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**Final Project**

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Topic:

Designing, Building and Testing a Voice Application using Dialog flow.

Step 1 - Describe the Application

I have developed a sophisticated voice-enabled assistant named "Mario" that serves as a comprehensive and personalized guide for travellers. Building upon my prior assignments, I have expanded the application's functionality to encompass a range of new intents that facilitate seamless travel experiences for users.

Mario now boasts an impressive collection of six distinct intents, each tailored to address specific travel-related needs. For instance, the "Choose Flight" intent enables users to select flights that best suit their itinerary, while the "Rental Car" intent helps users navigate car rental options with ease. The "Upgrade Flight" intent allows users to upgrade their travel experience, while the "CheckIn Flight" intent enables users to conveniently check in for their journey in line with their travel schedule. Additionally, the "Flight Status" intent keeps users updated on any changes to their flight schedules, while the "Special Assistance" intent provides support to travellers with unique health concerns or other pressing issues.

With Mario as their trusted travel companion, users can effortlessly access a wealth of travel-related information and services at their fingertips. The application's intuitive interface and advanced functionality ensure that users are always up-to-date with their travel plans, making for a hassle-free and memorable travel experience.
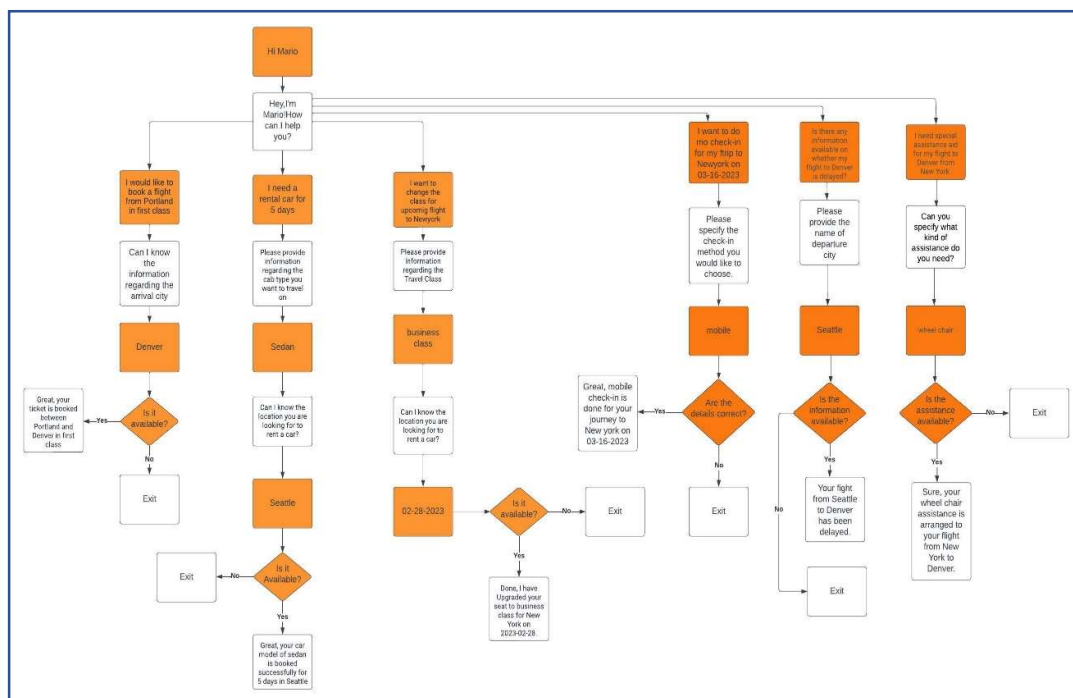
Step 2- Interaction Model

The interaction model has six intents, each of which is made up of 25 training phrases for the best possible performance and accuracy.

