

# IRA ChatBot

# IRA ChatBot

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## Objective

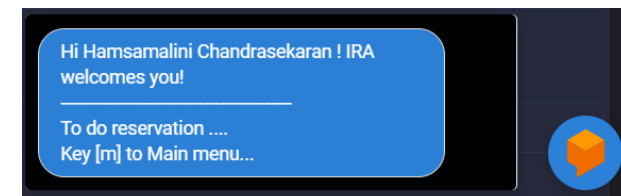
- Enable real-time interaction with Patron for reservation activities to any establishment( Clinic, Restaurant, Shopping malls, Training Institute etc)
- ChatBot applies the intelligence using the Rules to
  - Book ,
  - Change ,
  - Check
  - Cancel reservation
- The ChatBot of type Dialogflow Messenger is constructed using Google Dialogflow.
- For each activity an intent is created. Altogether there are 13 intents created to solve the purpose
- Entities for each establishment, establishment\_type, selection option are created.
- Agent training is done for intent identification
- The input, output contexts for each intents are created to enable navigation from one intent to another



# IRA ChatBot

## Objective

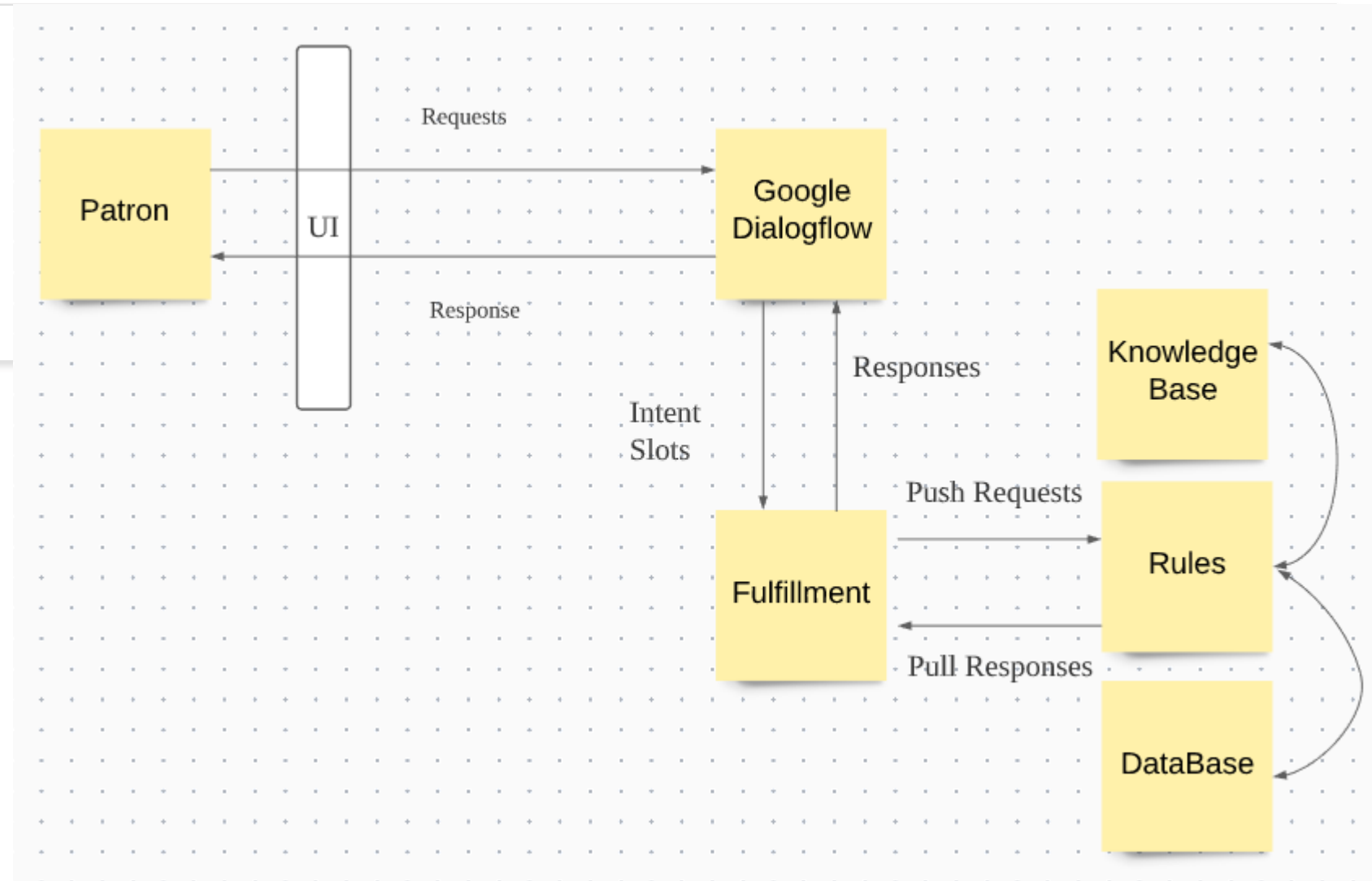
- Events for the intent are created.
- Events are triggered through custom response
- To avoid complexity in parsing Patron input, useful information extraction, summary generation, confirmation through custom intents and question Answering Pattern is followed,
- Dynamic response is generated by enabling fulfilment through webhook.
- Actions corresponding to the intents are processed in Django through fulfilment.
- The Django dialogflow api allows capturing the intent and returns fulfilment.
- The process involves communication with Rules engine, Knowledge Base and Database
- The Rich response are rendered using
  - dialogflow\_v2beta1 api and custom response



# IRA ChatBot

## Architecture

- The patron communicates to Dialogflow placing request & receiving request.
- The requests are processed through dialogflow fulfillment. For each request, relevant intents are invoked, and the requests are processed dynamically through fulfillment.
- The fulfillment process the requests based on the rules, knowledge from knowledge base and data from database.



# IRA ChatBot: Follow up with Rules

## Features

- Agent Training is done to invoke the relevant intents
- Tokenization challenges are met with syntactic analysis
- Case normalization are done

Which date ( e.g. Dec 10 )?

book for friday

NewStarbuck @ Bugis 1 says : You have requested for a reservation on Friday 13 November 2020 from 16:00 for 2 people.

Key [c] to confirm ....  
Key [m] to Main menu ....

show my status of my reservations

Your upcoming reservation status...

Establishment: TS Wong Clinic  
No. of Person(s) :3  
Time in :20/11/11 at 15:20  
Status :on-hold

Establishment: NewStarbuck  
No. of Person(s) :4  
Time in :20/11/09 at 14:50  
Status :confirmed

Establishment: NewStarbuck  
No. of Person(s) :4  
Time in :20/11/30 at 09:00  
Status :confirmed

Which date ( e.g. Dec 10 )?

Saturday

What time to begin ( e.g. 3 pm ) ?

4PM

How many seats do you want to book ?

3


Your expected time Out? ( e.g. 4.20 pm . Key 0 if unkown)

8 pm

A-look Spec @ Woodland Avenue2 says : You have requested for a reservation on Saturday 7 November 2020 from 16:00 to 20:00 for 3 people....  
Key [c] to confirm ....  
Key [m] to Main menu ....



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## Upcoming Reservation

NO	RESERVATION ID	TIME	SHOP	ADDRESS	CONTACT	QTY	MODIFY	CANCEL	STATUS
----	----------------	------	------	---------	---------	-----	--------	--------	--------

## New Reservation

Session Id : (System Generate)

45167802781

## Establishments:

-- select an option --

Location : (System Generate Once you have selected establishment)

Opening Hours : (System Generate Once you have selected establishment)

1: Monday, 2: Tuesday, 3: Wednesday, 4: Thursday, 5: Friday, 6: Saturday, 7: Sunday

Hi Hamsamalini Chandrasekaran ! IRA  
welcomes you!To do reservation ....  
Key [m] to Main menu...

