

Workshop

Hacking with Amazon Alexa

Welcome to *MLH Localhost: Hacking with Alexa!*



Wifi Network:
[eduroam]
[UB_Secure]



Event Hashtag:
#MLHLocalhost

Twitter Handle:
@MLHacks

Event Sign In Form

<https://tinyurl.com/yd5nqhmt>

1

*Using your Web Browser,
Open this URL & Fill out the Form:*

<http://mlhlocal.host/checkin>

2

Afterwards, Check your Email to Find:

- Setup Instructions
- An Invite to the MLH Slack
- The Code Samples
- A Workshop FAQ
- These Workshop Slides
- More Learning Resources

Welcome! My name is Aniruddha Nandi.

- 1** I'm will be leading this session to help you learn something new today
- 2** I'm a Junior in CS & Lead of Project AI in the Robotics Club
- 3** Things I love to do include globetrotting, aerial photography and hacking



Our Mission is to Empower Hackers.

65,000+
HACKERS

12,000+
PROJECTS CREATED

3,000+
SCHOOLS

We hope you learn something awesome today!
Find more resources: <http://mlh.io/>

What will you **learn today?**

- 1 Understand Voice User Interfaces & what you can build using them.
- 2 Meet Alexa, an intelligent personal assistant developed by Amazon.
- 3 Create your first voice powered app with Amazon Alexa.

Table of Contents

- 0. Welcome to MLH Localhost
- 1. Introduction to Alexa & Voice UIs
- 2. Developing for Alexa
- 3. Build Your First Alexa Skill
- 4. Review & Quiz
- 5. Next Steps

What is Alexa?

Alexa is a Voice User Interface (VUI), that lets you **speak** commands, instead of clicking buttons or typing on your keyboard.

Speech



Request



Response

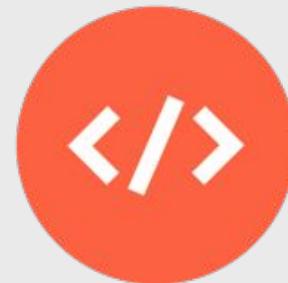
Alexa listens to spoken input, uses it to execute tasks or skills in the cloud, and then returns output -- just like a JavaScript function.

Why do Voice UIs Matter?



Instead of typing, clicking, or tapping - we can physically separate ourselves from our devices and speak commands naturally.

Voice UIs can run code in the cloud and communicate with IoT devices, making them ideal for homes, cars, & more.

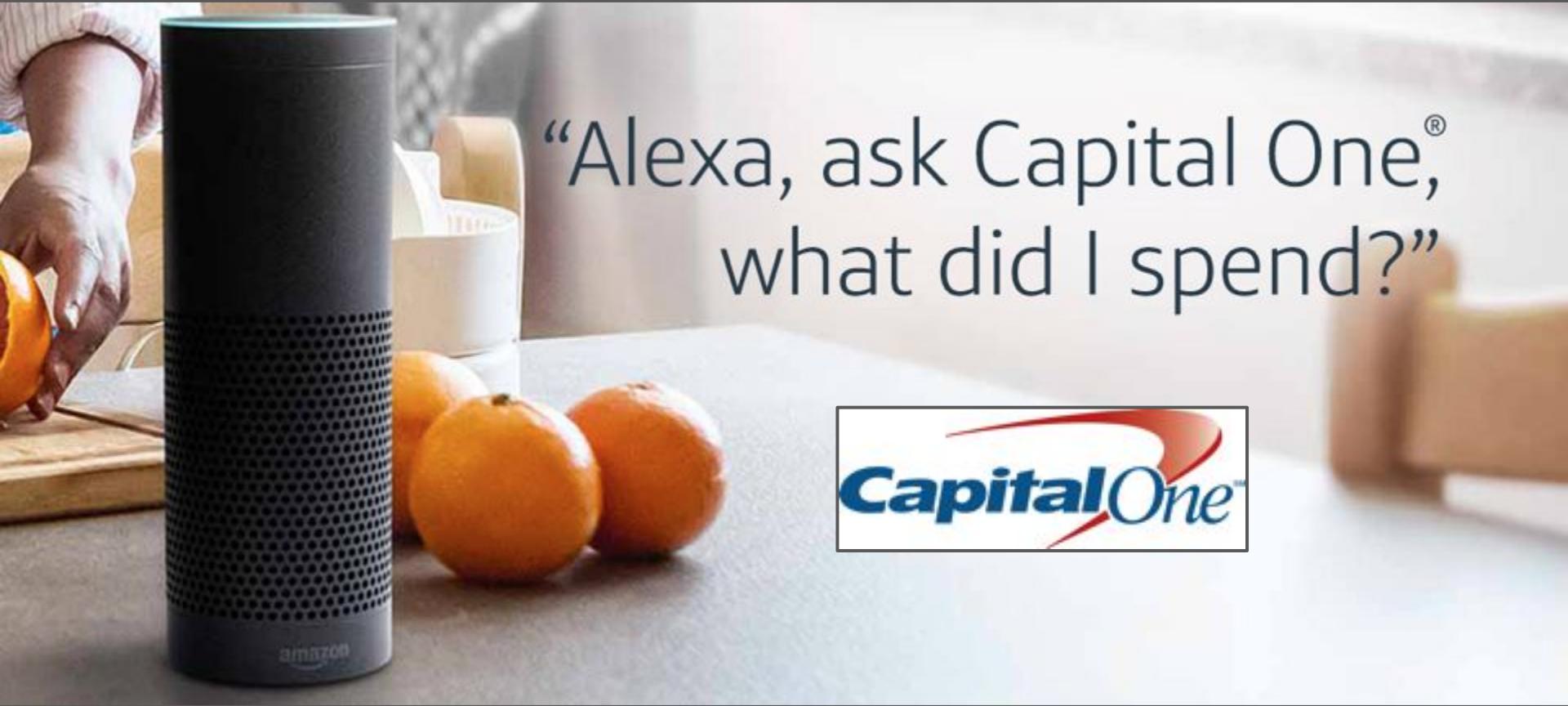


What can you build with Alexa?



Alexa, ask Lyft for a Lyft Line to work.

What can you build with Alexa?



“Alexa, ask Capital One,
what did I spend?”



Alexa, ask Capital One, what did I spend?

What can you build with Alexa?



Your afternoon pick-me-up.



*“Alexa, tell Starbucks
to start my order.”*

[Get started ▶](#)

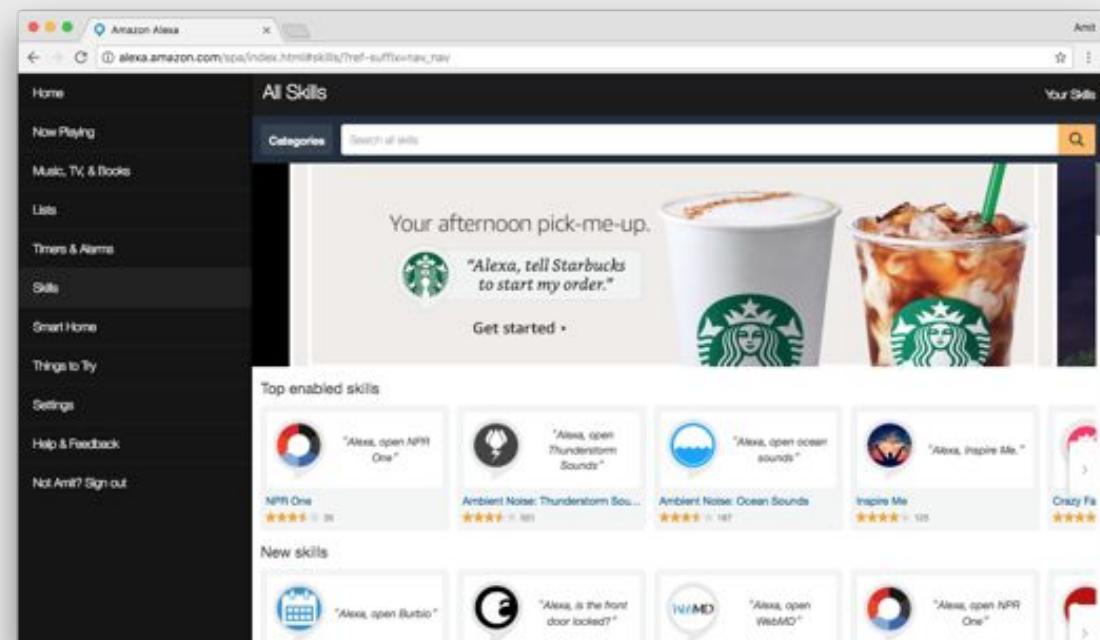


Alexa, tell Starbucks start my order.

Alexa has Skills. Lots of them.

Companion app for device setup, skills, remote control, and more.

alexa.amazon.com



It's LIVE Demo Time!

Try these commands:

"Alexa, tell me a joke!"

