

Serverless Data Processing (CSCI 5410)

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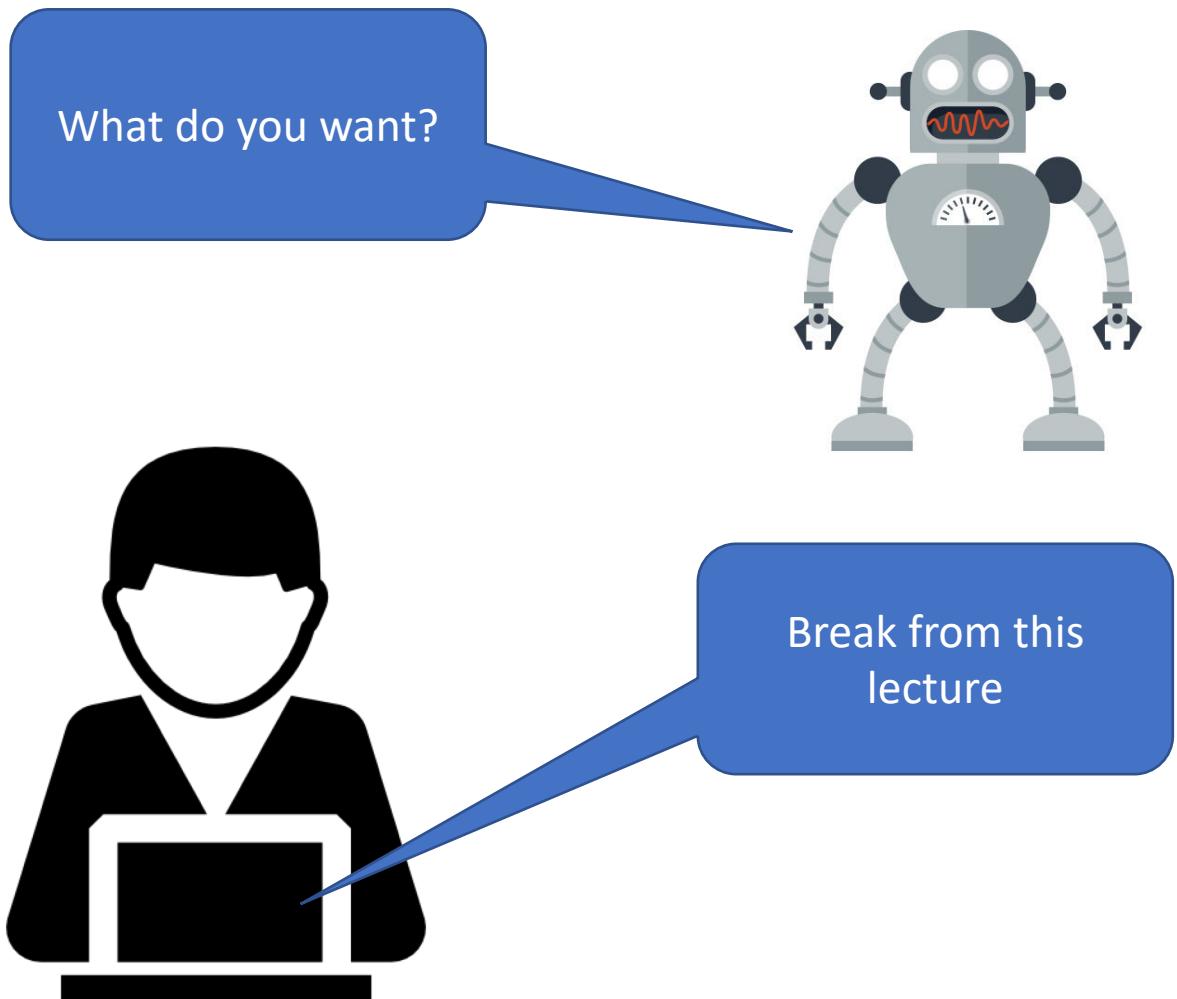
Outline

