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# 1. The prototype

I designed a coffee shop whose main product is a variety of coffees, and users can order coffee from a chat machine through a conversation. In the following, I will present the overall idea of the prototype design, while the prototype samples and the dialogues will be shown in the second part.

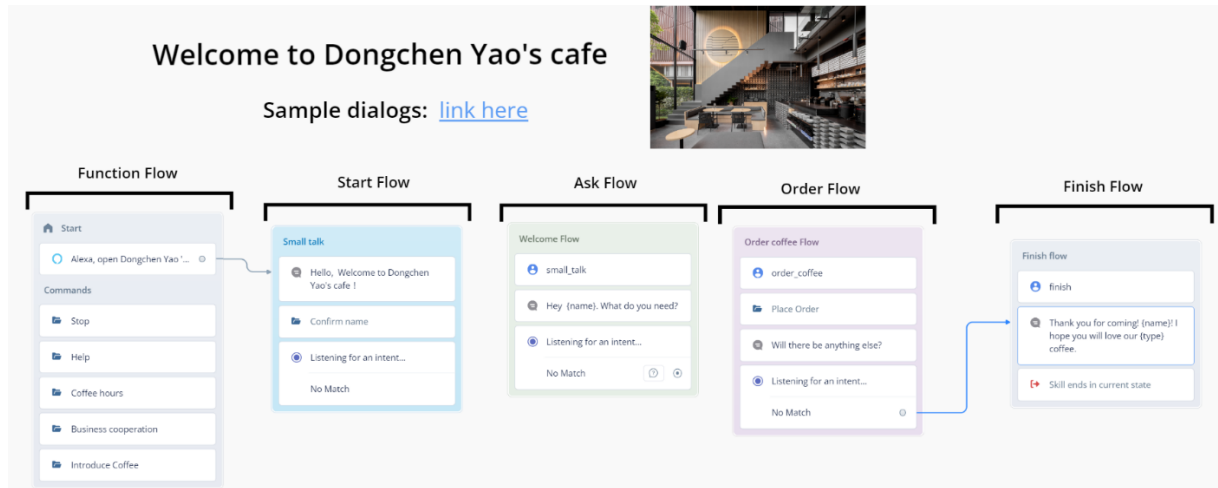
From the moment the user enters the chat system, they can enter keywords to learn about the café's help, hours of operation, and business partnerships. It is worth mentioning that in the introduction of coffee, we set many options for users, so they can ask BOT according to their preferences, and thus learn about different types of coffee in the cafe, as well as specific details about coffee, to meet the user's choice of coffee.

Secondly, in the "Start Flow" section, BOT will confirm the name entered by the user, and will remember the user's name and provide the user with details of coffee shopping; "Ask Flow" includes the size, type, and dining method of coffee, where I use a lot of word slots to enrich the content that the user can talk about, to better understand the output, and if there is a mismatch, BOT will give the user a hint, after the user has entered the reservation information.

"Order flow" also provides the user with the ability to check the order and cancel the order, which will be divided into two parts, part of the user after the successful order to choose the payment method is to support a variety of BOT will give the user a variety of payment methods and follow-up questions to ensure that the user can provide the correct payment method to complete the final The closed-loop of ordering coffee. Another part is that the user can cancel the order by keyword, to ensure that the order is correct, BOT will confirm the user's name before canceling the order to ensure that the user did not cancel by mistake. Finally, in the "Finish Flow", BOT will chat with the user to confirm that the user has no other needs, and then finish the chat conversation, thus ending a complete flow.

