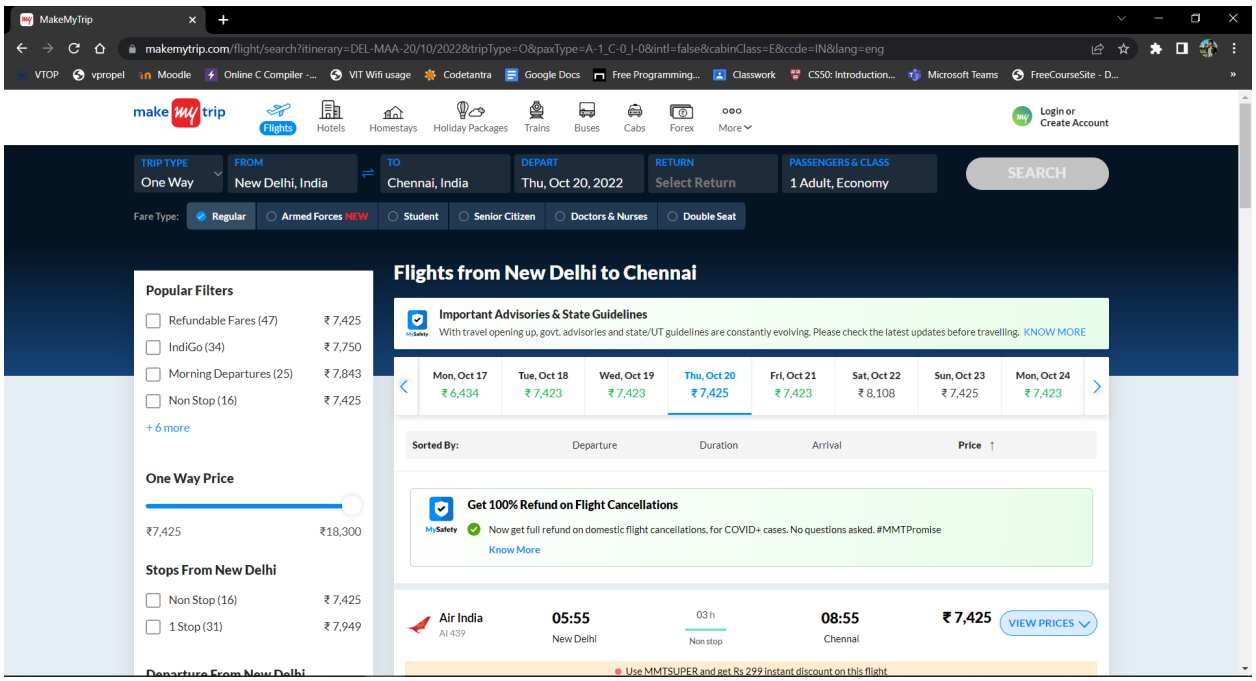


Webpage Screenshots

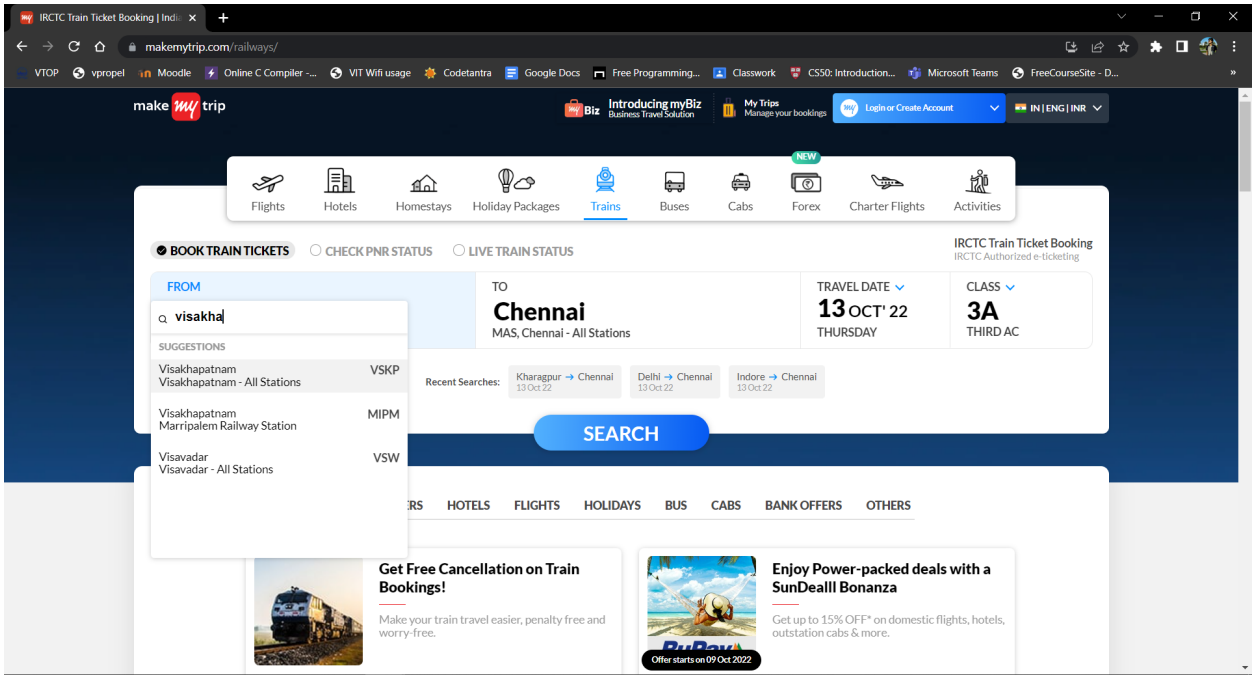
Flight Booking

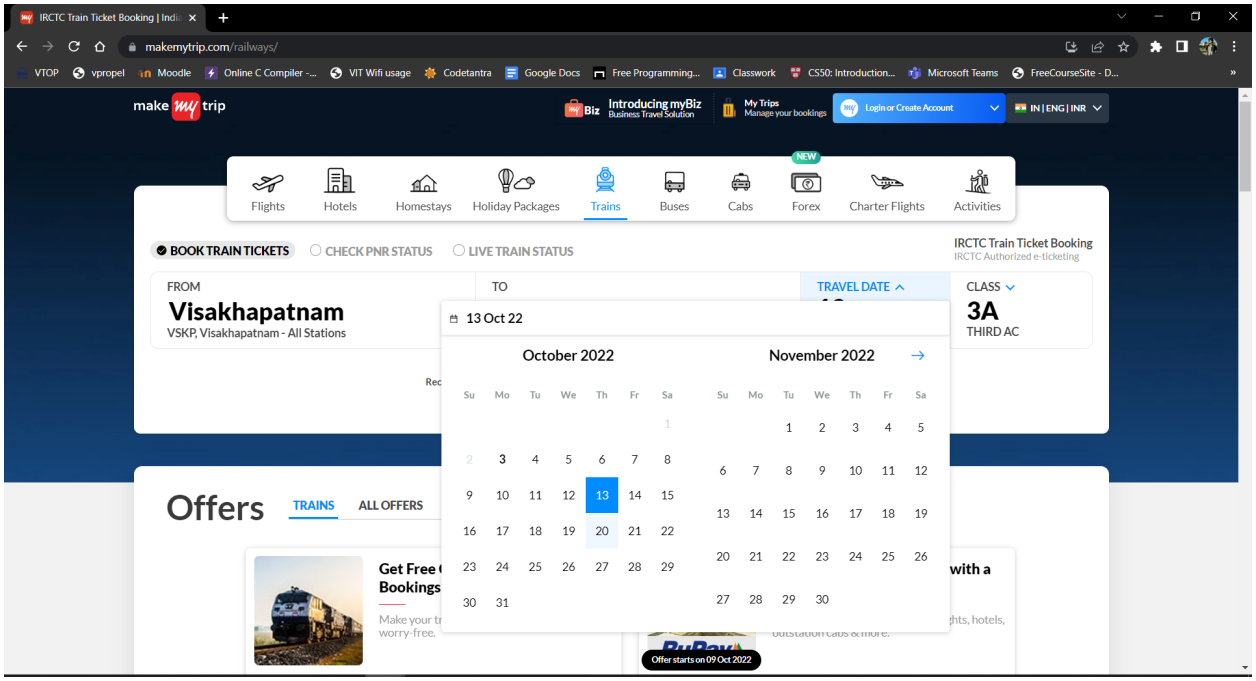


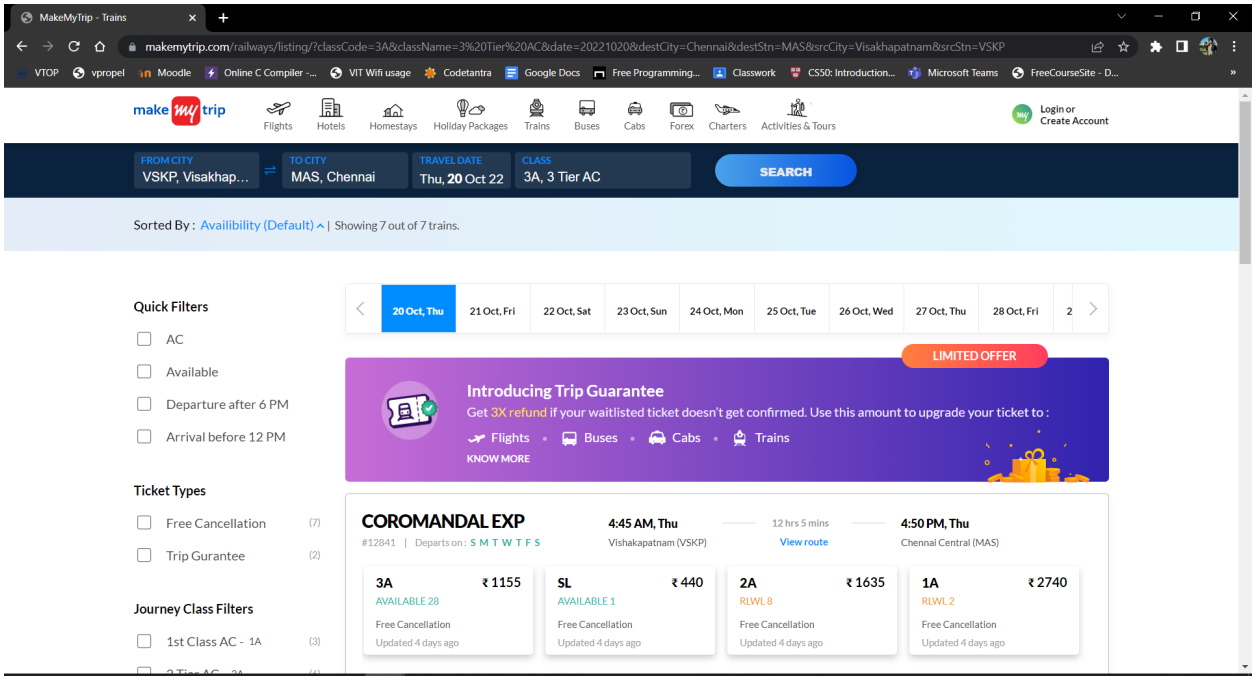

MakeMyTrip
makemytrip.com/flight/search?itinerary=DEL-MAA-20/10/2022&tripType=O&paxType=A-1_C-0_I-0&intl=false&cabinClass=E&ccde=IN&lang=eng
make my trip
Flights
Hotels
Homestays
Holiday Packages
Trains
Buses
Cabs
Forex
More
Login or Create Account
TRIP TYPE
One Way
FROM
New Delhi, India
TO
DEPART
Thu, Oct 20, 2022
RETURN
Select Return
PASSENGERS & CLASS
1 Adult, Economy
SEARCH
Fare Type:
Regular
Armed Forces NEW
Student
Senior Citizen
Doctors & Nurses
Double Seat
Hold on, we're fetching flights for you


