

CREATE YOUR FIRST ALEXA SKILL

PRESENTED BY



TechEm
STUDIOS

CapTech®

Others Talk, We Listen.

WHAT/WHO IS ALEXA?

a **voice-controlled personal assistant** developed by Amazon.
But also an example of...

Artificial Intelligence (AI). Alexa uses a service called Amazon Lex which uses **deep learning** to convert speech to text, and **natural language understanding** (NLU) to figure out the intent of the text.



"The age of touch could soon come to an end. From smartphones and watches, to home devices, to in-car infotainment systems, touch is no longer the primary user interface."

Source: Design News

Devices that use Alexa - The "Internet of Things"

new additions



What are Alexa Skills?

- Alexa has a few built-in features (music, reminders, timers, calling other users, weather, facts, calendar integration, etc.)
- **Skills** can be created by any person or company to add new capabilities to Alexa
- Anyone with a device that uses Alexa can choose and enable from thousands of skills

STEP 1: SET UP THE VOICE USER INTERFACE (VUI) USING THE ALEXA SKILLS KIT (ASK)



OPEN THE SAMPLE CODE IN GITHUB

<https://github.com/techemstudios/inspiring-women-alexa>

LOG INTO OUR DEMO AMAZON DEVELOPER ACCOUNT

<http://developer.amazon.com>

Username: alexa@techemstudios.com

Password: techme17

GO TO THE DEVELOPER CONSOLE

amazon developer

Developer Console

A

?

Q

Amazon Developer Services and Technologies



amazon alexa

Alexa

Build natural voice experiences that offer customers a more intuitive way to interact with technology

amazon appstore

Amazon Appstore

Develop Android apps and games for Amazon Fire TV, Fire tablet, and mobile platforms



Amazon Web Services

Reliable, scalable, and inexpensive cloud computing services

amazon software
+ games

Amazon Software + Games

Publish your desktop software and games on PC & MAC platforms

amazon dash
services

Dash Services

Build Amazon reordering experiences into your devices

SELECT CREATE SKILL

*** Make Money with Your Alexa Skills ***

On May 3, we announced general availability of in-skill purchasing (ISP) and Amazon Pay for Alexa Skills. With ISP, you can sell premium digital content that enriches your skill experience. With Amazon Pay, you can sell physical goods or services through your skill. You can also continue to make money for eligible skills that drive some of the highest customer engagement through Alexa Developer Rewards. [Learn more.](#)

Welcome to the new Alexa Skills Kit Developer Console

Curious about what's new? [Watch the video overview](#) or [read about what's changed](#).

Alexa Skills

Create Skill

Create your first skill

NAME YOUR SKILL

Create a new skill

Cancel

Create a skill

Skill name

Enter skill name

Skill name must have at least 2 characters.

0/50 characters

Default language

English (US)



More languages can be added to your skill after creation

Choose a model to add to your skill

There are many ways to start building a skill. You can design your own custom model or start with a pre-built model. Pre-built models are interaction models that contain a package of intents and utterances that you can add to your skill.

Custom

Design a unique experience for your users. A custom model enables you to create all of your skill's interactions.

SELECTED

Flash Briefing

Give users control of their news feed. This pre-built model lets users control what updates they listen to.

"Alexa, what's in the news?"

Smart Home

Give users control of their smart home devices. This pre-built model lets users turn off the lights and other devices without getting up.

"Alexa, turn on the kitchen lights"

Video

Let users find and consume video content. This pre-built model supports content searches and content suggestions.

"Alexa, play Interstellar"

**SET YOUR SKILL'S
INVOCATION NAME**

 English (U.S.)

CUSTOM



Interaction Model

Invocation

Intents (4)

 Add

AMAZON.FallbackIntent



Built-In Intents (3)

AMAZON.CancelIntent

AMAZON.HelpIntent

AMAZON.StopIntent

Slot Types (0)

 Add

JSON Editor



Interfaces



Endpoint



Intent History

How to get started

Alexa Skills Kit Developer Console: Build

 amazon alexa
Developer Console: Build

Resources

[Documentation](#)

Refer to our technical documents for detailed guides on building custom skills.

[Sample Alexa Projects](#)

Whatever your experience, you can get started quickly using one of our Alexa projects on GitHub.

[Weekly Office Hours](#)

Drop in with your questions and thoughts. We're here to help you.