1. Data Processing in Cloud
2. ETL in Cloud

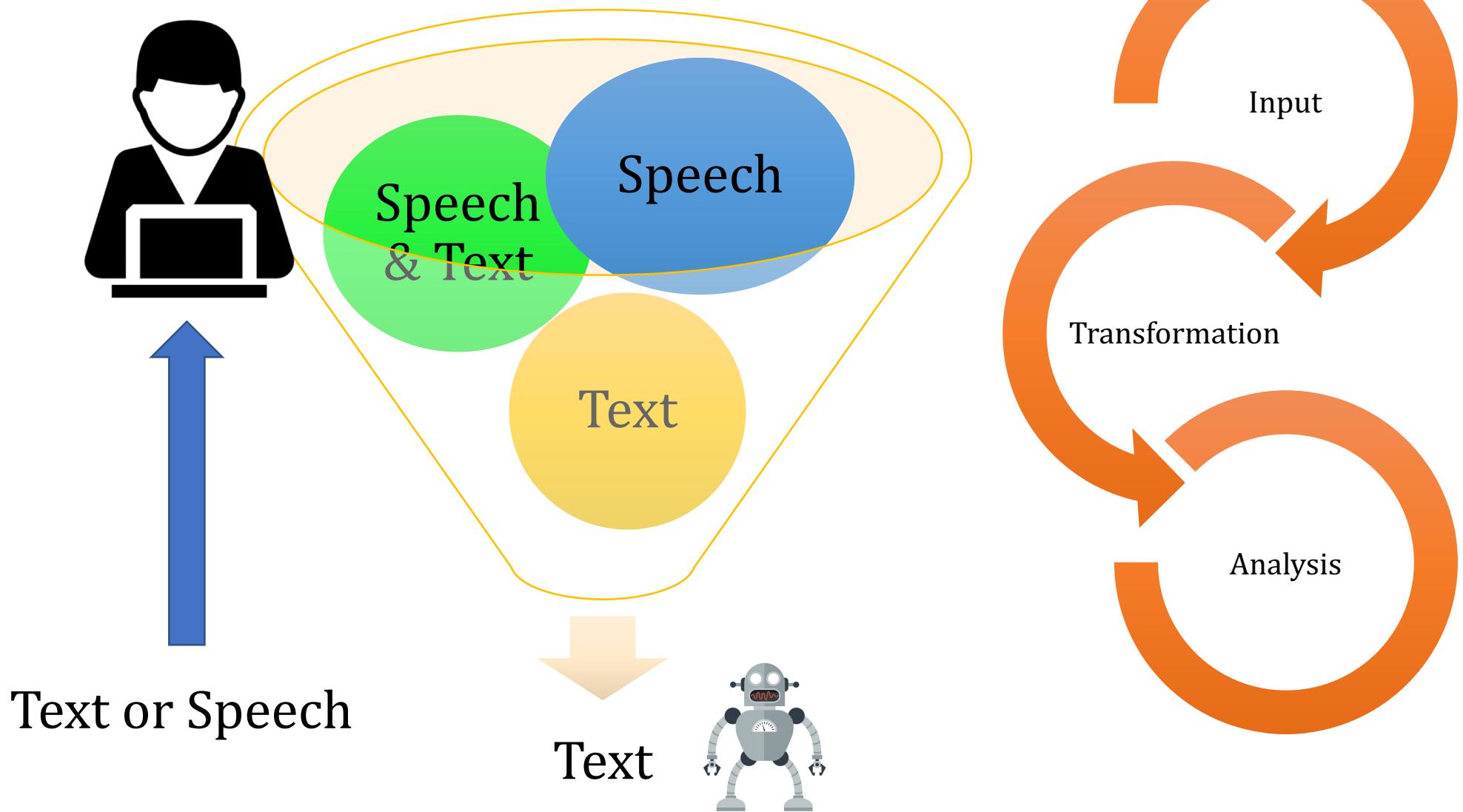


Building Chatbots

- Efficient Service
- Customer Satisfaction
- Cost Reduction
- Zero probability of conflict

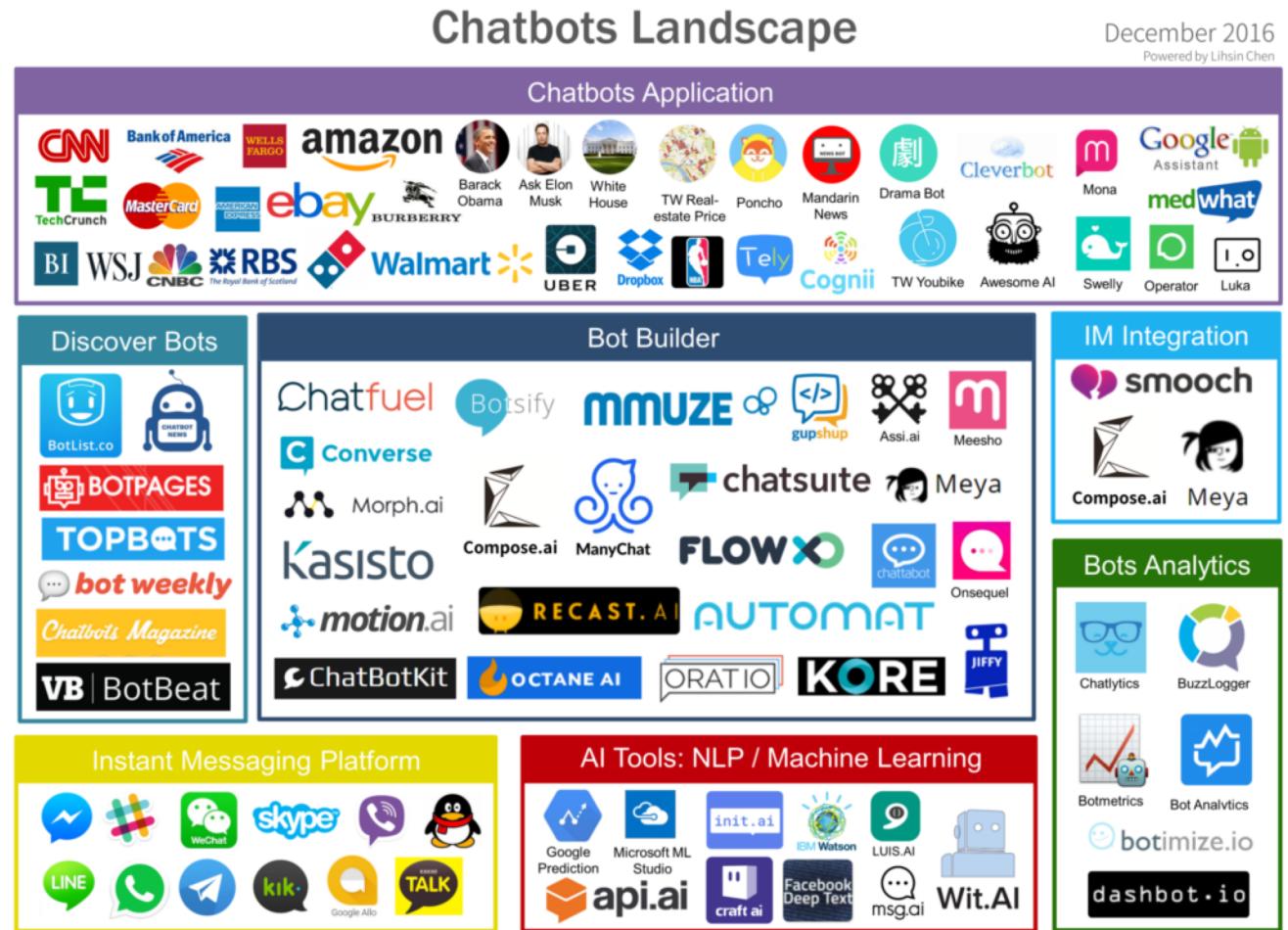


What is the Input?



