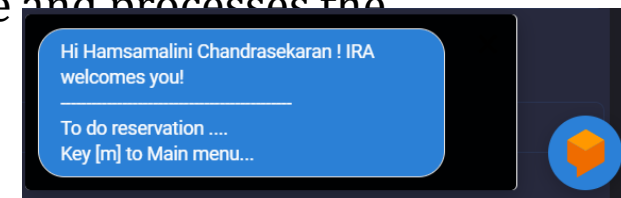


IRA ChatBot

IRA ChatBot

Objective

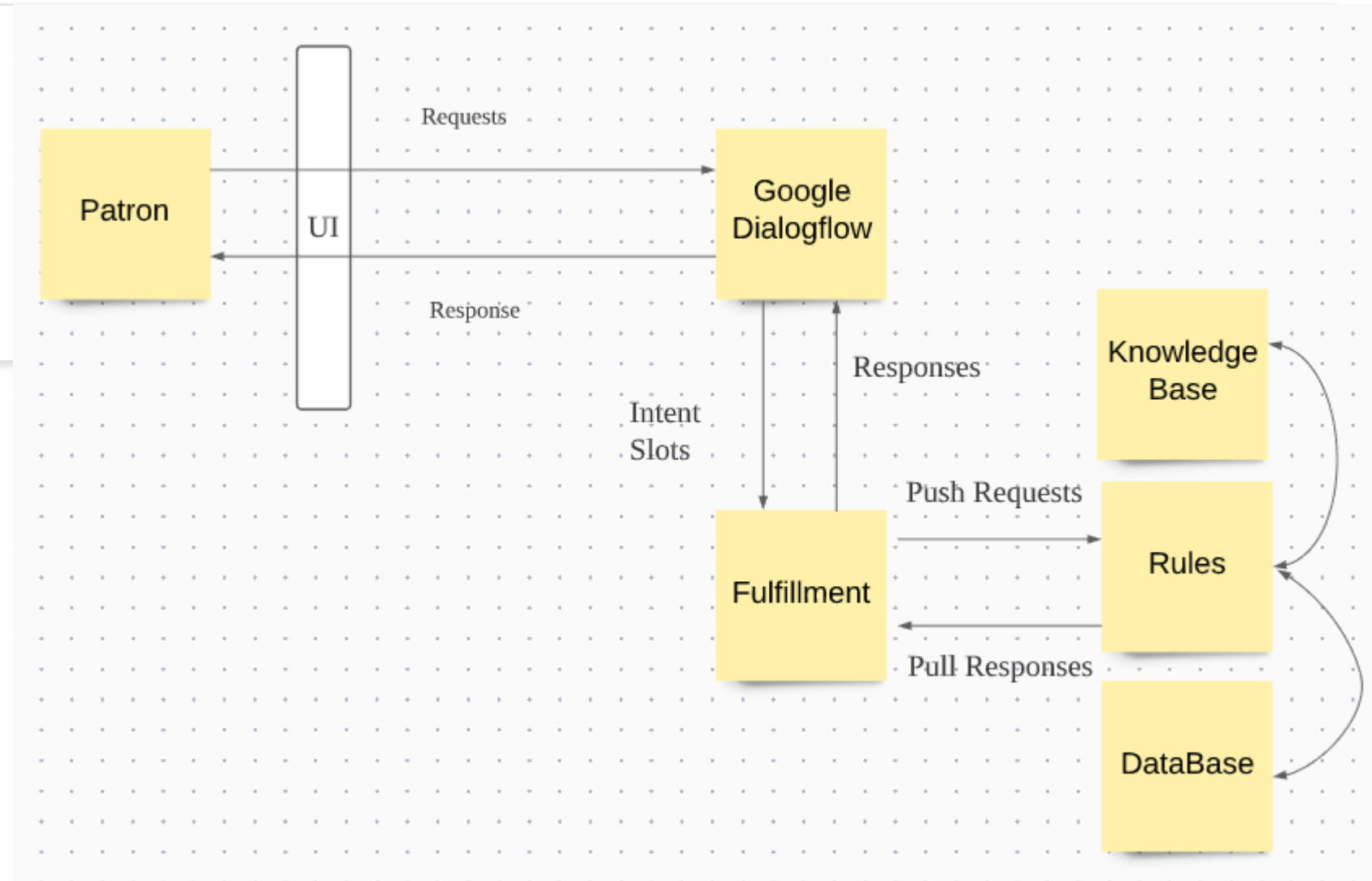
- Enable real-time interaction with Patron for reservation activities to any establishment(Clinic, Restaurant, Shopping malls, Training Institute etc)
- ChatBot applies the intelligence using the Rules to
 - Book ,
 - Change ,
 - Check
 - Cancel reservation
- The ChatBot of type Dialogflow Messenger is constructed using Google Dialogflow.
- For each activity an intent is created. Altogether there are 13 intents created to solve the purpose
- Dynamic response is generated by enabling fulfilment through webhook.
- With Webhook, the Dialogflow makes use of Django api to interact with Rules engine and processes the response to Patrons
- 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
- 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



ISS IRS PROJECT TEAM

• DASHBOARD

MAPS

USER PROFILE

PAST HISTORY

SUPPORT

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...