[Alexa Developer Forums](#)

INVOCATION NAME

the name people say to *invoke* your skill

The screenshot displays the Amazon Alexa Developer Console interface. At the top, the 'amazon alexa' logo is on the left, and 'Your Alexa Consoles' with user avatars is on the right. A navigation bar below the logo contains links: '< Your Skills', 'mySkillName', 'Build' (highlighted), 'Test', 'Distribution', 'Certification', and 'Analytics'. On the far right of this bar is a 'Feedback forum' link. Below the navigation bar, a language dropdown is set to 'English (U.S.)'. To its right are 'Save Model' and 'Build Model' buttons. The left sidebar is divided into sections: 'CUSTOM' (containing 'Interaction Model'), 'Invocation' (highlighted in blue), and a list of intents including 'Intents (5)' with an 'Add' button, and 'Built-In Intents (3)' with specific intent names like 'AMAZON.FallbackIntent', 'About', 'AMAZON.CancelIntent', 'AMAZON.HelpIntent', and 'AMAZON.StopIntent'. Below these are 'Slot Types (0)' with an 'Add' button, 'JSON Editor', 'Interfaces', and 'Endpoint'. The main content area is titled 'Invocation' and explains that users say a skill's invocation name to begin an interaction. It provides an example: 'User: Alexa, ask daily horoscopes for the horoscope for Gemini'. Below this is a 'Skill Invocation Name' field with a help icon and a placeholder 'e.g. tide pooler'. A red error message states: 'Invocation name must be between 2 and 50 characters.' At the bottom, a light blue box titled 'Invocation name requirements' with a lightbulb icon lists rules: the name must be two or more words, use only lower-case alphabetic characters, spaces, and possessive apostrophes; numbers must be spelled out; and it cannot contain Alexa skill launch phrases or wake words.

amazon alexa

Your Alexa Consoles A ?

< Your Skills mySkillName **Build** Test Distribution Certification Analytics Feedback forum

English (U.S.)

Save Model Build Model

Invocation

Users say a skill's invocation name to begin an interaction with a particular custom skill.
For example, if the invocation name is "daily horoscopes", users can say:

User: Alexa, ask daily horoscopes for the horoscope for Gemini

Skill Invocation Name ?

e.g. tide pooler

Invocation name must be between 2 and 50 characters.

Invocation name requirements

Your invocation name should be two or more words, and can contain only lower-case alphabetic characters, spaces between words, possessive apostrophes (for example, "sam's science trivia"), or periods used in abbreviations (for example, "a. b. c."). Other characters like numbers must be spelled out. For example, "twenty one".

Invocation names cannot contain any of the Alexa skill launch phrases such as "launch", "ask", "tell", "load", "begin", and "enable". Wake words including "Alexa", "Amazon", "Echo", "Computer", or the words "skill" or "app" are not allowed. [Learn more](#) about invocation names for custom skills.



A **voice user interface (VUI)** allows people to use their voice to control computers and devices.

TERMINOLOGY

Alexa, tell Personality Type to start the quiz.

Wake word

Launch

Skill Invocation Name

Utterance



Executes the "Quiz" intent

Alexa, ask Personality Type for a fun fact.

Wake word

Launch

Skill Invocation Name

Utterance



Executes the "Fact" intent

Intents

English (U.S.)

Save Model

Build Model

CUSTOM

Interaction Model

Invocation

Intents (4)

+ Add

AMAZON.FallbackIntent

Built-In Intents (3)

AMAZON.CancelIntent

AMAZON.HelpIntent

AMAZON.StopIntent

Slot Types (0)

+ Add

JSON Editor

Interfaces

Endpoint

Intent History

Add Intent

An intent represents an action that fulfills a user's spoken request. [Learn more](#) about intents.

Create custom intent ?

ScienceCategory



Create custom Intent

Use an existing intent from Alexa's built-in library ?

[Learn more](#) about using built-in intents.

Search built-ins

144/144 built-ins

Name	Description
>  Books 16 built-ins	Intents asking about books and other written works, such as rating books, adding books to reading lists, or navigating through audio books.
>  Calendar 2 built-ins	Intents for asking about calendars and schedules, such as asking about upcoming events, adding events to a calendar, and looking up events such as birthdays.

reload this page

< Your Skills

TEST

Build

Test

Distribution

Certification

Analytics

Feedback forum

English (U.S.)

CUSTOM

Interaction Model

Invocation

Intents (8)

+ Add

ScienceCategory

EngineeringCategory

TechnologyCategory

MathCategory

Built-In Intents (4)

AMAZON.FallbackIntent

AMAZON.CancelIntent

AMAZON.HelpIntent

AMAZON.StopIntent

Slot Types (0)

+ Add

JSON Editor

Interfaces

Save Model

Build Model

(2) Intents / (3) ScienceCategory

Sample Utterances (3)

?

Bulk Edit

Export

What might a user say to invoke this intent?

+

(1)

scientific

science category

science

1 - 3 of 3

Intent Slots (0)

?

ORDER <div>?</div>	NAME <div>?</div>	SLOT TYPE <div>?</div>	ACTIONS
1	Create a new slot	<div>+</div> <div>Select a slot type</div>	<div>Edit Dialog</div> <div>Delete</div>

STEP 2: CREATE YOUR SKILL LOGIC USING AN AWS LAMBDA FUNCTION



COMPONENTS OF AN ALEXA SKILL



WHAT IS THE CLOUD?