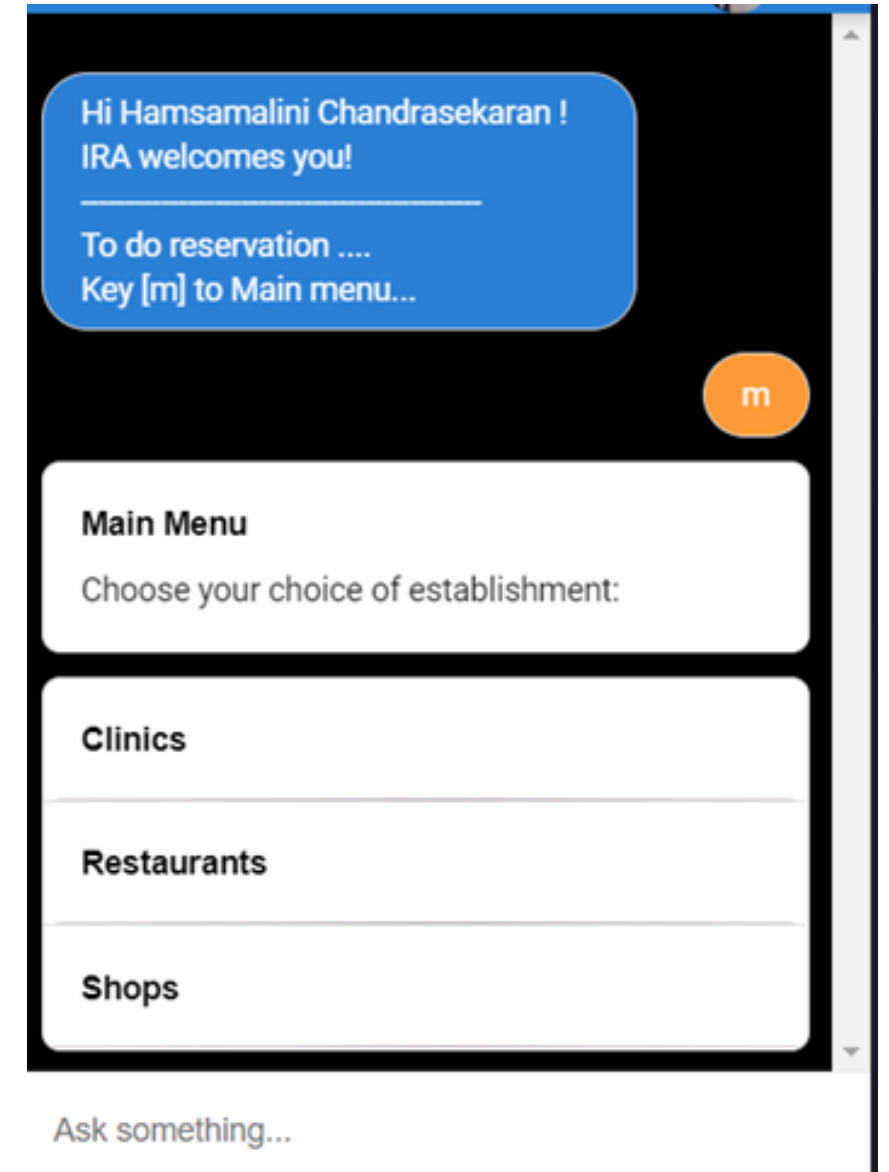
## IRA ChatBot

- Patron signs in the app as a fresher. The bot welcomes the patron.
- Key 'm' or 'M' to the main menu which lists the establishment list.

# IRA ChatBot

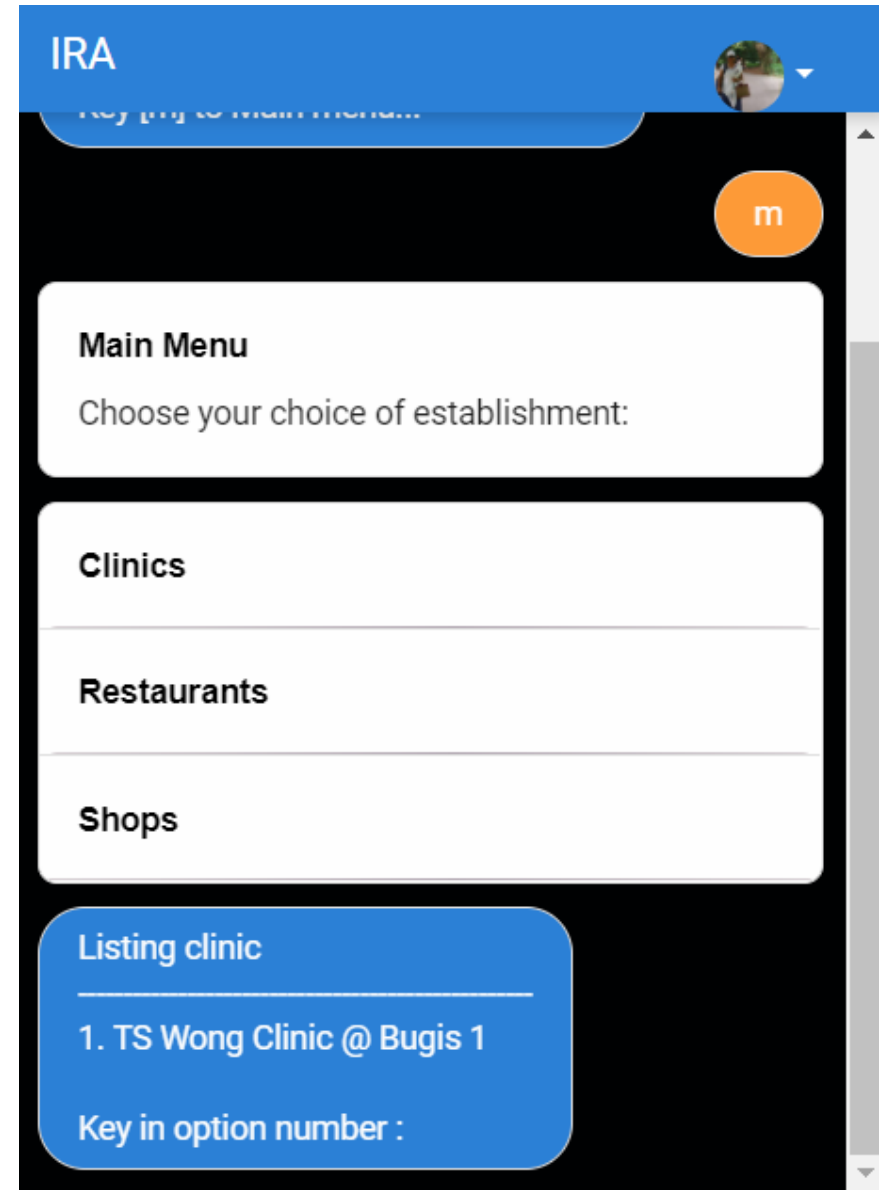
## Establishment List

- Select your choice of establishment.