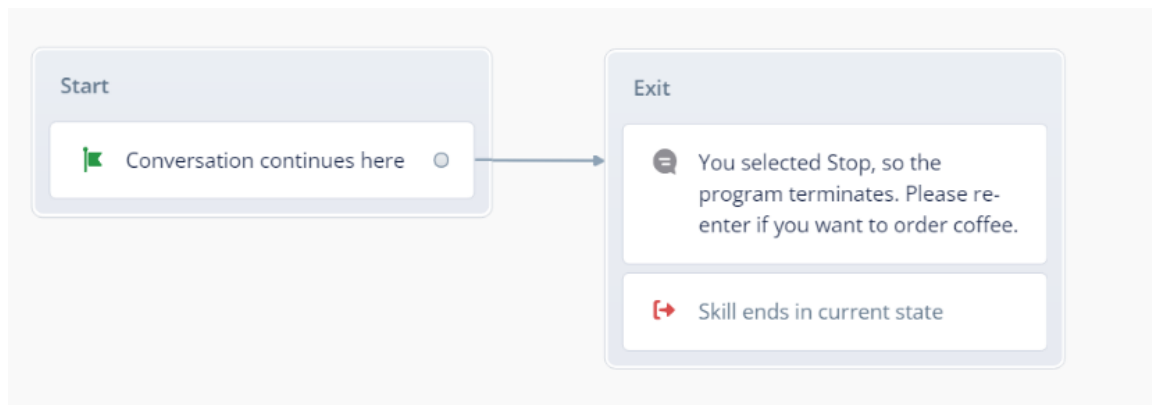
## 2. Design process

### 2.1 Flow diagram

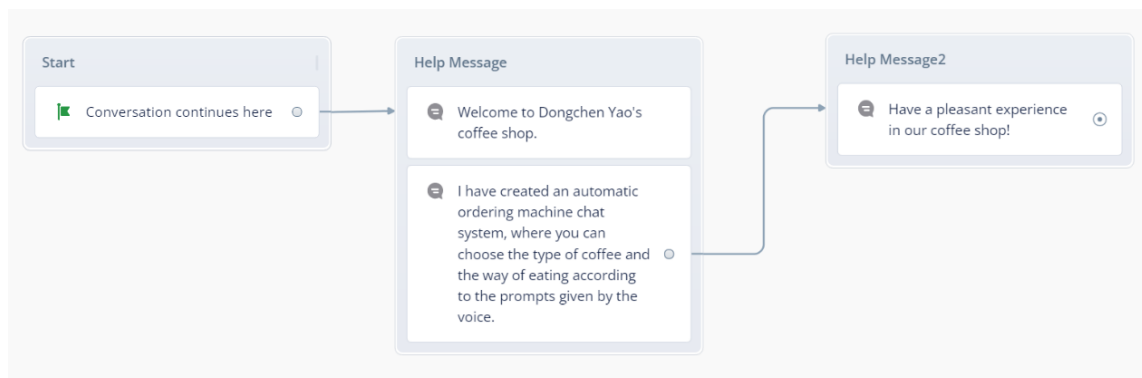


#### 2.1.1 Function flow:

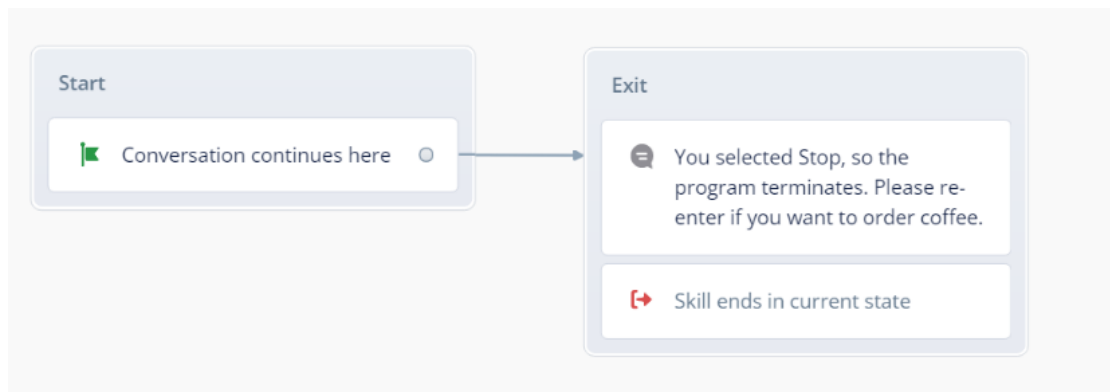
##### Stop flow:



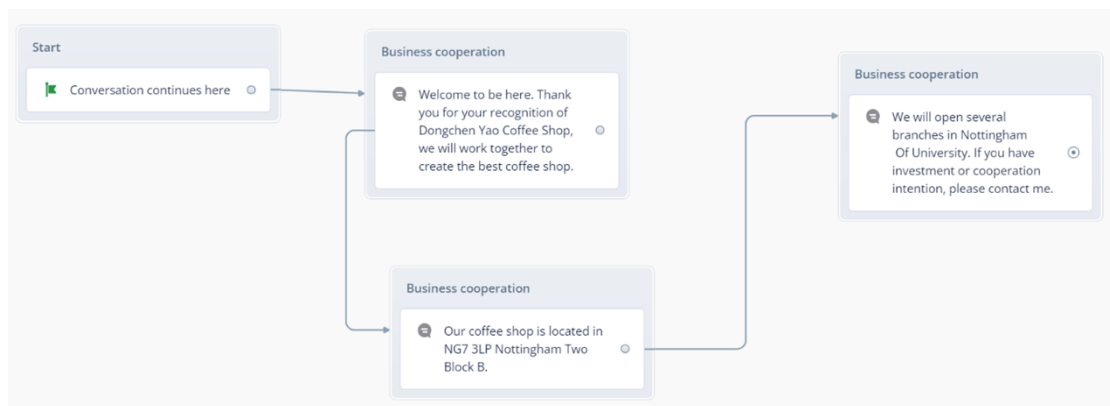
##### Help flow:



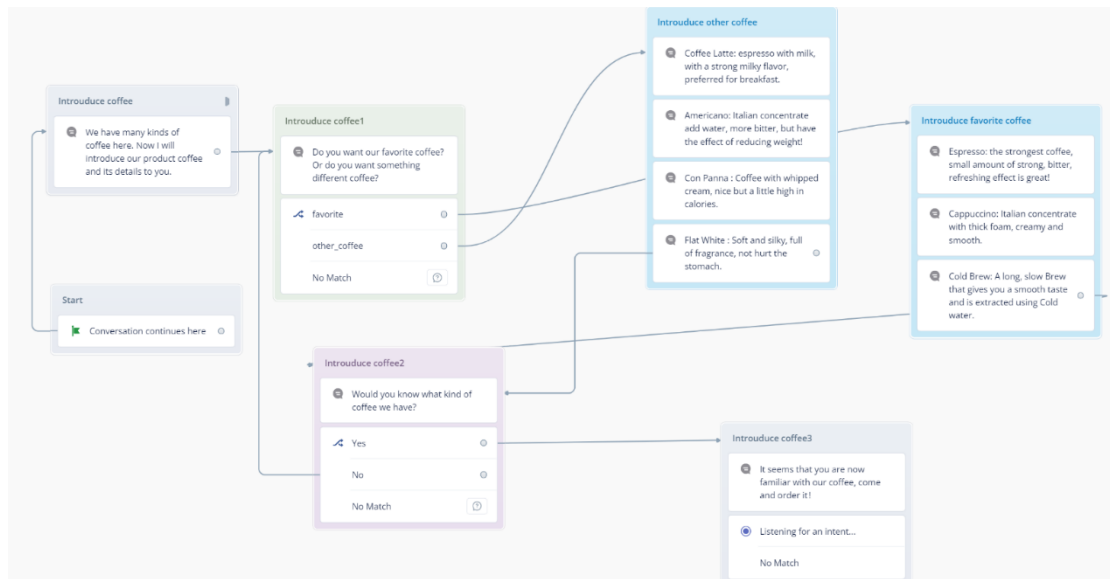
## Coffee hours flow :



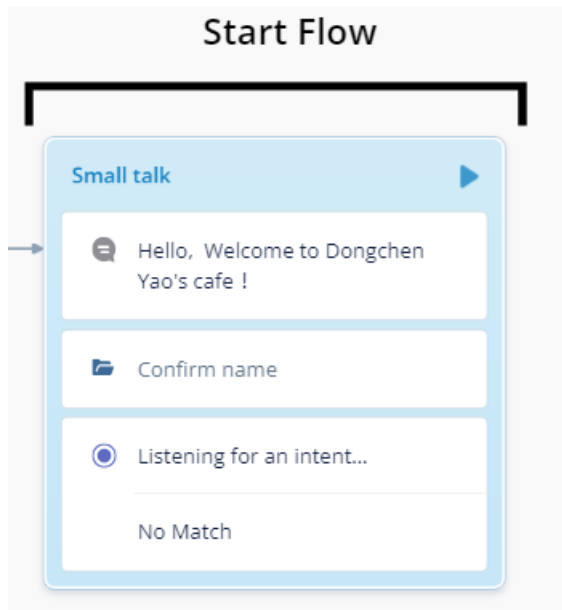
## Business cooperation flow :