The **cloud** is software and services that run on the internet (a.k.a. someone else's server) instead of running from your computer



Amazon Web Services (AWS) is a cloud services platform.

AWS Lambda is one of those services -- it lets you build and run your code online

LOGIN TO OUR DEMO AWS ACCOUNT

<https://console.aws.amazon.com>

Account ID: 694910018021

Username: lambda@techemstudios.com

Password: techme17



AWS Lambda

The screenshot shows the AWS Management Console interface. At the top, the navigation bar includes the AWS logo, 'Services' with a dropdown arrow, 'Resource Groups' with a dropdown arrow, and a user profile icon. The user's email 'lambda@techemstudios.com' is visible on the right. The main content area is titled 'AWS services' and features a search bar with the placeholder text 'Find a service by name or feature (for example, EC2, S3 or VM, storage)'. Below the search bar, there are two expandable sections: 'Recently visited services' and 'All services'. In the 'Recently visited services' section, the 'Lambda' service is highlighted with an orange circle. To its right, the 'RDS' service is also visible. The 'All services' section is organized into several categories: 'Compute' (EC2, Lightsail, Elastic Container Service, EKS, Lambda, Batch, Elastic Beanstalk), 'Storage' (S3, EFS, Glacier, Storage Gateway), 'Management Tools' (CloudWatch, AWS Auto Scaling, CloudFormation, CloudTrail, Config, OpsWorks, Service Catalog, Systems Manager, Trusted Advisor, Managed Services), 'Media Services' (Elastic Transcoder, Kinesis Video Streams), 'Mobile Services' (Mobile Hub, AWS AppSync, Device Farm, Mobile Analytics), 'AR & VR' (Amazon Sumerian), and 'Application Integration' (Step Functions, Amazon MQ, Simple Notification Service, Simple Queue Service). On the right side of the console, there is a 'Helpful tips' section with two items: 'Manage your costs' (with an icon of a document and a dollar sign) and 'Create an organization' (with an icon of a cube). Below this is an 'Explore AWS' section with links to 'Machine Learning with Amazon SageMaker' and 'Amazon Relational Database Service (RDS)'. The bottom of the console shows the start of the 'Amazon Relational Database Service' section.

AWS services

Find a service by name or feature (for example, EC2, S3 or VM, storage).

▼ Recently visited services

-  **Lambda**
-  **RDS**

▼ All services

Compute

- EC2
- Lightsail [↗](#)
- Elastic Container Service
- EKS
- Lambda
- Batch
- Elastic Beanstalk

Storage

- S3
- EFS
- Glacier
- Storage Gateway

Management Tools

- CloudWatch
- AWS Auto Scaling
- CloudFormation
- CloudTrail
- Config
- OpsWorks
- Service Catalog
- Systems Manager
- Trusted Advisor
- Managed Services

Media Services

- Elastic Transcoder
- Kinesis Video Streams

Mobile Services

- Mobile Hub
- AWS AppSync
- Device Farm
- Mobile Analytics



AR & VR

- Amazon Sumerian

Application Integration

- Step Functions
- Amazon MQ
- Simple Notification Service
- Simple Queue Service

Helpful tips


-  **Manage your costs**
Monitor your AWS costs, usage, and reservations using AWS Budgets.
-  **Create an organization**
Use AWS Organizations for policy management of multiple AWS accounts. [Learn more.](#)

Explore AWS

- Machine Learning with Amazon SageMaker**
The fastest way to build, train, and deploy machine learning models. [Learn more.](#)
- Amazon Relational Database Service (RDS)**
RDS manages and scales your database instances. It supports Aurora, MySQL, PostgreSQL, Microsoft SQL Server, and Oracle Database. [Learn more.](#)

Create your Lambda
function

CREATE YOUR LAMBDA FUNCTION

 **Services** ▾ **Resource Groups** ▾ ★

🔔 **lambda@techemstudios.com @...** ▾ **N. Virginia** ▾ **Support** ▾

Author from scratch ☒

Start with a simple "hello world" example.



Blueprints ☐

Choose a preconfigured template as a starting point for your Lambda function.



Serverless Application Repository ☐

Find and deploy serverless apps published by developers, companies, and partners on AWS.



Author from scratch [Info](#)

Name

Runtime

▾

Role

Defines the permissions of your function. Note that new roles may not be available for a few minutes after creation. [Learn more](#) about Lambda execution roles.

▾

Existing role

You may use an existing role with this function. Note that the role must be assumable by Lambda and must have Cloudwatch Logs permissions.

▾

Cancel

Create function

ADD TRIGGER

Lambda > Functions > joeTest

ARN - arn:aws:lambda:us-east-1:694910018021:function:joeTest

joeTest

Throttle

Qualifiers ▼

Actions ▼

Select a test event.. ▼

Test

Save

Configuration

Monitoring

▼ Designer

Add triggers

Click on a trigger from the list below to add it to your function.