MakeMyTrip
makemytrip.com/flight/search?itinerary=DEL-MAA-20/10/2022&tripType=O&paxType=A-1_C-0_I-0&intl=false&cabinClass=E&ccde=IN&lang=eng
make my trip
Flights
Hotels
Homestays
Holiday Packages
Trains
Buses
Cabs
Forex
More
Login or Create Account
TRIP TYPE
One Way
FROM
New Delhi, India
TO
Chennai, India
DEPART
Thu, Oct 20, 2022
RETURN
Select Return
PASSENGERS & CLASS
1 Adult, Economy
SEARCH
Fare Type:
Regular
Armed Forces NEW
Student
Senior Citizen
Doctors & Nurses
Double Seat
Popular Filters
Refundable Fares (47) ₹ 7,425
IndiGo (34) ₹ 7,750
Morning Departures (25) ₹ 7,843
Non Stop (16) ₹ 7,425
+ 6 more
One Way Price
₹7,425
₹18,300
Stops From New Delhi
Non Stop (16) ₹ 7,425
1 Stop (31) ₹ 7,949
Flights from New Delhi to Chennai
Important Advisories & State Guidelines
With travel opening up, govt. advisories and state/UT guidelines are constantly evolving. Please check the latest updates before travelling. KNOW MORE
Mon, Oct 17 ₹ 6,434
Tue, Oct 18 ₹ 7,423
Wed, Oct 19 ₹ 7,423
Thu, Oct 20 ₹ 7,425
Fri, Oct 21 ₹ 7,423
Sat, Oct 22 ₹ 8,108
Sun, Oct 23 ₹ 7,425
Mon, Oct 24 ₹ 7,423
Sorted By:
Departure
Duration
Arrival
Price
Get 100% Refund on Flight Cancellations
Now get full refund on domestic flight cancellations, for COVID+ cases. No questions asked. #MMTPromise
Know More
Air India
AI 439
05:55
New Delhi
03 h
Non stop
08:55
Chennai
₹ 7,425
VIEW PRICES
Use MMTSUPER and get Rs 299 instant discount on this flight