## Introduce Coffee flow :



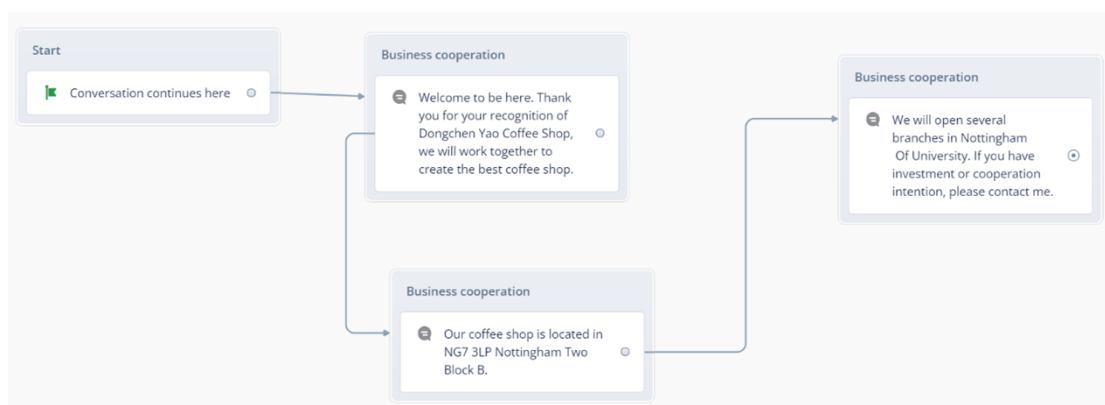
## 2.2.2 Start Flow:



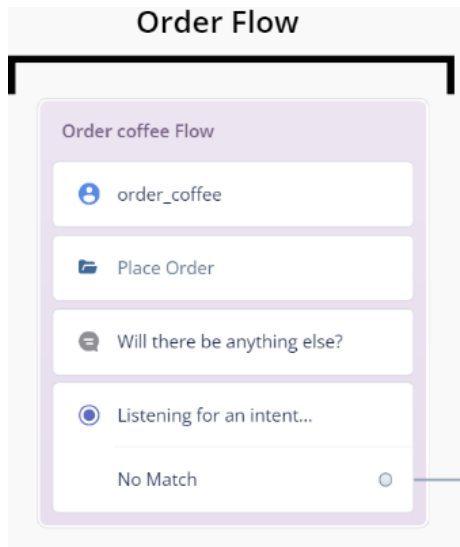
### Confirm name flow:



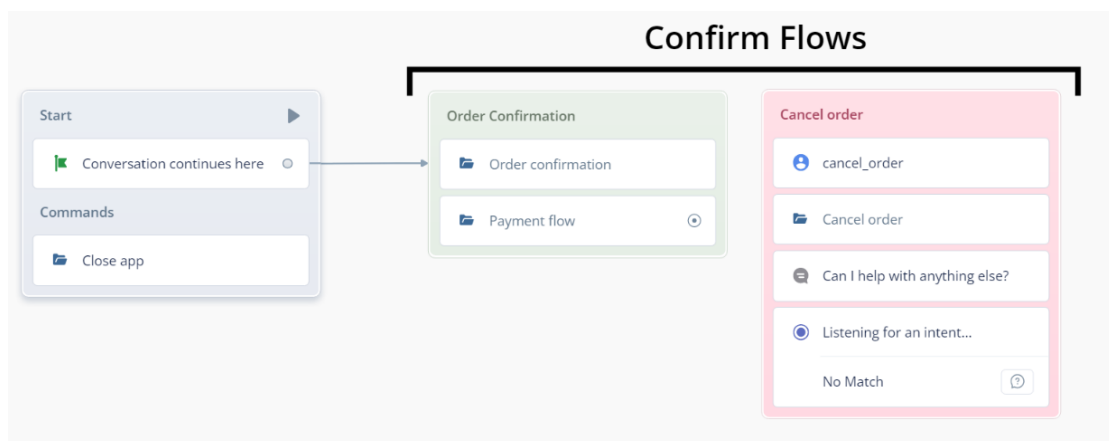
## 2.1.3 Ask Flow:



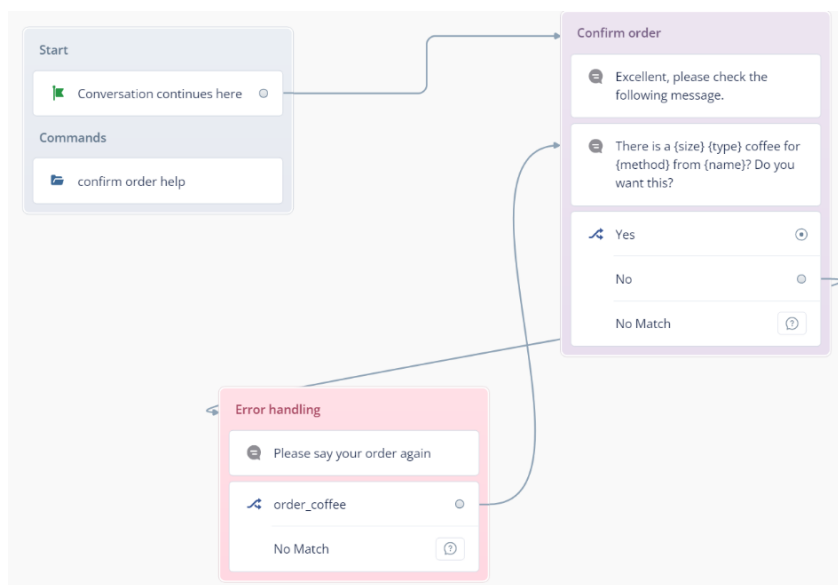
## 2.1.4 Order Flow



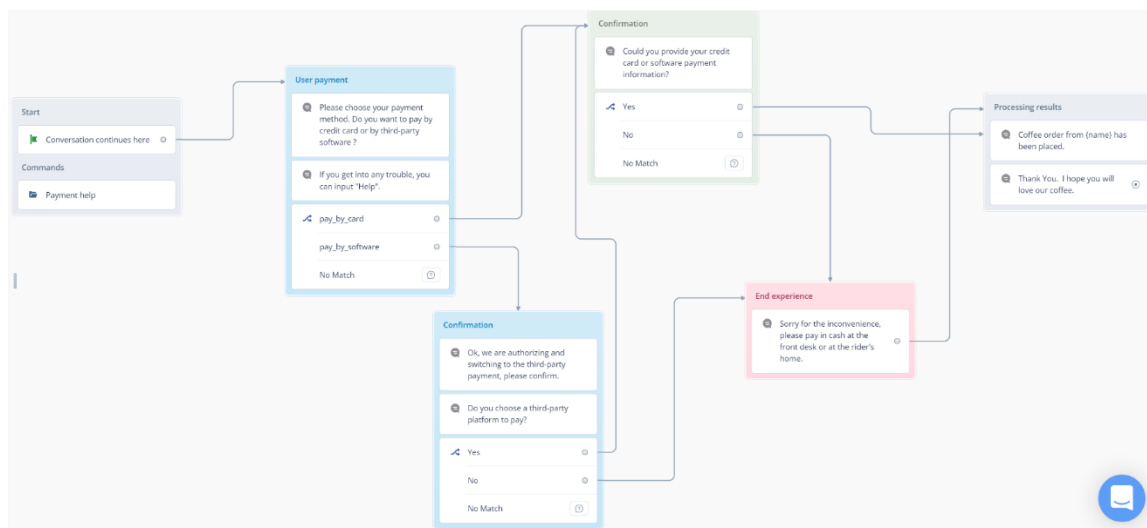
### Place Order flow :



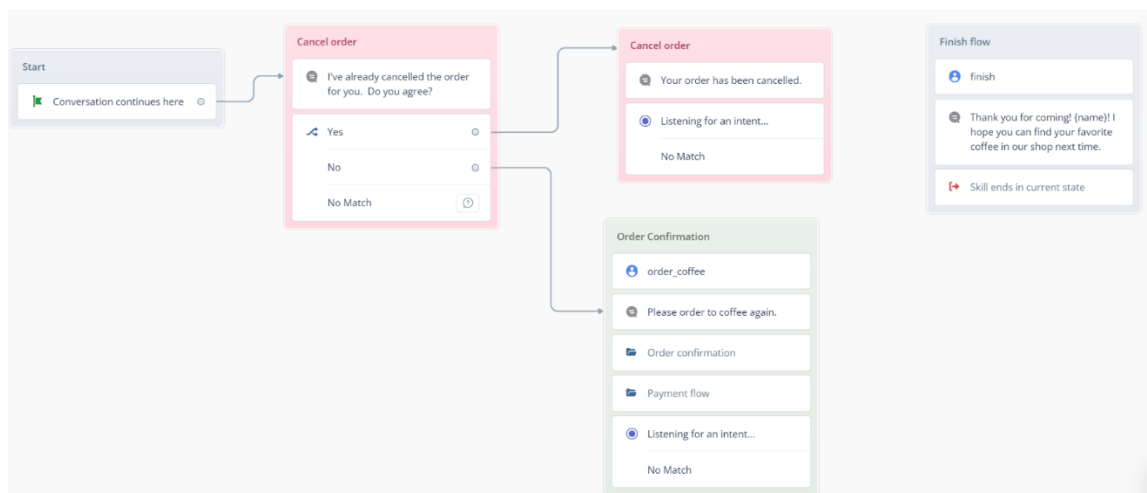
### Order confirmation flow :