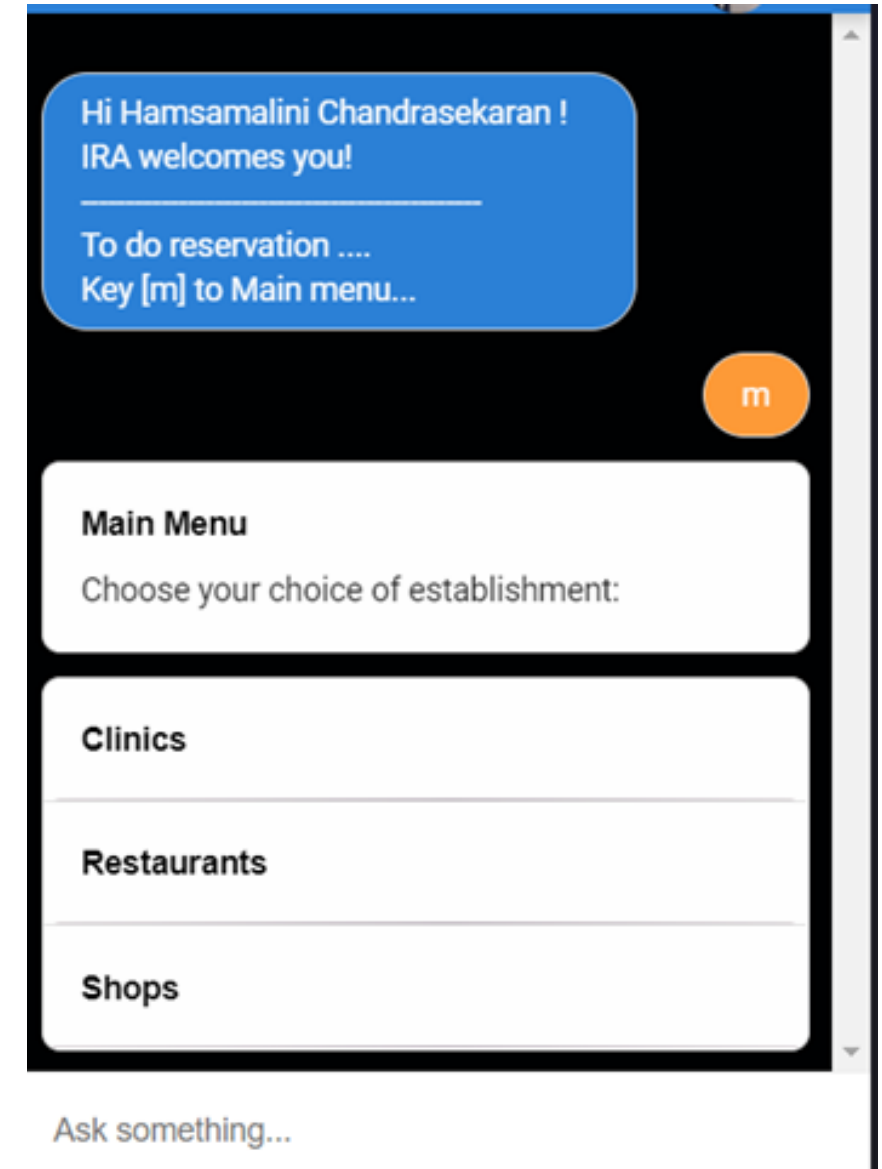
IRA ChatBot

- 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

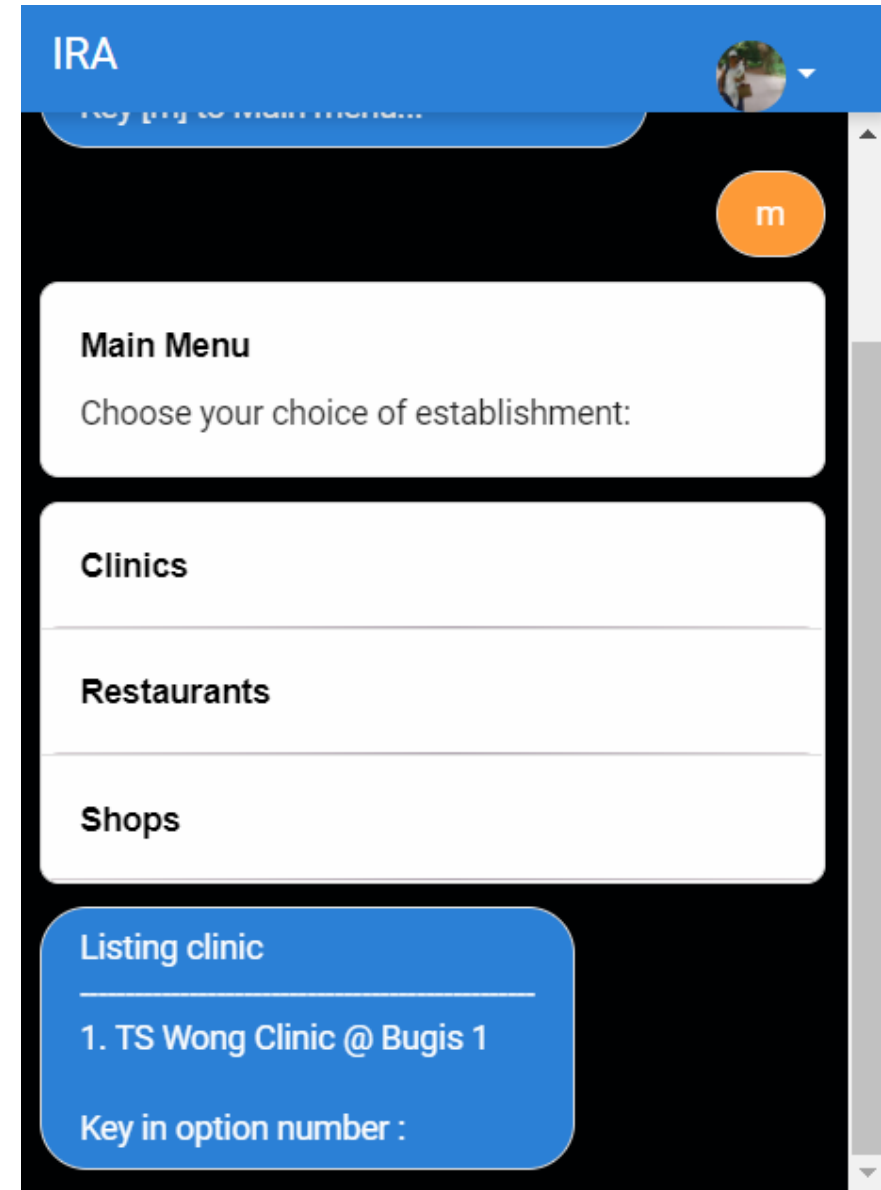
Establishment List

- Select your choice of establishment.



