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Build a Chatbot with Amazon Lex

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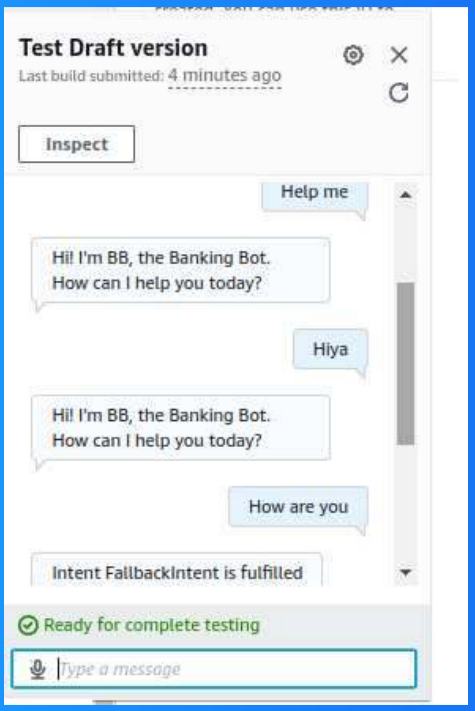

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Introducing Today's Project!

What is Amazon Lex?

Amazon Lex is a service that helps you build conversational interfaces using speech or text. It's useful for creating chatbots that can understand and respond to natural language, making interactions feel more human-like

How I used Amazon Lex in this project

I used Amazon Lex to build a chatbot that can interact with users using text or voice. I defined several intents. I also configured a FallbackIntent to handle unexpected inputs.And enable service interactions

One thing I didn't expect in this project was...

I initially had trouble understanding the purpose of the FallbackIntent, but eventually .I realized it was a safety net for when the chatbot didn't understand the user's input.

This project took me...

This project took me around 1 hour

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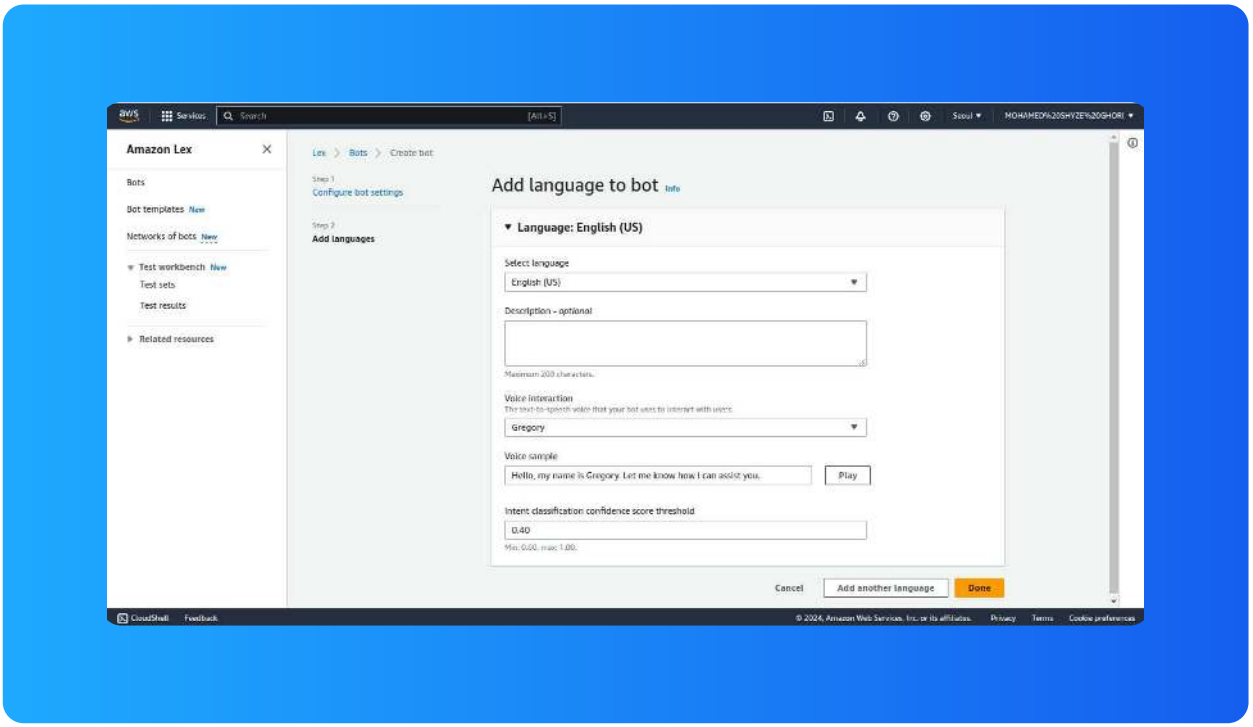
Setting up a Lex chatbot

I created my chatbot from scratch with Amazon Lex. Setting it up took me 5 minutes

While creating my chatbot, I also created a role with basic permissions because to communicate to other aws services on my behalf

In terms of intent classification confidence score,I kept the default value of 0.40.This means if a user's input is ambiguous and your chatbot's confidence score is below 0.4, it'll throw an error message.



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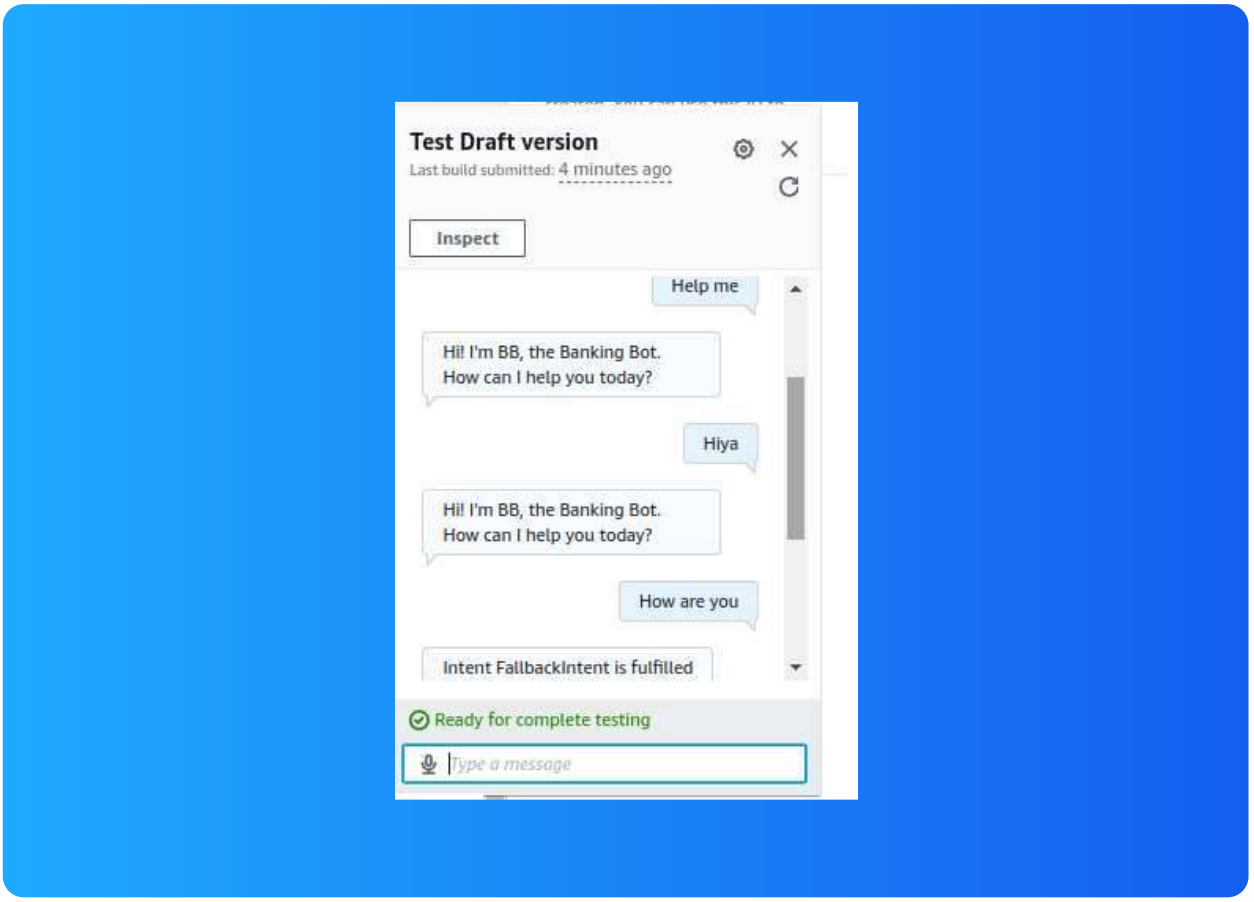
Intents

Intents are the goals a user wants to achieve when interacting with a chatbot. In Amazon Lex, you create a chatbot by defining and organizing various intents, allowing it to handle different types of requests.

I created my first intent, WelcomeIntent, to welcome a user when they say hello.