# IRA ChatBot

- Choose Clinics

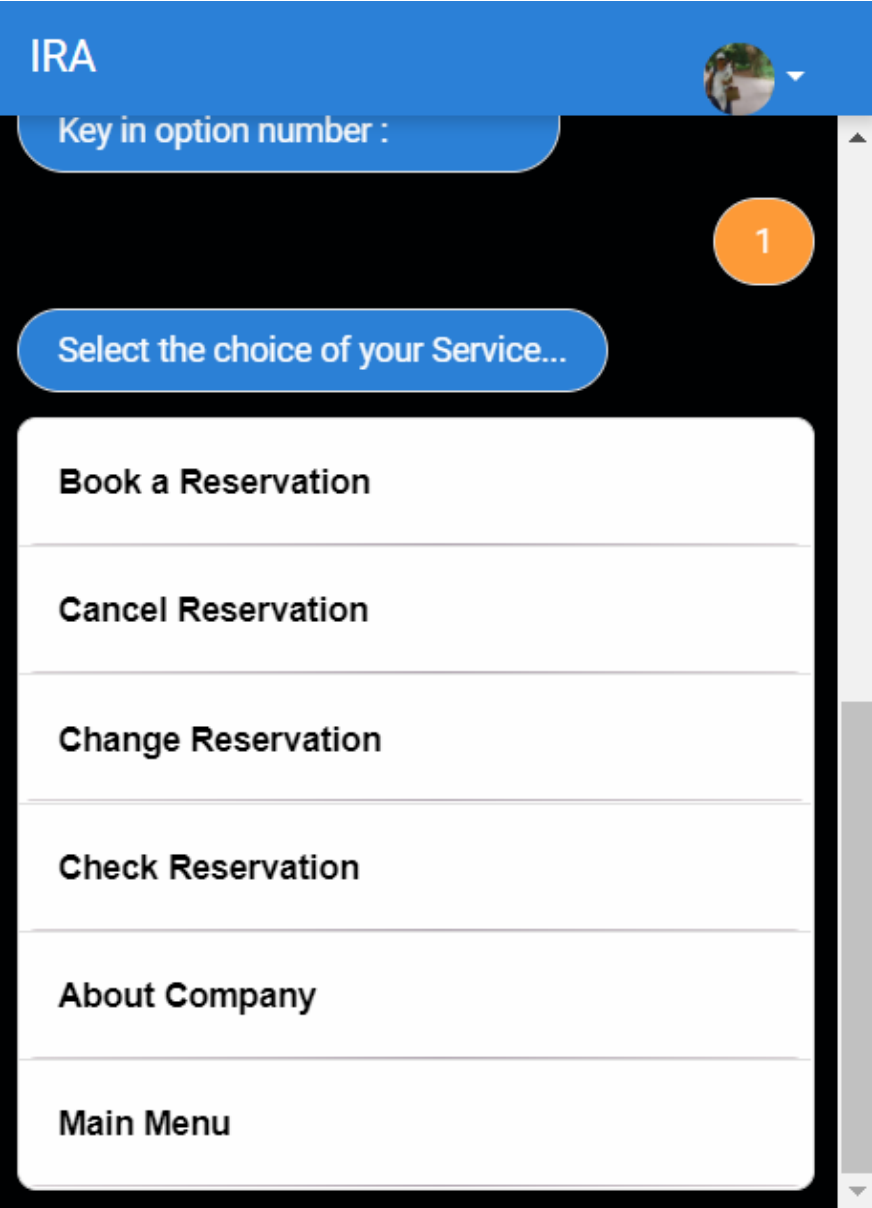


Ask something...



# IRA ChatBot

- Option 1 entered.
- Bot Services pops up



The screenshot displays the IRA ChatBot interface. At the top, a blue header bar contains the text "IRA" and a circular profile picture of a person. Below the header, a blue button labeled "Key in option number :" is visible. To the right of this button is an orange circle containing the number "1". Below the button is another blue button labeled "Select the choice of your Service...". Underneath this button is a white rectangular box with a black border, containing a list of service options: "Book a Reservation", "Cancel Reservation", "Change Reservation", "Check Reservation", "About Company", and "Main Menu".

Ask something...

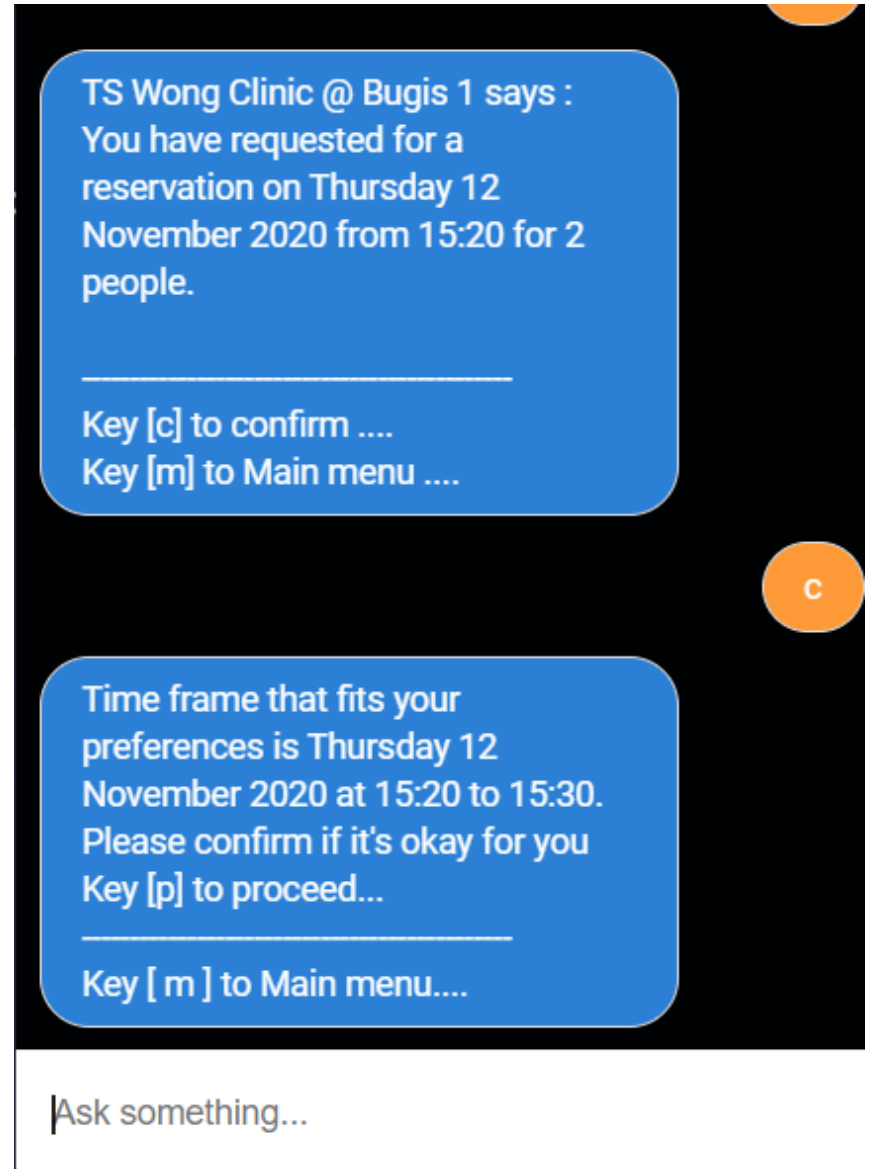
# IRA ChatBot

- Select Book Reservation
- This option expects collecting details from the Patron on Date, timeStart, no of seats, and timeOut. If the Patron is not aware of timeOut, he/she can key in '0' or else key in the time in the specified format.
- The agent is trained with variable inputs by the patron to fill the slots for date, and time.
- For e.g,
  - **What time to begin?** Can receive 3.50 for 3.50 am/3.50am, 3pm or 3 pm
  - **What date?** Can receive – 12 Nov/ Nov 12/ Thursday

The screenshot displays the IRA ChatBot interface. At the top, a blue header bar contains the text "IRA" and a small circular profile picture of a person. Below the header, a white box labeled "Main Menu" is visible. The chat area has a black background with blue bubbles for user questions and orange bubbles for bot responses. The conversation proceeds as follows: 1. User asks "Which date ( e.g. Dec 10 )?". 2. Bot responds with "12 Nov". 3. User asks "What time to begin (e.g. 3 pm ) ?". 4. Bot responds with "3.20 pm". 5. User asks "How many seats do you want to book ?". 6. Bot responds with "2". 7. User asks "Your expected time Out? ( e.g. 4.20 pm . Key 0 if unkown)". 8. Bot responds with "0". At the bottom of the screen, there is a white input field with the placeholder text "Ask something..." and a small upward-pointing arrow on the right side.