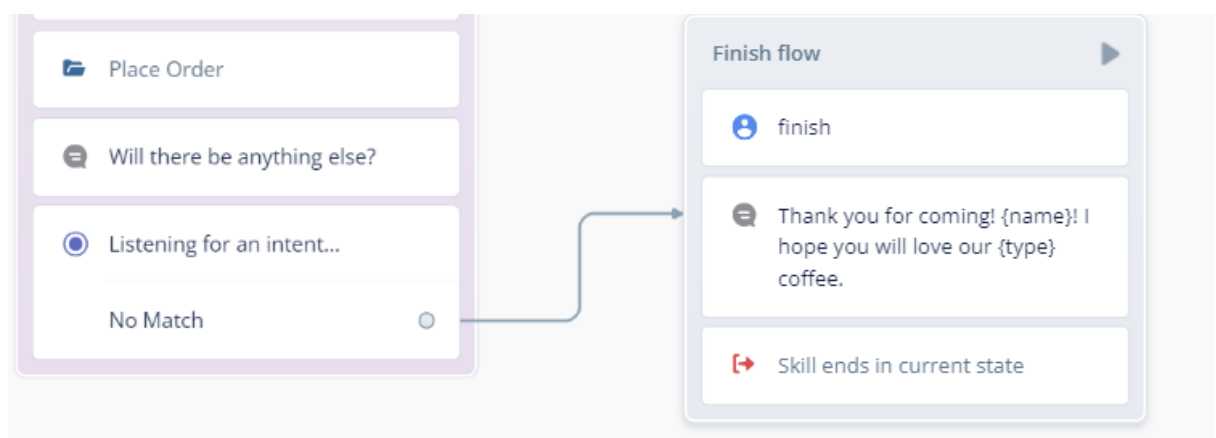
## Payment flow :



## Cancel order flow :



## 2.1.5 Finish flow :



## 2.2 Sample dialogs:

[https://docs.google.com/document/d/1mbrRHIGsxP3GvhZUFmZfdQ\\_3KyZBCr8r6Kv7eR2DF4Q/edit](https://docs.google.com/document/d/1mbrRHIGsxP3GvhZUFmZfdQ_3KyZBCr8r6Kv7eR2DF4Q/edit)

### Normal Order coffee

**Bot:** Hello, Welcome to Dongchen Yao's cafe !  
What is your name?

**User:** TOM

**Bot:** Yoo TOM .What kind of coffee would you like?

**User:** I want to order a cup of coffee

**Bot:** What size coffee?

**User:** Biggest

**Bot:** What type of coffee?

**User:** Cappuccino

**Bot:** Do you want to Dine in or Take out?

**User:** Dine in

**Bot:** Excellent, please check the following message.

There is a Large cappuccino coffee for Dine in from TOM? Do you want this?

**User:** Yes

**Bot:** Please choose your payment method. Do you want to pay by credit card or by third-party software ?

If you get into any trouble, you can input "Help".

**User:** Paypal

**Bot:** Ok, we are authorizing and switching to the third-party payment, please confirm.

Do you choose a third-party platform to pay?

**User:** Yes

**Bot:** Could you provide your credit card or software payment information?

**User:** Yes

**Bot:** Coffee order from TOM has been placed.

Thank You. I hope you will love our coffee.

**Bot:** Anything else I can help with?

**User:** No thanks

**Bot:** Thank you for coming! Alan! I hope you will love our espresso coffee.

*(Termination of program)* ■



# Get coffee details and order coffee:

**Bot:** Hello, Welcome to Dongchen Yao's cafe !  
What is your name?

**User:** Alan

**Bot:** Yoo Alan .What kind of coffee would you like?

**User:** I need help

**Bot:** Welcome to Dongchen Yao's coffee shop.  
I have created an automatic ordering machine chat system, where you can choose the type of coffee and the way of eating according to the prompts given by the voice.  
Have a pleasant experience in our coffee shop!