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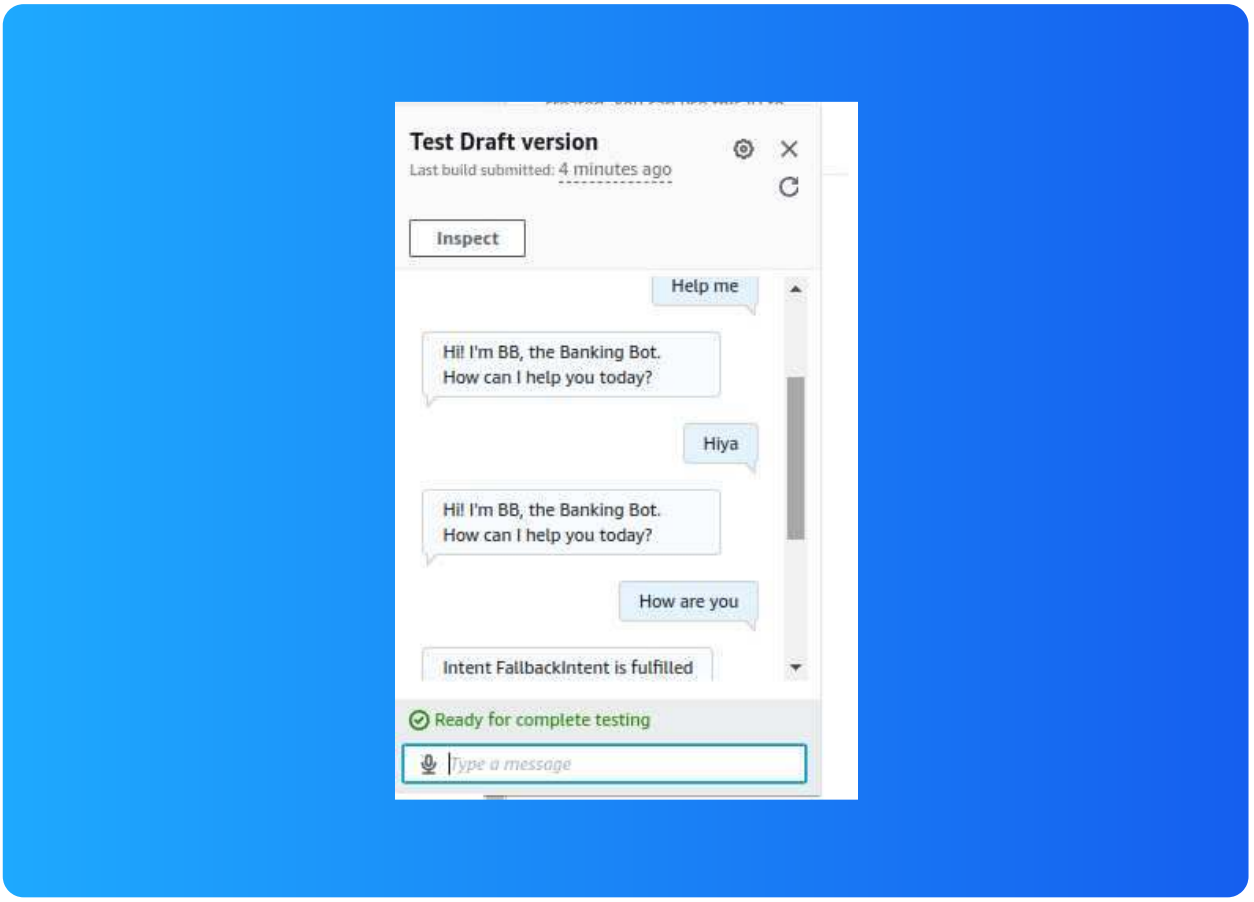
FallbackIntent

I launched and tested my chatbot, which could respond successfully if I enter "Hi,Hello,I need help, I need help"

My chatbot returned the error message `Intent FallbackIntent is fulfilled` when I entered "How are you" .This error message occurred because Amazon Lex doesn't quite recognize your utterance



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Configuring FallbackIntent

FallbackIntent is a default intent in every chatbot that gets triggered when The user's input doesn't match any other defined intent.The confidence score for the best-matching intent is below the threshold.

I wanted to configure FallbackIntent because it provides a graceful fallback for misunderstood inputs. It helps identify gaps in the chatbot's training.

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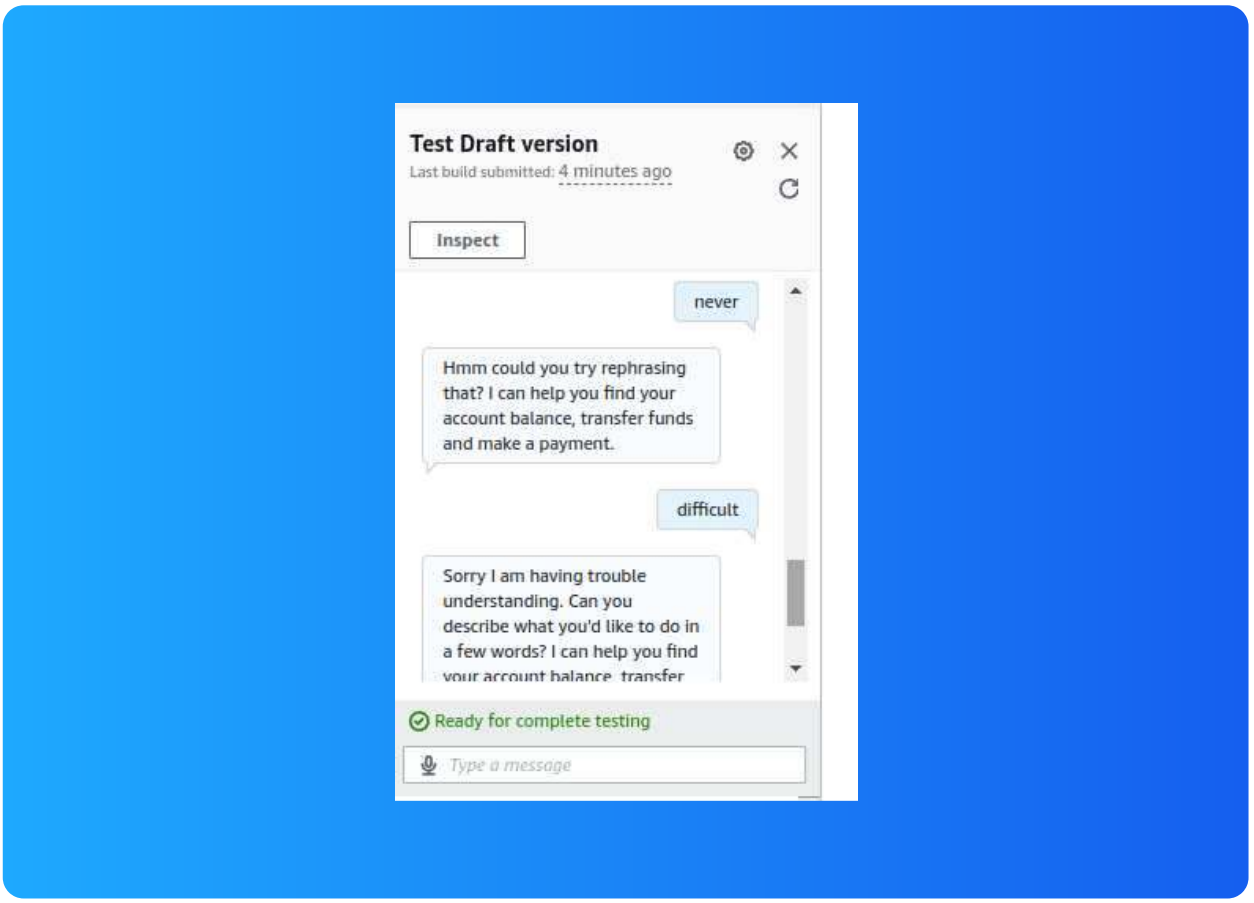
Variations

To configure FallbackIntent: Create a new intent named "FallbackIntent". Define appropriate responses. Set it as the default intent.

Variations allow users to ask questions differently and still get the correct answer.



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Build a Chatbot with Custom Slots

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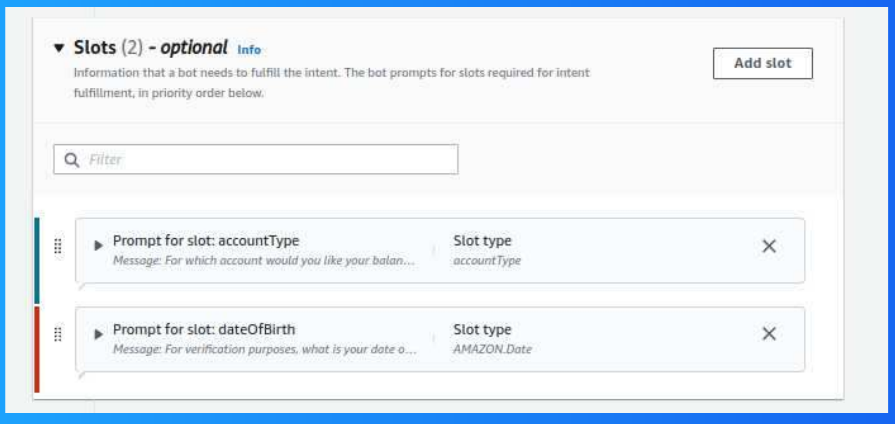

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Introducing Today's Project!

What is Amazon Lex?

Amazon Lex is a tool for creating chatbots that can understand and respond to human language. It's like building a virtual assistant that can talk to you.

How I used Amazon Lex in this project

I used Amazon Lex to build a chatbot. I defined intents, configured a FallbackIntent, and used IAM permissions to enable service interactions. I also created a custom slot type and linked slots to intents.

One thing I didn't expect in this project was...

I didn't realize how much there was to learn about Amazon Lex.

This project took me...