API Gateway

AWS IoT

Alexa Skills Kit

Alexa Smart Home

CloudFront



joeTest

Add triggers from the list on the left



Amazon CloudWatch Logs

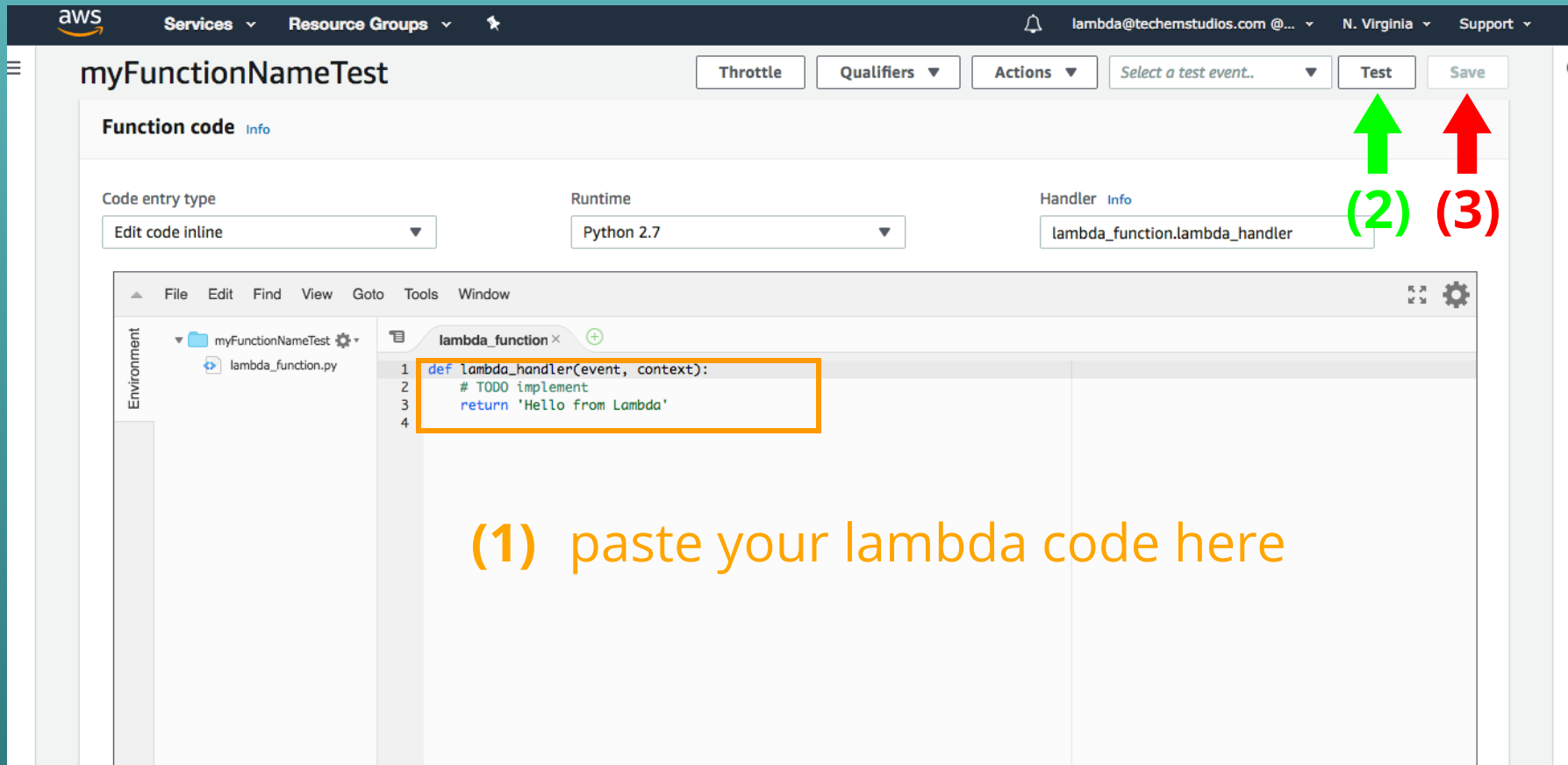


Amazon S3

Resources the function's role has access to will be shown here

copy the code from src/main.py

<https://github.com/techemstudios/inspiring-women-alexa>

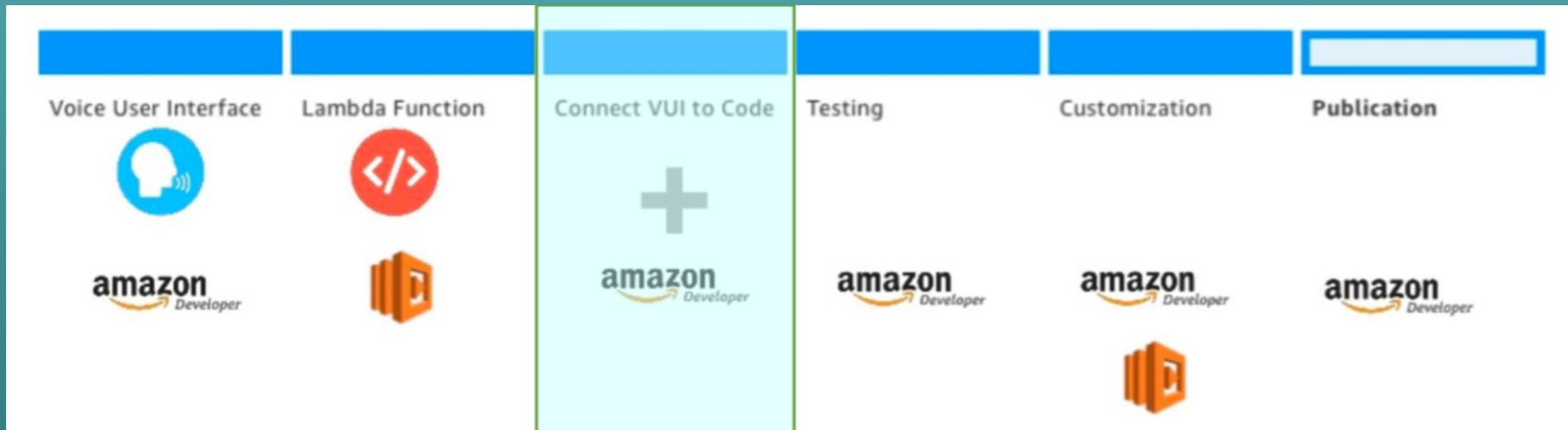


The screenshot shows the AWS Lambda console interface for a function named 'myFunctionNameTest'. The top navigation bar includes the AWS logo, 'Services', 'Resource Groups', and user information. The function name 'myFunctionNameTest' is displayed at the top left of the console. To the right of the name are buttons for 'Throttle', 'Qualifiers', 'Actions', and a dropdown for 'Select a test event..'. Further right are 'Test' and 'Save' buttons. Below the function name, the 'Function code' section is active, showing 'Code entry type' set to 'Edit code inline', 'Runtime' set to 'Python 2.7', and 'Handler' set to 'lambda_function.lambda_handler'. The code editor displays the following Python code:

```
1 def lambda_handler(event, context):
2     # TODO implement
3     return 'Hello from Lambda'
4
```

The code is highlighted with an orange box. Below the code editor, the text '(1) paste your lambda code here' is displayed in orange. To the right of the 'Test' and 'Save' buttons, there are green and red arrows pointing to them, labeled '(2)' and '(3)' respectively.

STEP 3: CONNECT YOUR VUI TO YOUR LAMBDA FUNCTION



COPY THE ARN

Lambda > Functions > joeTest

ARN - arn:aws:lambda:us-east-1:694910018021:function:joeTest

joeTest

Throttle

Qualifiers ▼

Actions ▼

Select a test event.. ▼

Test

Save

Configuration

Monitoring

▼ Designer

Add triggers

Click on a trigger from the list below to add it to your function.

API Gateway

AWS IoT

Alexa Skills Kit

Alexa Smart Home