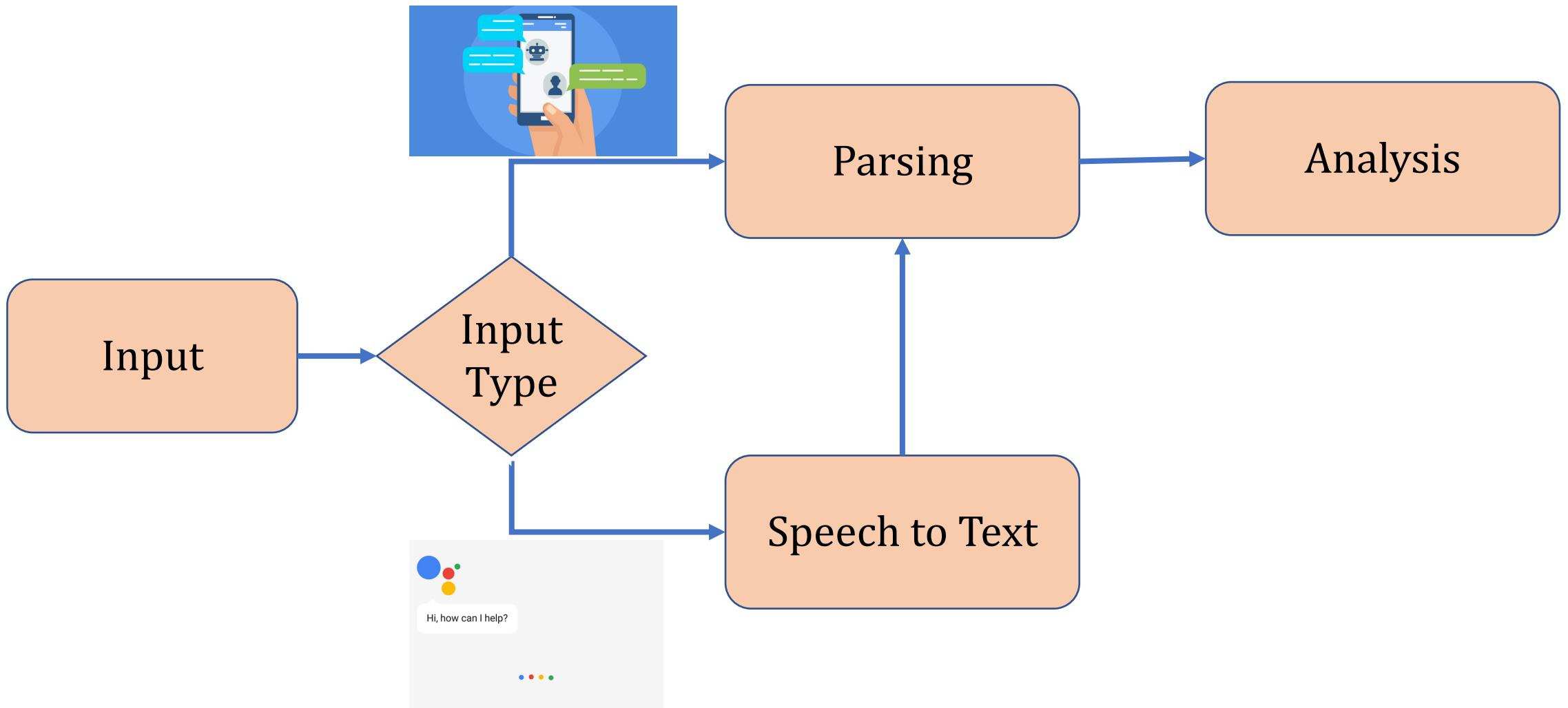
Things to consider in building Chatbots

- Functionality
- Complexity
- Audio/Visual
- Budget
- Integration
- 3rd Party



<https://chatbotsmagazine.com/choosing-the-best-chatbot-platform-101-a-beginners-guide-e841b41192c7>

Challenges in Chatbot building



Where will you consider chatbot with update functionality?

Menti.com

6769 5967

Building a Chatbot with Amazon Lex

- No need to build all functions of a chatbot
- Use existing features of Lex

Create your bot

Amazon Lex enables any developer to build conversational chatbots quickly and easily. With Amazon Lex, no deep learning expertise is necessary—you just specify the basic conversational flow directly from the console, and then Amazon Lex manages the dialogue and dynamically adjusts the response. To get started, you can choose one of the sample bots provided below or build a new custom bot from scratch.