The project took quite more around one hour

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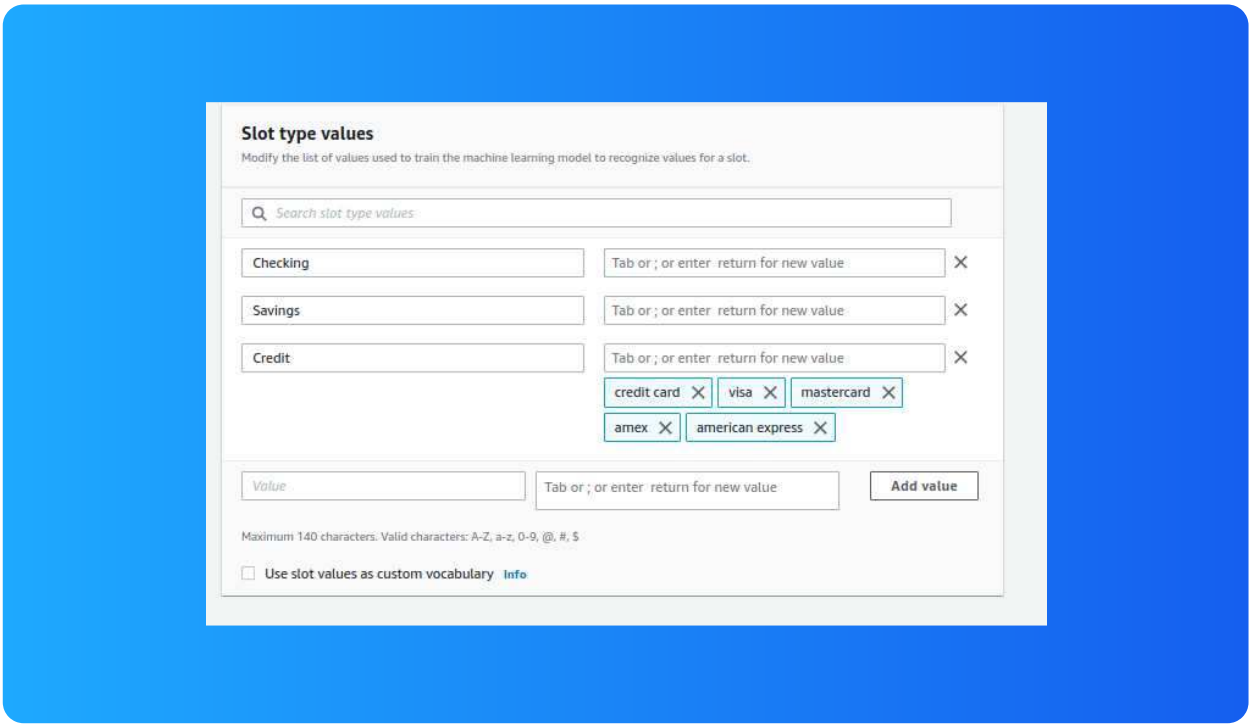
Slots

Slots are are like placeholders for specific information that you want the user to provide. They help structure the conversation and ensure that the chatbot gets the necessary data to complete a task.

In this project ,I created a custom slot type to define a specific set of values.

This slot type has restricted slot values, which means: The user can only input values that are explicitly defined within the slot type. This helps ensure data consistency and prevents unexpected or invalid inputs.



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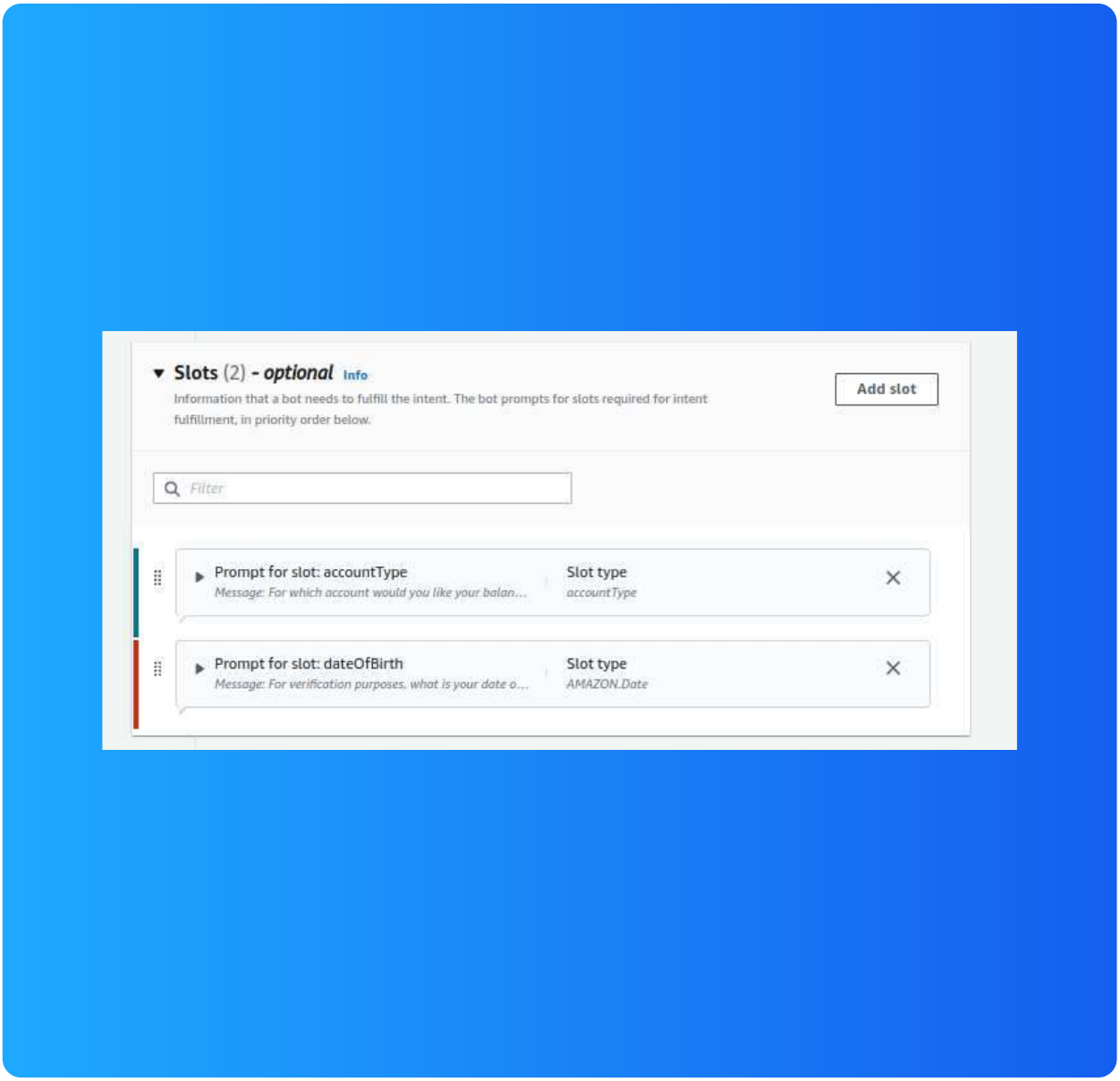
Connecting slots with intents

I associated my custom slot with CheckBalance, which check the balance in the specified account type.



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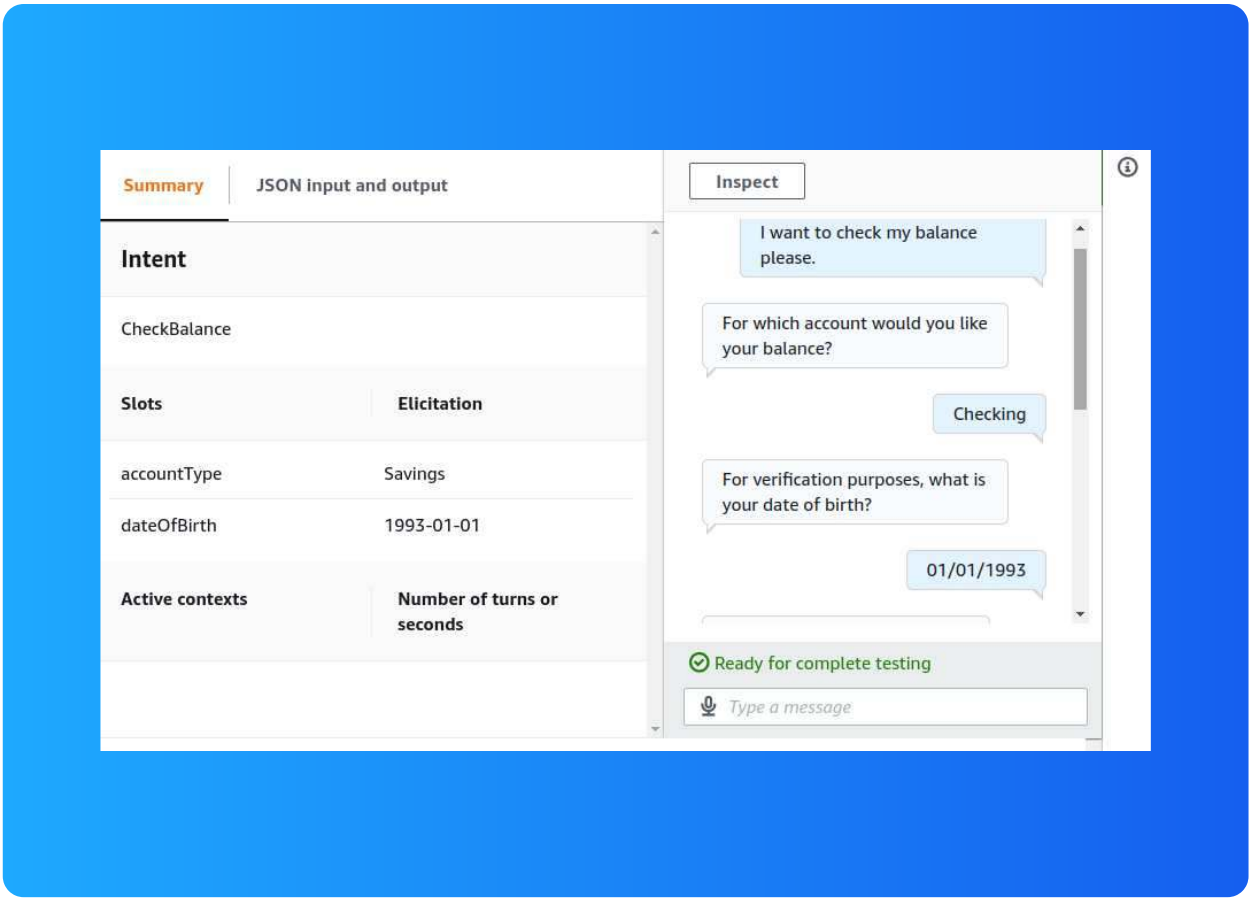
Slot values in utterances

I included slot values in some of the utterances (i.e. user inputs) by: Using curly braces {} to represent the slot value.For example:- Utterance: "What's my {account_type} balance?" Slot value: account_type

By adding custom slots in utterances, I: Made the chatbot more flexible and adaptable. By defining specific slots, I helped the chatbot better understand the user's intent and extract the necessary information.