CloudFront



joeTest



Alexa Skills Kit

Configuration required



Add triggers from the list on the left



Amazon CloudWatch Logs



Amazon S3

Resources the function's role has access to will be shown here

Go back to

developer.amazon.com

English (U.S.)

Save Endpoints

CUSTOM

Interaction Model

Invocation

Intents (5)

+ Add

AMAZON.FallbackIntent



About



Built-In Intents (3)

AMAZON.CancelIntent

AMAZON.HelpIntent

AMAZON.StopIntent

Slot Types (0)

+ Add

JSON Editor

Interfaces

Endpoint

Endpoint



The Endpoint will receive POST requests when a user interacts with your Alexa Skill. The request body contains parameters that your service can use to perform logic and generate a JSON-formatted response. Learn more about Lambda endpoints [here](#). You can host your own HTTPS web service endpoint as long as the service meets the requirements described [here](#).

Service Endpoint Type

Select how you will host your skill's service endpoint.

AWS Lambda ARN
(Recommended)

Your Skill ID

(2) now, copy your skill's ID

amzn1.ask.skill.a73c1e44-86a1-4111-96e6-162287b1dd79

Copy to Clipboard

Default Region
(Required)North America
(Optional)



arn:aws:lambda:<location>:<aws_account_id>:function:<lambda_name>

(1) paste the ARN here

arn:aws:lambda:us-east-1:<aws_account_id>:function:<lambda_name>

Go back to your
Lambda Function

Configure triggers

 Skill ID verification is an easy way to verify the Skill ID in an incoming request from a Skill. To set this up, enter the Skill ID (also called Application ID) of your skill located in your Alexa Skills Kit dashboard. [Learn more.](#) 

Skill ID verification

☒ Enable (recommended)

☐ Disable

Skill ID

(1) paste your copied Skill ID here

Lambda will add the necessary permissions for Amazon Alexa to invoke your Lambda function from this trigger. [Learn more](#) about the Lambda permissions model.