Training Phrases:

1.Intent: **Choose Flight Intent**

The following utterances can be used for Choose Flight Intent

1) I am interested in booking a flight from Seattle to New York.
2) Can you reserve me a flight ticket in economy class to Seattle?
3) I would like to book a flight from Portland in first class.
4) Can you book a flight ticket in business class to New York from Portland?
5) Can you help me to secure a flight ticket to Seattle from Denver?
6) I need to reserve a flight from Denver to Seattle for economy class.
7) I am looking to buy a flight ticket from New York to Denver in first class.
8) Could you book a flight in first class from LasVegas to New York?
9) I would like to go to Kansas from Portland in economy class, can you book me a flight?
10) I want to book a flight from Portland to LasVegas in first class
11) Could you please reserve a premium class ticket from Seattle to New York?
12) Can you please reserve a first class flight ticket to New York from LasVegas?
13) I am interested in booking an economy class ticket from Portland to New York, could you please help me with that?
14) I am looking for help to secure a flight ticket from Denver to New York in premium class. Could you please assist me?
15) Can you help me in getting a flight ticket in first class from Portland to New York?
16) I want to book a flight ticket from Dallas to Portland in economy class.
17) I would like to go to New York from Dallas. Can you book me a business class ticket for my travel?
18) I want to travel in economy class to Seattle from Portland. Please help me with it.
19) I am looking for help to reserve a flight ticket in premium class to Seattle from New York.
20) I need to book a first class ticket to Denver from Portland.
21) Could you assist me in booking a flight ticket from Denver to Seattle?
22) I need to book a flight from New York to Seattle. Can you be able to help me with that?
23) Please assist me in reserving a flight ticket to Portland from New York.
24) I need to travel to Portland. Please book me a premium class ticket.
25) I am interested to buy a flight ticket from Dallas to Portland.

2.Intent: **Rental Car Intent**

The following utterances can be used for Rental Car Intent

1) I am looking for a rental car at New York for 8 days of type sedan.
2) I need a rental car for 5 days.

3) I need a rental car of type suv at New York for two days can you book for me.
4) I am interested in renting a car at New York for 6 days with minivan.
5) I would like to take a rental car of type coop.
6) Can you reserve me a coop model car at New York for nine days?
7) Can you help me to book a rental car which is sedan at New York for three days?
8) Can I rent a car for 7 days of type suv model at New York.
9) Could you help me in booking a car for rent for 4 days of type coop?
10) I want to rent a minivan for five days at New York.
11) Can you help me find a coop rental car for 3 days in New York?
12) I'm looking to rent a sedan in New York for two days. Could you assist me with that?
13) I need to rent a suv in New York for six days. Can you please help me with that?
14) Can you help me in booking a minivan for rent in New York for 10 days?
15) Can you reserve me a minivan for 6 days at New York.
16) Could you please reserve me a sedan car at New York for four days.
17) I'm looking for minivan for rent for 3 days in New York.
18) I would like to book a coop for rent at New York.
19) Please assist me in booking a rental car for two days.
20) Could you help in reserving a sedan car?
21) I'm looking to rent a minivan at New York. Please help me in booking that.
22) I need you to help to book me a rental car in New York for seven days.
23) I want to book a sedan car in New York.
24) I want a rental car in New York which is coop.
25) Could you help me in booking a rental car in New York for nine days.

3.Intent: **Upgrade Flight Intent**

The following utterances can be used for Upgrade Flight Intent

1) Can I upgrade my seat to business class for my trip to New York on 02-20-2023?
2) Please help me in upgrading my ticket to first class.
3) I would like to upgrade the seat on my pre-booked flight to New York on 02-20-2023.
4) I want to change the class for my upcoming flight to New York.
5) I need to upgrade my seat to business class for my trip to New York on 02-20-2023.
6) Can you please upgrade my existing ticket to business class?
7) Can you upgrade my flight for New York on 02-20-2023 to first class?
8) Could you help in upgrading my ticket to business class for New York on 02-20-2023?
9) I want to upgrade to first class for my flight to New York on 02-20-2023.
10) My flight to New York on 02-20-2023 is already booked, please change my seat preference to first class.
11) I would like to change my seat to premium class for my flight to New York on 02-20-2023?
12) Can you please help me upgrade my seat to first class for my flight to New York on 02-20-2023?
13) I would like to upgrade my seat to business class for my upcoming trip to New York on February 02-20-2023.

14) I need you to help me upgrade my seat to premium class for my flight to New York on 02-20-2023?

15) I am interested in upgrading my seat to first class for my upcoming trip to New York on 02-20-2023. Could you assist me with that?

16) I need to upgrade my seat to first class for the flight to New York on 02-20-2023.

17) Can you change my seat preference to first class for the New York flight that I've already booked for 02-20-2023?