# IRA ChatBot

- On receiving the details , the bot expects a confirmation from the patron. Key 'c' to confirm.



# IRA ChatBot

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- The bot expects an input 'p' to proceed with the given time frame. If not satisfied, the Patron can key in 'm' to the main menu
- On keying 'p', the bot returns the response as:
- The Patron will have to check if his reservation is confirmed after 7 pm on the day of reservation

Your request for 2 person(s) on  
Thursday 12 November 2020 at  
15:20 to 15:30 is now on-hold.  
Please status check after cufoff  
time 19:00

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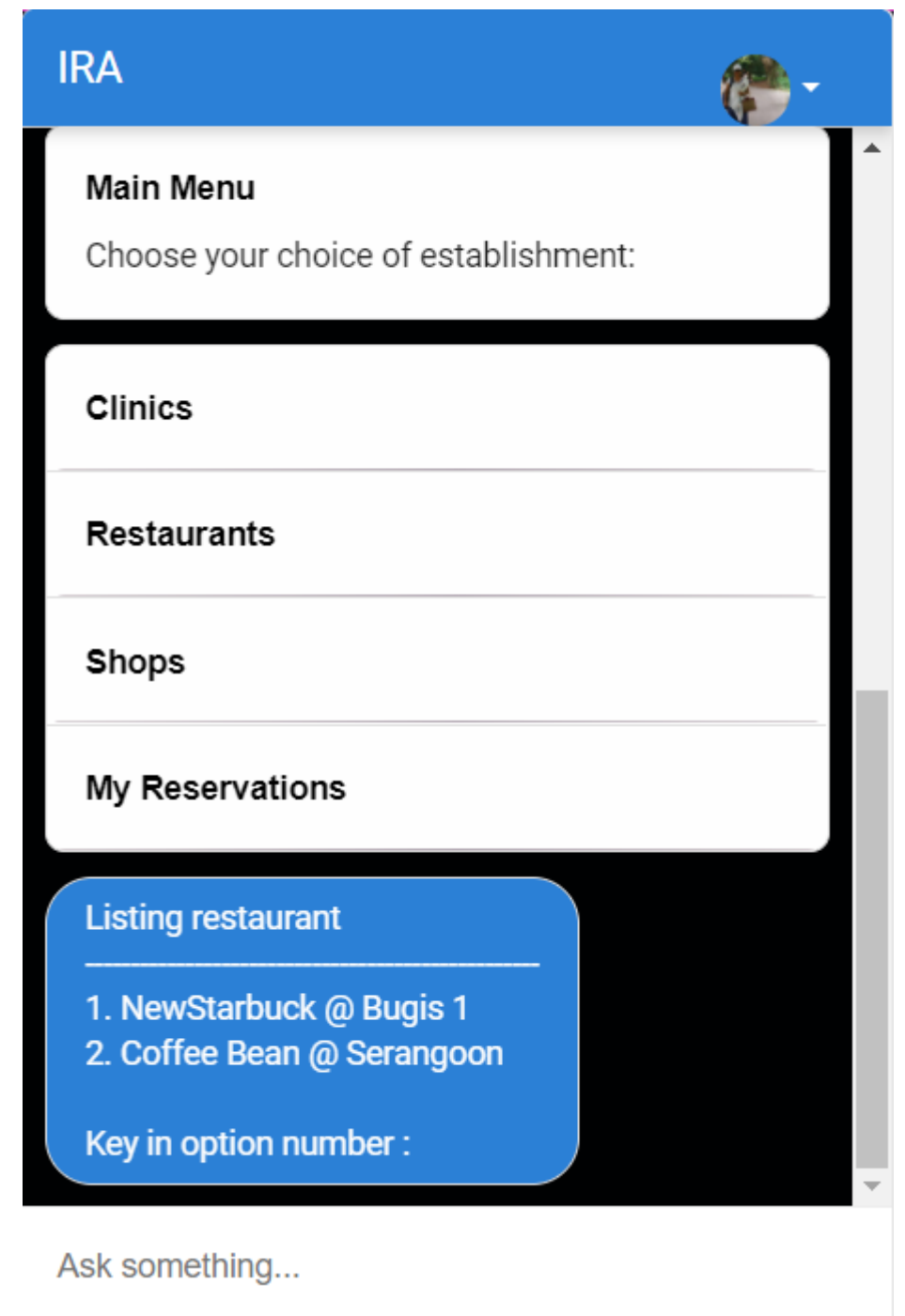
Key [ m ] to Main menu....

|Ask something...

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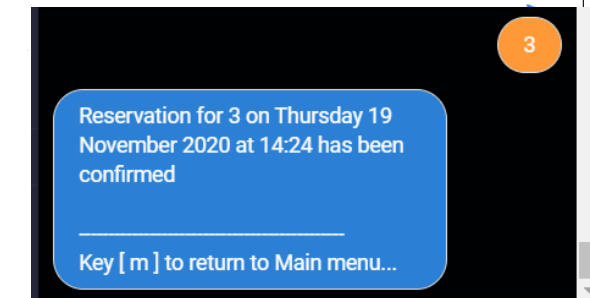
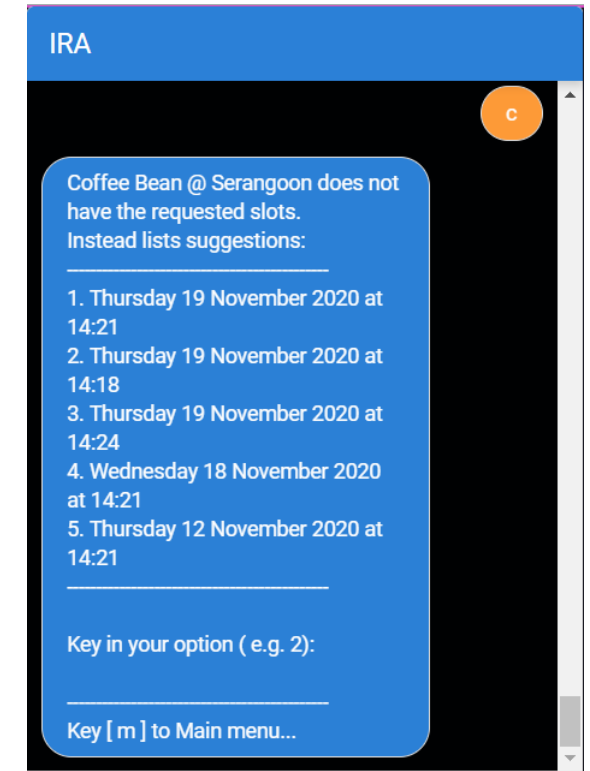
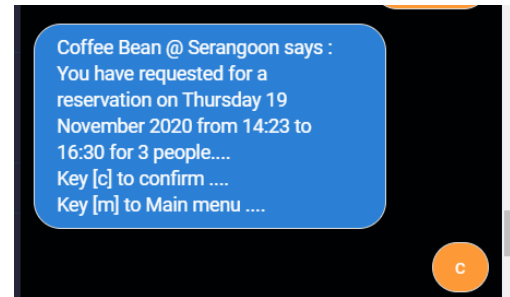
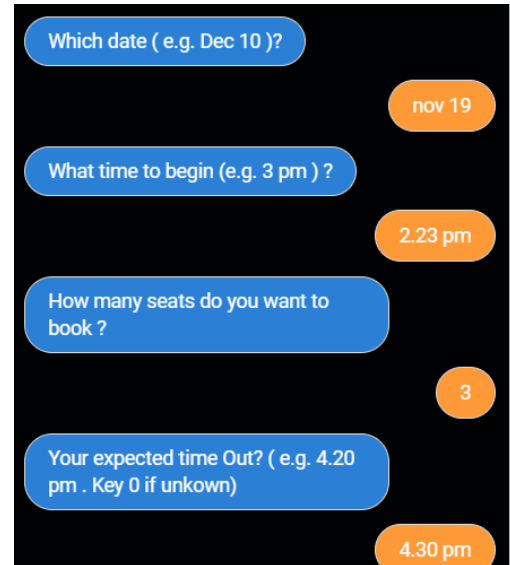
# IRA ChatBot