Cancel

Add

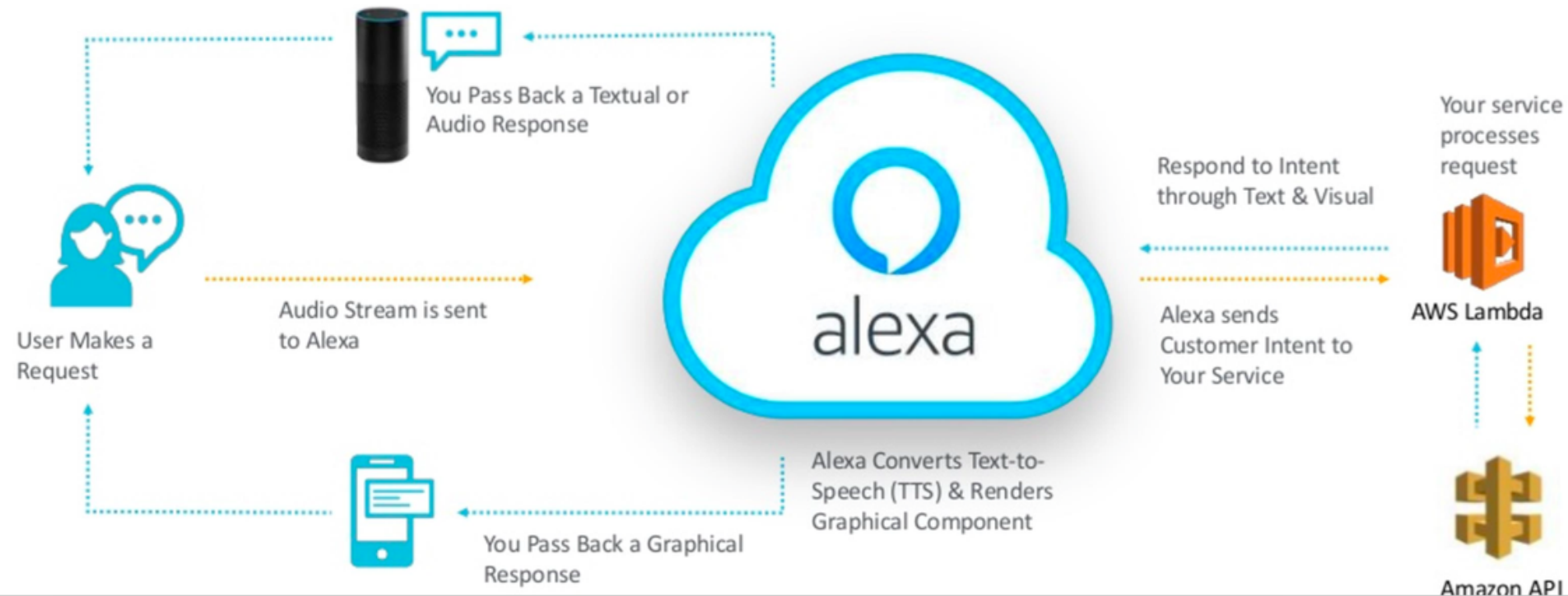
(2)



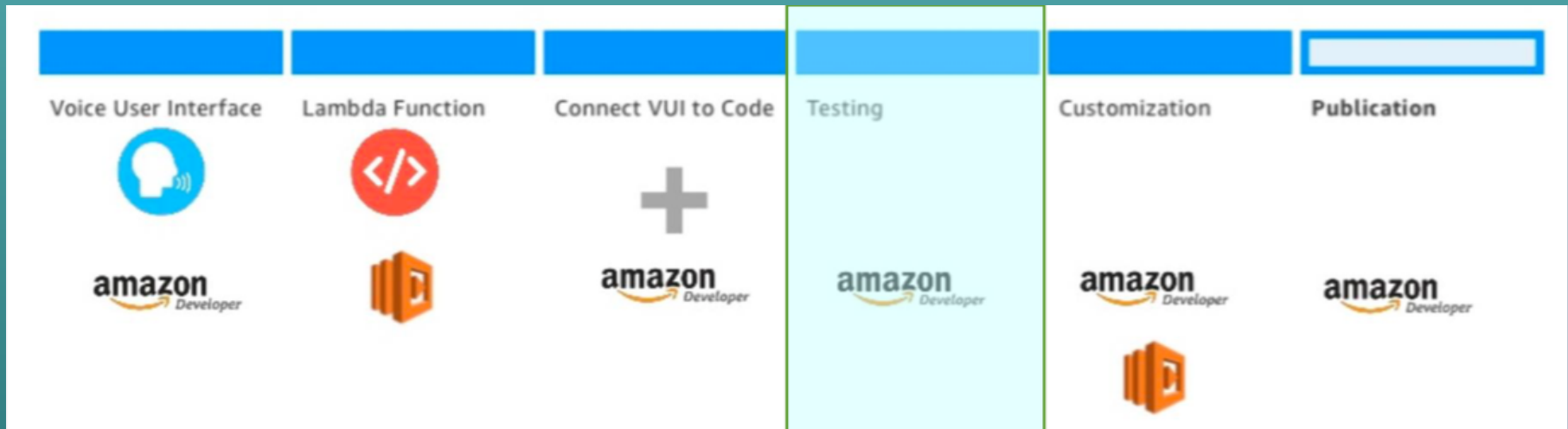
Your skill & your Lambda function can
now communicate!