18) I would like to request a seat upgrade to premium class for my already booked flight to New York on 02-20-2023.

19) Could you please upgrade my seat to first class for the flight to New York that I've already pre-booked for 02-20-2023.

20) I would like to change my seat preference to premium class for the New York flight that I booked in advance for 02-20-2023.

21) Please upgrade my seat to business class for my trip on 02-20-2023.

22) Can you assist me with upgrading my ticket to first class?

23) I am interested in upgrading my ticket to premium class for New York. Could you please help me with that?

24) I am looking to upgrade my seat for my trip to New York on 02-20-2023.

25) I want to upgrade my seat for the New York flight that I booked in advance for 02-20-2023. Can you do that?

4.Intent: **CheckIn Flight Intent**

The following utterances can be used for CheckIn Flight Intent

1) I want to do online check-in for my flight from New York on 03-16-2023.
2) Could you please help me to do mobile check-in on 03-16-2023 from New York?
3) My flight from New York is on 03-16-2023. Please do online check-in.
4) I would like to do automatic check-in on 03-16-2023 from New York.
5) My journey is on 03-16-2023 from New York. Help me in checking in my flight through online.
6) Can you do mobile check-in on 03-16-2023 from New York?
7) Please help me in checking in online from New York on 03-16-2023.
8) Can you do automatic check-in for my flight on 03-16-2023 departing from New York?
9) I would like to check-in for my flight on 03-16-2023 from New York in online.
10) I am travelling from New York on 03-16-2023 and want to do automatic check-in.
11) I would like to do mobile check-in for my flight departing from New York on 03-16-2023.
12) My travel date is on 03-16-2023 from New York. Help me with doing mobile check-in for my travel.
13) Please do automatic check-in for my scheduled flight on 03-16-2023 from New York.
14) I'm departing from New York on 03-16-2023. Please do online check-in.
15) Can you help me complete online check-in for my flight from New York on 03-16-2023?

16) I need to do online check-in for my flight from New York.
17) Please do automatic check-in for my upcoming flight from New York
18) Could you do check-in for my trip from New York?
19) I need assistance in check-in for my upcoming trip on 03-16-2023.
20) I would like to check-in for my upcoming flight from New York on 03-16-2023
21) Please help me in doing online check-in for my flight from New York.
22) Can you help me with checking in my flight from New York on 03-16-2023?
23) Could you do the check-in for my flight on 03-16-2023 from New York?
24) Please assist me in checking in my upcoming flight from New York.
25) Can you assist me with checking in for my flight from New York on 03-16-2023?

5.Intent: **Flight Status Intent**

The following utterances can be used for Flight Status Intent.

1) Has my flight from New York to Denver is delayed?
2) Can you check if my flight from New York to Denver is on-time?
3) Can you tell me if my flight from New York to Denver has been cancelled due to weather conditions?
4) Can you help me in knowing if my upcoming flight to Denver is on-time from New York?
5) Can you tell me if my flight from New York to Denver is currently on-time?
6) Can you provide me an update if the flight is on-time to Denver from New York?
7) I'm looking for information on my upcoming flight from New York to Denver. Can you tell me if it's currently delayed?
8) Can you confirm whether my flight to Denver from New York has been cancelled?
9) Could you please let me know if my flight to Denver from New York is on-time?
10) Is my flight from New York to Denver is on schedule, or has it been delayed? Can you give me an update on whether the flight from New York to Denver is on-time?
11) I'm hoping to get an update on my upcoming flight from New York to Denver. Can you confirm if it's delayed?
12) Is there any information on whether my flight from New York to Denver is cancelled?
13) Could you provide an update on my flight from New York to Denver? Is it delayed?
14) I'm supposed to fly to Denver soon from New York. Can you tell me if my flight is currently on-time?
15) I need to check the status of my flight from New York to Denver. Can you confirm if it's on-time?
16) Can you help me check if my flight from New York to Denver has been cancelled?
17) I need to know if my flight to Denver from New York is on-time.
18) I'm checking to see if my flight from New York to Denver is cancelled. Do you have any updates on that?
19) I want to know if my flight from Denver is on-time.
20) Can you check if my flight has been cancelled?
21) I would like to know the status of my flight to Denver from New York.
22) Please let me know the details if my flight is cancelled.
23) Is there any information available on whether my flight to Denver is delayed?

