

CS 410/510: Voice Assistants

Homework 3 - Dialogflow / Google Actions

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Use Case 3: *Book a flight*

Step 1 - Invocation Name

Answer : *flight trip planner*

<https://bot.dialogflow.com/60e2bd30-8e9b-4ef1-a00a-60aa05f9eb03>

Step 2 - Intents

1. Intent : *SearchCheapestFlightIntent*

Description : User wants to search for the cheapest flight from a city to another city. Based on the source and destination city, the intent will provide details of a flight which is the cheapest.

2. Intent : *WhereToGoVacationIntent*

Description : User wants to know where he/she can travel from a source destination. The intent will provide a list of cities, where travel is possible via flight from the user given source city. We get a list, also we can limit the list by giving the number of cities, or number of days we can be on vacation and a custom slot of duration like short trip or long vacation.

3. Intent : *LowBudgetVacationIntent*

Description : This is the case when a user specifies only the source city and asks the agent to search for the lowest flight ticket from a list of all flights available from that source city.

Note : Destination city is not given as input and hints of less expenditure is asked by the user.

Step 3 - Training Phrases

Intent : *SearchCheapestFlightIntent*

1. I want to travel to new york from los angeles
2. I would like to travel from las vegas to seattle
3. Plan my trip from boston to chicago
4. Search for flights from san francisco to los angeles
5. Check flights from new york to las vegas
6. Are any flights available from seattle to boston
7. What is the cheapest flight to chicago from san Francisco
8. Please check whether any flights are available from los angeles to seattle
9. Tell me the cheapest flight to boston from seattle
10. Plan a flight trip to new york from las vegas
11. Take me to san francisco from seattle
12. I'd like to fly out of chicago to los angeles

Intent : *WhereToGoVacationIntent*

1. Where can I go on a vacation from new york Tell me three cities
2. Plan my vacation from los angeles I need a two day trip
3. Take me away from las vegas on a small trip
4. When should I go for a family trip from seattle I have 2 days of leave
5. I need a long trip Plan it from boston
6. What are the possible destinations I can go to from chicago
7. Where can I go from san francisco
8. Let me know the places to visit via los angeles
9. Let me know any four places to visit via las vegas
10. What are the places to visit from new york

Intent : *LowBudgetVacationIntent*

1. Where can I go on a low budget vacation from new york
2. Plan my vacation from los angeles I need a economical trip
3. Take me away from las vegas on a inexpensive trip

4. When should I go for a family trip from seattle I have low budget
5. I need a low-cost trip Plan it from chicago
6. Which is the best possible low budget destination I can go to from san francisco
7. Where can I go from new york with minimum expenditure
8. Let me know the place to visit via los angeles with least cost
9. Let me know any economical place to visit via new york
10. What is the inexpensive place to visit from las vegas

Step 4 - Parameters and Entities

"parameter name": "tocity"

"entity": "@sys.geo-city-us"

"parameter name": "fromcity"

"entity": "@sys.geo-city-us"

"parameter name": "number"

"entity": "@sys.number"