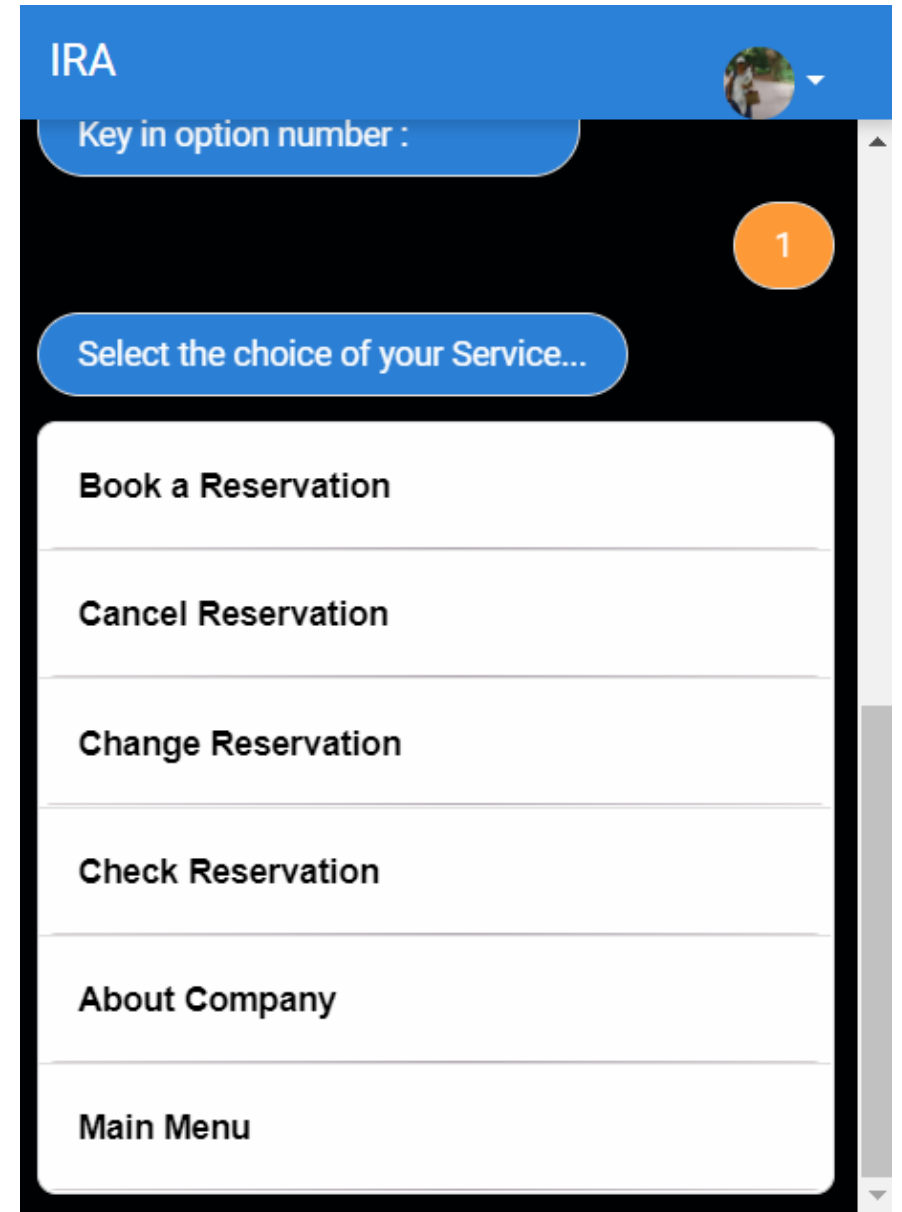
IRA ChatBot

- Choose Clinics



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 input field contains the text "Key in option number :". To the right of this field is an orange circle with the number "1". Below the input field is a blue button with the text "Select the choice of your Service...". Below the button is a white list of services, each in a separate row with a horizontal line separator. The services listed are: "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

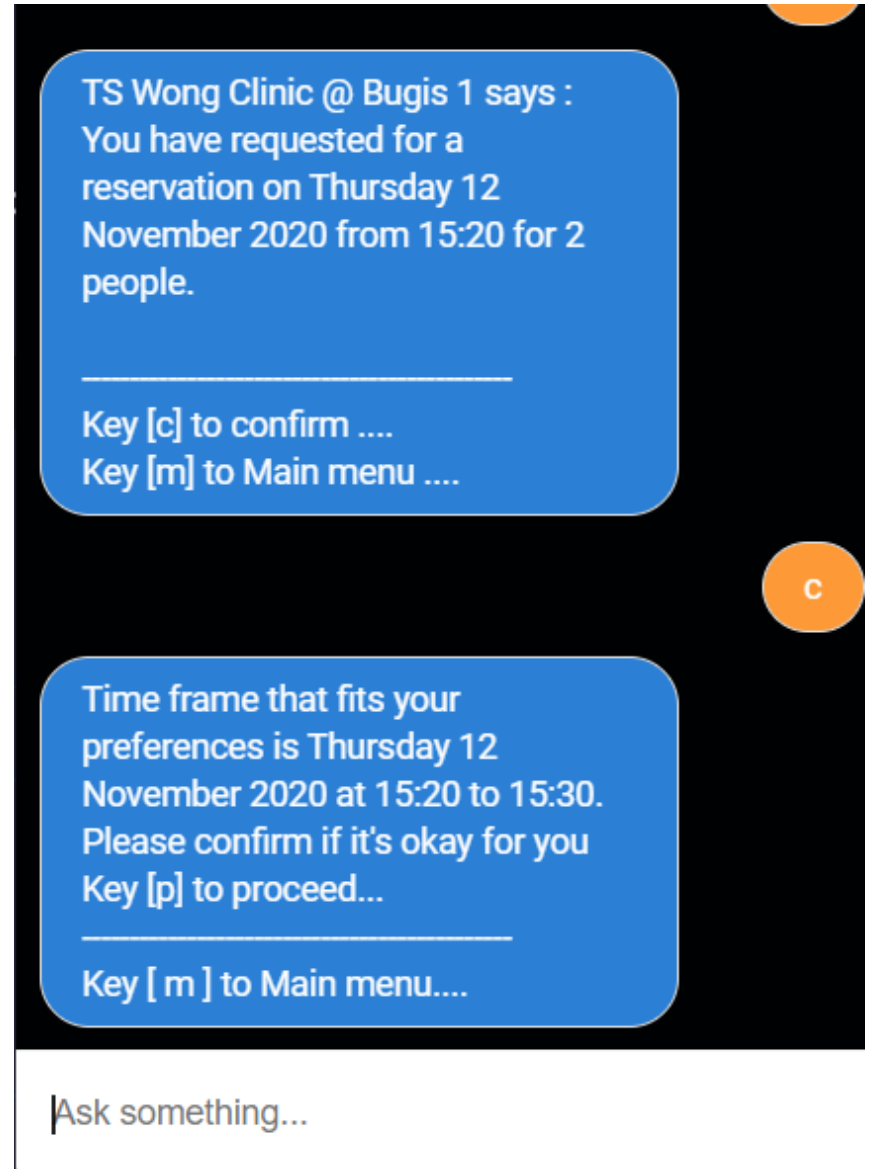
The screenshot displays the IRA ChatBot interface. At the top, there is a blue header with the text 'IRA' and a small circular profile picture of a person. Below the header is a white box labeled 'Main Menu'. The chat area has a black background with blue bubbles for user questions and orange bubbles for bot responses. The conversation is as follows:

- User: Which date (e.g. Dec 10)?
- Bot: 12 Nov
- User: What time to begin (e.g. 3 pm) ?
- Bot: 3.20 pm
- User: How many seats do you want to book ?
- Bot: 2
- User: Your expected time Out? (e.g. 4.20 pm . Key 0 if unkown)
- Bot: 0

At the bottom of the chat area is a text input field with the placeholder text 'Ask something...'.

IRA ChatBot

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



IRA ChatBot

- 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

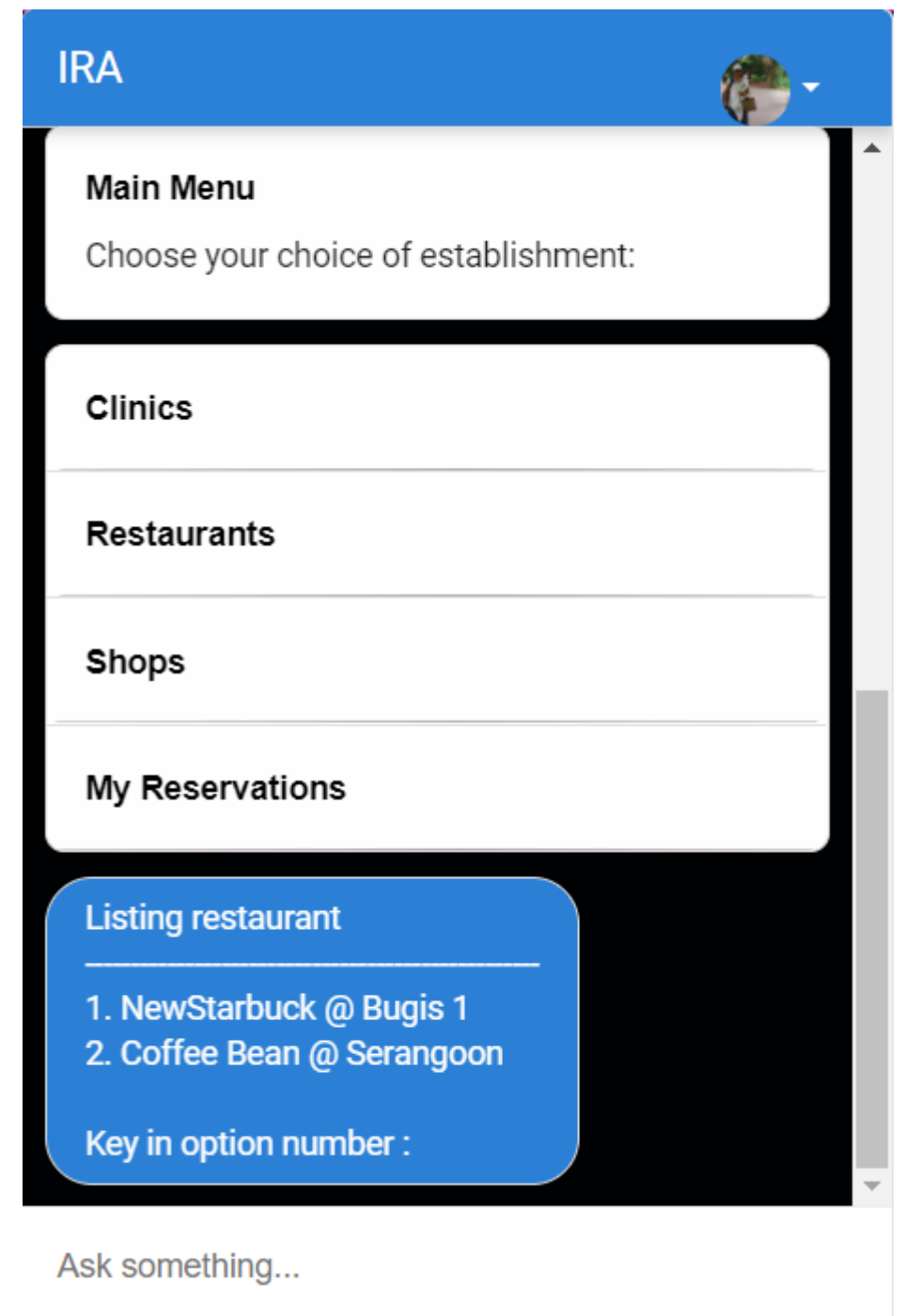
Your request for 2 person(s) on
Thursday 12 November 2020 at
15:20 to 15:30 is now on-hold.
Please status check after cufoff
time 19:00

Key [m] to Main menu....

|Ask something...