CREATE YOUR OWN TRY A SAMPLE

Custom bot BookTrip OrderFlowers ScheduleAppointment

Bot name

BookTrip

Intents
A particular goal that the user wants to achieve

Utterances
Spoken or typed phrases that invoke your intent

Slots
Data the user must provide to fulfill the intent

Prompts
Questions that ask the user to input data

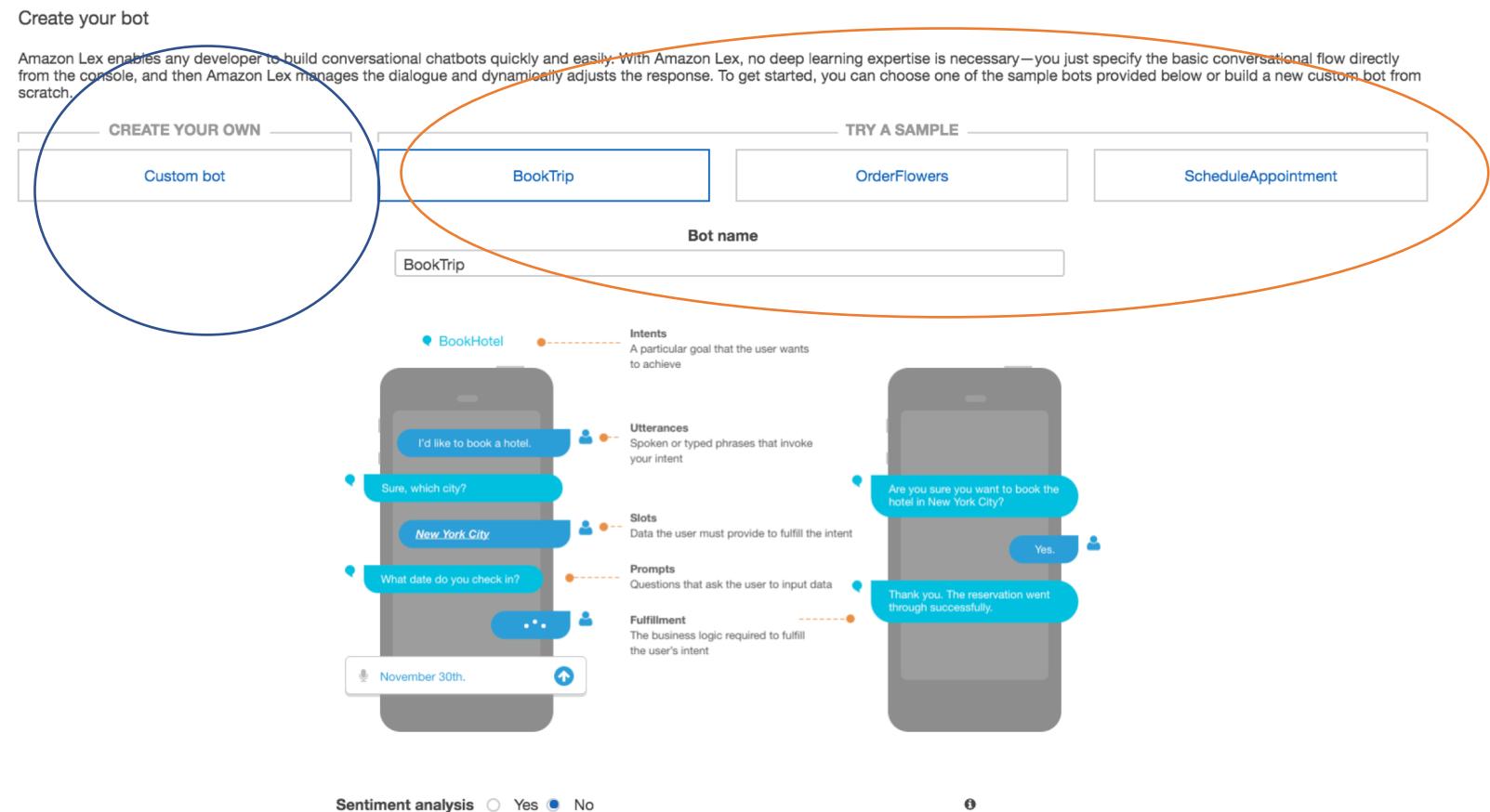
Fulfillment
The business logic required to fulfill the user's intent