*"Alexa, what is
Major League Hacking?"*

Don't have an Alexa device?
Head to: echosim.io

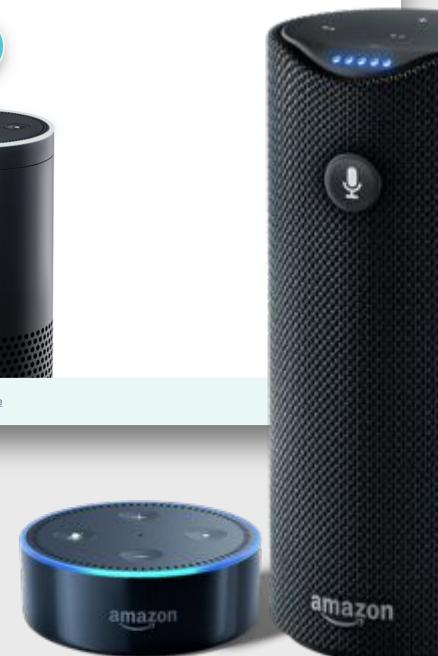
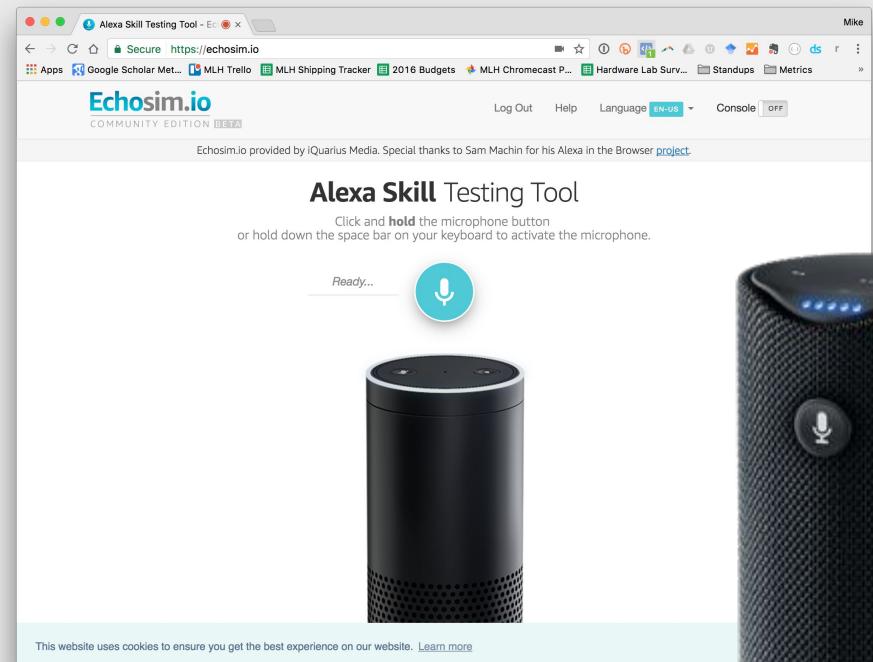


Table of Contents

0. Welcome to MLH Localhost
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2. Developing for Alexa
3. Build Your First Alexa Skill
4. Review & Quiz
5. Next Steps

Why build an Alexa Skill?

1. Alexa, Amazon's voice service, is already integrated into Echo devices and can perform hundreds of skills.
2. Your skill can reach millions of customers with Alexa enabled devices.
3. Building with Alexa is free, easy, & fun!

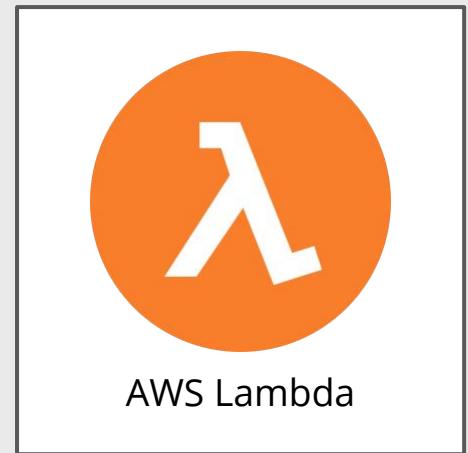


Alexa Skills are made of 2 parts:

- Front End** - The Alexa Voice UI handles text to speech, converting the audio into something our app can use, etc.



- Back End** - The logic code that actually powers our app. Usually this is written on a service called AWS Lambda.



Speech Recognition is Hard.

You said: *for tē tīmz*. But,
what did you mean?

1. Forty Times?
2. For Tea Times?
3. For Tee Times?
4. Four Tee Times?



Parts of Speech Recognition

Automatic Speech Recognition (ASR)

Enables the recognition and translation of spoken language into text by computers.

1. Traditional phonetics-based using HMM's (Hidden Markov Models)
2. Deep feedforward neural network or RNN (recurrent neural nets) based

Parts of Speech Recognition

Natural Language Understanding (NLU)

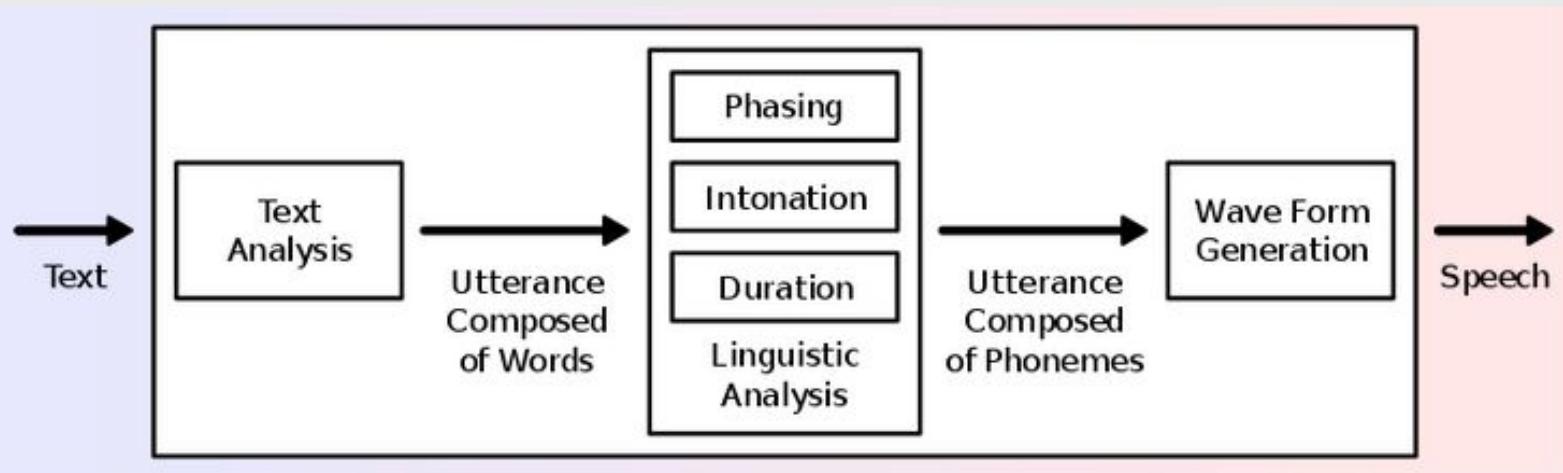
Deals with how to best handle unstructured inputs that are governed by poorly defined, flexible rules and convert them into a structured form that a machine can understand. It is an AI-hard problem.

"I need a flight and hotel in Miami from October 4 to 10"
need:flight {intent} / need:hotel {intent} / Miami {city} /
Oct 4 {date} / Oct 10 {date} / sentiment: 0.5723 (neutral)

Parts of Speech Recognition

Text to Speech (TTS)

Converts text back to human-understandable speech



Alexa uses Sample Utterances for Training.

In order to **map user input** to a behavior, we provide **training data**, for each intent.



```
01 GetNewFactIntent a fact
02 GetNewFactIntent a Major League Hacking fact
03 GetNewFactIntent tell me a fact
04 GetNewFactIntent tell me a Major League Hacking fact
05 GetNewFactIntent give me a fact
06 GetNewFactIntent give me a Major League Hacking fact
07 GetNewFactIntent tell me trivia
08 GetNewFactIntent tell me a Major League Hacking trivia
09 GetNewFactIntent give me trivia
10 GetNewFactIntent give me a Major League Hacking trivia
11 GetNewFactIntent give me some information
12 GetNewFactIntent give me some Major League Hacking information
13 GetNewFactIntent tell me something
14 GetNewFactIntent give me something
```

Alexa Maps Speech Input to Intents.