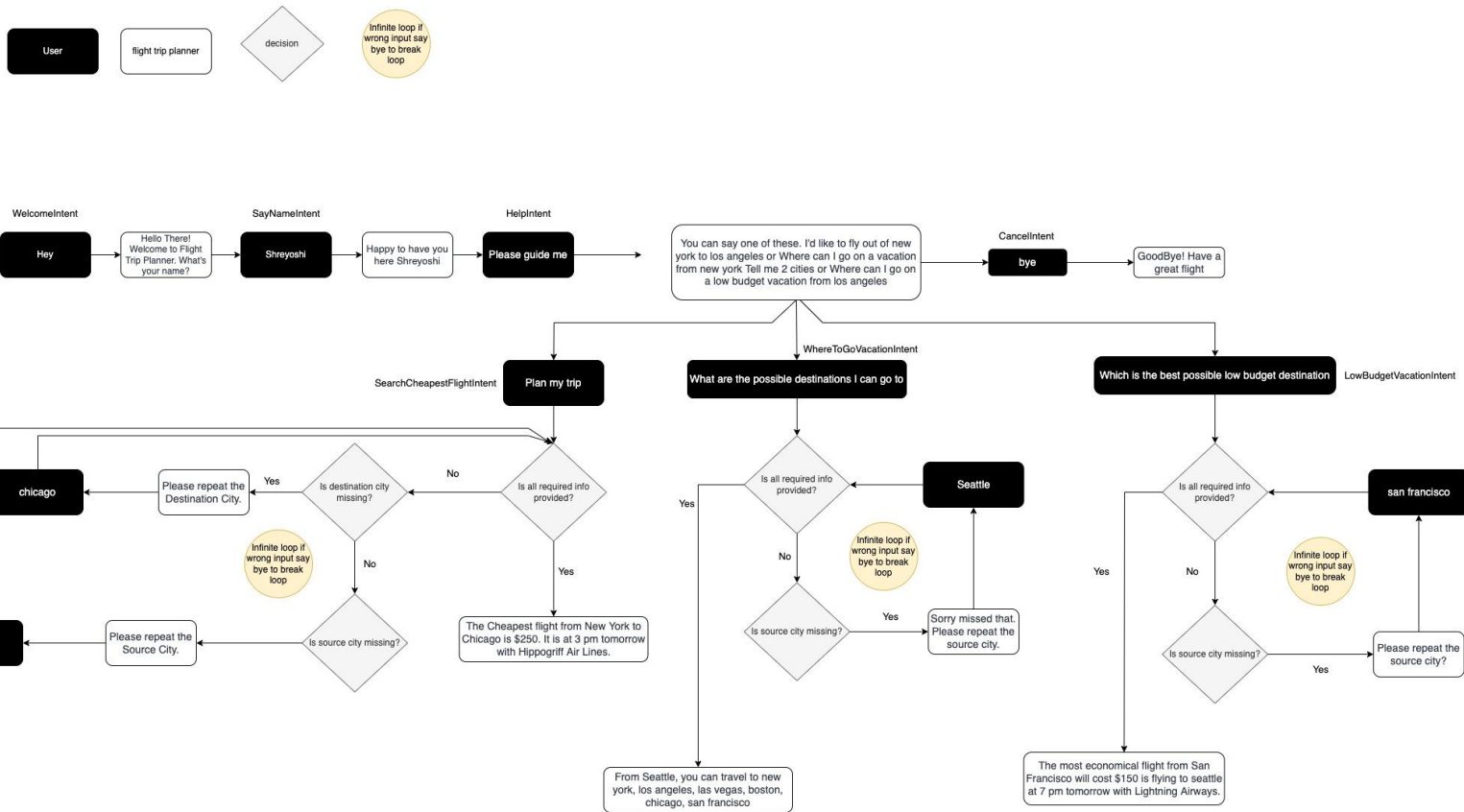
Custom Entity

"parameter name": "duration-amount"

"entity": "@DurationAmount"

"values": "short", "long", "brief"

Step 5 - Conversational Flow



Step 6 - Logic for Each Intent

I have maintained a flightDataObj javascript object which contains a list of flight details to destination under source city index, one inside another.

```
"new york": {
  "los angeles":
  {
    "cost": "450",
    "time": "12 pm",
    "airline": "Hippogriff Air Lines",
    "departureAirport": "JFK",
    "arrivalAirport": "LAX",
    "departureTime": "12:00 PM EST",
```

```
    "arrivalTime": "14:55 PM PST"
  }, {...}
}
```

SearchCheapestFlightIntent

The parameters are fromcity and tocity. These are required. They do have prompts. If the above two cities contain flight values ex. `flightDataObj[fromcity][tocity]` is not blank from the above. Then we return the details like cost, airline etc. The values are unique ex. there cannot be two `los angeles` indexes inside a source `new york`.