- Book Reservation with a Restaurant



# IRA ChatBot

- On selecting Book Reservation and feed the inputs to Bot's prompts.
- The bot provides a suggestion list. Selecting the option from suggestion list, the bot **confirms** reservation



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### Upcoming Reservation

NO	RESERVATION ID	TIME	SHOP	ADDRESS	CONTACT	QTY	MODIFY	CANCEL	STATUS
1	42805739	20/11/12_15:20	TS Wong Clinic	Bugis 1	93112233	2			
2	42805739	20/11/19_14:24	Coffee Bean	Serangoon	65930328	3			
3	42805739	20/11/17_12:57	Coffee Bean	Serangoon	65930328	3			

### New Reservation

Session Id : (System Generate)

22022055290

Establishments:

Hi Hamsamalini Chandrasekaran ! IRA welcomes you!  
Your upcoming reservation status...

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Establishment: TS Wong Clinic  
No. of Person(s) :2  
Time in :20/11/12 at 15:20  
Status :on-hold

Establishment: Coffee Bean  
No. of Person(s) :3  
Time in :20/11/19 at 14:24  
Status :confirmed

Establishment: Coffee Bean  
No. of Person(s) :3  
Time in :20/11/17 at 12:57  
Status :confirmed

Key [m] to Main menu...

# IRA ChatBot

- Log out by Patron and Log in again
- If Patron logs out and logs in, the bot welcomes the Patron with upcoming reservations as

# IRA ChatBot

- Book a reservation for tomorrow

IRA

**Main Menu**  
Choose your choice of establishment:

**Clinics**

**Restaurants**

**Shops**

**My Reservations**

**Listing restaurant**

1. NewStarbuck @ Bugis 1  
2. Coffee Bean @ Serangoon

Key in option number :

Ask something...

Select the choice of your Service...

**Book a Reservation**

**Cancel Reservation**

**Change Reservation**

**Check Reservation**

**About Company**

**Main Menu**

Which date ( e.g. Dec 10 )?

tomorrow

What time to begin (e.g. 3 pm ) ?

5 pm

How many seats do you want to book ?

5

Your expected time Out? ( e.g. 4.20 pm . Key 0 if unkown)

0

A-look Spec @ Woodland Avenue2 says : You have requested for a reservation on Sunday 8 November 2020 from 17:00 for 5 people.

Key [c] to confirm ....  
Key [m] to Main menu ....

c

Please make reservation 3 day(s) in advance

Key [ m ] to Main menu...



# IRA ChatBot

- Change Reservation

IRA

Main Menu

Choose your choice of establishment:

Clinics

Restaurants

Shops

My Reservations

Listing restaurant

1. NewStarbuck @ Bugis 1  
2. Coffee Bean @ Serangoon

Key in option number :

Ask something...

IRA

Change Reservation

Check Reservation

About Company

Main Menu

Your upcoming reservation slot( s ):

1. Tuesday 17 November 2020 at 12:57  
2. Thursday 19 November 2020 at 14:24

Key your choice (e.g. 1)

Key [ m ] to Main menu...

2

2

Select the choice of your Service...

Book a Reservation

Cancel Reservation

Change Reservation

Check Reservation

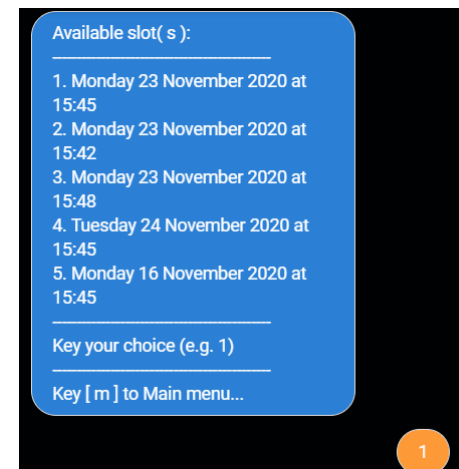
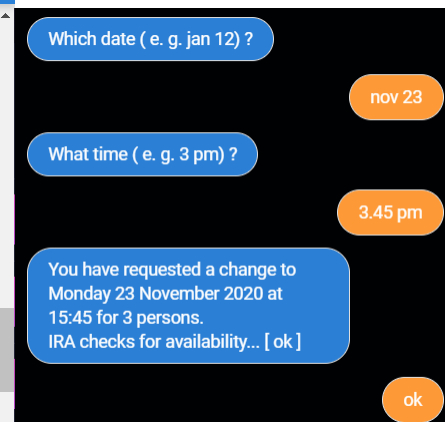
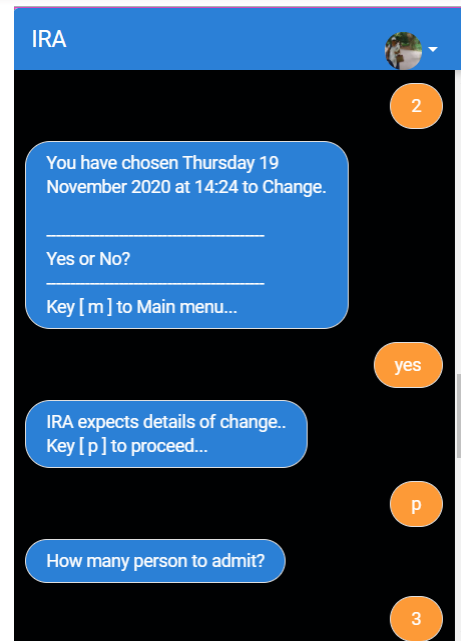
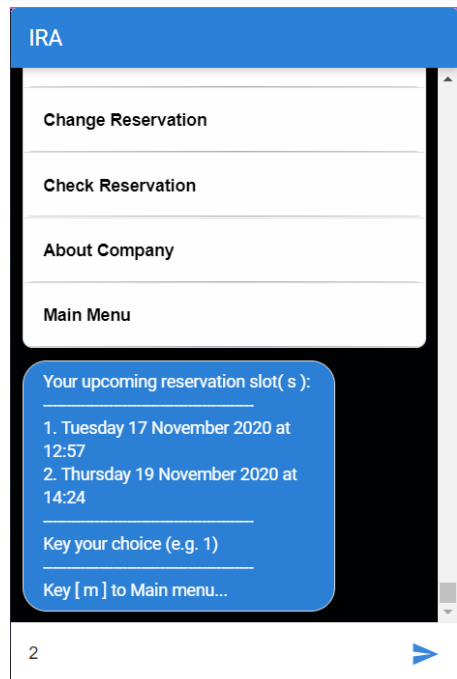
About Company

Main Menu

Ask something...

# IRA ChatBot

- Select Change Reservation. The bot lists the upcoming reservation slots. The Patron selects the slot to change.
- On selecting the option from suggestion list, the bot responds **confirmation** as ,



# IRA ChatBot

- Cancel Reservation

IRA

Main Menu

Choose your choice of establishment:

Clinics

Restaurants

Shops

My Reservations

Listing restaurant

1. NewStarbuck @ Bugis 1

2. Coffee Bean @ Serangoon

Key in option number :

Ask something...