Once Alexa figures out what Intent you wanted,
you can easily map that back to code.

```
01  {
02    "intents": [
03      { "intent": "GetNewFactIntent" },
04      { "intent": "AMAZON.HelpIntent" },
05      { "intent": "AMAZON.StopIntent" },
06      { "intent": "AMAZON.CancelIntent" }
07    ]
08  }
```

"Tell me a Fact about MLH" → GetNewFactIntent

Table of Contents

0. Welcome to MLH Localhost
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-  3. Build Your First Alexa Skill
4. Review & Quiz
5. Next Steps

Demo: About MLH Skill

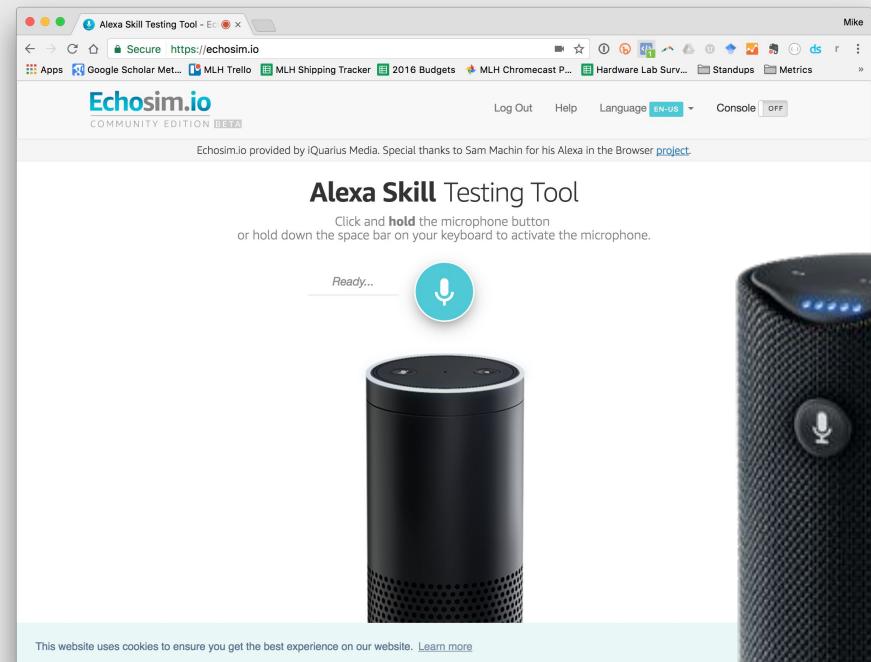
Ask your Alexa:

“Alexa, open MLH Facts.”

“Alexa, ask MLH Facts for a fact.”

Don't have an Alexa device?

Head to: echosim.io



Steps to Build Your Skill:

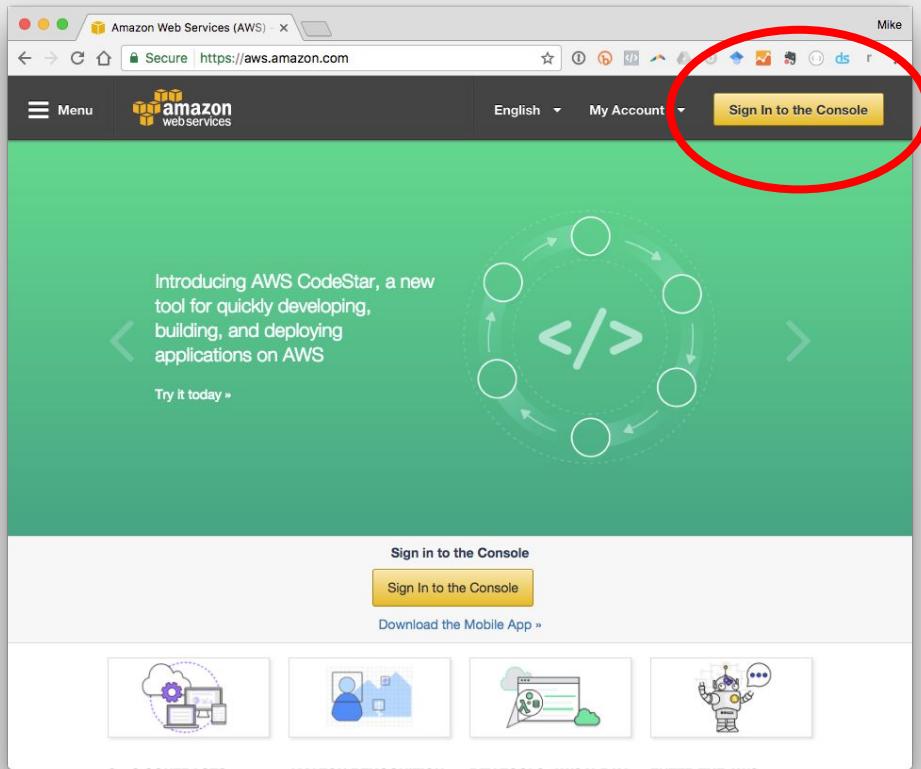
To build your first skill, we'll complete the following steps:

1. Write your skill code as an AWS Lambda function
2. Create an Alexa Skill in the Developer Portal
3. Connect Your Lambda Function to Your Skill
4. Test your Skill
5. Publish Your Skill

Sign into the AWS Console.

Navigate to:

mlhlocal.host/alexा-aws



Instructions

Click on “Sign in to Console” to get started.

Navigate to the Lambda Manager.

You can search for Lambda in the search box or find it on the list of available services.

AWS services

Search icon

- Lambda**
Run Code without Thinking about Servers
- CodeBuild**
Build and Test Code
- Lex**
Build Voice and Text Chatbots

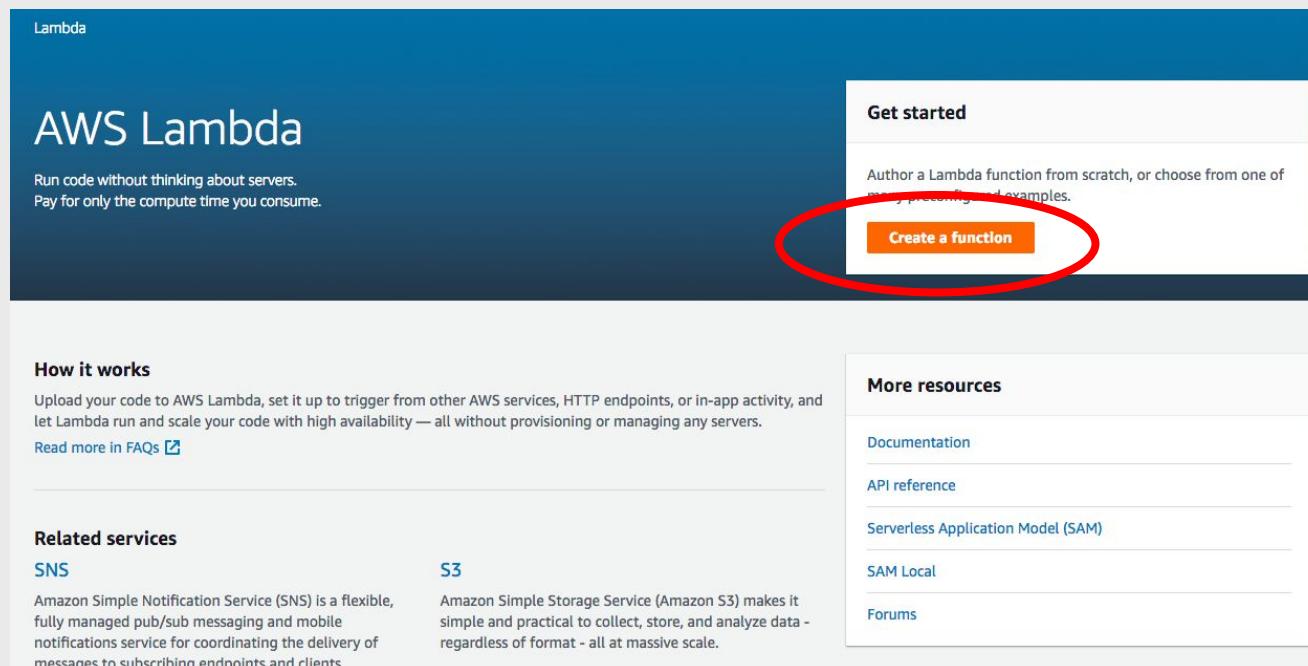
Build a solution

Get started with simple wizards and automated workflows.

 Launch a virtual machine With EC2 ~1 minute	 Build a web app With Elastic Beanstalk ~6 minutes	 Deploy a serverless microservice With Lambda, API Gateway ~2 minutes
 Host a static website With S3, CloudFront, Route 53 ~5 minutes	 Create a backend for your mobile app With Mobile Hub ~5 minutes	 Register a domain With Route 53 ~3 minutes

Create your First Lambda Function.

Each AWS Lambda Function is responsible for one thing
(like returning facts about you!).



The screenshot shows the AWS Lambda homepage. At the top left, it says "Lambda". Below that is the "AWS Lambda" logo with the tagline "Run code without thinking about servers. Pay for only the compute time you consume.". On the right, there's a "Get started" section with the text "Author a Lambda function from scratch, or choose from one of many pre-existing examples." and a prominent orange "Create a function" button. This button is circled in red. To the right of the main content area, there's a sidebar titled "More resources" containing links to "Documentation", "API reference", "Serverless Application Model (SAM)", "SAM Local", and "Forums". At the bottom left, there are sections for "How it works" and "Related services" (SNS and S3), each with a brief description.

