The prototype

For this project I created a fictional premium meal prep delivery service called MeatEaterz. It was inspired by such companies as Hello Fresh, Mindful Chef, and FitKitchen. The USP being that MeatEaterz provided high protein, meat-based meals.

The prototype was a VUI that allowed the user to order their weekly meals that would be delivered. The user would be able to select from multiple different types of cuisines and would be able to select set meals from those individual cuisines. Being a prototype, there was a limited number of different cuisines and meals within the VUI. Once the user has made their selection, it would be added to their cart and the user would select another meal, until they have selected their chosen number of meals.

Design process

Sample dialogs

One of the tools used when designing the VUI was sample dialogs. Sample dialogs are a simple way to show a snapshot of how an interaction might look. I found that creating these and then doing a table read (by myself) helped to improve the natural conversational feel of my VUI.

Below we can see an example of an optimal interaction between the user and the VUI. The user has no issues being able to order their meals and everything is as expected.

User	Alexa, open meateaterz.
VUI	Welcome back to MeatEaterz. How many meals would you like this week? three, five or seven?
User	Three
VUI	Ok, you've chosen three meals. What cuisine would you like for meal 1? You can tell me things like Italian, Mexican or Japanese
User	Italian
VUI	Ok, in the Italian options this week we have Pizza, Penne, and spaghetti. Which would you like to add to your cart?
User	Pizza please
VUI	Ok, I've added pizza to your orders. You have chosen one meal. What cuisine would you like for meal two?
User	Japanese
VUI	Ok, in the Japanese section we have Rice, Curry, and noodles. Which would you like to add to your cart?
User	Noodles
VUI	Ok, I've added noodles to your orders. You have chosen two meals. What cuisine would you like for meal three?
User	Mexican
VUI	Ok, in the Mexican section we have pulled pork, beef fajitas, or salsa chicken. Which would you like to add to your cart?
User	Salsa chicken please
VUI	Ok, I've added salsa chicken to your orders. You have chosen all of your meals now. In your cart is Pizza, Noodles, and Salsa chicken. Does that sound right to you?
User	Yes
VUI	Ok, let's check out.

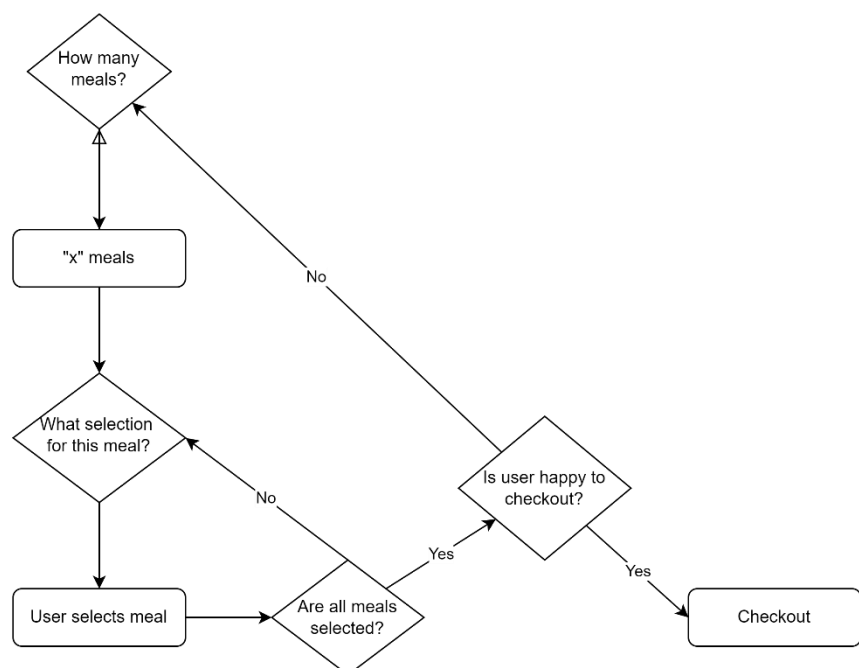|	Your order has now been placed. Goodbye.