24) I'm looking to confirm whether my flight has been delayed. Is there any information you can provide me with?

6.Intent: **Special Assistance Intent**

The following utterances can be used for Special Assistance Intent.

1) I need wheel chair assistance for my flight from New York to Denver.
2) Can you help me request pet assistance for my upcoming flight to Denver from New York?
3) I need to request pet assistance for my flight from New York to Denver.
4) I would require wheel chair assistance to Denver from New York.
5) Could you arrange me wheel chair assistance for my upcoming flight to Denver from New York?
6) I require the help of pet assistance for my flight to reach Denver from New York.
7) Can you assist me with arranging medical assistance for my flight from New York to Denver?
8) Could you provide me with wheel chair support in my flight to Denver from New York?
9) I need help with pet assistance for my upcoming flight to Denver from New York.
10) I would like to seek wheel chair support from New York to Denver.
11) I am looking for medical assistance for my travel in flight from New York to Denver.

12) Can you arrange me with wheel chair support for my journey from New York to Denver for my upcoming flight?
13) Pet assistance is required for my upcoming flight from New York to Denver.
14) I'm travelling from New York to Denver. Can you help me with providing medical assistance for my trip.
15) I'm in need of medical assistance for my flight travel from New York to Denver.
16) Could you please add wheel chair assistance to my existing flight from New York to Denver.
17) I am in need of wheel chair support for my travel to Denver. Please help me with it.
18) Can you arrange me pet assistance for my upcoming flight journey?
19) I am interested in obtaining wheel chair assistance for my journey from New York to Denver.
20) Can you assist me in arranging medical assistance for my upcoming flight to Denver?
21) My trip to Denver needs pet assistance. Is it possible to get it?
22) I need help with medical assistance for my upcoming flight.
23) My flight journey from New York requires wheel chair support. Help me with it.
24) Can you provide me special assistance aid for my trip to Denver from New York?
25) I want to go to Denver from New York with pet assistance.

Parameters and Entities:

1. Intent: **Choose Flight Intent**

Parameter Name: Class

Entity Type: @Class
- ➢ Economy class
- ➢ First class
- ➢ Business class
- ➢ Premium class

Parameter Name: arrival-city
Entity Type: @sys.geo-city
Parameter Name: depature-city
Entity Type: @sys.geo-city

2. Intent: **Rental Car Intent**

Parameter Name: CabType
Entity Type: @CabType
- ➢ sedan
- ➢ suv
- ➢ minivan
- ➢ coop

Parameter Name: number
Entity Type: @sys.number
Parameter Name: geo-city
Entity Type: @sys.geo-city

3. Intent: **Upgrade Flight Intent**

Parameter Name: Class
Entity Type: @Class
- ➢ economy class
- ➢ first class
- ➢ business class
- ➢ premium class

Parameter Name: geo-city
Entity Type: @sys.geo-city
Parameter Name: date
Entity Type: @sys.date

4. Intent: **CheckIn Flight Intent**

Parameter Name: TypeOfCheckIn
Entity Type: @TypeOfCheckIn
- ➢ online
- ➢ mobile
- ➢ automatic

Parameter Name: geo-city

Entity Type: @sys.geo-city
Parameter Name: date
Entity Type: @sys.date

5.Intent: **Flight Status Intent**

Parameter Name: StatusType
Entity Type: @StatusType
> ➢ delayed
> ➢ cancelled
> ➢ on-time

Parameter Name: departure-city
Entity Type: @sys.geo-city
Parameter Name: arrival-city
Entity Type: @@sys.geo-city

6.Intent: **Special Assisitance Intent**

Parameter Name: AsstType
Entity Type: @AsstType
> ➢ wheel chair
> ➢ medical
> ➢ pet

Parameter Name: departure-city
Entity Type: @sys.geo-city
Parameter Name: arrival-city
Entity Type: @@sys.geo-city

Step 3- Fulfillment

1.Intent: **Choose Flight Intent**

- This code defines a function called ChooseFlight that uses the Dialogflow Fulfillment library to handle incoming requests from a user regarding booking a flight. The function generates a response to the user's request by selecting a random string from an array of possible responses.
- The ChooseFlight function starts by defining a helper function called rand1 that generates a random number between 0 and the length of an array passed as an argument.
- Next, the function extracts the parameters of the user's request from the agent object. Specifically, it extracts the arrival city, departure city, and flight class.
- After that, the function defines an array called response that contains three different string responses that will be used to confirm the booking of the flight.