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

Which date (e.g. Dec 10)?

nov 19

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

2.23 pm

How many seats do you want to book ?

3

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

4.30 pm

Coffee Bean @ Serangoon says :
You have requested for a reservation on Thursday 19 November 2020 from 14:23 to 16:30 for 3 people....
Key [c] to confirm
Key [m] to Main menu

c

IRA

Coffee Bean @ Serangoon does not have the requested slots.
Instead lists suggestions:

1. Thursday 19 November 2020 at 14:21
2. Thursday 19 November 2020 at 14:18
3. Thursday 19 November 2020 at 14:24
4. Wednesday 18 November 2020 at 14:21
5. Thursday 12 November 2020 at 14:21

Key in your option (e.g. 2):

Key [m] to Main menu...

c

Reservation for 3 on Thursday 19 November 2020 at 14:24 has been confirmed

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

3

ISS IRS PROJECT TEAM

DASHBOARD
MAPS
USER PROFILE
PAST HISTORY
SUPPORT

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...

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

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...

IRA

2

You have chosen Thursday 19 November 2020 at 14:24 to Change.

Yes or No?

Key [m] to Main menu...

yes

IRA expects details of change..
Key [p] to proceed...

How many person to admit?

p

3

Which date (e. g. jan 12) ?

nov 23

What time (e. g. 3 pm) ?

3.45 pm

ok

You have requested a change to Monday 23 November 2020 at 15:45 for 3 persons.
IRA checks for availability... [ok]

Available slot(s):

1. Monday 23 November 2020 at 15:45
2. Monday 23 November 2020 at 15:42
3. Monday 23 November 2020 at 15:48
4. Tuesday 24 November 2020 at 15:45
5. Monday 16 November 2020 at 15:45

Key your choice (e.g. 1)

Key [m] to Main menu...

1

Previous reservation on Thursday 19 November 2020 at 14:24 has been successfully cancelled, and new reservation for 3 on Monday 23 November 2020 at 15:45 has been confirmed

Key [m] to Main menu...

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

You have chosen Monday 23 November 2020 at 15:45 to Cancel.

Yes or No?

Key [m] to Main menu...

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

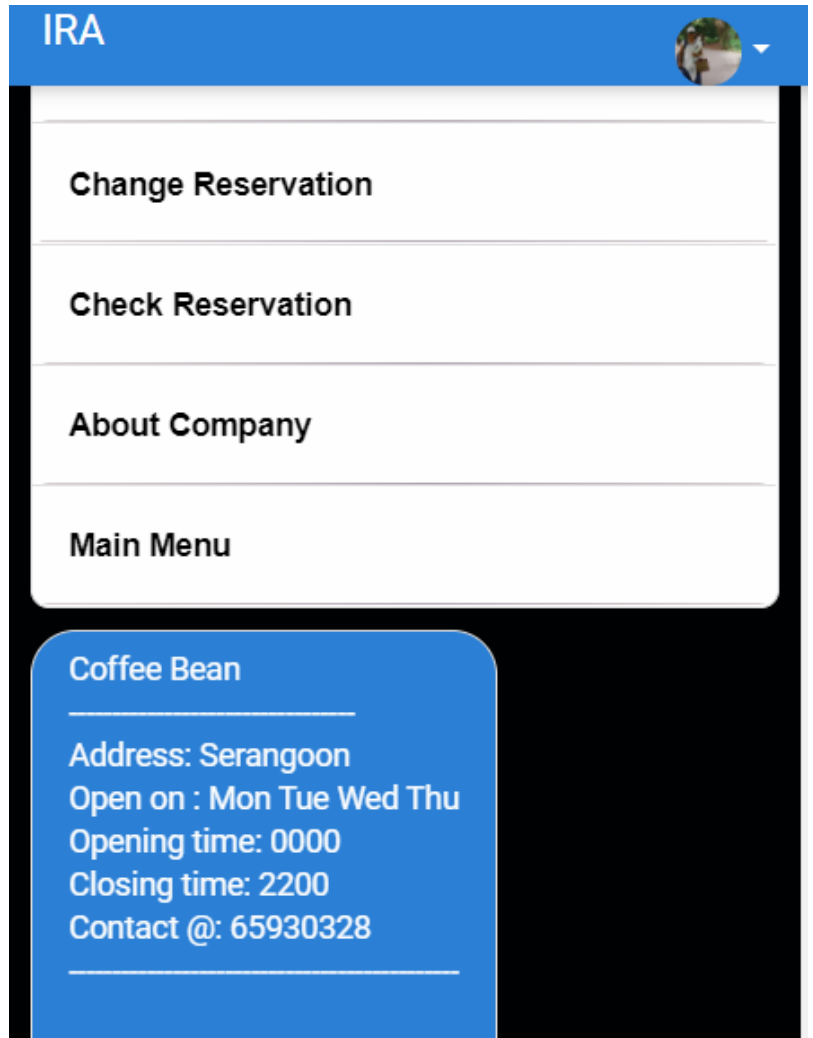
You have these reservation(s):
(1) Thursday 19 November 2020 at 11:20 to 12:10 for 3 person(s) is on-hold
(2) Thursday 12 November 2020 at 15:20 to 15:30 for 2 person(s) is on-hold

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.