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Connect a Chatbot with Lambda

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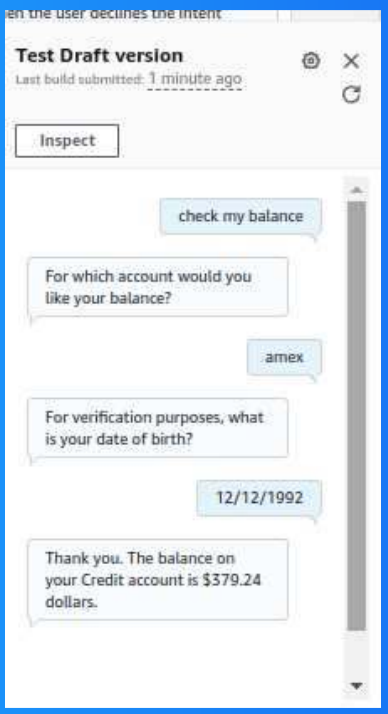

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Introducing Today's Project!

What is Amazon Lex?

Amazon Lex is like a magic tool that helps you build chatbots that can talk to people. It understands what they say and responds in a way that feels natural.

How I used Amazon Lex in this project

Set up a Lambda function: I created a new Lambda function to enhance the chatbot's capabilities. Integrate Lambda with the chatbot: I connected the Lambda function to the chatbot's alias for seamless interaction. Use code hooks

One thing I didn't expect in this project was...

Learning Lambda was a bit tough at first.

This project took me...

It took me around 45 minutes to complete this project

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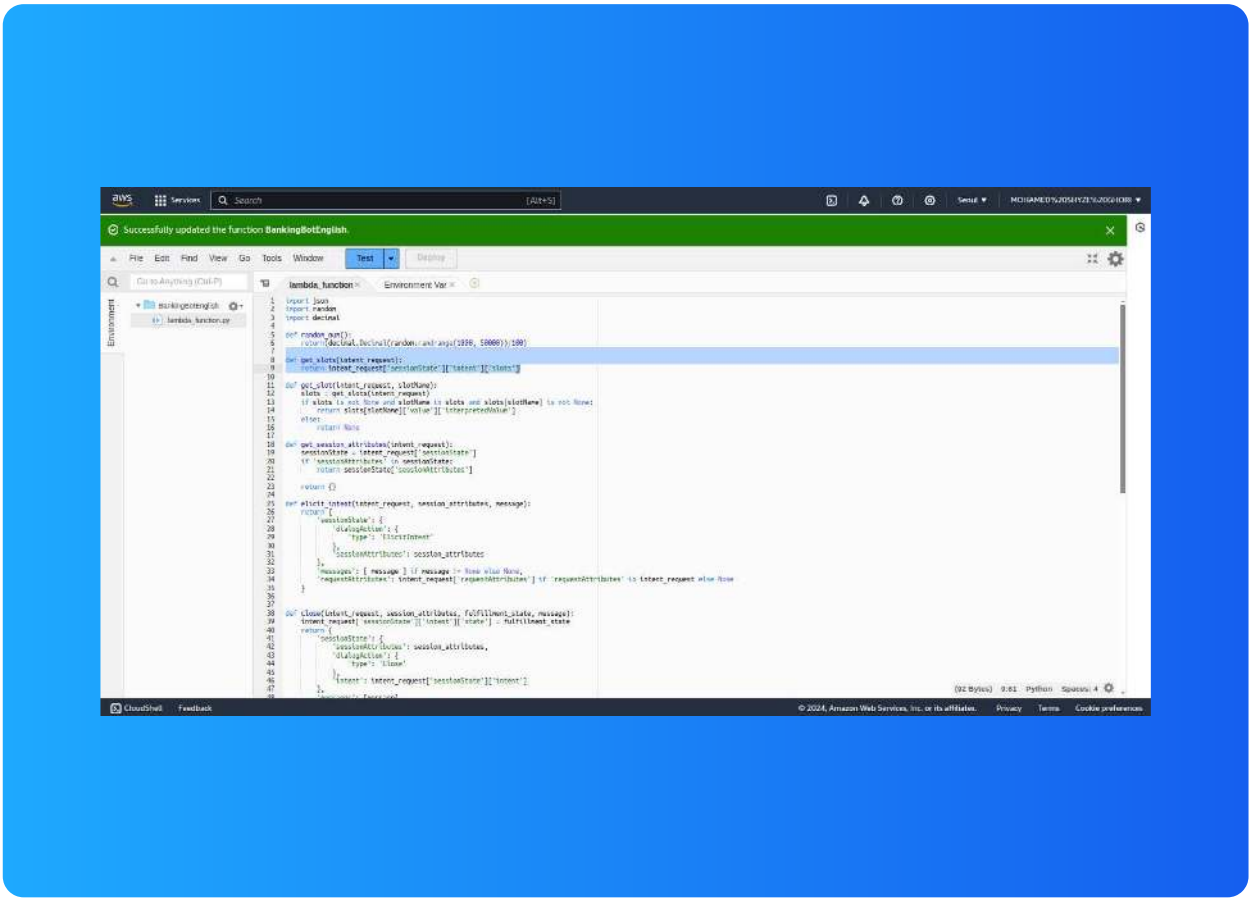
AWS Lambda Functions

AWS Lambda is a serverless computing service that runs code without managing servers. You upload your code and it executes in response to events.

The Lambda function I created is designed to handle bank balance inquiries efficiently. It retrieves balance data and delivers it to the user in a clear and concise format.



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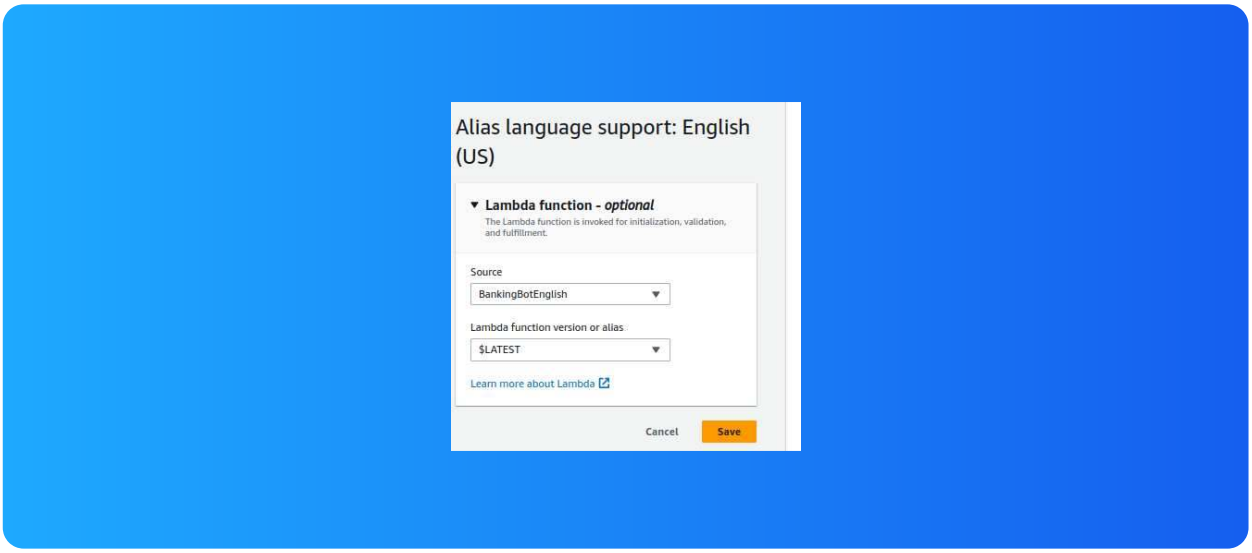
Chatbot Alias

An alias is a logical reference to a specific version of your Lambda function. It provides a stable endpoint for your application, allowing you to update the underlying function without disrupting service.

TestBotAlias is a safe testing area for your chatbot. It lets you try out changes without affecting the live version.