- The function then uses the rand1 helper function to generate a random number between 0 and 2 (inclusive) and selects a response string from the response array using this random number. The selected string is then added to the agent's response using the agent.add method.
- Overall, this function serves as an example of how to generate a random response to confirm a booking made by a user. However, it does not include any actual booking of flights.

2.Intent: **Rental Car Intent**

- This code implements the backend logic for a Dialogflow agent to handle a user's request to rent a car. The RentalCar function uses the Dialogflow Fulfillment library to generate a response message for the user's request.
- To generate a response, the function first defines a helper function rand2 that generates a random number between 0 and the length of an array passed as an argument.
- Next, the function extracts the user's request parameters from the agent object, including the number of days for the rental, the type of cab, and the city where the rental will take place.
- The function then defines an array response that contains two different strings that will be used to confirm the rental of the car.
- Using the rand2 helper function, the function generates a random index between 0 and 1 (inclusive) and selects a response string from the response array using this index. The selected string is then added to the agent's response using the agent.add method.
- It is important to note that while the function generates a confirmation response for the rental of a car, it does not actually book the car.

3.Intent: **Upgrade Flight Intent**

- The above code defines a JavaScript function named UpgradeFlight(agent), which takes an agent parameter as input. This function is likely part of a larger program designed to simulate a conversational interface, such as a chatbot or voice assistant.
- The function begins by defining a nested function named rand3. This function takes a single parameter len, which represents the length of an array. It generates a random integer between 0 and len, inclusive, and returns it.
- The main body of the UpgradeFlight function extracts three parameters from the agent input object: city, Class, and date. These parameters are assumed to represent the destination city, desired travel class, and date of the flight upgrade request, respectively.
- The function then creates an array named response that contains two different message strings. These messages are written in a conversational tone and indicate that the user's flight seat has been upgraded to the desired class for the specified destination city and date.

- Next, the rand3 function is called with the length of the response array as its argument, which generates a random index value. This random index is used to select one of the two message strings from the response array.
- Finally, the selected message string is added to the response returned by the agent object, which is likely being used to communicate with the user in a conversational interface. This message string will inform the user that their flight seat has been upgraded.

4.Intent: **CheckIn Flight Intent**

- The CheckInFlight function is a JavaScript code block designed for use in a conversational interface such as a chatbot or voice assistant. The function accepts an agent object, which contains the user's input and context in the conversation.
- The program begins by defining a nested function called rand5 that generates a random integer between 0 and a specified len parameter, inclusively. This function is later used to randomly select a response message from an array.
- The function then extracts three parameters, city, type, and date, from the agent object. These parameters represent the flight's destination city, the type of check-in the user has chosen (e.g. online, mobile, etc.), and the flight's date.
- Afterward, the program creates an array called response, which contains two message strings that inform the user that their check-in for the flight to the specified destination city on the specified date has been completed.
- The rand5 function is then invoked with the response array's length as its argument, generating a random index value that is used to select one of the two message strings from the response array.
- Finally, the selected message string is added to the response returned by the agent object, informing the user that their check-in for the flight has been completed.
- In summary, the CheckInFlight function generates a response message that informs the user that their check-in for a specific flight has been completed. The program's use of the rand5 function to randomly select a response message adds an element of variability to the program, making it more engaging for the user.

5.Intent: **Flight Status Intent**

- The code is defining a function named FlightStatus that takes an agent object as a parameter. The function is designed to provide information about the status of a flight from a departure city to an arrival city based on a user's input.
- The function checks for the StatusType parameter passed to the function and provides different responses based on the value of this parameter. If the value is "delayed", the function will respond with two messages, one stating that the flight has not been delayed and another stating that the flight has been delayed. Similarly, if the value is "cancelled", the function will respond with two messages, one stating that the flight has not been cancelled and another stating that the flight has been cancelled. If the value is "on-time", the function will respond with two messages, one stating that the flight is not on time and another stating that the flight is on time.

- The function uses the add method of the agent object to add the response messages. These messages are constructed using template literals that include the values of the deptcity and arrivalcity parameters passed to the function.