**Bot:** Alan .What do you need?

**User:** I want to know about coffee

**Bot:** We have many kinds of coffee here. Now I will introduce our product coffee and its details to you.

Do you want our favorite coffee? Or do you want something different coffee?

**User:** Popular

**Bot:** Espresso: the strongest coffee, small amount of strong, bitter, refreshing effect is great!

Cappuccino: Italian concentrate with thick foam, creamy and smooth.

Cold Brew: A long, slow Brew that gives you a smooth taste and is extracted using Cold water.

Would you know what kind of coffee we have?

**User:** Not yet

**Bot:** Do you want our favorite coffee? Or do you want something different coffee?

**User:** Different coffee

**Bot:** Coffee Latte: espresso with milk, with a strong milky flavor, preferred for breakfast.

Americano: Italian concentrate add water, more bitter, but have the effect of reducing weight!

Con Panna : Coffee with whipped cream, nice but a little high in calories.

Flat White : Soft and silky, full of fragrance, not hurt the stomach.

Would you know what kind of coffee we have?

**User:** Yes

**Bot:** It seems that you are now familiar with our coffee, come and order it!

**User:** Ok

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**Bot:** Yoo Alan .What kind of coffee would you like?

**User:** Coffee please

**Bot:** What size coffee?

**User:** Small

**Bot:** What type of coffee?

**User:** Espresso

**Bot:** Do you want to Dine in or Take out?

**User:** Take out

**Bot:** Excellent, please check the following message.

There is a Small espresso coffee for Take out from Alan? Do you want this?

**User:** Yes

**Bot:** Please choose your payment method. Do you want to pay by credit card or by third-party software ?

If you get into any trouble, you can input "Help".

**User:** Apple pay

**Bot:** Ok, we are authorizing and switching to the third-party payment, please confirm.

Do you choose a third-party platform to pay?

**User:** Yes

**Bot:** Could you provide your credit card or software payment information?

**User:** Yes

**Bot:** Coffee order from Alan has been placed.

Thank You. I hope you will love our coffee.

Anything else I can help with?

**User:** No thank you so much

*(Termination of program)*

# Order quickly and cancel order

**Bot:** Hello, Welcome to Dongchen Yao's cafe !

What is your name?

**User:** David

**Bot:** Hey David. What do you need?

**User:** I would a medium cappuccino coffee

**Bot:** Do you want to Dine in or Take out?

**User:** Dine in

**Bot:**Excellent, please check the following message.

There is a Medium cappuccino coffee for Dine in from David? Do you want this?

**User:** Yes

**Bot:** Please choose your payment method. Do you want to pay by credit card or by third-party software ?

If you get into any trouble, you can input "Help".

**User:** software

**Bot:** Ok, we are authorizing and switching to the third-party payment, please confirm.

Do you choose a third-party platform to pay?

**User:** Please cancel

**Bot:** I've already cancelled the order for you. Do you agree?

**User:** Yes

**Bot:** Your order has been cancelled.

**User:** Thank you

**Bot:** Thank you for coming! David! I hope you can find your favorite coffee in our shop next time.

*(Termination of program)*

# Users pay in different ways

**Bot:** Hello, Welcome to Dongchen Yao's cafe !  
What is your name?

**User:** John

**Bot:** Yoo John .What kind of coffee would you like?

**User:** I want to know business cooperation

**Bot:** Welcome to be here. Thank you for your recognition of Dongchen Yao Coffee Shop, we will work together to create the best coffee shop.

We will open several branches in Nottingham Of University. If you have investment or cooperation intention, please contact me.

Yoo John .What kind of coffee would you like?

**User:** Tell me your coffee hours

**Bot:** Our business hours are usually from 7 am. to 10 pm., Monday to Sunday, and closed on major holidays.

Yoo John .What kind of coffee would you like?

**User:** I want to order a cup of coffee

**Bot:** What size coffee?

**User:** Large

**Bot:** What type of coffee?

**User:** Flat White

**Bot:** Do you want to Dine in or Take out?

**User:** Take out

**Bot:** Excellent, please check the following message.

There is a Large Flat White coffee for Take out from John? Do you want this?

**User:** Yes

**Bot:** We have various payment methods. You can use your bank card or third-party payment software like Apple Pay, Alipay or paypal. If the payment fails, you can use cash.

When you don't want to pay the order, you can enter the word for the word and cancel the order.

If you get into any trouble, you can input "Help".