In the sample dialogue below, we see what happens when the VUI and the user do not have the optimal interaction. We can see how the VUI handles errors, and how it prompts the user to help move the conversation forward. By giving the user a prompt of what the VUI expects to hear, the user can add to their order easily.

User	Alexa, open meateaterz.
VUI	Welcome back to MeatEaterz. How many meals would you like this week? three, five or seven?
User	Three
VUI	Ok, you've chosen three meals. What cuisine would you like for meal 1? You can tell me things like Italian, Mexican or Japanese
User	Italy
VUI	Ok, in the Italian options this week we have Pizza, Penne, and spaghetti. Which would you like to add to your cart?
User	Ok, erm……. Maybe the pasta dish.
VUI	I'm sorry, I didn't quite get that. Please tell me whether you'd like the pizza, the penne, or the spaghetti.
User	Penne
VUI	Ok, I've added the penne to your orders. You have chosen one meal. Which cuisine would you like for meal two?

Flow diagrams

Having written some sample dialogs, I was able to understand how the flow of my VUI would look. A flow diagram lists all ways that the user may branch to the next state from each given turn.

The flow diagram for my VUI is very simple, which made it easy to implement. The user would select the number of meals and the VUI would take the users selection until all meals are selected.

VUI Design principles

Here I will discuss the use of VUI design principles that I applied to my VUI.

Prompt design

I found that I should add prompts to my VUI, especially with it being a system that orders items for the user to pay for, I did not want the system to use low confidence to recognise what the user had said, I wanted it to be clear what the user wanted. Therefore, if there was not an intent match in my VUI I wanted the VUI to prompt the user on how to meet an intent match. In the "Italian" section of my VUI, if the user had said something that the VUI did not recognise it would reply: "I'm sorry, I didn't catch that. Would you like the Pizza, the penne pasta or the Spaghetti?".

This same approach was used throughout the VUI to ensure each item added to the order was confidently what the user wanted.

I also felt it would be useful to use conversational markers. This was an important way to let the user know where they were at in the ordering process and that they have been understood. Below we can see the VUI response after the user has added the second item to their order. Letting them know that their order has been added, how many meals they have selected and asking them what they would like for their third selection.

Ok, I've added that to your order

You have 2 meals in your kart

What cuisine woukd you like for meal
3? We currently have Mexican, Japanese and Italian meals

Discoverability

This was another important part of my VUI. The user needed to know what to say to the VUI in certain situations. I followed the principle that when asking the user for their input, it is best ti give them examples of what to say.

An example of where this was used in my VUI is when the VUI asked the user what type of cuisine they would like; especially with it being a prototype that only included three types of cuisine. Here is a bad example of how to do this:

VUI	What type of cuisine would you like?
User	Errrm….. I don't know.
VUI	I'm sorry I didn't understand that. What cuisine would you like?

Instead, here is how I handled it:

VUI	What type of cuisine would you like? We currently have Mexican, Japanese and Italian meals
User	Italian
VUI	Ok, in the Italian options this week we have Meat Feast Pizza. chicken penne or spaghetti Bolognese. Which would you like to add?

Giving a list of the options worked well. However, in the full VUI that could have dozens of cuisines this would not be practical. Instead, here is an example of how this might look:

VUI	What type of cuisine would you like? You can say things like soul food, Mexican, or healthy meals.
User	Italian
VUI	Ok, in the Italian options this week we have Meat Feast Pizza. chicken penne or spaghetti Bolognese. Which would you like to add?

Error handling

Thanks to my sample dialogs, I identified early how errors could occur and how my VUI could handle them. By simply prompting the user when there was no match and letting them know what they could say I was confident that even inexperienced users would be able to move the VUI to the next stage. I also made sure to include lots of different "utterances" that the user might use when replying to the VUI, for example when adding the Spaghetti Bolognese there is 12 utterances that the user might say; this of course could be expanded in the real VUI.