To connect my bot to Lambda, I went to the TestBotAlias settings, clicked "Edit," and changed the Lambda function link to point to my TestBotAlias. This let me test changes without affecting the live bot



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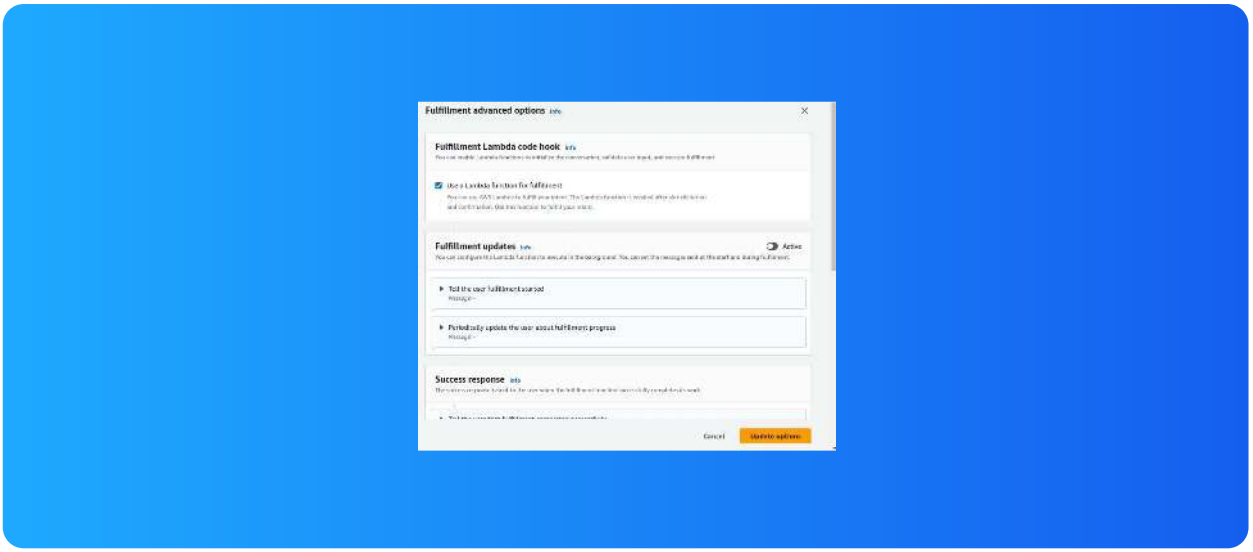
Code Hooks

Code hooks help you connect your chatbot to custom Lambda functions for doing specific tasks during a conversation. It make chatbot smarter & enhance chatbot capabilities by enabling seamless execution of additional tasks during conversations

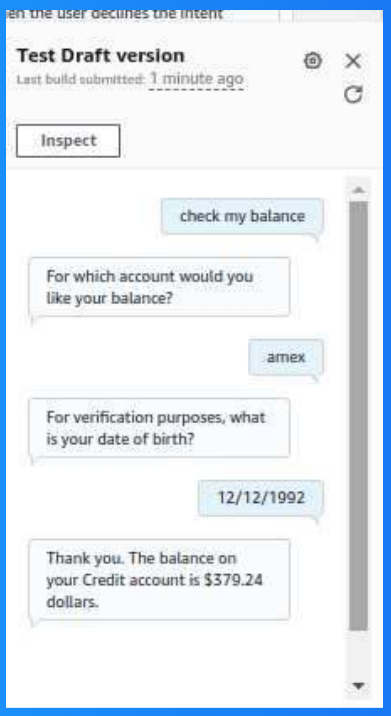
Even though I already connected my Lambda function with my chatbot's alias, I had to use code hooks because to make my chatbot more flexible and able to do specific things during conversations

I could find code hooks at: The "Fulfillment" section of my chatbot's intent settings. Within the Lambda function itself. In the "Code Hook" configuration of the Lambda function.



The final result!

My chatbot triggers Lambda to return a random balance figure when: The user asks for their balance. The chatbot understands the request. Lambda generates a random number.



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Save User Info with your Chatbot

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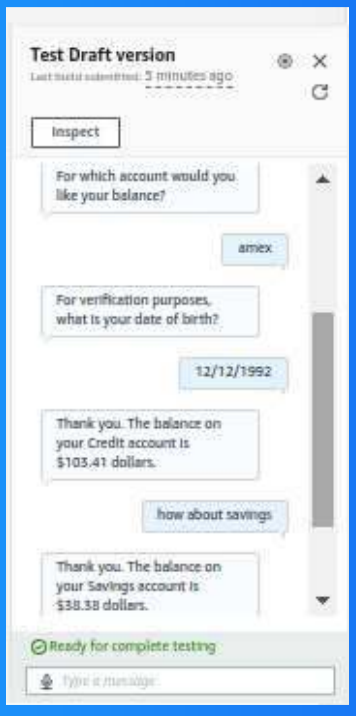

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Introducing Today's Project!

What is Amazon Lex?

Amazon Lex is a cool tool that helps you build chatbots that can talk to people. It's like having a virtual assistant that understands what you're saying.

How I used Amazon Lex in this project

I employed Amazon Lex to develop a chatbot capable of retaining and utilizing user data effectively. By establishing intents and implementing context carryover, I enhanced the chatbot's ability to engage in more natural and personalized conversations

One thing I didn't expect in this project was...

The potential benefits of using context carryover to improve the user experience. I was pleasantly surprised by how much smoother & more natural the conversation felt when the chatbot remembered the user's birthday & didn't require them to repeat it

This project took me...

This project took me about 2 hours. I focused on setting up the FollowupCheckBalance intent, enabling context carryover, and testing. I also defined other intents and variations

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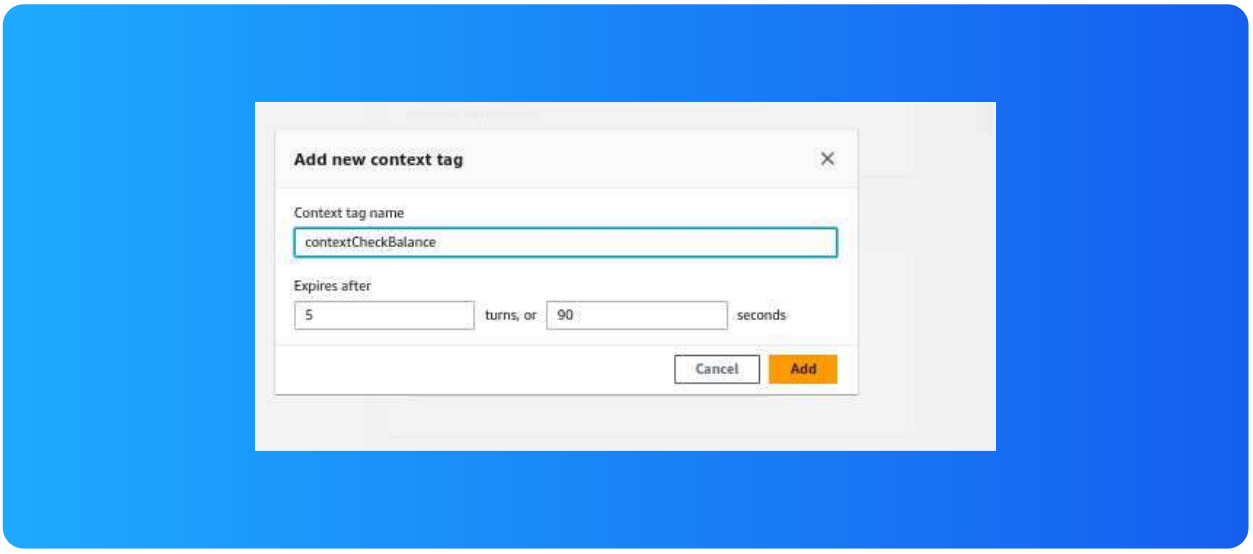
Context Tags

Context tags in Amazon Lex are used to store and check for specific information across different parts of a conversation. They help save the user from having to repeat certain information.

There are two types of context tags: output context tag-This tells the chatbot to remember certain details after an intent is finished, ,input context tag- check specific detail are already available before an intent activates.

'I created a context tag called contextCheckBalance(output context tag).This context tag was created in the intent CheckBalance.This tag stores information about user birthday



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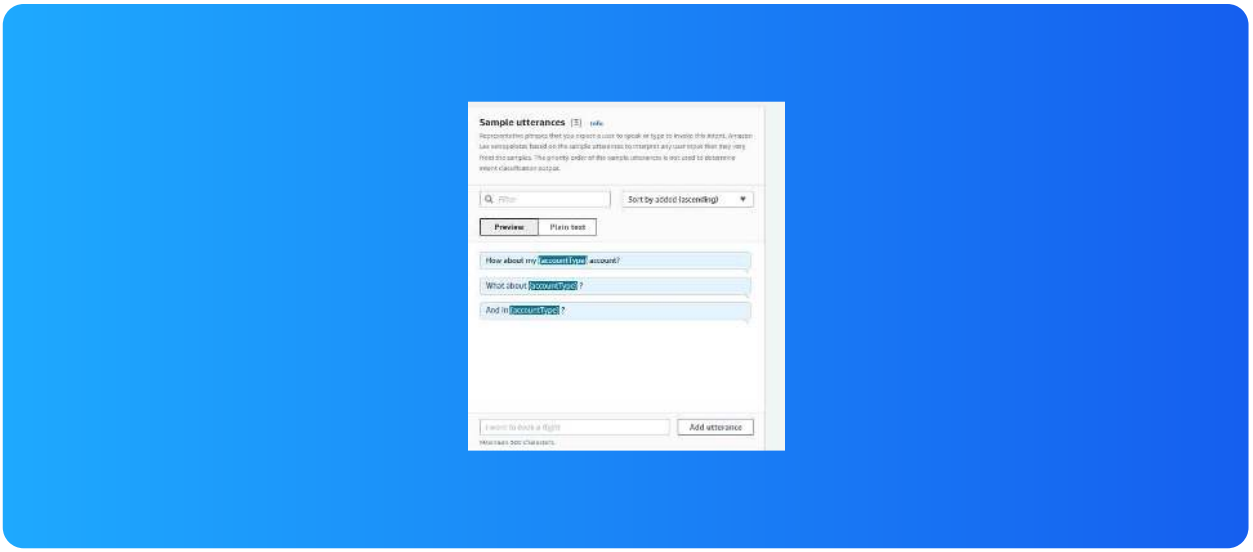
FollowUpCheckBalance

I created a new intent called FollowupCheckBalance. The purpose of this intent is to allow a follow-up balance check request without authentication.Which has Input context: contextCheckBalance which checks specific details are available

This intent is connected to CheckBalance because: It allows for follow-up questions.It provides a more natural conversation.It simplifies the chatbot's logic.It's a best practice in chatbot design.