**User:**Paypal

**Bot:** Sorry for the inconvenience, please pay in cash at the front desk or at the rider's home. Coffee order from John has been placed.

Thank You. I hope you will love our coffee.

**Bot:**Anything else I can help with?

**User:** Bey

**Bot:** Thank you for coming! John! I hope you will love our Flat White coffee.

*(Termination of program)*

## 3. VUI design principles

### 1. Prompt design

The design uses session markers and key phrases, and if the user says a phrase that the computer cannot understand, we give the correct prompt to guide the user to answer again. For example, if the user types a phrase that the machine cannot understand to order a cup of coffee, we will give the prompt: you can say "I want to order a cup of coffee", to help the user.

### 2. Discoverability support

And some parts give the user options to help the user "complete the task", this part in my design, the user can use what payment method to reflect, the user can choose from the card or third-party payment platform, which can also be refined more parts, the third-party platform has Apple pay and PayPal, etc., after the user chooses, will also prompt him to confirm the choice.

### 3. Error handling,

If the user provides something in the options that the machine cannot understand, I designed the error handling to revert to the previous step and give the user a prompt of "no matching" so that the second time can proceed smoothly.

### 4. Personalisation

The user experience is very good, because the name is set as an example output, and then the computer will confirm the name to the user, it will give the user a very unique experience, and the overall content is very comprehensive, and we are impressed with our coffee shop.

### 5. Confirmation

Using context capture you can collect the information entered by the user at once, show it briefly through the input of the statement, and show the user whether to confirm the order for the follow-up.

### 6. context capture

The machine can capture the information entered by the user and enter it in the next part when needed, such as the user's name, and the user's order.

### 7. Integration

My design doesn't involve much integration from external sources, but it uses a lot of name data when giving the user's name so that the user can be sure to enter it correctly again.

## 4. Advanced features

In designing this part of the user order, I designed a lot of intent in the word slots, where we need more information from the user to complete the instructions. The word slots are designed to be either

optional or required, as traditional forms, because some instructions are very important. In Dongchen Yao's coffee shop, the word slots in the coffee size section are divided into small, medium, and large, and we also added a lot of synonyms to the slots so that we could provide feedback to the user's input. When we confirm an order, the specific order specifications of this coffee must be clear, thus completing the user's instructions, so this word slot is mandatory, and its input will override any default values, and similarly when selecting the type of coffee.

## **5. Conclusion**

### **5.1 Project achievement and good operation**

One of the things I like about this Yao Dongchen's cafe project is that it fully satisfies the user's need to know about coffee, shopping needs, and ordering and payment needs.

From the moment the user enters the chat system, he/she can learn about the café's help, business hours, and business cooperation. At the same time, the user can ask BOT about his/her preferences and thus learn about the different types of coffee in the café, as well as specific details about the coffee, satisfying the user's choice of coffee. Secondly, BOT will remember the user's name and provide the user with the details of coffee shopping, including the size, type, and dining method of coffee, as well as the functions of order inquiry and order cancellation for the user; after successfully placing an order, the choice of payment method is also supported in a variety of ways, and BOT will give the user a variety of payment methods and follow-up questions to ensure that the user can provide the correct payment method to finally complete the coffee order. Finally, BOT will chat with the user to confirm that the user has no other needs and then finish the chat conversation.

### **5.2 Regrets in the design**

Because I designed the coffee shop to give users the option to order "take away" or "dine in", but I did not do a complete job for "take away", because this part involves assigning orders to the delivery person, user inputting more address and contact information to confirm, real-time interaction between the user and the rider, and the background management function of the delivery person, etc. It is a new product 0-1 process, which requires a lot of intention and context tracking, so I omitted the details of delivery.

### **5.3 The main obstacles to a successful prototype**

The first difficulty is in expression when the user shows their request. The user says "I want to order a cup of coffee" but this is not the only way the user can make this request. The user can also say:

"Any coffee I can buy?" I need to take into account various expressions and expand the user question, but obviously, this requires a lot of data and practice to make continuous improvement, and for the "no match For the "no matching" user question, the strategy I used was to display a specific word to order coffee to meet the user's needs.

## **5.4 Next improvements to this project**

The goal of the VUI system is not to simply "train" the user, but to adapt to the user's behavior. When the user gives a response that is not important to the next conversation, set up a generic answer, or let the user know that others will listen to their answer. When ambiguity arises, set up a common list and increase efficiency by asking further questions to confirm the user's true intentions.