Train Booking

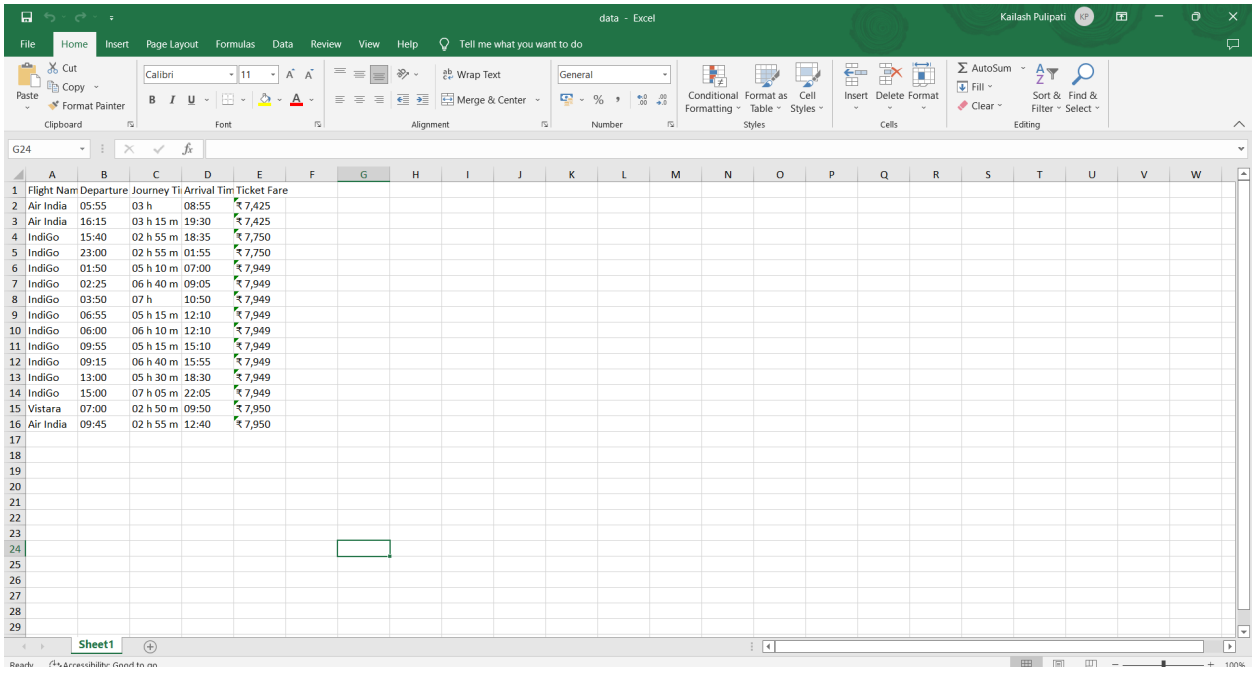






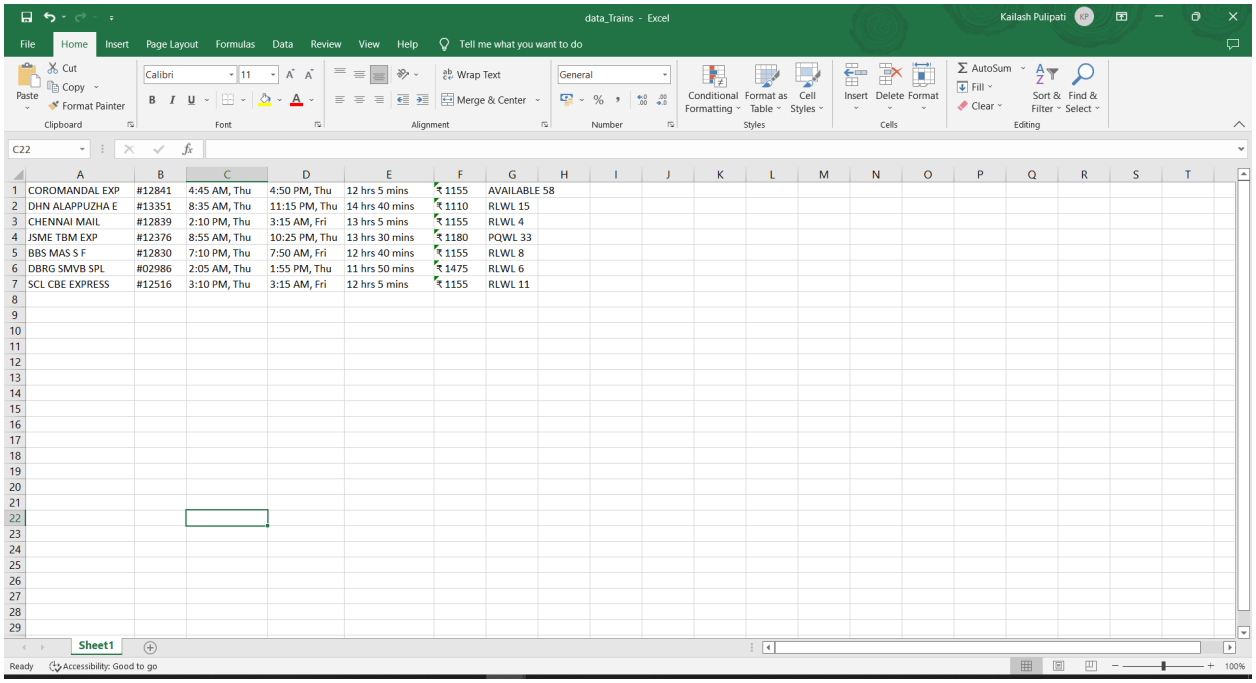
Extracted Data Screenshots

Flights



	A	B	C	D	E
1	Flight Nam	Departure	Journey Ti	Arrival Tim	Ticket Fare
2	Air India	05:55	03 h	08:55	₹7,425
3	Air India	16:15	03 h 15 m	19:30	₹7,425
4	IndiGo	15:40	02 h 55 m	18:35	₹7,750
5	IndiGo	23:00	02 h 55 m	01:55	₹7,750
6	IndiGo	01:50	05 h 10 m	07:00	₹7,949
7	IndiGo	02:25	06 h 40 m	09:05	₹7,949
8	IndiGo	03:50	07 h	10:50	₹7,949
9	IndiGo	06:55	05 h 15 m	12:10	₹7,949
10	IndiGo	06:00	06 h 10 m	12:10	₹7,949
11	IndiGo	09:55	05 h 15 m	15:10	₹7,949
12	IndiGo	09:15	06 h 40 m	15:55	₹7,949
13	IndiGo	13:00	05 h 30 m	18:30	₹7,949
14	IndiGo	15:00	07 h 05 m	22:05	₹7,949
15	Vistara	07:00	02 h 50 m	09:50	₹7,950
16	Air India	09:45	02 h 55 m	12:40	₹7,950

Trains



	A	B	C	D	E	F	G
1	COROMANDAL EXP	#12841	4:45 AM, Thu	4:50 PM, Thu	12 hrs 5 mins	₹1155	AVAILABLE 58
2	DHN ALAPPUZHA E	#13351	8:35 AM, Thu	11:15 PM, Thu	14 hrs 40 mins	₹1110	RLWL 15
3	CHENNAI MAIL	#12839	2:10 PM, Thu	3:15 AM, Fri	13 hrs 5 mins	₹1155	RLWL 4
4	JSME TBM EXP	#12376	8:55 AM, Thu	10:25 PM, Thu	13 hrs 30 mins	₹1180	PQWL 33
5	BBS MAS S F	#12830	7:10 PM, Thu	7:50 AM, Fri	12 hrs 40 mins	₹1155	RLWL 8