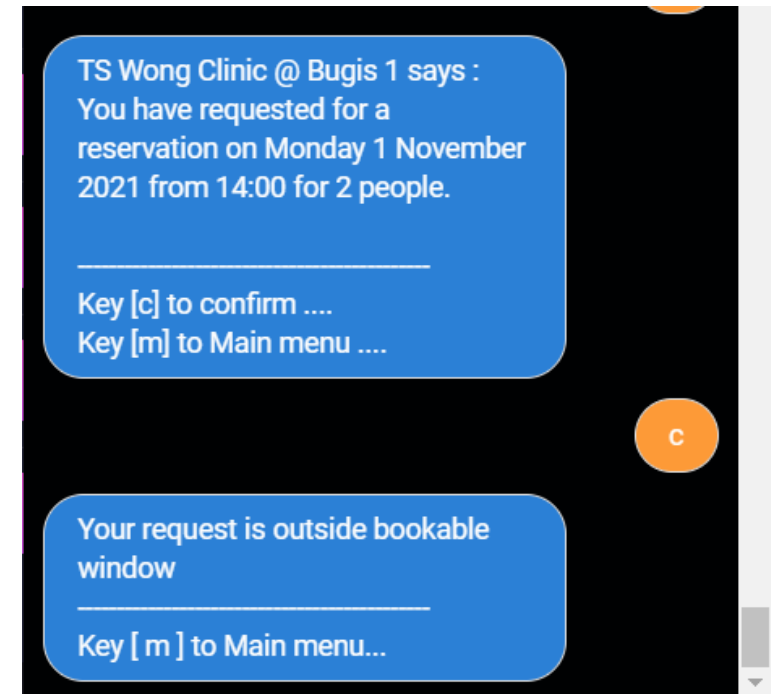
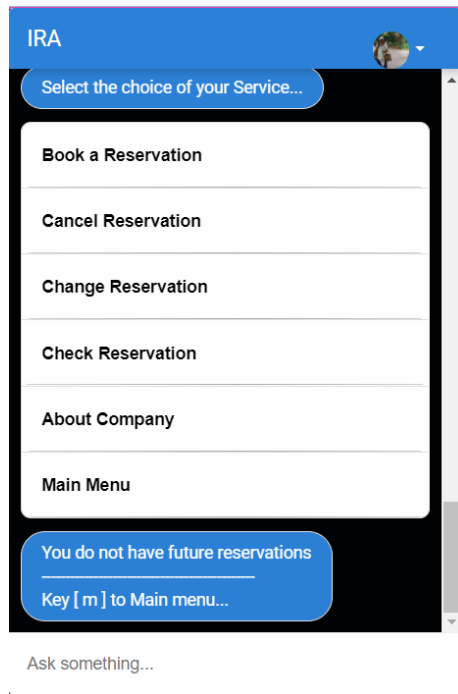
Key [c] to confirm
Key [m] to Main menu

I am afraid our full capacity has been reached

Key [m] to Main menu...

IRA ChatBot: Follow up with Rules

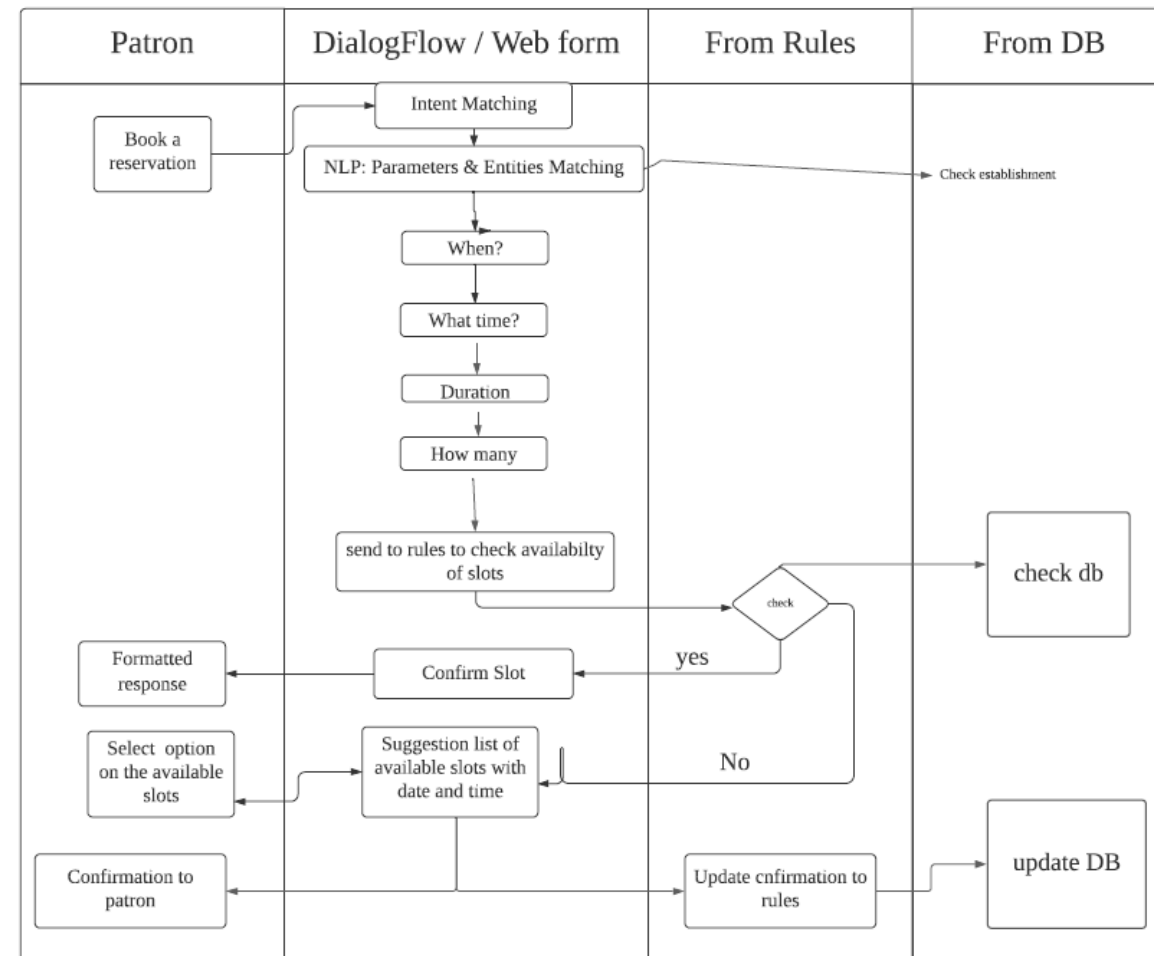
- When Cancel/change reservation is selected before booking any slots
- Booking a reservation for past date