User wants to search for the cheapest flight from one city to another city. Based on the source and destination city, the intent will provide details of a flight which is the cheapest.

WhereToGoVacationIntent

The parameters are `fromcity` (*required*), `number` and `durationAmount`. User wants to know where he/she can travel from a source destination. The intent will provide a list of cities, where travel is possible via flight from the user given source city. We get a list, also we can limit the list by giving the number of cities, or number of days we can be on vacation and a custom slot of duration like short trip or long vacation.

`flightDataObj[fromcity]` will give a list, we can only pick the indexes which are possible destinations and limit that list of cities by the above mentioned slots.

If `number` is present

 If (`City list size > number`)

`City list size = number`

Else If `DurationAmount` is present

 If `DurationAmount == "short"`

`City list size = 1`

 Else

`City list size = complete list`

LowBudgetVacationIntent

The only parameter is **fromcity** (required). **flightDataObj[fromcity]** will give a list of all possible flight details to different destinations from the source city. We need to loop on that list and find the minimum cost flight going through that **fromcity**. The minimum cost flight will be the most economical one.

Step 7 - Build the Dialogflow agent or Google Action

I have created an agent in Dialogflow.

Step 8 - Test the Application

1. hey
2. john doe
3. please guide me
4. plan a flight trip to chicago from new york
5. what are the possible destinations I can go to from seattle
6. which is the best possible low budget destination I can go to from san francisco
7. plan my trip → chicago → new york
8. what are the possible destinations I can go to → seattle
9. which is the best possible low budget destination → san francisco
10. bye
11. I want to travel to new york from los angeles
12. take me away from las vegas on a small trip
13. where can I go from new york with minimum expenditure
14. stop
15. what can you do

Note: chicago, seattle, san francisco, seattle, los angeles, las vegas, boston are only cities, whose data I have added

Step 9 - Review and Reflection

Impressions: What was your overall impression of building a Dialogflow agent or Google Action?

Answer : I built an agent in Dialogflow. At first when I was trying to add training phrases same as Alexa sample utterances, I learned that we can specify direct values i.e real values instead of giving slot names, here it is called parameter name, it gets assigned a name automatically, which can be changed later. We can set up follow up intents. Some static responses can be in default response and not in the webhook fulfillment if there is no logic or condition. The agent itself chooses randomly from the default responses, no logic is required there.

I did not choose Google action, but I did the codelabs examples and tutorials mentioned in the Module 4 section. Because of those Codelabs examples, I thought maybe I should try dialogflow for the HW3. The thing I found very fascinating in google actions was the transition to new scenes and the suggestion chip to respond to the prompt, and the ease of building them.

Platforms: *Was the process easier after having previously built the Alexa Skill? What did you enjoy about the platform you used for this assignment as opposed to the previous assignment?*

Answer : Yes, the process was easier this time because I have built the same agent/skill previously in the Alexa Developer console. I used the same first two intents and their logic. I had to create the third intent for the first time, where I introduced a looping logic. The benefit we have when we build a skill in Alexa is that we can add new files and separate some functions from index.js but I had to write everything in dialogflow in a single file i.e index.js. The thing that I liked more in dialog flow is that it does not lose context, and everytime I didn't have to use the launch and invocation word. At each intent level, we have the option to specify that intent as the end of conversation. Even the training phrases doesn't not have to be exactly the same. We can specify the required and optional parameters, and their prompt questions. That was my favorite part. It automatically understands from the training phrases what can be the parameter. My personal preference would go to dialogflow compared to Alexa skill, but definitely Alexa was a stepping stone.

Feedback: *Did you integrate the feedback you received from the Alexa Skill testing in this new application? If so, how did you integrate the feedback? If not, why not?*

Answer : I haven't received any feedback or grade for HW2 Alexa Skill. So it was not possible for me to integrate any feedback. But definitely I added and tested everything that was taught in the lecture videos. I studied all the documentation that was assigned in Module 4.