6	DBRG SMVB SPL	#02986	2:05 AM, Thu	1:55 PM, Thu	11 hrs 50 mins	₹1475	RLWL 6
7	SCL CBE EXPRESS	#12516	3:10 PM, Thu	3:15 AM, Fri	12 hrs 5 mins	₹1155	RLWL 11

Work Improvements Done

1. Implementation of Multiple websites for getting the Flight Tickets Price Variation.

All the websites used for data extraction are:

https://www.makemytrip.com/flights/
https://www.makemytrip.com/railways/
https://www.goibibo.com/flights/
https://www.easemytrip.com/flights.html

Extracted Data:

Makemytrip Website

Flight Name	Departure Time	Journey Time	Arrival Time	Ticket Fare
SpiceJet	06:15	02 h 35 m	08:50	₹ 8,053
SpiceJet	18:50	02 h 40 m	21:30	₹ 8,053
IndiGo	08:25	02 h 55 m	11:20	₹ 8,054
IndiGo	17:15	03 h	20:15	₹ 8,054
IndiGo	19:20	02 h 50 m	22:10	₹ 8,054
Air India	05:45	03 h 05 m	08:50	₹ 8,055

Makemytrip Railways Website

Train Name	Train Name1	Departure	Arrival	Ticket Price
#12286	SMPARK KRNT EXP	5:20 AM, Tue	4:43 PM, Wed	₹ 2150
#12270	MAS DURONTO EXP	3:55 PM, Tue	8:55 PM, Wed	₹ 3275
#12616	GRAND TRUNK EXP	4:10 PM, Tue	4:30 AM, Thu	₹ 2140
#12622	TAMILNADU EXP	9:05 PM, Tue	6:15 AM, Thu	₹ 2140

Goibibo Website

Flight Name	Departure Tin	Arrival Time	Journey Time	Ticket Fare
Air India	07:30	14:10	6h 40m	6,640
Air India	06:10	14:10	8h 00m	6,640
AirAsia	08:10	17:05	8h 55m	6,735