6.Intent: **Special Assisitance Intent**

- The code defines a function named SpecialAssistance that takes an agent object as a parameter. The function is designed to provide information about special assistance for a flight from a departure city to an arrival city based on a user's input.
- The function begins by defining a helper function named rand4 that takes a parameter len and returns a random number between 0 and len. This helper function is used to select a random message from an array of responses.
- The function then extracts the values of arrival-city, departure-city, and AsstType parameters from the agent object. It uses these values to construct an array of response messages that include the departure city, arrival city, and the type of assistance arranged for the flight.
- The function then uses the rand4 helper function to select a random message from the response array and adds it to the agent response using the add method of the agent object.
- In summary, the function uses the values of arrival-city, departure-city, and AsstType parameters to construct a message about the special assistance arranged for a flight and returns a randomly selected message from an array of response messages using a helper function.

Step 4- User Testing:

Task	Completed	Time to complete	User 1	User 2
Reserving a flight ticket to New York from Denver	Yes	35 sec	40 sec	30 sec
Booking a rental car at New York	Yes	40 sec	30 sec	35 sec
Upgrade the flight ticket to first class	Yes	30 sec	25 sec	30 sec
To complete the process of check-in for the flight	Yes	35 sec	35 sec	25 sec
Check the status of my flight	Yes	35 sec	25 sec	30 sec

Arrange special assistance for pre-booked flight ticket	Yes	40 sec	25 sec	40 sec

User 1:

Question	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
Is the voice assistant able to perform the given range of tasks?				X	
Is the voice assistant able to provide the flight status information accurately?				X	
Are you satisfied with the speed of the voice assistant's responses?			X		
Is the voice assistant's response time quick?				X	
Is the voice assistant able to understand the requests made by the user?					X
Are you able to enjoy with this system?				X	
Did the voice assistant provide helpful recommendations?			X		
Is it simple for the voice assistant to understand the natural language?				X	
Are you planning on making further use of the voice assistant?				X	
Having used the voice assistant generally, are you happy with the results?			X		

User 2:

Question	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
Is the voice assistant able to perform the given range of tasks?					X

Question					
Is the voice assistant able to provide the flight status information accurately?			X		
Are you satisfied with the speed of the voice assistant's responses?			X		
Is the voice assistant's response time quick?				X	
Is the voice assistant able to understand the requests made by the user?				X	
Are you able to enjoy with this system?				X	
Did the voice assistant provide helpful recommendations?			X		
Is it simple for the voice assistant to understand the natural language?					X
Are you planning on making further use of the voice assistant?				X	
Having used the voice assistant generally, are you happy with the results?			X		

3-open ended questions:

1) What aspects of the application stood out to you as particularly useful, and why?

I think that the prompts used throughout the interaction are well-crafted and appropriate, leading to a highly engaging and interactive session. The application exhibits a high degree of quality in terms of its structure and content. The intents chosen for the use case are not only relevant but also useful, indicating careful consideration of the user's needs.

2)How well did the application meet your needs or expectations for the task you were trying to accomplish?

Upon extensive testing of the application with a diverse set of utterances, it performed admirably by providing accurate and complete output, effectively fulfilling the intended tasks. The application's performance was consistently reliable, displaying proficiency in most scenarios tested. As a user, I am pleased with the application's ability to consistently deliver accurate and satisfactory results.

3)What features of the application can be improved?

In my opinion, incorporating additional features into the application can enhance its responsiveness. Specifically, I suggest expanding the special assistance intent to include more detailed information. This would enable the application to provide extra prompts in instances where the user requires medical assistance, asking for specific details regarding the nature of the required medical support. By doing so, the application's performance would improve significantly.

Step 5- Review and Reflections:

General Impressions:

The process of creating a voice assistant can be exciting and challenging. When creating a voice assistant, several things need to be taken into account, including the assistant's functionality, user interface, and technology using. The development of natural language processing (NLP) and natural language understanding (NLU) capabilities is one of the most difficult aspects of creating a voice assistant. The ability of the system to translate spoken language into text that can be processed is referred to as natural language processing (NLP), whereas natural language understanding (NLU) refers to the system's capacity to comprehend spoken words' meanings and respond to user requests appropriately. A further difficulty is ensuring that the voice assistant can recognize and understand user commands without error, regardless of accent or dialect. The voice recognition and language models that the system uses must be carefully tested and tuned for this.