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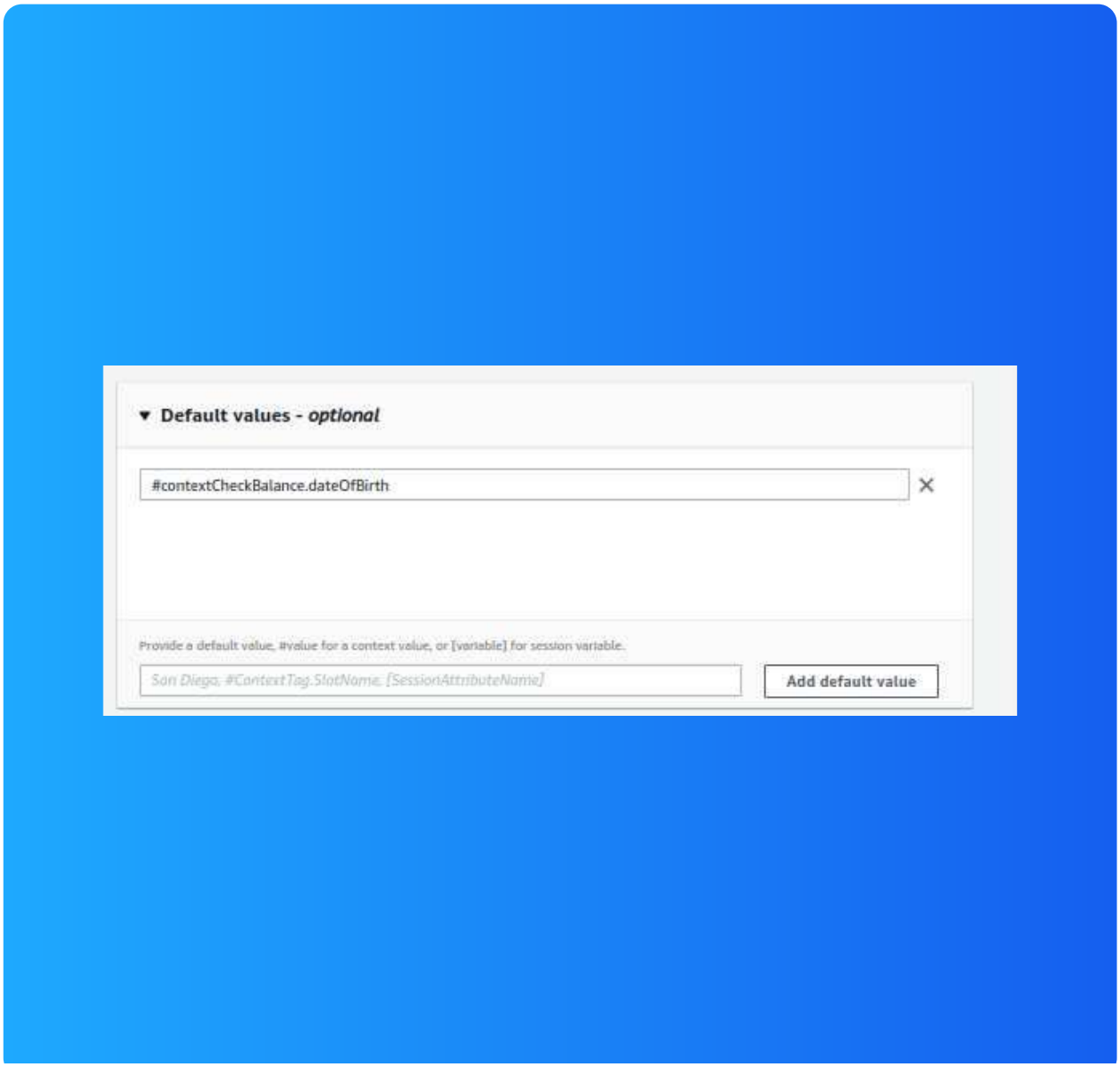
Input Context Tag

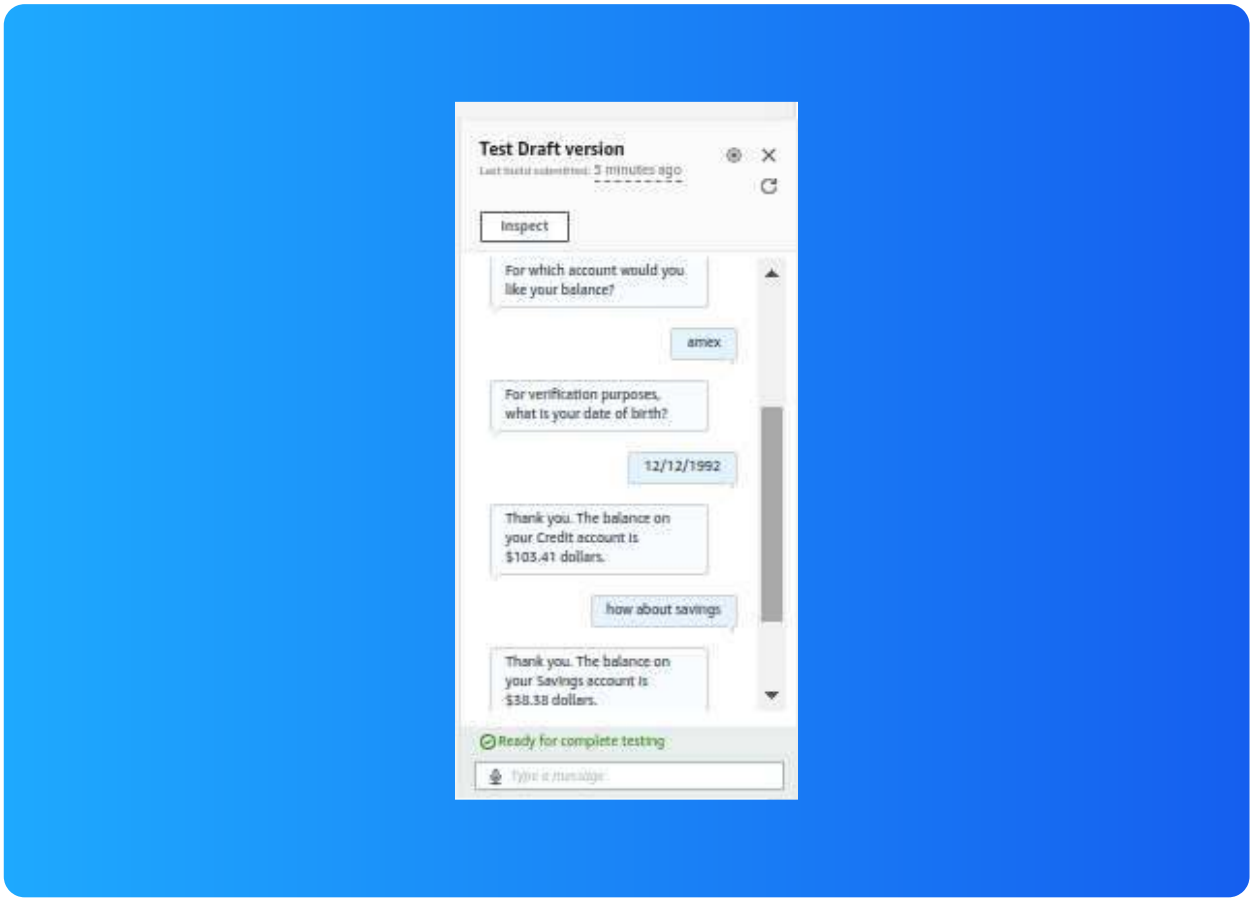
I created an input context, contextCheckBalance, to store the account type and pass it to FollowupCheckBalance. This ensures the follow-up intent is triggered only after the user has provided the account type, maintaining a consistent conversation fl



The final result!

To test the context tags and follow-up intent, I: Asked "What's my checking balance?" Then, asked "And how about my savings balance?"

If I hadn't set up the context, the chatbot would have likely responded with an error or a generic message. The follow-up intent needs the context from CheckBalance to provide accurate information



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Build a Chatbot with Multiple Slots