Select the choice of your Service...

Book a Reservation

Cancel Reservation

Change Reservation

Check Reservation

About Company

Main Menu

Your upcoming reservation slot( s ):

1. Monday 23 November 2020 at 15:45

2. Tuesday 17 November 2020 at 12:57

Key your choice (e.g. 1)

Key [ m ] to Main menu...

Reservation is cancelled SUCCESSFULLY!

Key [ m ] to proceed to Main menu...

1

YES

# IRA ChatBot

## Check Reservations with Clinics

**IRA**

**Main Menu**  
Choose your choice of establishment:

**Clinics**

**Restaurants**

**Shops**

**My Reservations**

**Listing clinic**  
1. TS Wong Clinic @ Bugis 1  
Key in option number :

1

Select the choice of your Service...

**Book a Reservation**

**Cancel Reservation**

**Change Reservation**

**Check Reservation**

**About Company**

**Main Menu**

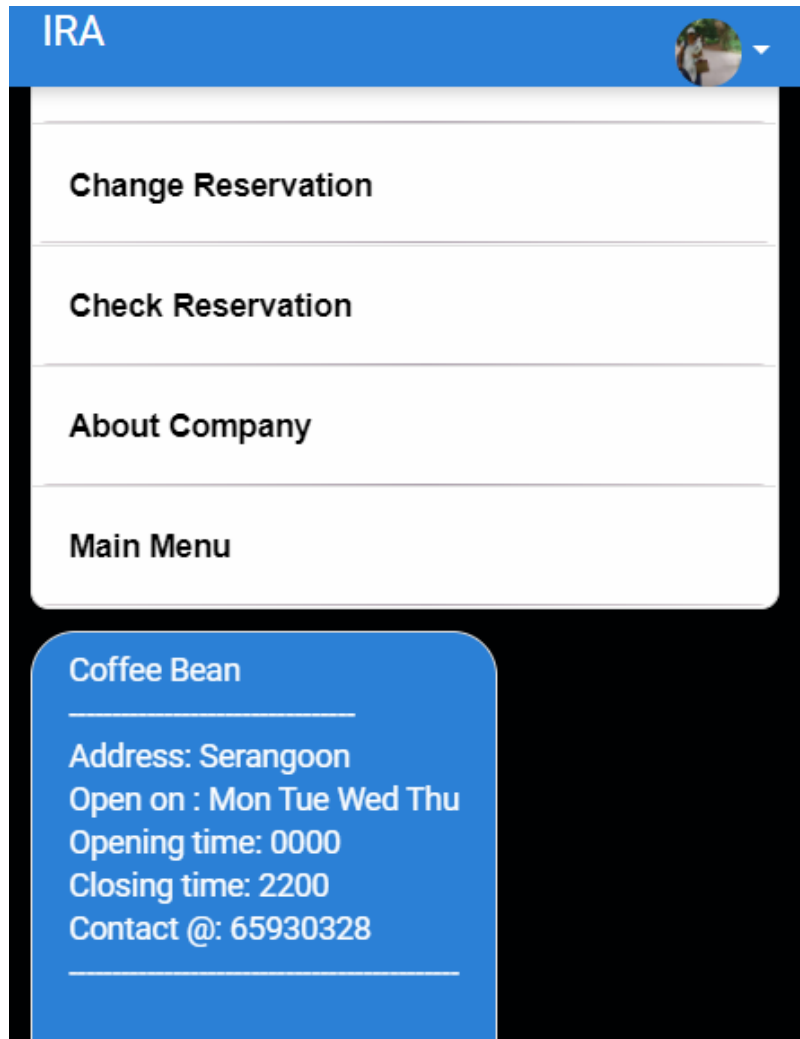
You have these reservation(s):  
(1) Thursday 19 November 2020 at 11:20 to 12:10 for 3 person(s) is on-hold  
(2) Thursday 12 November 2020 at 15:20 to 15:30 for 2 person(s) is on-hold

Key [ m ] for Main menu...



# IRA ChatBot

About Company



## IRA ChatBot: Follow up with Rules

- Booking a slot on a closed day is identified by Bot
- Bot identifies error when timeout is less than time start
- Bot identifies booking a slot on a longer plan
- Bot identifies when number of seats are beyond limit

NewStarbuck @ Bugis 1 says : You have requested for a reservation on Saturday 21 November 2020 from 15:20 for 3 people.

Key [c] to confirm ....  
Key [m] to Main menu ....

I am afraid we are not open on that day

Key [ m ] to Main menu...

A-look Spec @ Woodland Avenue2 says : You have requested for a reservation on Tuesday 24 November 2020 from 15:00 to 13:00 for 4 people....  
Key [c] to confirm ....  
Key [m] to Main menu ....

Exit time should not be earlier than entry time

Key [ m ] to Main menu...

NewStarbuck @ Bugis 1 says : You have requested for a reservation on Thursday 31 December 2020 from 16:00 for 55 people.

Key [c] to confirm ....  
Key [m] to Main menu ....

Your request is outside bookable window

Key [ m ] to Main menu...

TS Wong Clinic @ Bugis 1 says : You have requested for a reservation on Wednesday 25 November 2020 from 13:00 for 45 people.

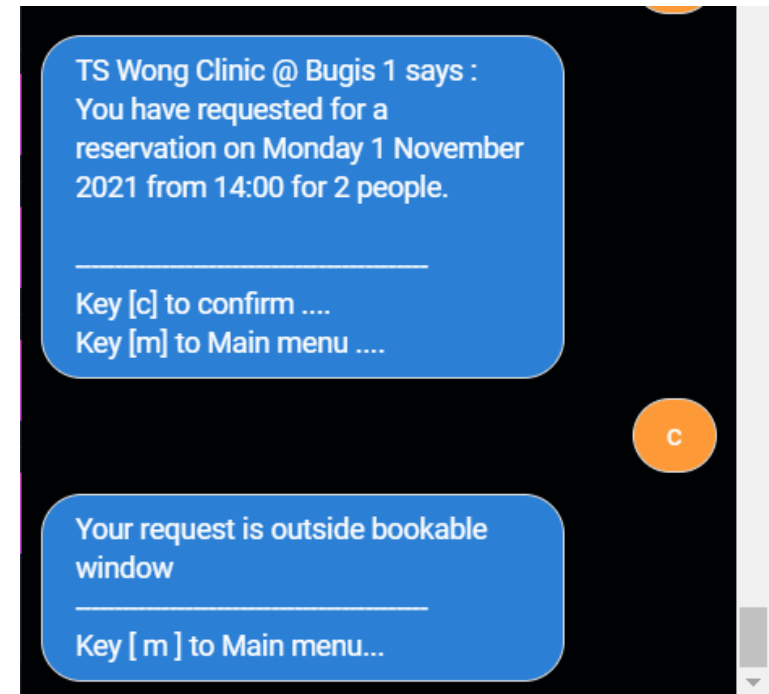
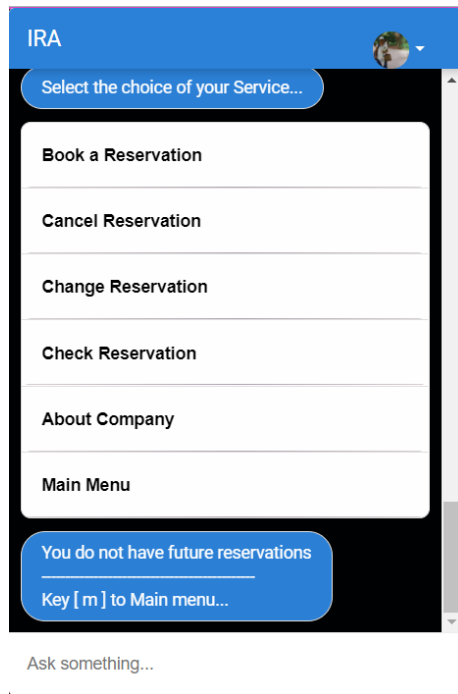
Key [c] to confirm ....  
Key [m] to Main menu ....