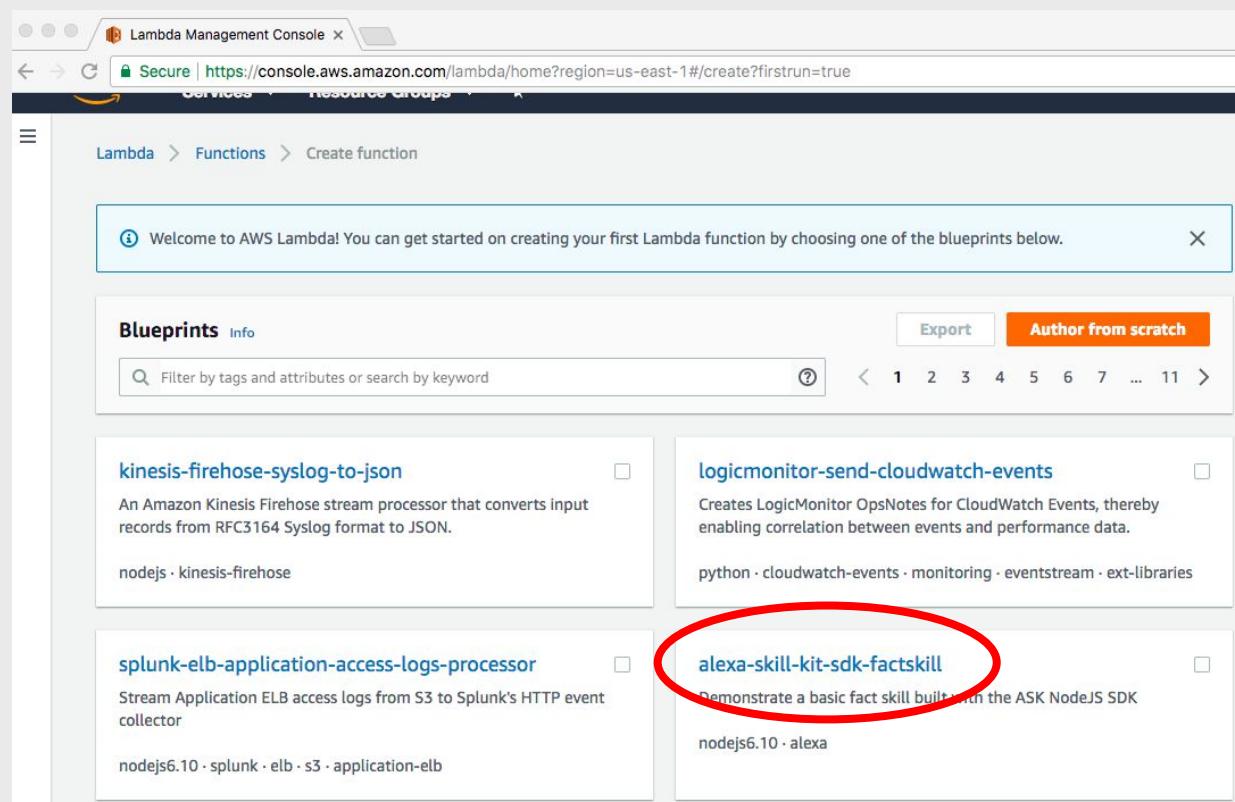
Instructions

Click “Create a Function” to create your first function!

Choose a Blueprint.

Instructions

Select “alexaskillkit-sdkskill” from the options.



Set Basic Information.

Instructions

Enter a name, select “Create a custom role,” and name your role.

The screenshot shows the AWS Lambda Management Console interface. The URL in the browser is <https://console.aws.amazon.com/lambda/home?region=us-east-1#/create/new?bp=alexa-skill-kit-sdk-factskill&firstrun=true>. The page title is "Basic information".

Name*: yourFunctionName

Role*: Create a custom role (highlighted with a red circle)

ROLE NAME*: yourRoleName

Policy templates: Choose one or more policy templates. A role will be generated for you before your function is created. Learn more about the permissions that each policy template will add to your role.

Create your IAM Role.

Instructions

Select "Create a new IAM Role" from dropdown menu.
Role Name & policy will automatically populate.

The screenshot shows the AWS Lambda IAM Role creation interface. At the top, there's a navigation bar with icons for CloudWatch Metrics, AWS Lambda, Services, and Edit. Below the navigation bar, a message states: "AWS Lambda requires access to your resources". It explains that AWS Lambda uses an IAM role to grant custom code permissions to access AWS resources it needs. A "Hide Details" button is present. Under the "Role Summary" section, there are three fields: "Role Description" (set to "Lambda execution role permissions"), "IAM Role" (a dropdown menu showing "Create a new IAM Role" as the selected option), and "Role Name" (set to "lambda_basic_execution"). At the bottom left, there's a link to "View Policy Document".

Select “Allow” in the lower right corner and you will be returned to your Lambda function.

Create your IAM Role.

Notice that “lambda_basic_execution” is now in the “Existing Role*” field.

Basic information Info

Name*

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.

Step 1: Download the Sample Code

To get the sample code, head to this URL:

mlhlocal.host/alexa-code

Step 2: Open Index.js

Unzip the directory and open [src/index.js](#) in your favorite code editor.



Customize your Facts

Instructions

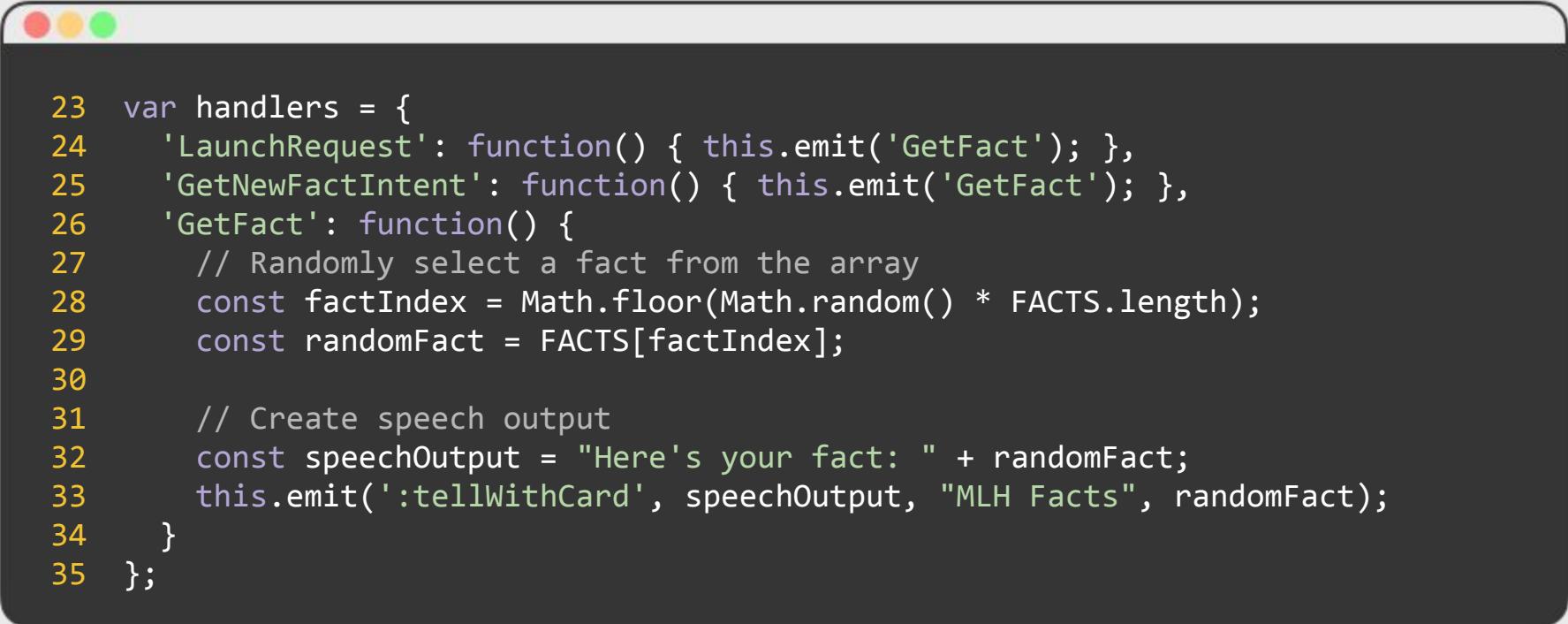
Find the `FACTS` array inside `index.js`.