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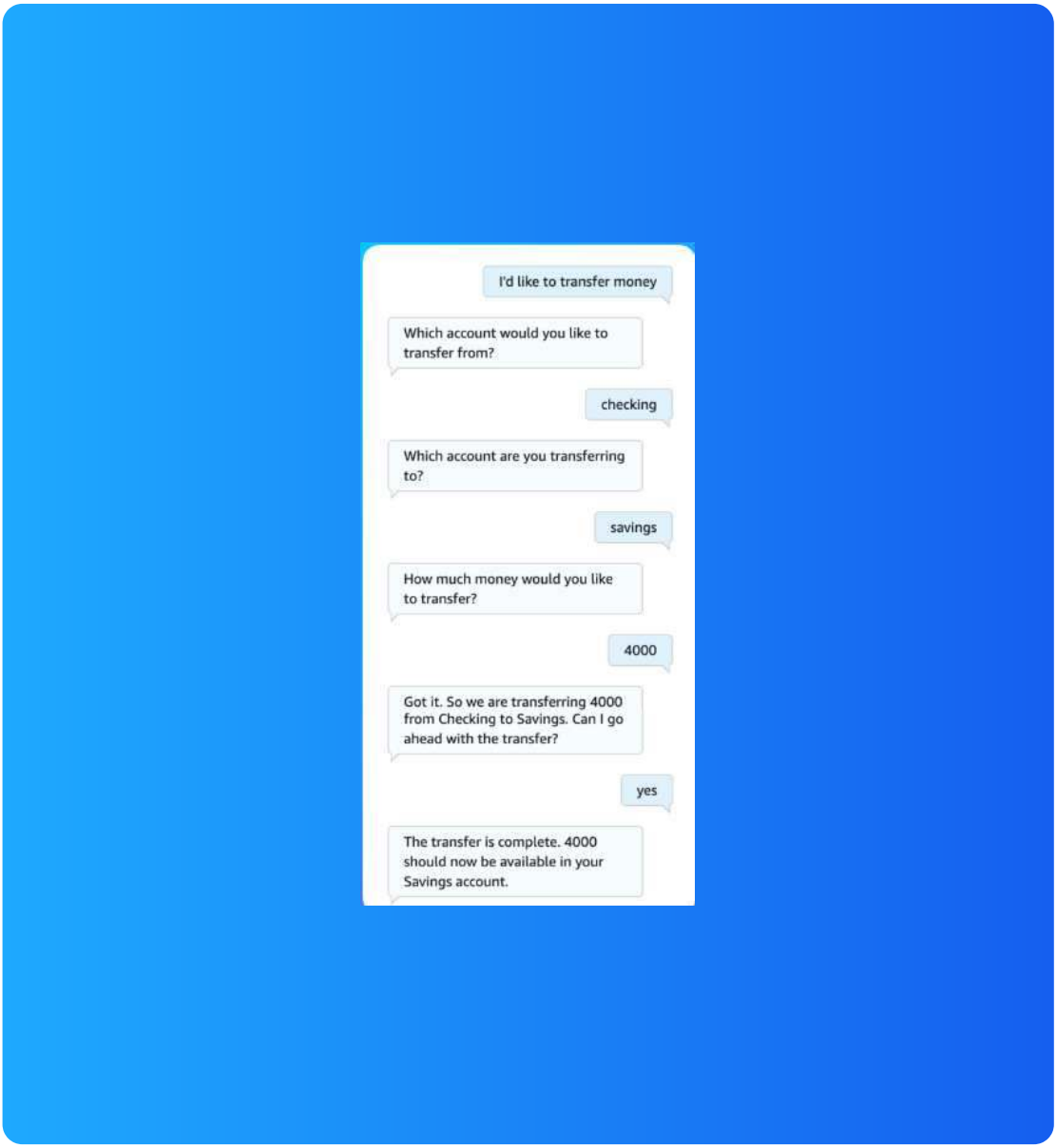

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Introducing Today's Project!

What is Amazon Lex?

Amazon Lex is a service that uses deep learning to build conversational interfaces, such as chatbots and voice-enabled applications

How I used Amazon Lex in this project

I utilized AWS Lex to develop a banking chatbot for today's project. It manages multiple slots with a shared type, includes a confirmation prompt, and automates deployment via CloudFormation. I integrated a Lambda function for intent fullfillment

One thing I didn't expect in this project was...

I was surprised by how seamlessly shared slot types streamlined data handling. The visual builder simplified designing conversation flows more than I expected. Automating deployment with CloudFormation greatly improved efficiency and accuracy

This project took me...

Completing this project took several hours, involving the configuration of multiple slots, a confirmation prompt, and automating deployment with CloudFormation. Each feature required careful setup and testing, making the hands-on experience

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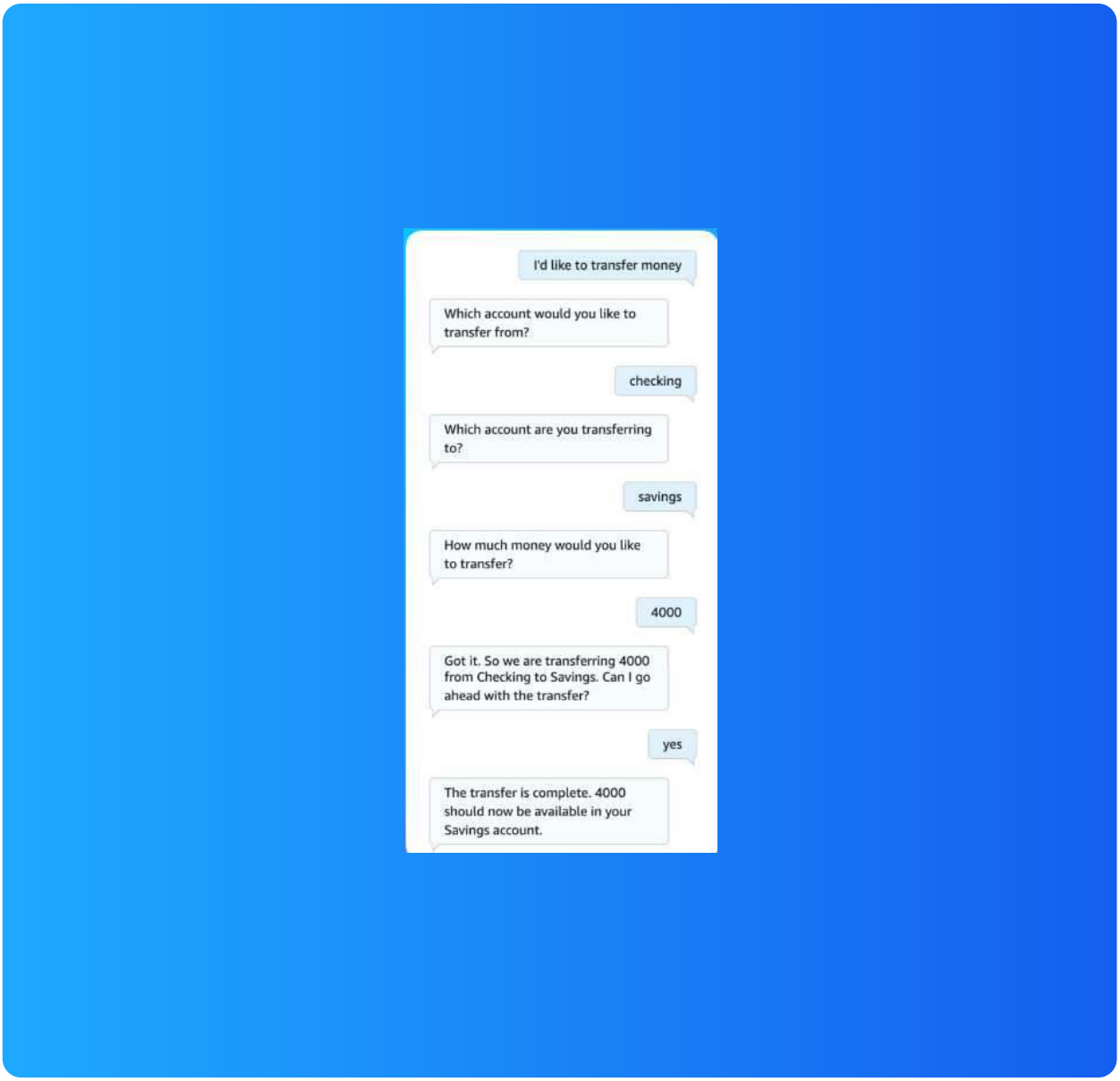
TransferFunds

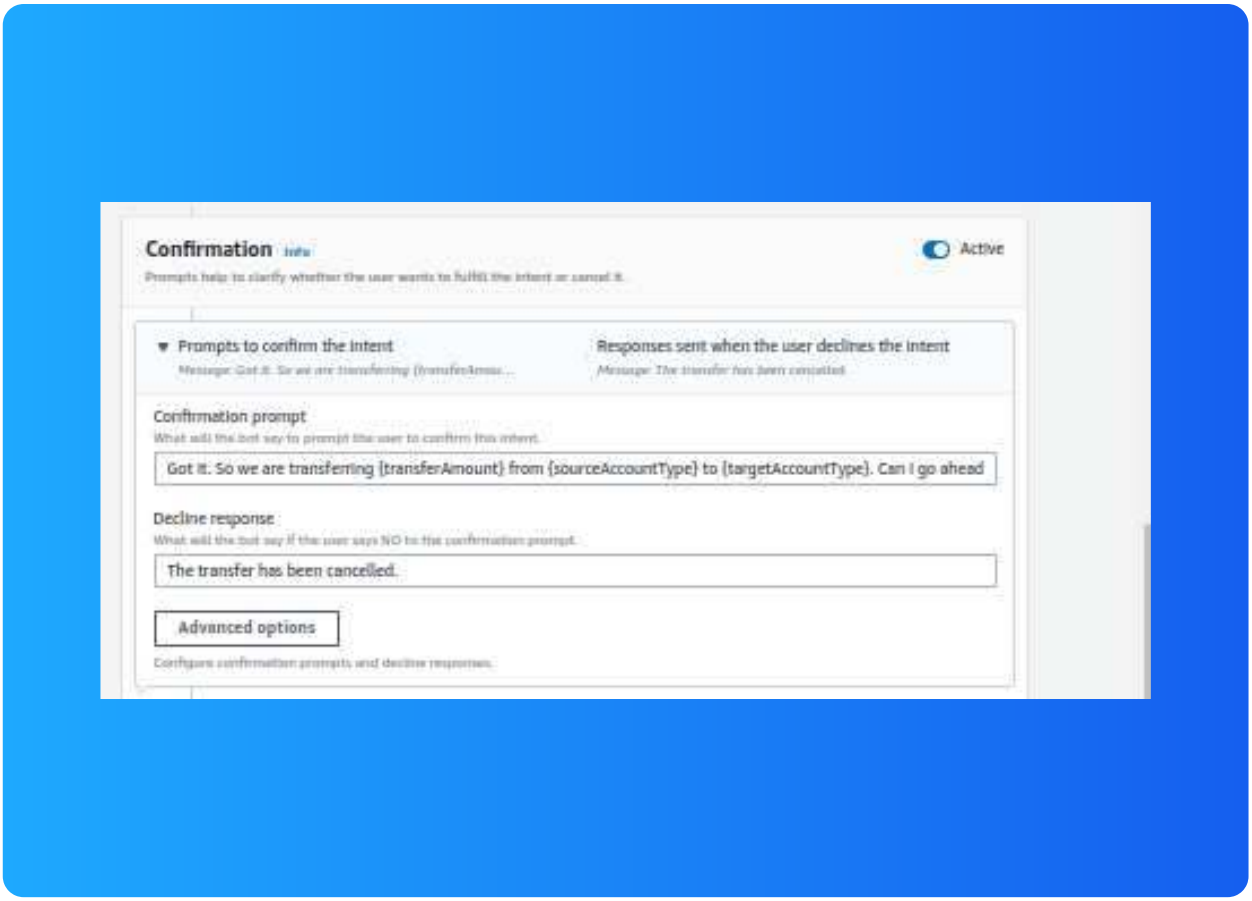
An intent I created for my chatbot was TransferFunds, which will help user transfer funds between bank accounts



Using multiple slots

For this intent, I had to use the same slot type twice. This is because it is important that you're using clear slot names, like sourceAccountType and targetAccountType, to make it easy to identify their differences.