The Life Cycle of our Skill

A look at how the Alexa Skills Kit process a request and returns an appropriate response



STEP 4: TEST YOUR ALEXA SKILL



Test ALL utterances to make sure the service response gives you what you'd expect.

amazon alexa

Your Alexa Consoles

< Your Skills rpatel Build Test Distribution Certification Analytics

Test is enabled for this skill

Skill I/O

Echo Show Display

Echo Spot Display

Device Log

Alexa Simulator Manual JSON Voice & Tone

English (US)

Type or click and hold the mic

open my quotes

Here's a great thought for today: How do I spice up my Cheez-Its? With Sriacha, of course! Another?

yes

Airplanes and Ice-cream make everything better. More?

Skill I/O

JSON Input

```
1 {
2   "version": "1.0",
3   "session": {
4     "new": false,
5     "sessionId": "amzn1.echo-api.session.76a602b7-72...
6     "application": {
7       "applicationId": "amzn1.ask.skill.244b8877-e...
8     },
9     "attributes": {
10      "blueprint": {
11        "id": "amzn.ask.bp.57f5a1aa-43ae-4d69-83...
12        "locale": "en-US",
13        "name": "Inspirations"
14      },
15      "initialMessageIndex": 2,
16      "continueIndex": 0,
17      "speechOutput": "How do I spice up my Cheez-...
18      "lastItem": {
19        "quote": "How do I spice up my Cheez-Its...
20      },
21      "STATE": "_START_MODE",
22      "repromptSpeech": "Another?",
23      "playOrder": [
24        3,
25        0,
```

JSON Output

```
1 {
2   "body": {
3     "version": "1.0",
4     "response": {
5       "outputSpeech": {
6         "type": "SSML",
7         "ssml": "<speack> Airplanes and ice...
8       },
9       "card": {
10        "type": "Simple",
11        "title": "Here's another inspirati...
12        "content": "Airplanes and ice-crea...
13      },
14      "reprompt": {
15        "outputSpeech": {
16          "type": "SSML",
17          "ssml": "<speack> More? </speack...
18        },
19      },
20      "shouldEndSession": false
21    },
22    "sessionAttributes": {
23      "blueprint": {
24        "id": "amzn.ask.bp.57f5a1aa-43ae-4...
25        "locale": "en-US",
```

Note: to test the **Launch** intent, you have to include the skill's invocation name after the word "open" or "launch" or "start".