Personalisation

I did not feel that adding personalisation would be beneficial to my VUI in anyway. The fictional story of my VUI was that a user would already have an account with the meal ordering service and that they would have set up payment methods etc. the VUI would simply be a way for the user to order their meals.

Confirmation

I found it important to have confirmation strategies in pace, especially with it being a VUI that takes money from the customer. I thought using explicit confirmation; forcing the user to confirm the information, was important. Afterall, paying for a wrong item that you could potentially be allergic to would be a bad consequence of having no confirmation.

We can see how I used explicit confirmation below. Once the user replies "Yes" the order is completed, and you check out.

You have completed your orders.

In your cart is; Spaghetti Bolognese, "Turkey Donburi , Beef Fajita , does that sound right?

I also used implicit confirmation at certain times in my VUI to let the user know that they had been understood and the conversation had moved forward. Below we can see an example of this. There

was no need to confirm this at this stage, instead letting the user know that the meal had been added and that they have two meals in their cart was enough.

> Ok, in the Japanese options this week we have: Pork Udon Noodles. Turkey Donburi, or Beef "kare " curry rice?

> Donburi

> Ok, I've added that to your order

> You have 2 meals in your kart

Context

Letting the user know that their selections had been understood and that the VUI had kept record of these things was important in my VUI. I showed tracking of context in several ways, for example when the users selected how many meals they wanted this week my VUI would let them knew it had understood and then when each meal was added it would keep track of which meal number they were at. We can see this in the examples below.

> Ok, you have chosen 3 meals.

> What cuisine woukd you like for meal 1? We currently have Mexican, Japanese and Italian meals

> What cuisine woukd you like for meal 2? We currently have Mexican, Japanese and Italian meals

> Japanese

User testing

I had several users test my VUI. Including my 6-year-old child, an inexperienced adult, and an experienced adult. All had no issues being able to use the VUI without any assistance.

Below is the test transcript from the child who was able to use the VUI. Although a child would not be using this product, it clearly shows that even an inexperienced low skilled user can work the VUI.

Welcome back to MeatEaterz. How many meals would you like this week? 3 5 or 7?

Three

Three -
100.00%

Ok, you have chosen
3
meals.
What cuisine would you like for meal
1? We currently have Mexican, Japanese and Italian meals

Italian

Italian -
100.00%

Ok, in the Italian options this week we have Meat Feast Pizza. chicken penne or spaghetti Bolognese. Which would you like to add?

Spaghetti

Spaghetti bolognese -
100.00%

Ok, I've added that to your order
You have 1 meals in your kart
What cuisine would you like for meal
2? We currently have Mexican, Japanese and Italian meals

Japanese

Japanese -
100.00%

Ok, in the Japanese options this week we have: Pork Udon Noodles. Turkey Donburi, or Beef "kare " curry rice?

Donburi

Turkey Donburi -
100.00%

Ok, I've added that to your order
You have 2 meals in your kart
What cuisine would you like for meal
3? We currently have Mexican, Japanese and Italian meals

Mexican

Ok, in the Mexican options this week we have: Beef Fajitas. Mexican shredded pork. Or Salsa Chicken Rice Casserole?

Fajitas

Ok, I've added that to your order
You have 3 meals in your kart
You have completed your orders.
In your cart is; Spaghetti Bolognese, ''Turkey Donburi , Beef Fajita , does that sound right?

Yes

Ok, lets check out now.
Your order has been successfully placed. Goodbye

Conclusion

I feel that my prototype did everything I wanted it to. It allowed the user to easily order their meals for the week, if any errors occurred the user was able to recover from this easily. As a prototype, although very limited, it showed what the full product could be capable of.

With additional time I would be able to expand on this prototype and create the full product. Obviously, this would be linked to a real company's ordering system with their specific products included rather than the simple "place holder" products in my prototype. I believe that this VUI would be a useful addition to food ordering companies such as Hello Fresh, Gousto, or Mindful Chef. Linking the VUI to an app where the user has logged in and supplied shipping/banking details would make this VUI simple to use.