Sentiment analysis Yes No

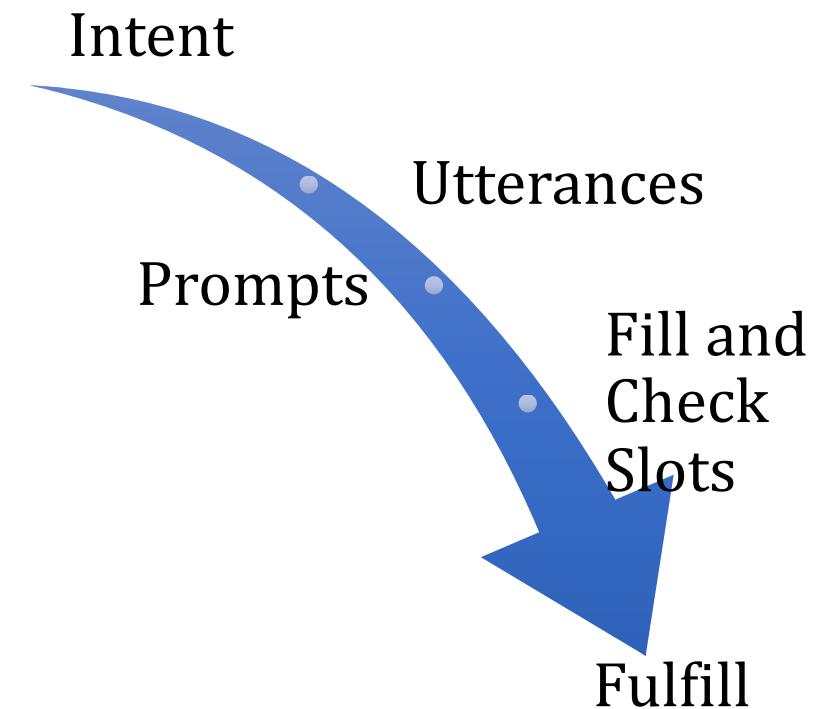
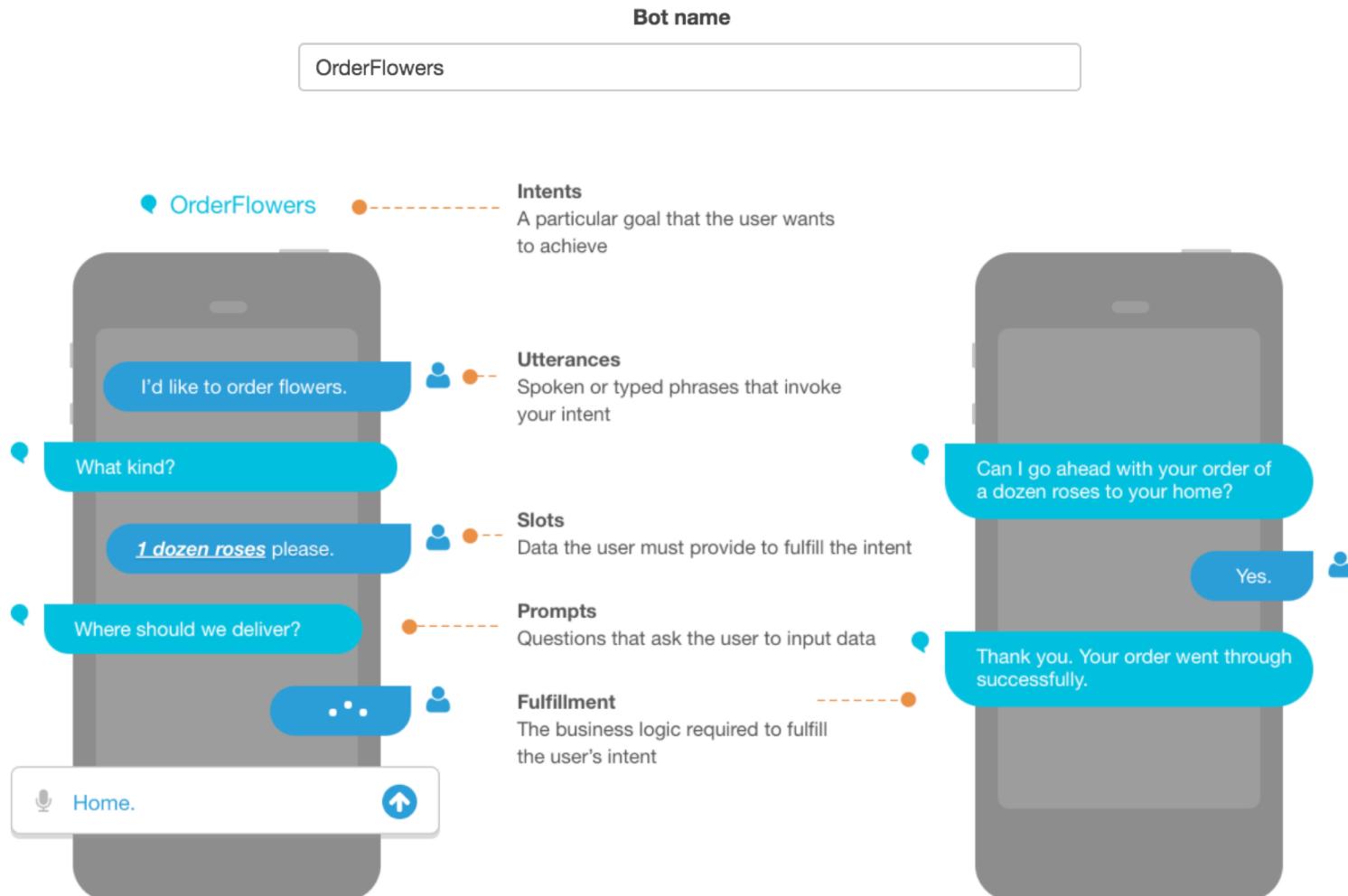
The screenshot shows the 'Create your bot' section of the Amazon Lex console. It features a 'TRY A SAMPLE' row with four options: 'Custom bot', 'BookTrip' (which is highlighted with a blue border), 'OrderFlowers', and 'ScheduleAppointment'. Below this is a 'Bot name' field containing 'BookTrip'. The main area displays a conversation flow between a user and a bot. The user says 'I'd like to book a hotel.' The bot responds with 'Sure, which city?'. The user replies 'New York City'. The bot asks 'What date do you check in?'. The user answers 'November 30th.'. The bot then asks 'Are you sure you want to book the hotel in New York City?'. The user says 'Yes.' and the bot confirms 'Thank you. The reservation went through successfully.' To the right of the conversation, a legend defines several terms: 'Intents' (a goal the user wants to achieve), 'Utterances' (phrases that invoke the intent), 'Slots' (data the user provides), 'Prompts' (questions for input), and 'Fulfillment' (business logic to fulfill the intent). At the bottom, there's a 'Sentiment analysis' section with radio buttons for 'Yes' (selected) and 'No'.

How to use Amazon Lex Service?