Replace the facts about MLH with facts of your choice!

```
12 // TODO: replace with facts about yourself
13 const FACTS = [
14     "Major League Hacking is commonly called MLH.",
15     "Major League Hacking's mission is to empower hackers.",
16     "Over 65,000 student hackers participated in Major League Hacking...",
17     "Major League Hacking was founded in 2013 by Swift and Jon.",
18     "Hackers created over 12,000 projects at MLH hackathons in 2016.",
19     "Over 200 schools around the world hosted MLH hackathons in 2016.",
20     "Major League Hacking is headquartered in New York City."
21 ];
```

Code Review: The Handlers Object

The `handlers` object tells Alexa how to handle various actions. `GetFact` is the main logic of our application.



```
23 var handlers = {
24   'LaunchRequest': function() { this.emit('GetFact'); },
25   'GetNewFactIntent': function() { this.emit('GetFact'); },
26   'GetFact': function() {
27     // Randomly select a fact from the array
28     const factIndex = Math.floor(Math.random() * FACTS.length);
29     const randomFact = FACTS[factIndex];
30
31     // Create speech output
32     const speechOutput = "Here's your fact: " + randomFact;
33     this.emit(':tellWithCard', speechOutput, "MLH Facts", randomFact);
34   }
35 };
```

Code Review: The Handler Function

The `handler` function tells Alexa how to route voice commands by passing a copy of the `handlers` object.

```
37 // AWS Lambda calls this function every time Alexa uses our skill.  
38 exports.handler = function(event, context, callback) {  
39     // Include the AWS Alexa Library.  
40     const Alexa = require("alexa-sdk");  
41  
42     // Create an instance of the Alexa library & pass it the requested command.  
43     var alexa = Alexa.handler(event, context);  
44  
45     // Give our Alexa instance handling instructions & execute the request.  
46     alexa.registerHandlers(handlers);  
47     alexa.execute();  
48 };
```

Create your Function.

Instructions

Click “Create Function” at the bottom of the page

Lambda function code

Code is pre-configured by the chosen blueprint. You can configure it after you create the function. [Learn more about deploying Lambda functions.](#)

Runtime
Node.js 6.10

```
2  /* eslint quote-props: ["error", "consistent"]*/
3  /**
4   * This sample demonstrates a simple skill built with the Amazon Alexa Skills
5   * nodejs skill development kit.
6   * This sample supports multiple languages. (en-US, en-GB, de-DE).
7   * The Intent Schema, Custom Slots and Sample Utterances for this skill, as well
8   * as testing instructions are located at https://github.com/alexa/skill-sample-nodejs-fact
9  */
10
11 'use strict';
12
13 const Alexa = require('alexa-sdk');
14
15 ⚠ const APP_ID = undefined; // TODO replace with your app ID (OPTIONAL).
16
17 const languageStrings = {
18   'en': {
19     translation: {
20       FACTS: [
21         'A year on Mercury is just 88 days long.',
22         'Despite being farther from the Sun, Venus experiences higher temperatures than Mercury.',
23         'Venus rotates anti-clockwise, possibly because of a collision in the past with an asteroid.',
24         'On Mars, the Sun appears about half the size as it does on Earth.',
25         'Earth is the only planet not named after a god.',
26         'Jupiter has the shortest day of all the planets.',
27         'The Milky Way galaxy will collide with the Andromeda Galaxy in about 5 billion years.'
28       ]
29     }
30   }
31 };
32
33 module.exports.handler = function (event, context) {
34   const alexa = Alexa.handler(event, context);
35
36   alexa.registerHandlers({
37     'LaunchRequest': function () {
38       alexa.emit('GetFactsIntent');
39     },
40     'GetFactsIntent': function () {
41       alexa.emit('GetFactsIntent');
42     }
43   });
44
45   alexa.execute();
46 };
47
48 
```

* These fields are required.

Cancel Previous **Create function**

Copy & Paste your Code into the Lambda Editor Instructions

Copy the entire contents of index.js and paste it over the code in the inline editor on the AWS Console.

The screenshot shows the AWS Lambda Function Configuration page. The top navigation bar includes tabs for Configuration, Triggers, and Monitoring. The Configuration tab is selected. Below the tabs, there's a section titled "Function code" with a warning message: "⚠ This function contains external libraries. Uploading a new file will override these libraries." A close button "X" is next to the message. Under the "Function code" section, there are three configuration options: "Code entry type" set to "Edit code inline", "Runtime" set to "Node.js 6.10", and "Handler" set to "index.handler". The main area contains the "index.js" code:

```
index.js
1  /* eslint-disable func-names */
2  /* eslint quote-props: ["error", "consistent"]*/
3  /**
4   * This sample demonstrates a simple skill built with the Amazon Alexa Skills
5   * nodejs skill development kit.
6   * This sample supports multiple languages. (en-US, en-GB, de-DE).
7   * The Intent Schema, Custom Slots and Sample Utterances for this skill, as well
8   * as testing instructions are located at https://github.com/alexa/skill-sample-nodejs-fact
9  */
10 'use strict';
11
12 const Alexa = require('alexa-sdk');
13
14 /**
15  * const APP_ID = undefined; // TODO replace with your app ID (OPTIONAL).
16 */
17 const languageStrings = {
18   'en': {
19     translation: $`
```

Save your Code.

Instructions

Click the white “Save” button (not the orange one).

Lambda > Functions > yourFunctionName ARN - arn:aws:lambda:us-east-1:448703130969:function:yourFunctionName

yourFunctionName Qualifiers ▾ Actions ▾ **Save** Select a test event.. ▾ Save and test

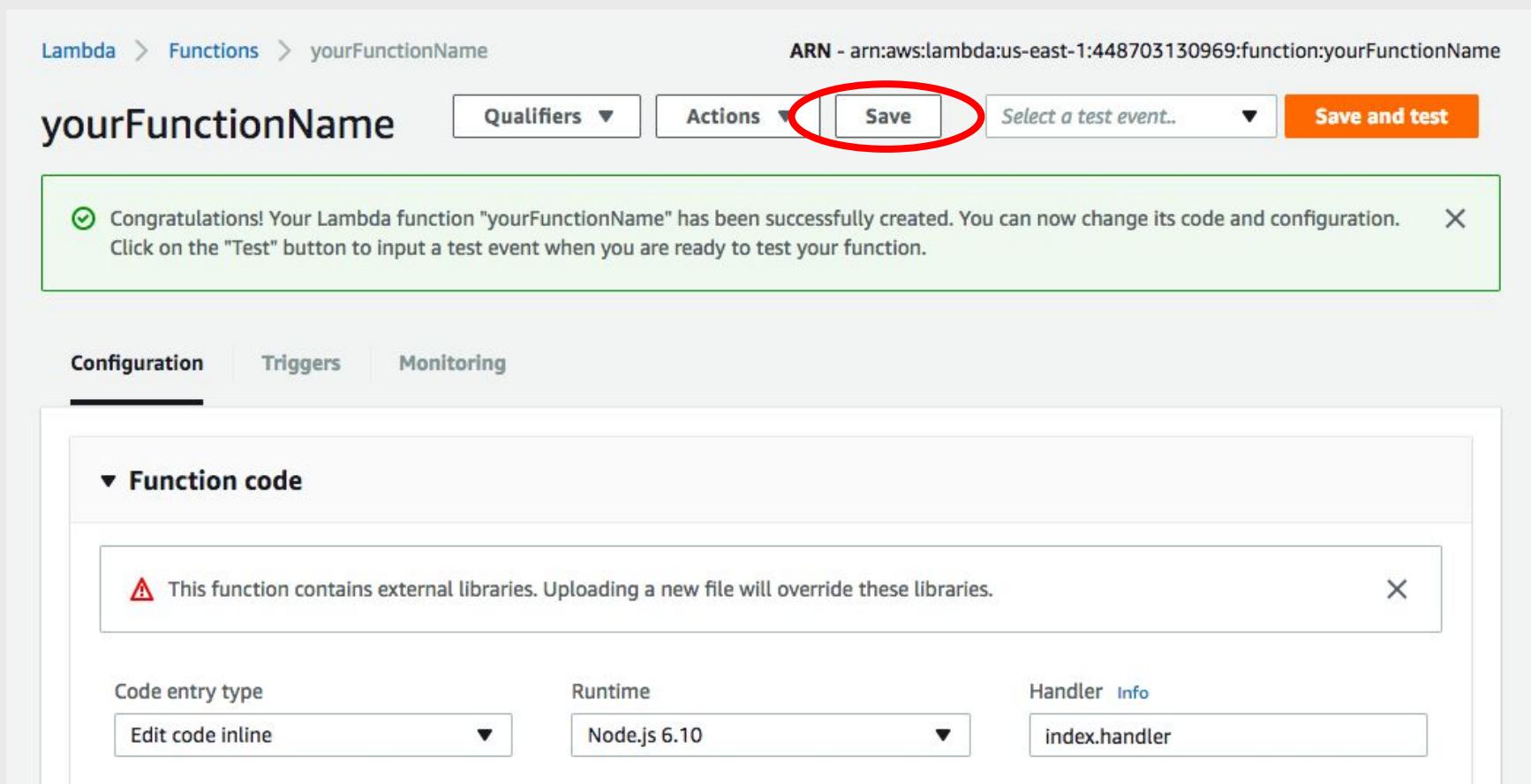
✓ Congratulations! Your Lambda function "yourFunctionName" has been successfully created. You can now change its code and configuration. X
Click on the "Test" button to input a test event when you are ready to test your function.