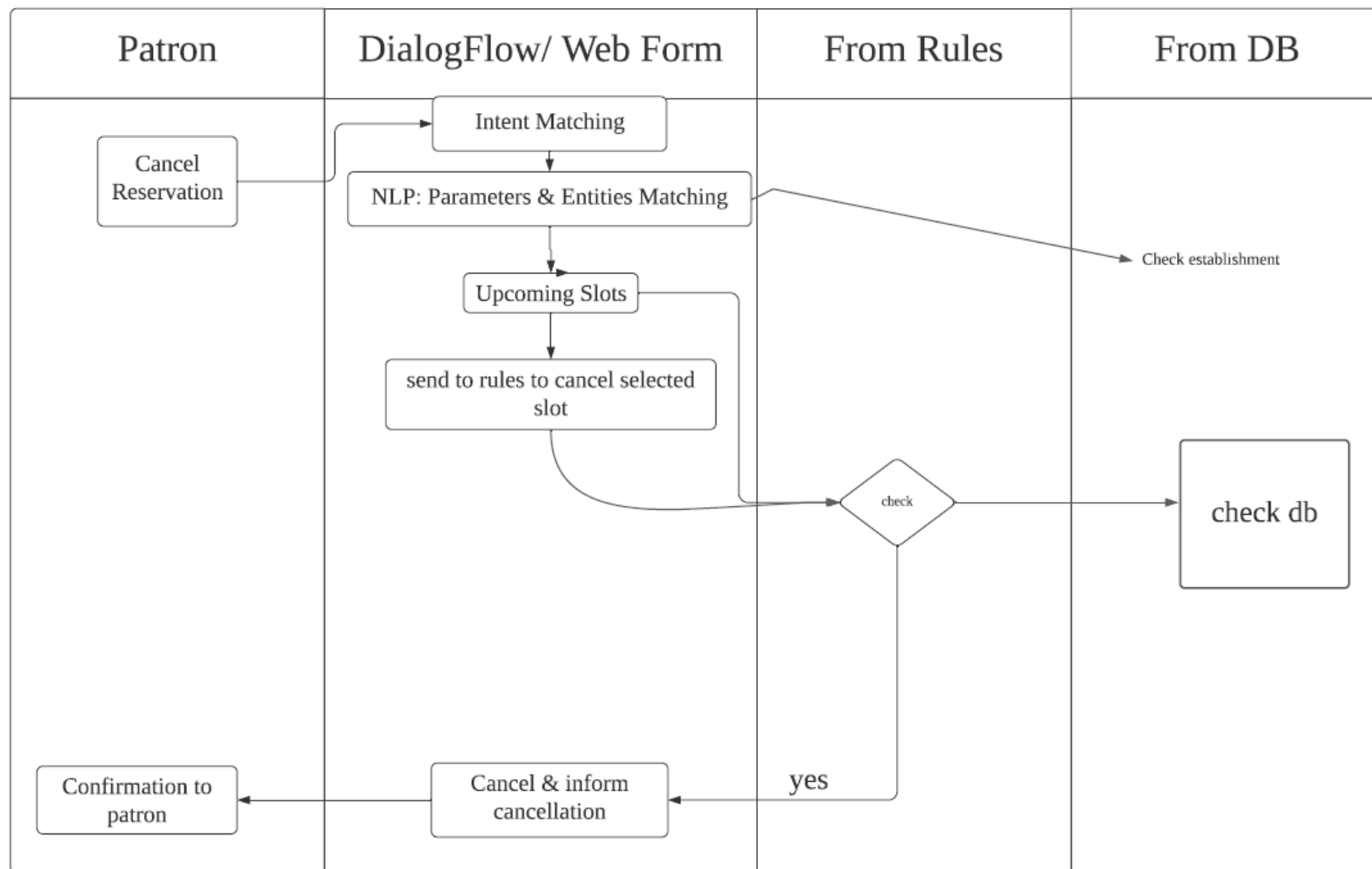


Appendices

Reservation Activity Workflow

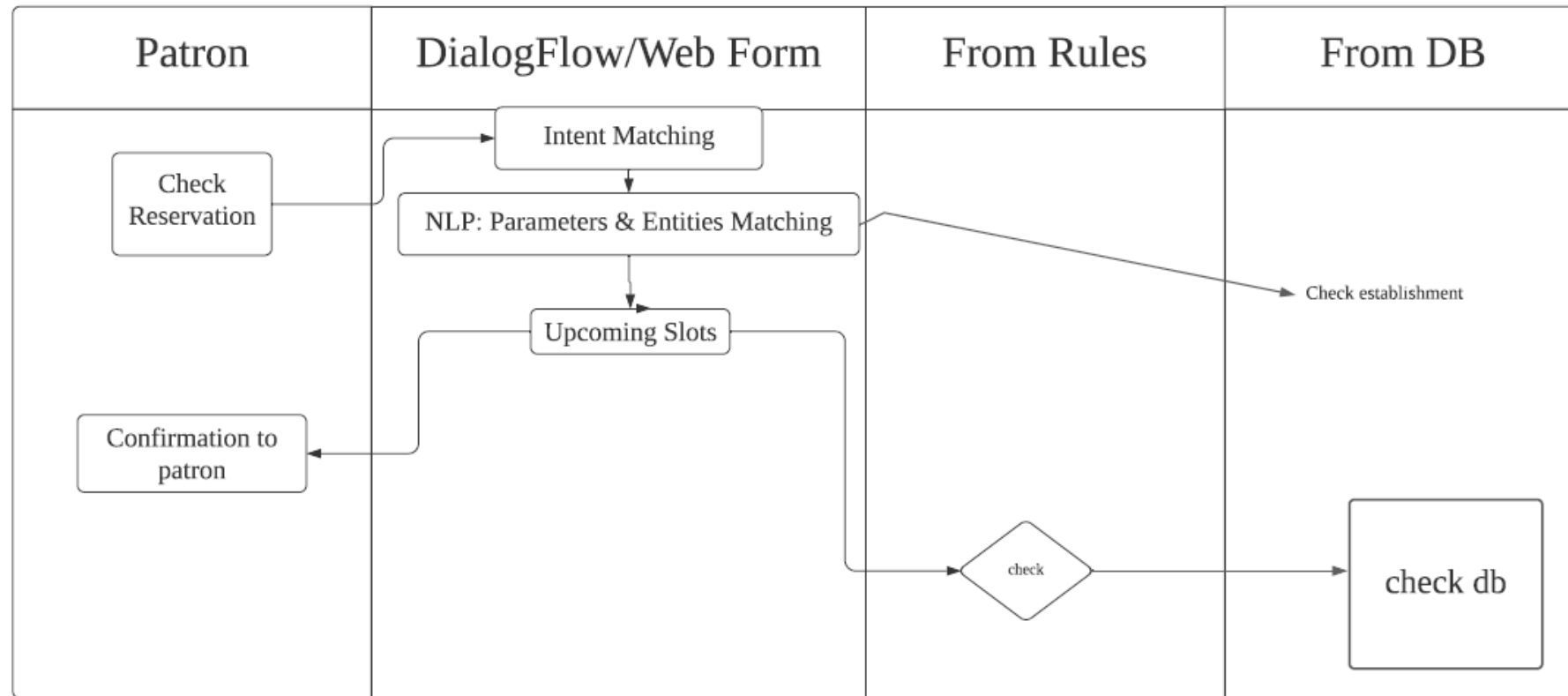