- Custom Bot or from Existing design



OrderFlowers Bots



Creating the OrderFlowers Bot

The screenshot shows the AWS Lambda Test interface for the OrderFlowers bot. The top navigation bar includes 'OrderFlowers Latest' (with a back arrow), 'Build' (disabled), 'Publish' (blue button), and a question mark icon. Below the navigation are tabs: 'Editor' (selected), 'Settings', 'Channels', and 'Monitoring'. On the left sidebar, there are sections for 'Intents', 'OrderFlowers' (selected), 'Slot types', 'FlowerTypes', and 'Error Handling'. The main content area displays the 'OrderFlowers' configuration. A green success message box says: 'OrderFlowers build was successful' and 'The build is now complete. You can now test the bot in the test window'. Below this, under 'Sample utterances', are three examples: 'e.g. I would like to book a flight.', 'I would like to order some flowers', and 'I would like to pick up flowers'. Under 'Slots', a table lists three slots: 1. FlowerType (Required, Name: e.g. Location, Slot type: e.g. AMAZON..., Prompt: e.g. What city?), 2. PickupDate (Required, Name: FlowerType, Slot type: AMAZON.DATE, Prompt: What type of flowers would you like to receive?), and 3. PickupTime (Required, Name: PickupDate, Slot type: AMAZON.TIME, Prompt: At what time do you want the flowers?). A blue oval highlights the 'Required' column for the first slot. A blue arrow points from the 'Required' column to the 'Edit Prompts' text at the bottom right. Another blue arrow points from the 'Slot type' dropdown for the second slot to the 'Types are amazon or user defined' text at the bottom center.

OrderFlowers build was successful
The build is now complete. You can now test the bot in the test window

Intents

OrderFlowers

Slot types

FlowerTypes

Error Handling

Sample utterances

e.g. I would like to book a flight.

I would like to order some flowers

I would like to pick up flowers

Lambda initialization and validation

Slots

Priority	Required	Name	Slot type	Version	Prompt	Settings
1.	<input checked="" type="checkbox"/>	e.g. Location	e.g. AMAZON....	1	e.g. What city?	
2.	<input checked="" type="checkbox"/>	FlowerType	FlowerTypes	1	What type of flowers would you like to receive?	
3.	<input checked="" type="checkbox"/>	PickupDate	AMAZON.DATE	Built-in	What day do you want the flowers?	
		PickupTime	AMAZON.TIME	Built-in	At what time do you want the flowers?	

Test bot (Latest) Ready. Build complete.

You're now ready for testing. Type an utterance below to begin conversation with your chatbot.

Clear chat history

Chat with your bot...