Configuration Triggers Monitoring

▼ Function code

⚠ This function contains external libraries. Uploading a new file will override these libraries. X

Code entry type Runtime Handler Info
Edit code inline Node.js 6.10 index.handler



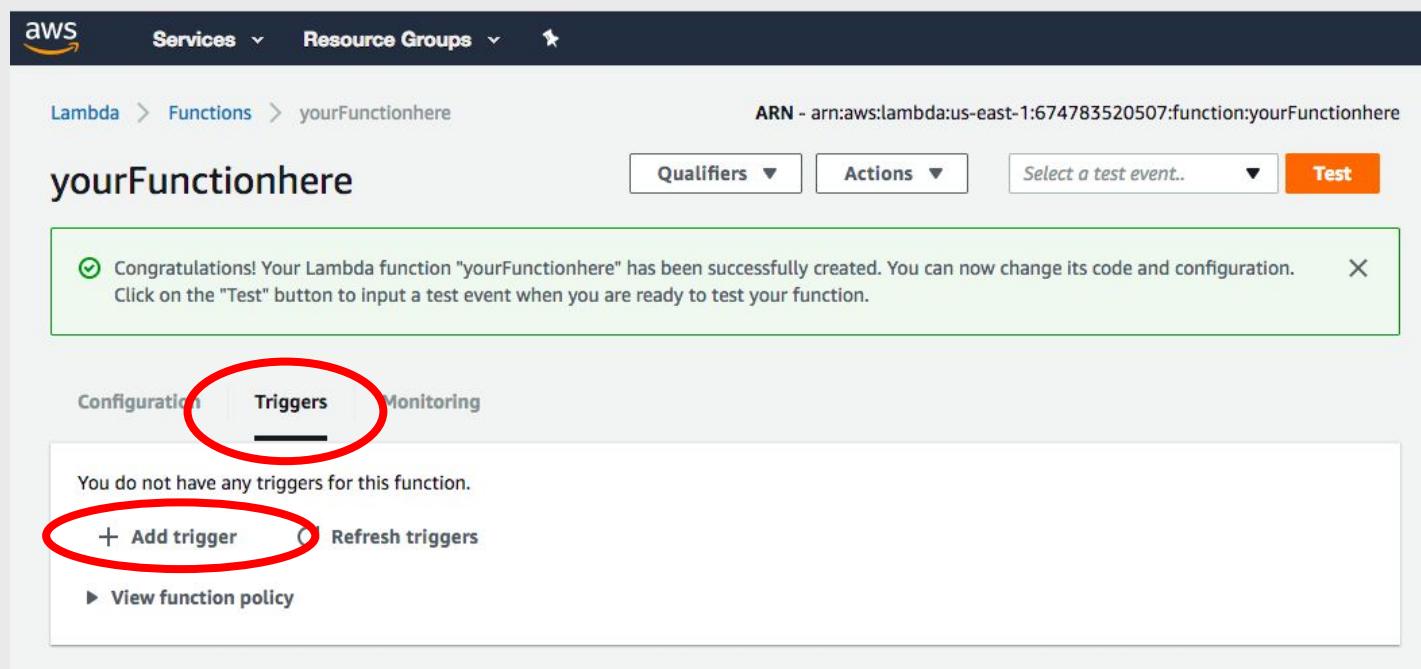
Configure your Trigger.

We need to setup a trigger to call our new Lambda Function (*in our case Alexa Skills Kit*).

Instructions

Click “Triggers”

Click “+ Add Trigger”

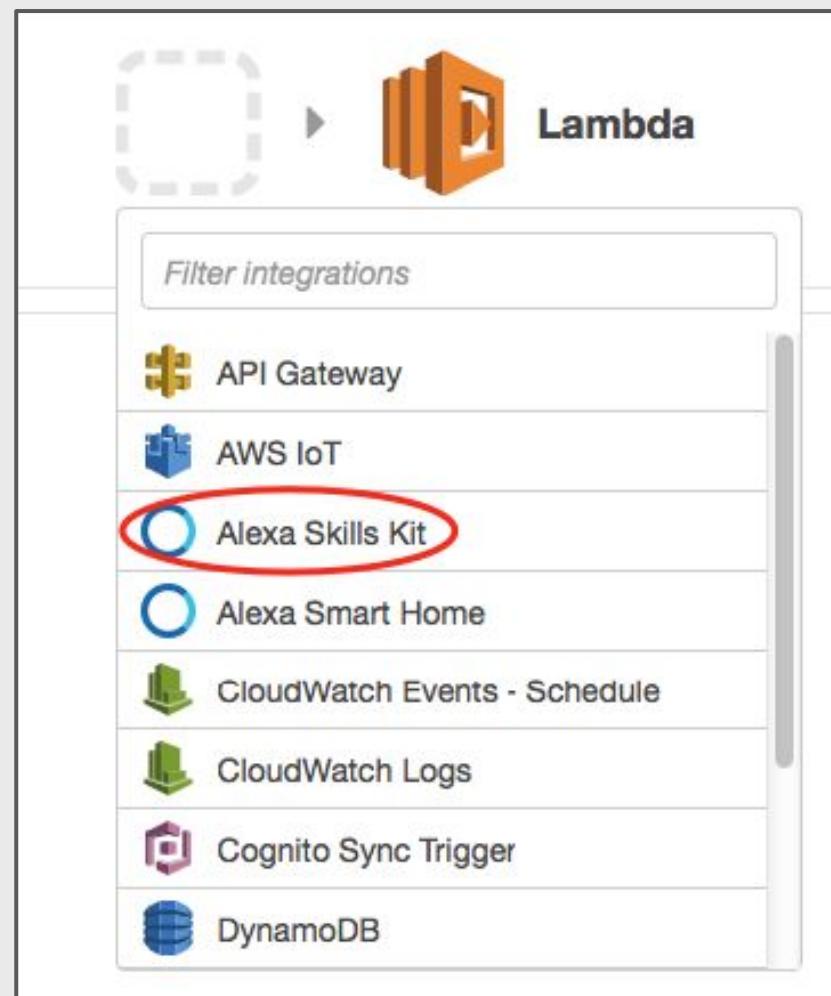


Configure your Trigger.

Instructions

Click on the gray dash-lined box

Select “Alexa Skills Kit” from the dropdown menu



Configure your Trigger.

Instructions

Click "Submit."

Add trigger X

Configure your Lambda function **yourFunctionhere** to respond to events from the selected trigger. Click on the box below to select your trigger type.

Alexa Skills Kit  ➤  **Lambda**

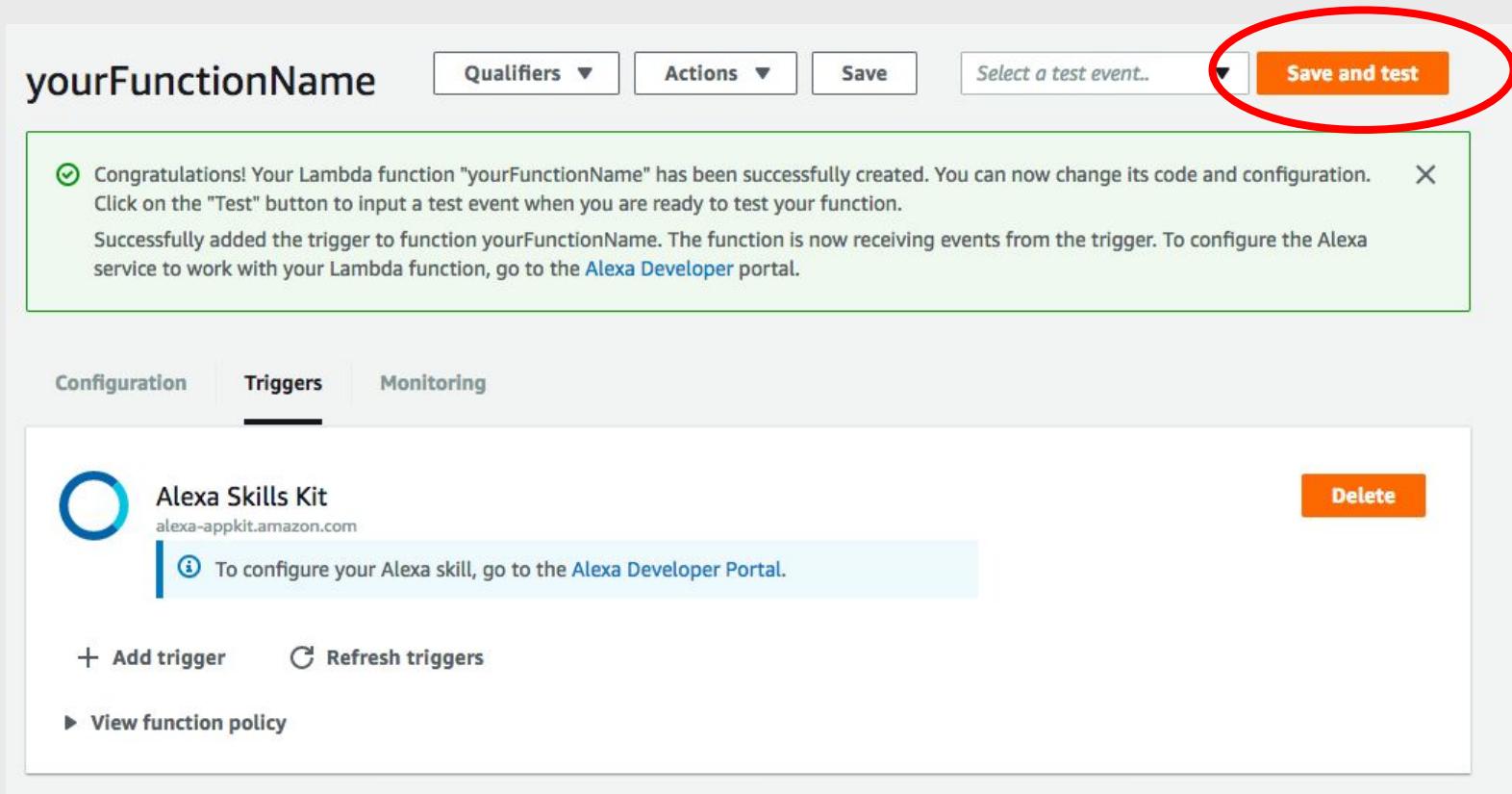
Lambda will add the necessary permissions for Amazon Alexa to invoke your Lambda function from this trigger.
[Learn more](#) about the Lambda permissions model.