I also learnt how to create confirmation prompts, which are typically repeat information for user confirmation. If the user confirms, the bot fulfills the intent. If the user declines, the bot responds with a decline response.



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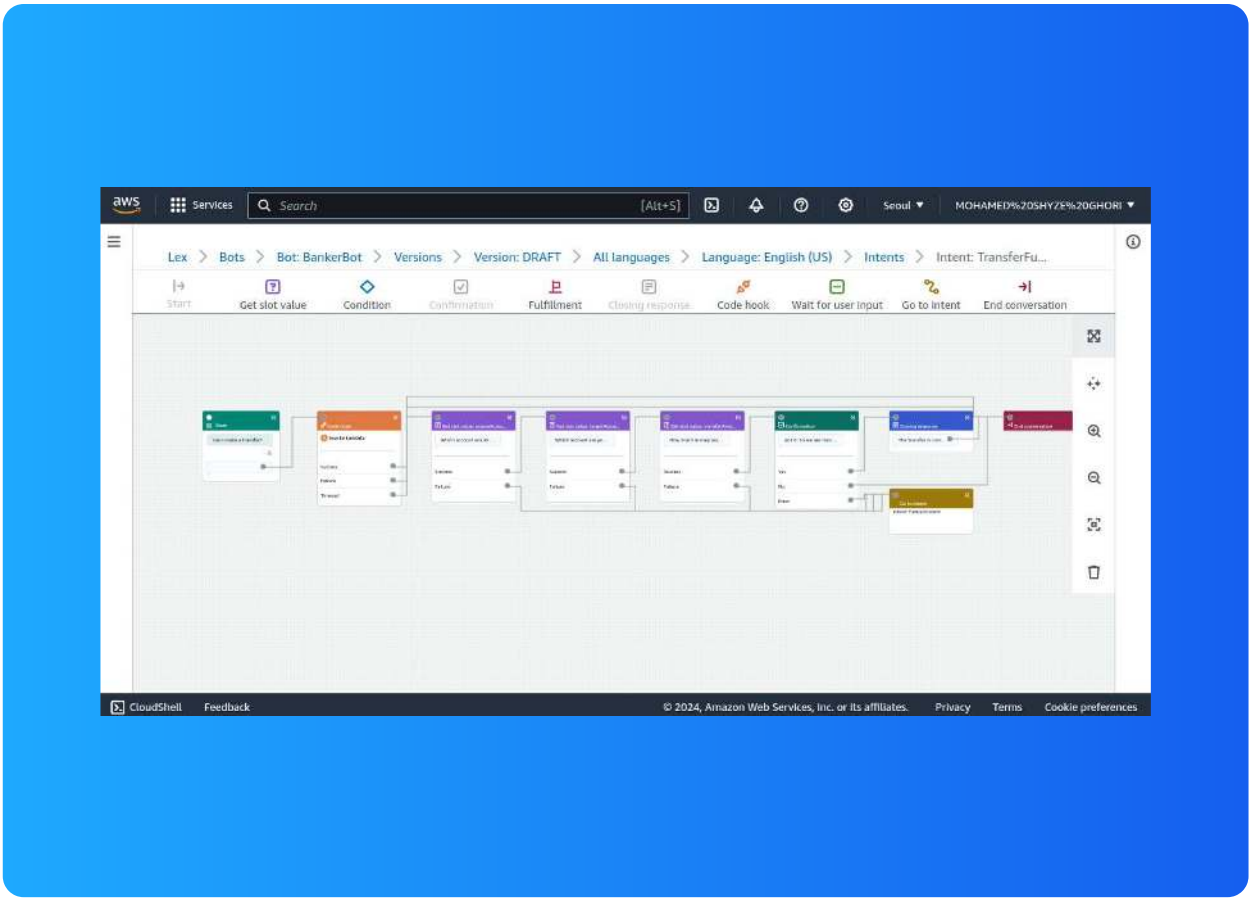
Exploring Lex features

The conversation flow feature provides a visual representation of the chatbot's interaction with the user, outlining the steps involved and suggesting potential responses

You could also set up your intent using a visual builder! A visual builder provides a graphical interface for creating and editing intents, making it easier to visualize the conversation flow and manage different branches



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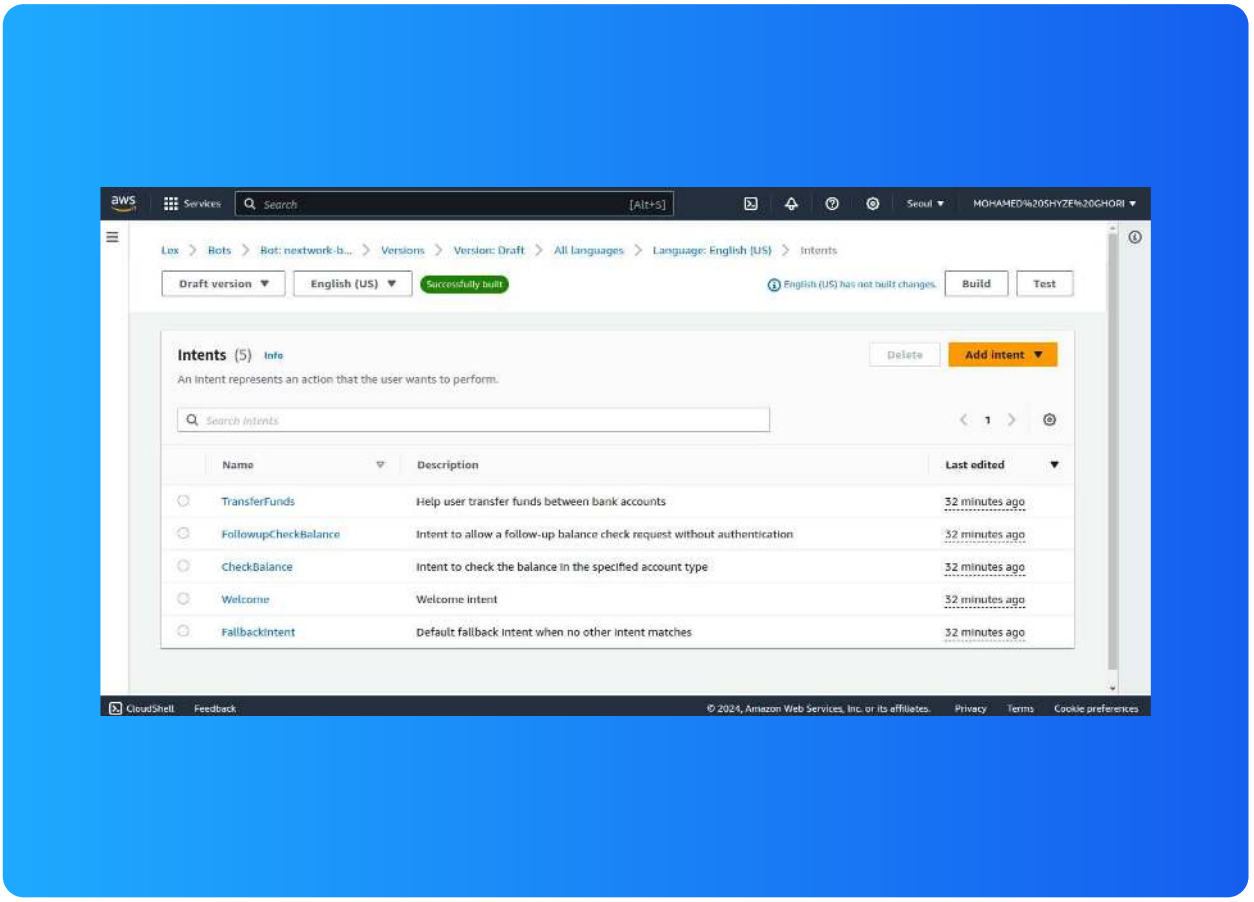
AWS CloudFormation

AWS CloudFormation is service that help users deploy AWS resources in seconds by defining the resources and their characteristics in a code file (called a YAML file)

As an extension to this project .I learned how to deploy the entire BankerBot using a single CloudFormation stack



The final result!

Doing this took me 1 minute to set up the CloudFormation stack,3-4 minutes to wait for the deployment to complete

There was an error after I deployed my bot! The error was denied access to lamda function.I fixed this by creating a new Lambda function ,find the Permissions tab in your new Lambda function,Create a new Resource-based policy statement gave access