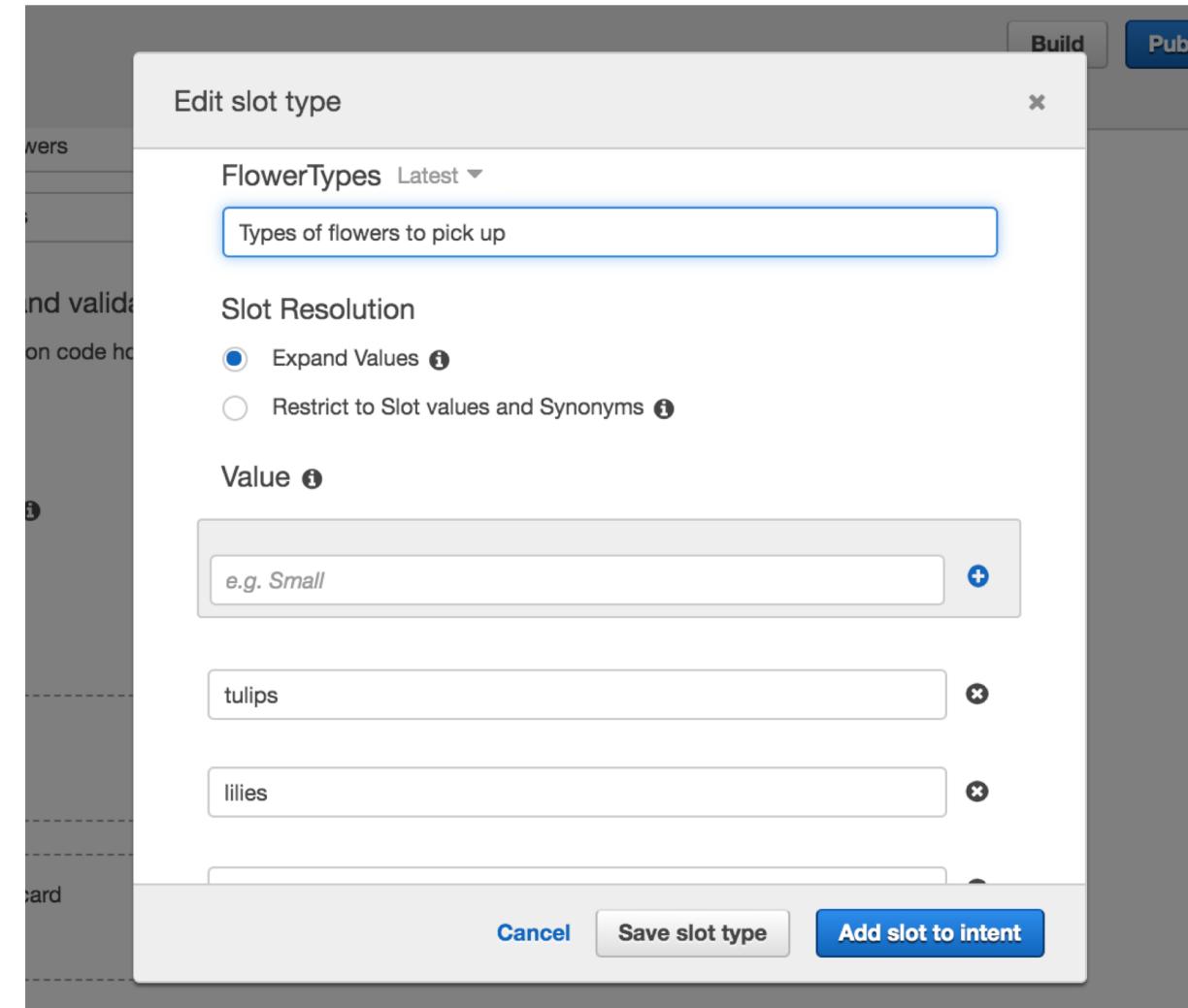
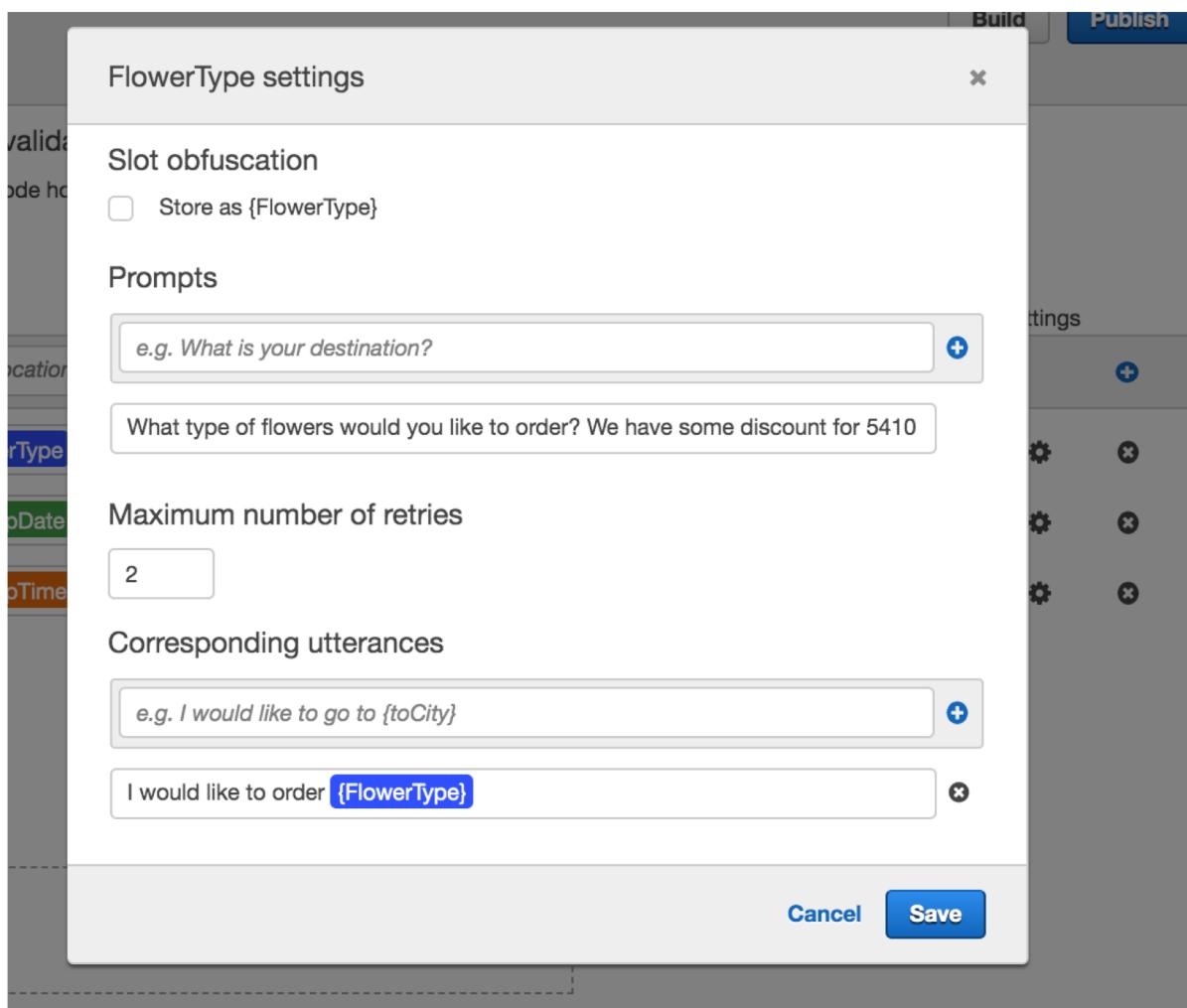
Inspect response

When you chat with your bot, you can see the fulfillment state of your intent and the response here.

Edit Prompts

Types are amazon or user defined

Creating the OrderFlowers Bot



Creating the OrderFlowers Bot

▼ Confirmation prompt ⓘ

Confirmation prompt

Confirm

Okay, your {FlowerType} will be ready for pickup by {PickupTime} on {PickupDat}



Cancel (if the user says "no")

Okay, I will not place your order.



▼ Fulfillment ⓘ

AWS Lambda function

Return parameters to client

- Once all slots are filled, it is time for order fulfillment
- It is done through confirmation prompt
- Curly brackets {} represents the slot type.

Creating the OrderFlowers Bot

The screenshot shows the Amazon Lex console interface for the 'OrderFlowers' bot. The left sidebar lists 'Intents', 'OrderFlowers', 'Slot types', and 'FlowerTypes'. The 'Error Handling' section is currently selected. The main area displays the 'Error handling' configuration:

- Error handling**:
 - Clarification prompts
 - e.g. Sorry, can you please repeat that? +
 - I didn't understand you, what would you like to do? x
- Maximum number of retries**: 2
- Hang-up phrase**:
 - e.g. Sorry, I could not understand. Please contact customer support. +
 - Sorry, I am not able to assist at this time x

At the bottom, there is a 'Save' button.