Easemytrip Website

Flight Name	Departure Tim	Journey Time	Arrival Time	Ticket Fare
Air India	07:30	06h 40m	14:10	6,640
Air India	06:10	08h 00m	14:10	6,640
AirAsia	09:35	07h 30m	17:05	6,735
AirAsia	08:10	08h 55m	17:05	6,735
AirAsia	21:20	09h 05m	06:25	6,735
AirAsia	21:20	11h 15m	08:35	6,735
AirAsia	19:05	11h 20m	06:25	6,735

2. Speech Recognition Module

With the help of SpeechRecognition module and pyttsx3 we are able to perform voice recognition so that the user will give the input where it gets saved in an excel file and through that file we take the inputs for the source and destination for our Project.

```
import speech_recognition as sr
import pyttsx3
```

Code :

```
import speech_recognition as sr
import pyttsx3

# Initialize the recognizer
r = sr.Recognizer()

# Function to convert text to speech
def SpeakText(command):
    engine = pyttsx3.init()
    engine.say(command)
    engine.runAndWait()

while(1):
    try:
        with sr.Microphone() as source2:
            r.adjust_for_ambient_noise(source2, duration=0.2)

            #listens for the user's input
            audio2 = r.listen(source2)

            # Using google to recognize audio
            MyText = r.recognize_google(audio2)
            MyText = MyText.lower()

            print("Did you say ",MyText)
            SpeakText(MyText)
    except sr.RequestError as e:
        print("Could not request results; {0}".format(e))
    except sr.UnknownValueError:
        print("unknown error occurred")
```

Output

```
[Running] python -u "d:\vsc\SEM4\SEM5\rpa\speechRecog.py"
Did you say  chennai
```

And this output later gets saved into the excel sheet where the required data will be extracted through UiPath Automation and used for providing input and output for the project.

3. Data Analyser Module

This module helps us to analyze the extracted data of Flights/Trains available from each website and shows the cheapest option of all.
With the help of pandas and numpy modules we are able to perform the required operations and read the files for data analysis.

```
1  import numpy as np
```

```
1  import pandas as pd
```

```
1  df1=pd.read_excel("D:\\vsc\SEM4\SEM5\Datasets\\rpa jcomp\data.xlsx")
2  df2=pd.read_excel("D:\\vsc\SEM4\SEM5\Datasets\\rpa jcomp\data_trains.xlsx")
3  df3=pd.read_excel("D:\\vsc\SEM4\SEM5\Datasets\\rpa jcomp\data_easemytrip.xlsx")
4  df4=pd.read_excel("D:\\vsc\SEM4\SEM5\Datasets\\rpa jcomp\data_goibibo.xlsx")
```

```
[10]
1 df1.head()
```

	Flight Name	Departure Time	Journey Time	Arrival Time	Ticket Fare
0	SpiceJet	06:15	02 h 35 m	08:50	₹ 8,053
1	SpiceJet	18:50	02 h 40 m	21:30	₹ 8,053
2	IndiGo	08:25	02 h 55 m	11:20	₹ 8,054
3	IndiGo	17:15	03 h	20:15	₹ 8,054
4	IndiGo	19:20	02 h 50 m	22:10	₹ 8,054

```
[11]
1 df2.head()
```