Cancel **Submit**

Test your Trigger.

Instructions

Click “Save and Test.”



The screenshot shows the AWS Lambda function configuration interface. At the top, there's a navigation bar with tabs for "Qualifiers", "Actions", "Save", and "Select a test event..". A prominent orange button labeled "Save and test" is circled in red. Below the navigation bar, a success message box contains the following text:

Congratulations! Your Lambda function "yourFunctionName" has been successfully created. You can now change its code and configuration. Click on the "Test" button to input a test event when you are ready to test your function. Successfully added the trigger to function yourFunctionName. The function is now receiving events from the trigger. To configure the Alexa service to work with your Lambda function, go to the [Alexa Developer portal](#).

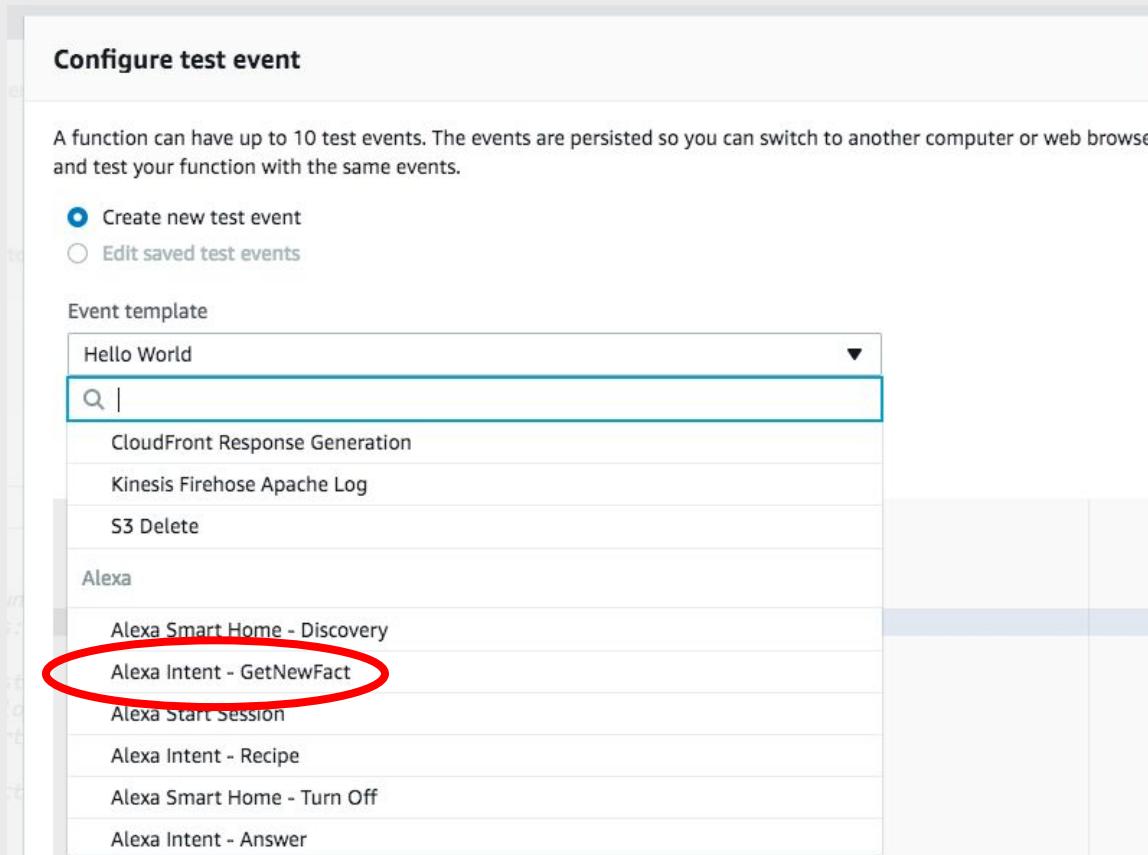
The main content area shows the "Triggers" tab selected. It lists a single trigger named "Alexa Skills Kit" with the URL "alexa-appkit.amazon.com". There are "Delete" and "Edit" buttons next to it. A blue info box says: "To configure your Alexa skill, go to the [Alexa Developer Portal](#)". Below the triggers, there are buttons for "+ Add trigger", "Refresh triggers", and "View function policy".

Test your Trigger.

Instructions

Click “Hello World.”

Scroll down and select “Alexa Intent - GetNewFact.”



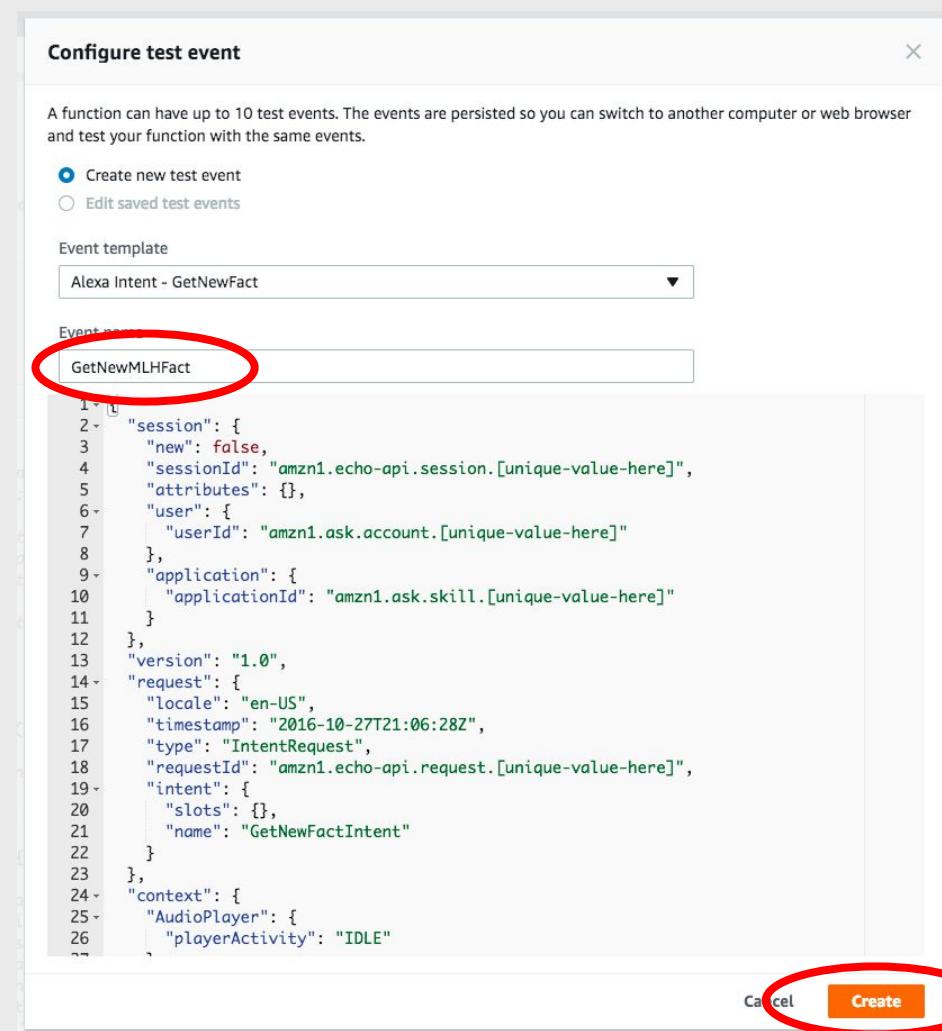
Test your Trigger.

We need to setup a trigger to call our new Lambda

Instructions

Name your test event.

Click "Create."



Test your Trigger.

Instructions

Click “Test.”