I am afraid our full capacity has been reached

Key [ m ] to Main menu...

# IRA ChatBot: Follow up with Rules

- When Cancel/change reservation is selected before booking any slots
- Booking a reservation for past date

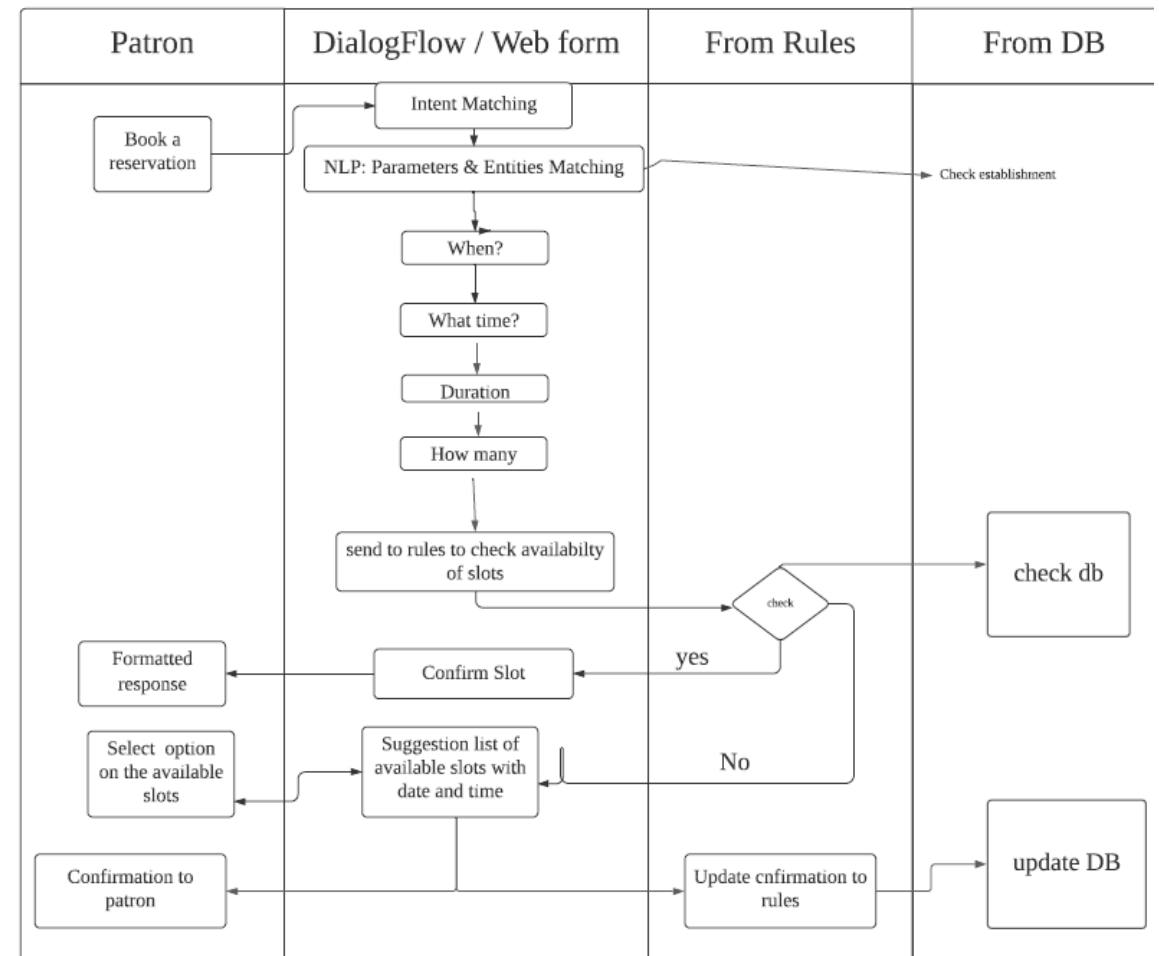