Book a Reservation

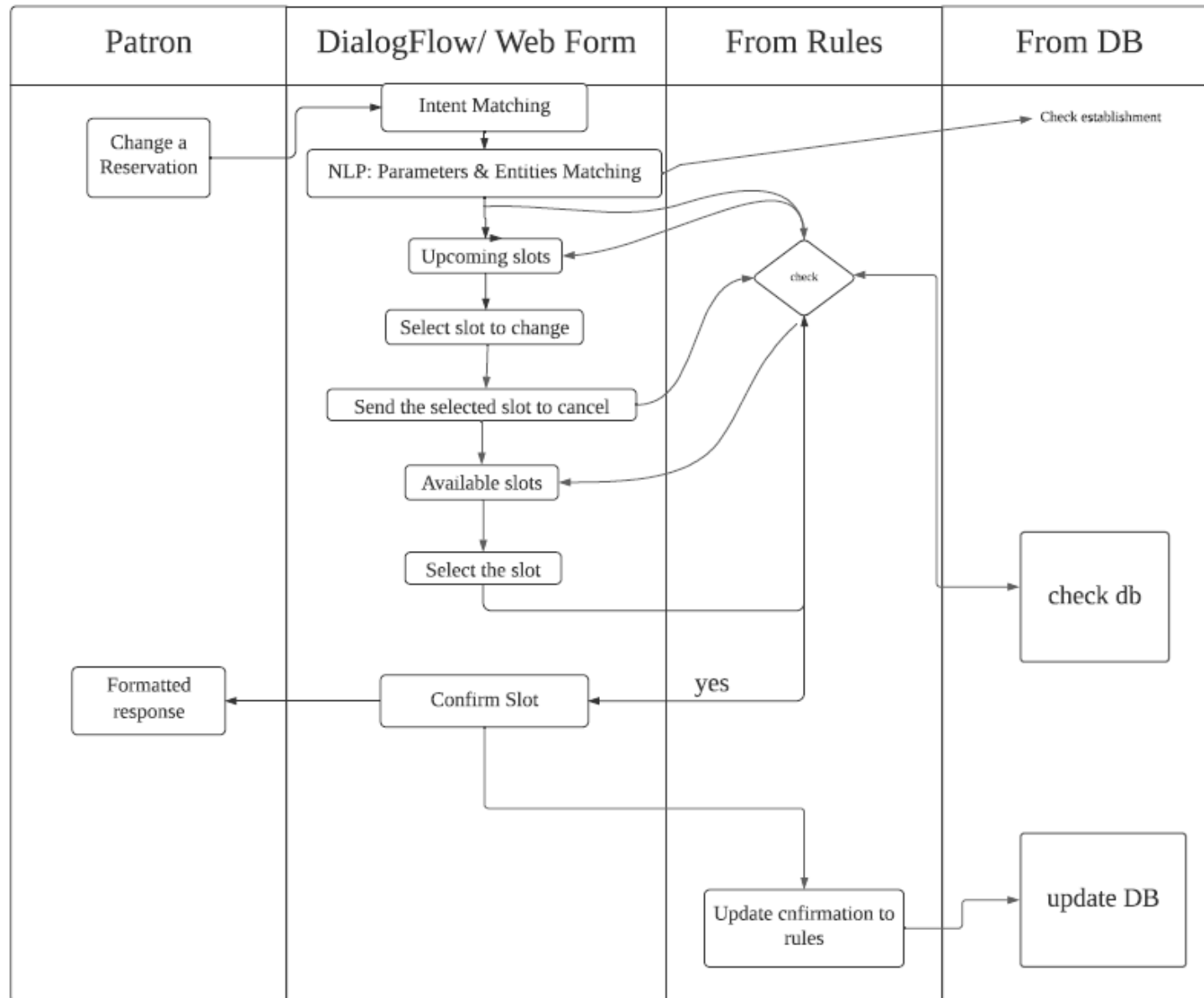




Cancel Reservation

Check Reservation





Change Reservation