We can say that one of the benefits here is making a voice assistant gives developers the chance to design a more intuitive and natural user interface. The voice assistant can offer users a hands-free interface that makes technology use more natural. The intents that are used here worked well with relevant parameters.

There are several areas where voice assistant can be improved, including accuracy, speed, contextual awareness, integration, privacy, and multilingual support. Privacy and security issues must be carefully taken into account when developing a voice assistant, though. In order to protect user data from unauthorized access and secure storage, it is crucial to remember that voice assistants may collect sensitive personal information. By focusing on this area, my voice assistant can provide a more personalized, relevant, and intuitive user experience.

 In general, creating a voice assistant can be both a rewarding and difficult project that necessitates a thorough knowledge of both user interface design and natural language processing. A voice assistant can offer a helpful and simple interface for users to interact with technology with careful planning and attention to detail.

Time:

Developing a voice assistant with multiple intents can be a challenging and time-consuming process, requiring a deep understanding of natural language processing, and software development. The

amount of time needed to create a voice assistant depends on the project's complexity, the accessibility of tools and resources, and the level of subject-matter expertise.

It takes a lot of time, effort, and knowledge to create a voice assistant with multiple intents. For each of the six intents, a natural language processing (NLP) model would need to be created and trained in order to recognize and comprehend user commands for booking flights, renting cars, and other travel-related inquiries. The development and training of the model is one of the most time-consuming steps in creating a voice assistant. To increase the model's accuracy and overall performance, I have spent more time tuning it. The process of integrating the system takes time as well when creating a voice assistant.

Testing:

An essential step in the development process is testing a voice assistant application to make sure it functions as intended and lives up to user expectations. An application for a voice assistant typically has several intents, each with its own set of features. It's crucial to test with a diverse group of users to ensure that the application meets the needs of the target audience.

It involved developing test cases to confirm that the application can handle various inputs and scenarios. For the choose flight intent, for instance, test cases could be handling errors, selecting various flight options, and checking for availability in my case. Another example can be checking the information regarding available rental cars in rental car intent and selecting the options for type of car. Checking the options for upgrading the seat preference for already pre-booked flight for the journey. Various training phrases have been included for all the intents.

The user interface and experience with the voice assistant application are evaluated through usability testing. Hence it involves asking users to carry out specific actions, like making a flight reservation or asking for special assistance, and watching how they interact with the application. In order to make the application more intuitive and user-friendly, this kind of testing can help pinpoint areas where it can be improved. To make sure the application meets the needs and expectations of the user, user testing is essential. Users are surveyed during user testing to get their opinions on the features, functionality, and overall user experience of the application. The user's expectations can be better understood and areas for improvement can be found with the help of this feedback.

More testing could be done if more time was available, including stress testing to see how quickly the application responds to heavy loads, regression testing to make sure that new features or changes don't adversely affect existing functionality, and exploratory testing to find any unforeseen problems or bugs.

Future Work:

There might be some areas of the application that need more development or improvement in the future. For instance, user feedback might suggest that the application's dialogue management system could be enhanced or that specific features could be added to improve the user experience. Code optimization and latency reduction could increase the application's response times. To increase the NLU model's precision and capacity for handling more complex inputs, it might also be necessary to update it. To further enhance the natural language understanding (NLU) model's precision and its ability to handle complex inputs, updating the model may be necessary. This could be achieved by incorporating additional training data, implementing new algorithms, or exploring different modelling techniques. A voice assistant application can add new functionality in a variety of

ways in terms of features. To help users when something goes wrong, the application could use more error handling and more detailed error messages. To give users more options for the users, additional intents like baggage information and travel insurance could be added. To give users a more complete travel experience, the application could also be integrated with other services, like reservations for hotels or restaurants. Adding information regarding weather services is another unique option where the users can have best experience with using the voice assistant. The user interface could be improved to make it easier to use and more aesthetically pleasing.

Step 6- Demo and Presentation:

Demo Link: https://bot.dialogflow.com/9dd7d209-6efe-499d-b1f1-913df613ec85

Presentation Link:
https://pdx.zoom.us/rec/share/PECpEv0Q0E0Vmr51s8T5lQjNQVXvmmRwBBTx8zh7GOzyizJgBKjWzl
NjlJZg7Ubd.qxF0-g3wx69GzPcq