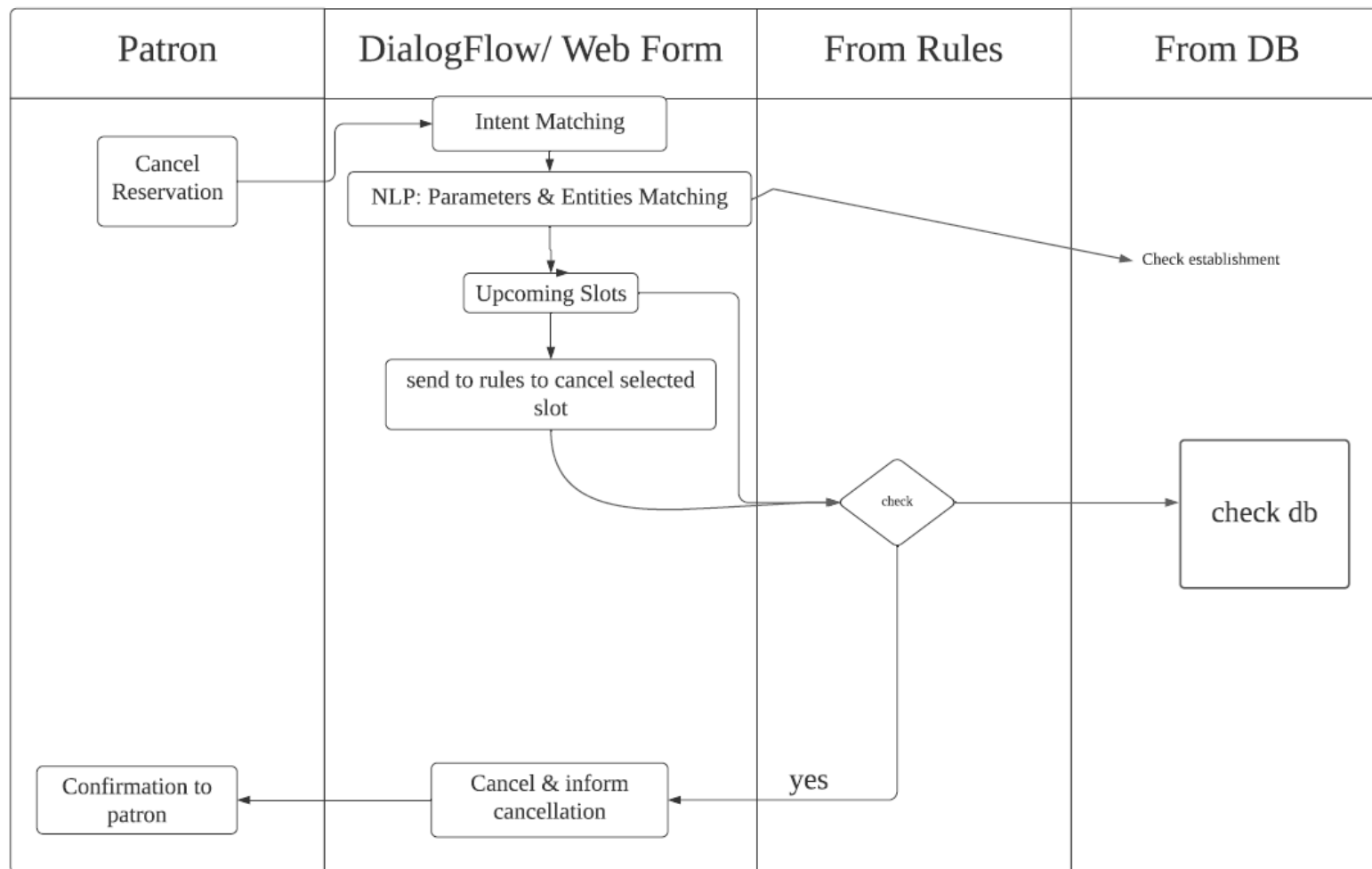
# Appendices



# Reservation Activity Workflow

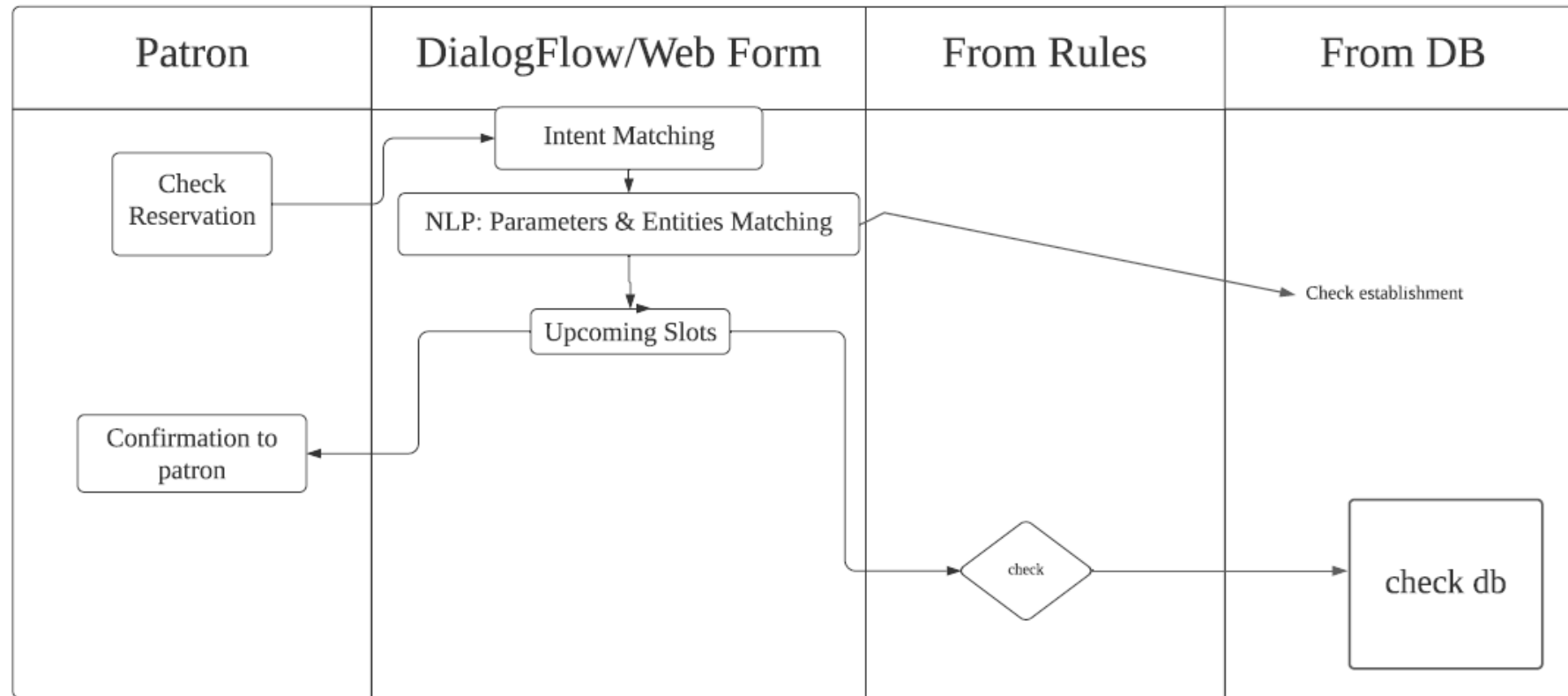
# Book a Reservation

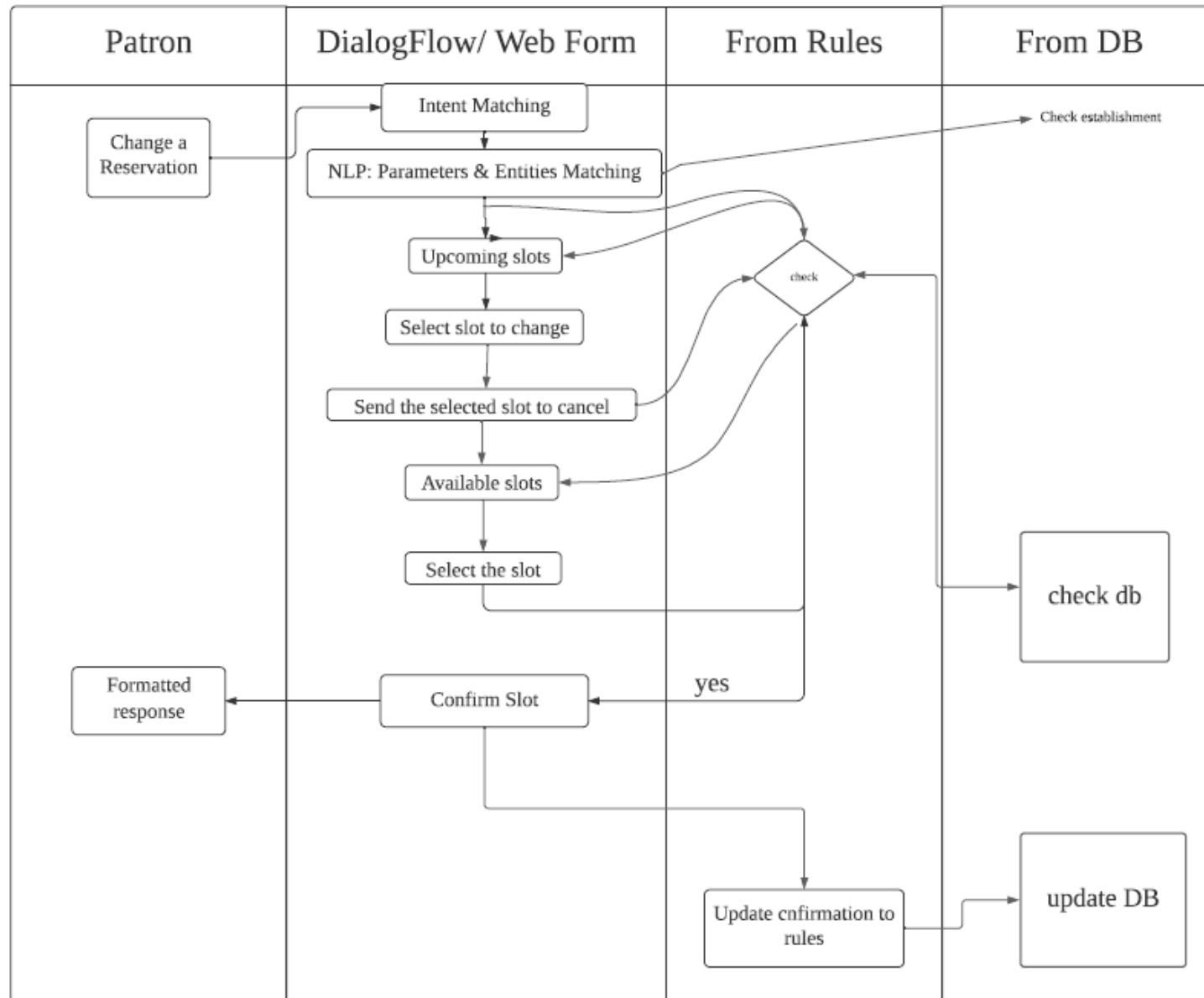




# Cancel Reservation

# Check Reservation





# Change Reservation