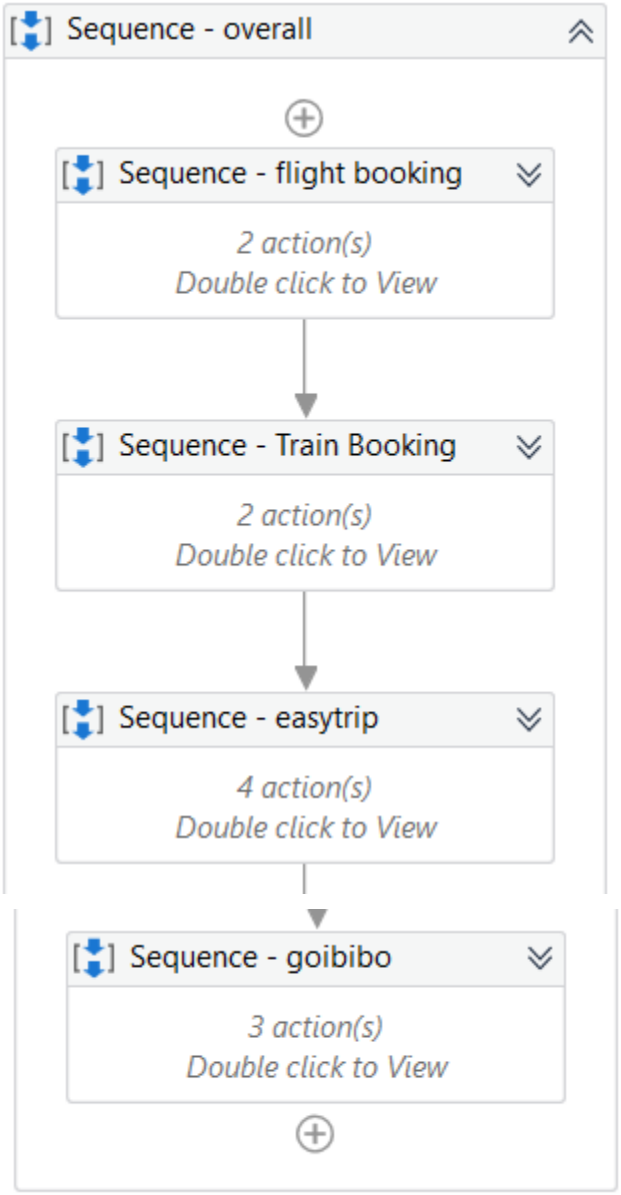
	Train Name	Train Name1	Departure	Arrival	Ticket Price
0		SMPARK KRNT EXP	5:20 AM, Tue	4:43 PM, Wed	₹ 2150
1	#12270	MAS DURONTO EXP	3:55 PM, Tue	8:55 PM, Wed	₹ 3275
2	#12616	GRAND TRUNK EXP	4:10 PM, Tue	4:30 AM, Thu	₹ 2140
3	#12622	TAMILNADU EXP	9:05 PM, Tue	6:15 AM, Thu	₹ 2140

```
1 z=df2[df2["Ticket Price"]==df2["Ticket Price"].min()]
2 print(z)
```

```
  Train Name      Train Name1     Departure       Arrival Ticket Price
2     #12616  GRAND TRUNK EXP  4:10 PM, Tue  4:30 AM, Thu       ₹ 2140
3     #12622    TAMILNADU EXP  9:05 PM, Tue  6:15 AM, Thu       ₹ 2140
```

So with the help of this output the user will be able to check for the cheapest way of travel to the required destination from multiple websites..

Final Overall Sequence



Conclusion

So we are able to achieve the automated ticket booking process using UiPath Automation. We have successfully implemented a voice recognition module which we use to take the Voice input of the source, destination from the user which will be used as an input for the ticket automation process. We have also learnt about web scraping which helps us to scrap the data from the web pages and store them in the excel sheet which will be used to analyze the required output. Using the concepts of python and Machine Learning we are able to get the cheapest mode of travel to the mentioned destination.

Future Works

We can implement the feature where we can add the option to get suggestions for the customers to get the airways that have less cancellation costs by analyzing the cancellation costs of that airways by a 1 month period.

We can also suggest the right flight to the passenger that has the most suggestions so that customer satisfaction can be improved.

We can add a feature where customer ratings for particular flights are given and customers can choose the right flight accordingly by referring to the reviews.

We can also make an automation where the customer gets the cheapest price and the airline details through mail by the process of email automation, so that the customer doesn't need to remember them and the data can be easily saved.

References

https://www.geeksforgeeks.org/python-convert-speech-to-text-and-text-to-speech/
https://www.makemytrip.com/flights/
https://www.goindigo.in/flight-booking.html
https://www.easemytrip.com/flights.html
https://www.goibibo.com/flights/