A success message box is displayed in the top right corner:
OrderFlowers build was successful
The build is now complete. You can now test the bot in the test window X

Creating the Book Bot

CREATE YOUR OWN

Custom bot

TRY A SAMPLE

BookTrip

OrderFlowers

ScheduleAppointment

Bot name *e.g. TodaysWeather, GetDrinkOrder*

Language English (US)

Output voice *Choose your output voice.*

Session timeout *e.g. 5* min *i*

Sentiment analysis Yes No *i*

IAM role **AWSServiceRoleForLexBots** *i*
Automatically created on your behalf

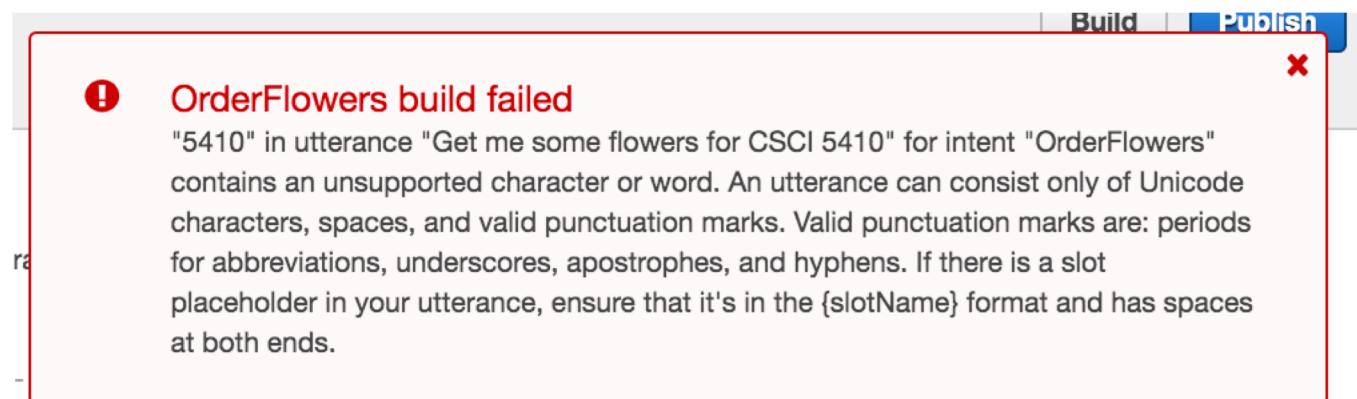
COPPA Please indicate if your use of this bot is subject to the *i*
[Children's Online Privacy Protection Act \(COPPA\)](#).
[Learn more](#)

Yes No

Versions of Bots

- Everything has versions
 - Bots, Intents, Slot Types – These are mainly for development, testing, and production
 - Any changes will be reflected in the latest version.

The screenshot shows the AWS Lambda console interface for the OrderFlowers bot. At the top, there are tabs for 'Editor', 'Settings', 'Channels', and 'Monitoring'. The 'Editor' tab is selected. On the left, there are sections for 'Intents', 'OrderFlowers', 'Slot types', 'FlowerTypes', and 'Error Handling'. In the main area, there are sections for 'Sample utterances' (containing 'Get me some flowers for CSCI 5410', 'I would like to order some flowers', and 'I would like to pick up flowers'), 'Lambda initialization and validation' (with an unchecked checkbox for 'Initialization and validation code hook'), and 'Slots' (listing three slots: 'FlowerType' (Priority 1, Required checked, Name 'FlowerType', Slot type 'FlowerTypes', Version 1, Prompt 'What type of flowers would you like?'), 'PickupDate' (Priority 2, Required checked, Name 'PickupDate', Slot type 'AMAZON.DATE', Version 1, Prompt 'What day do you want the flowers?'), and 'PickupTime' (Priority 3, Required checked, Name 'PickupTime', Slot type 'AMAZON.TIME', Version 1, Prompt 'At what time do you want the flowers?')).



Versions of Bots

The screenshot shows the Amazon Lex console interface for the 'OrderFlowers' bot. The top navigation bar includes tabs for 'Editor', 'Settings', 'Channels', and 'Monitoring'. The 'Build' and 'Publish' buttons are visible, along with a success message: 'OrderFlowers build was successful'.

The left sidebar lists bot components: 'Intents', 'OrderFlowers' (selected), 'Slot types', 'LowerTypes', and 'Error Handling'. The main workspace displays the 'OrderFlowers' configuration. A dropdown menu under 'OrderFlowers' shows 'Versions' with 'Latest' selected. Below this, 'Sample utterances' are listed:

- e.g. I would like to order some flowers
- Get me some flowers
- I would like to order some flowers
- I would like to pick up flowers

Under 'Lambda initialization and validation', there is an unchecked checkbox for 'Initialization and validation code hook'.

The right side of the screen shows the 'Test bot (Latest)' window, which is currently active. It displays a message: 'You're now ready for testing. Type an utterance below to begin conversation with your chatbot.' A 'Clear chat history' button is available. A microphone icon and the text 'Chat with your bot...' are present. An 'Inspect response' section is also shown.

Testing

?

> **Test bot (Latest)**  Ready. Build complete.

I want to order some flowers

What type of flowers would you like to order? We have some discount for 5410

[Clear chat history](#)

Microphone icon **Tulip**

Inspect response

Questions to Consider

- Are cloud based Chatbot applications sufficient enough compare to custom-made applications?
- Can you design a customer support system using Lex?