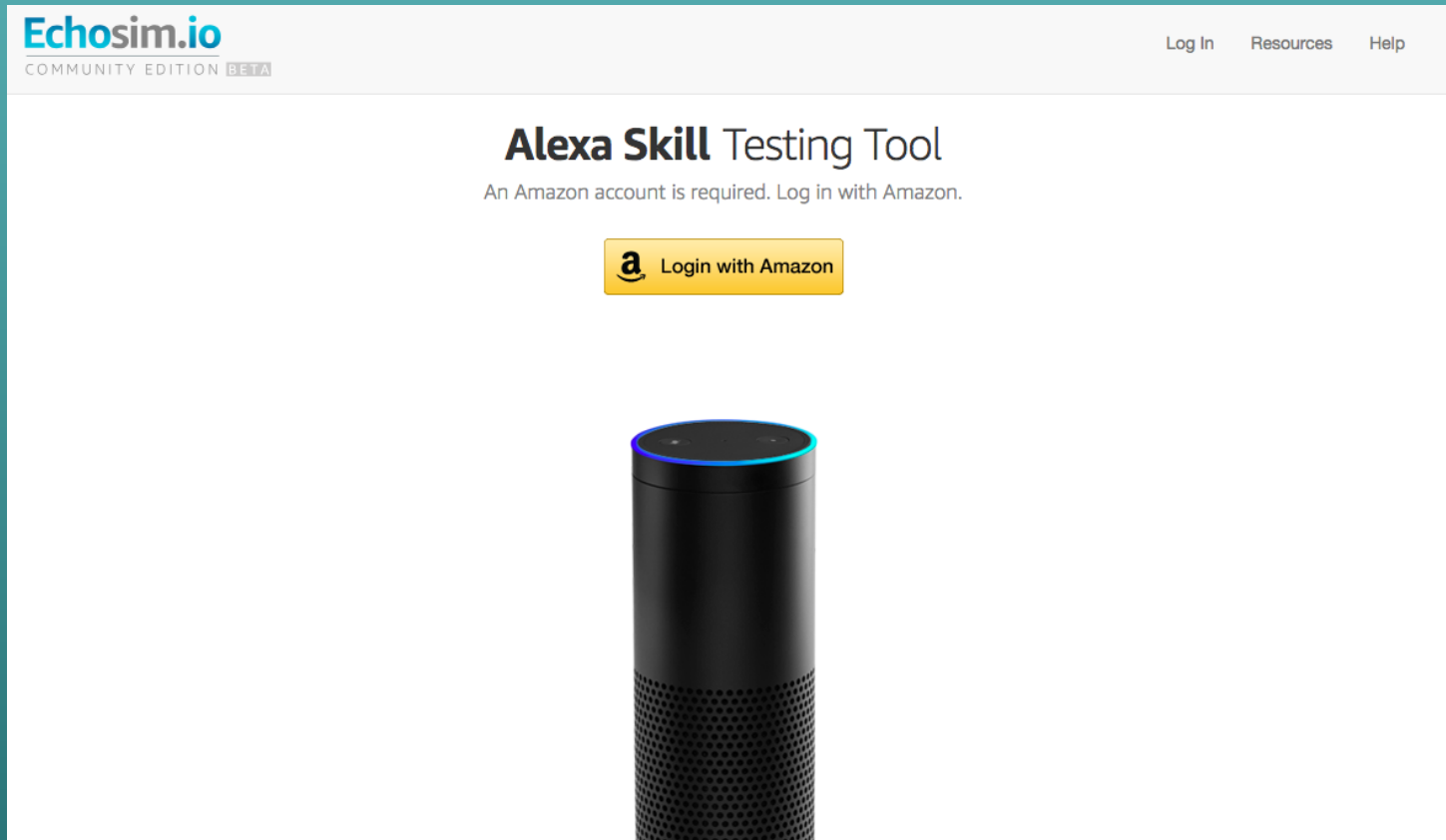
But for all other intents, you can simply type the utterance by itself to test it.

Troubleshoot Service Response Errors:
Copy the service request from the
Service Simulator and paste into the
Lambda's "Configure test events" modal.

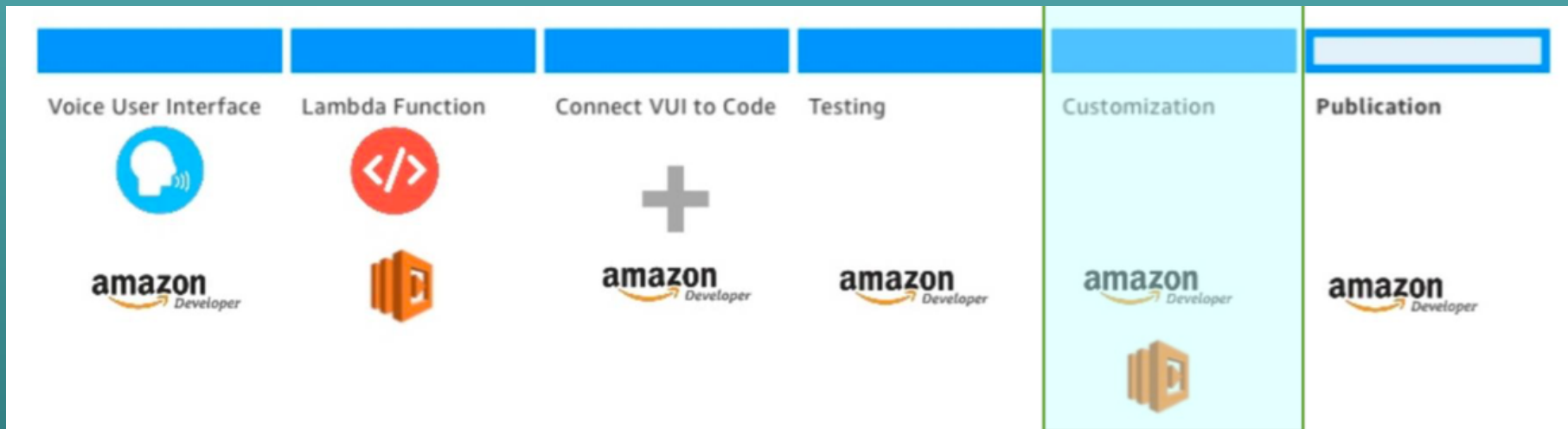
Then click "Test". Error details will be
under the Execution result's Details
section.

Go to Echosim.io to perform verbal testing of your skill if you don't have an Alexa-enabled device.

You can also grant the developer.amazon.com to have microphone access to test with voice.



STEP 5: CUSTOMIZE THE SKILL TO BE YOURS



STEP 6: OPTIONAL - GET YOUR SKILL CERTIFIED & PUBLISHED