The screenshot shows the AWS Lambda function details page for a function named "yourFunctionHere". The ARN is listed as "arn:aws:lambda:us-east-1:674783520507:function:yourFunctionHere". Below the ARN are three buttons: "Qualifiers ▾", "Actions ▾", and a dropdown menu containing "GetNewMLHFact" followed by a "Test" button, which is circled in red. A green box at the bottom displays the execution result: "Execution result: succeeded (logs)" with a link to "Details".

Lambda > Functions > yourFunctionHere

ARN - arn:aws:lambda:us-east-1:674783520507:function:yourFunctionHere

yourFunctionHere

Qualifiers ▾ Actions ▾ GetNewMLHFact ▾ Test

Execution result: succeeded (logs)

▶ Details

Test your AWS Lambda Function

If it's working, you can click "Details" to see output similar to the following:

yourFunctionName

Qualifiers ▾ Actions ▾ GetNewMLHFact ▾ Test

Execution result: succeeded ([logs](#))

▼ Details

The area below shows the result returned by your function execution. [Learn more](#) about returning results from your function.

```
{  
  "version": "1.0",  
  "response": {  
    "shouldEndSession": true,  
    "outputSpeech": {  
      "type": "SSML",  
      "ssml": "<speak> Here's your fact: Major League Hacking is headquartered in New York City. </speak>"  
    },  
    "card": {  
      "type": "Simple",  
      "title": "Major League Hacking - MLH Facts"  
    }  
  }  
}
```

Summary

Code SHA-256
pQzEC+puZNYW0djE
m2I1X3Maqu17/WPn7

Log output

The area below shows the logging calls in your code. These correspond to a single row within the CloudWatch log group corresponding to this Lambda function. [Click here](#) to view the CloudWatch log group.

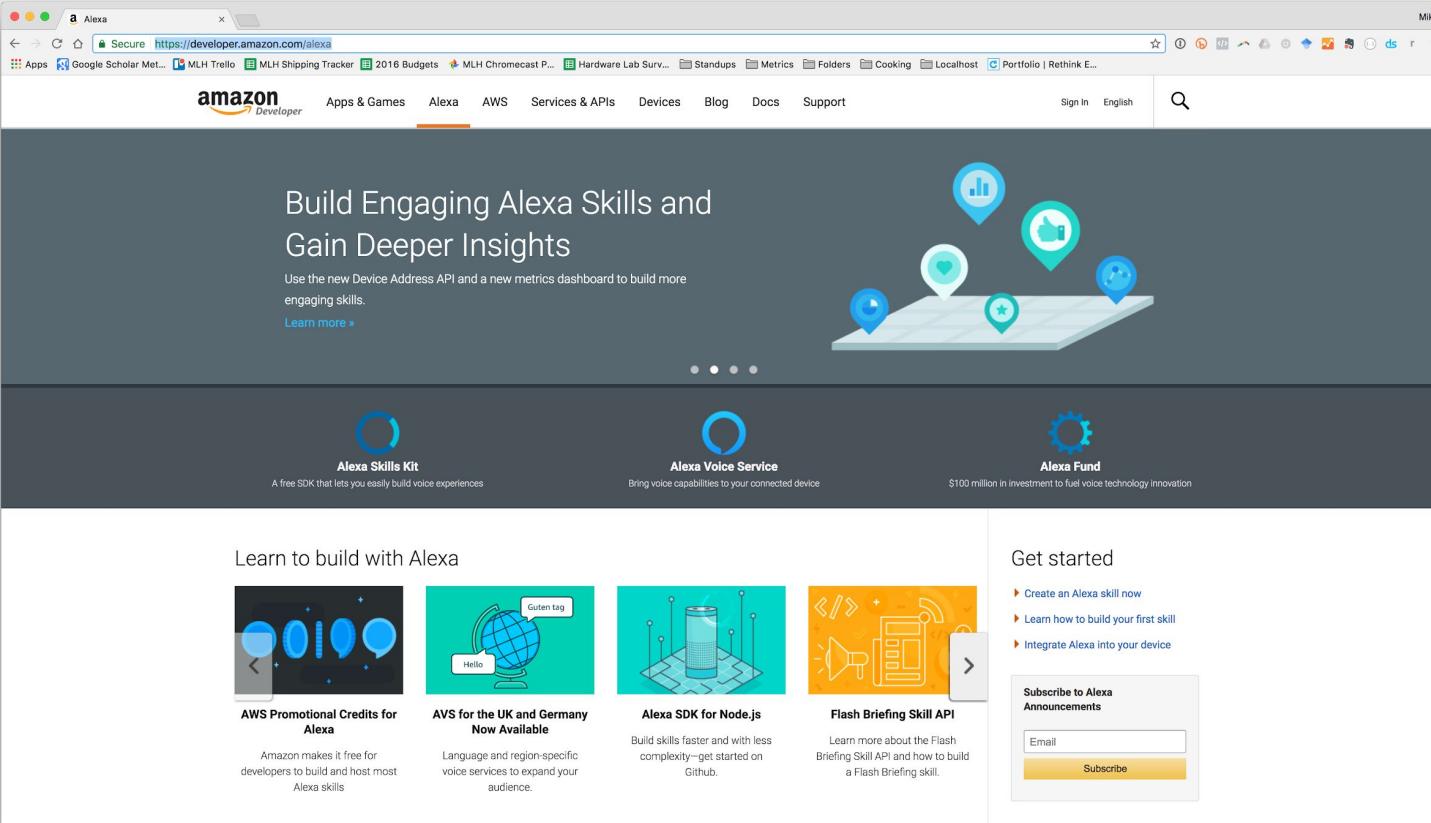
Note Down your Function's ARN.

You'll need it in a few steps, so either keep this tab open or save it in a file somewhere now.

The screenshot shows the AWS Lambda function details page for a function named "yourFunctionHere". The top navigation bar shows "Lambda > Functions > yourFunctionHere". Below the navigation, the function name "yourFunctionHere" is displayed. To the right, there is a toolbar with buttons for "Qualifiers ▾", "Actions ▾", a dropdown menu set to "GetNewMLHFact", and an orange "Test" button. A red box highlights the "ARN" field, which contains the value "arn:aws:lambda:us-east-1:674783520507:function:yourFunctionHere". Below the toolbar, a green box displays the execution result: "Execution result: succeeded (logs)" with a checkmark icon, and a "Details" link. A note at the bottom states: "The area below shows the result returned by your function execution. [Learn more](#) about returning results from your function."

Sign into the Amazon Developer Portal.

Head over to:
mlhlocal.host/alexa-portal



The screenshot shows the Amazon Alexa developer portal homepage. At the top, there's a navigation bar with links for Apps, Google Scholar Met..., MLH Trello, MLH Shipping Tracker, 2016 Budgets, MLH Chromecast P..., Hardware Lab Surv..., Standups, Metrics, Folders, Cooking, Localhost, Portfolio, and Rethink E... The main header features the Amazon logo and the word "Developer". Below the header, a large banner reads "Build Engaging Alexa Skills and Gain Deeper Insights" with a subtext about the new Device Address API and metrics dashboard. To the right of the text is a graphic of a smartphone displaying various location-based icons like a bar chart, thumbs up, heart, and stars. Below the banner are three sections: "Alexa Skills Kit" (a free SDK for building voice experiences), "Alexa Voice Service" (bringing voice capabilities to connected devices), and "Alexa Fund" (\$100 million for fueling innovation). The bottom section is titled "Learn to build with Alexa" and includes four cards: "AWS Promotional Credits for Alexa" (Amazon makes it free for developers to build and host most Alexa skills), "AVS for the UK and Germany Now Available" (language and region-specific voice services), "Alexa SDK for Node.js" (build skills faster with less complexity), and "Flash Briefing Skill API" (learn about the Flash Briefing Skill API). On the right side, there's a "Get started" section with links to "Create an Alexa skill now", "Learn how to build your first skill", and "Integrate Alexa into your device". A "Subscribe to Alexa Announcements" form is also present.

Create your account.

Instructions

Fill in this form.



Create account

Your name

Email

Password

Re-enter password

[Create your Amazon Developer account](#)

By creating an account, you agree to Amazon's [Conditions of Use](#) and [Privacy Notice](#).

Already have an account? [Sign in](#) ↗

Create your Developer Profile.

Instructions

Fill out the registration form & agree to the terms of use.

Registration

1. Profile Information 2. App Distribution Agreement 3. Payments

* indicates a required field.

Country/Region *	United States
First name *	Local
Last name *	Host
Email address *	localhost@mlh.io
Phone number *	212-555-1212 e.g. 212-555-1212, +44 0161 715 3369
Fax number	
Developer name or company name *	MLH Localhost Displayed on your apps at Amazon.com
Developer description	Major League Hacking (MLH) is the official student hackathon league. Each year, we power over 200 weekend-long Invention competitions that inspire innovation, cultivate communities, and teach computer science skills to more than 65,000 students around the world. MLH is an engaged and passionate maker community, consisting of the next generation of technology leaders and entrepreneurs.
Address 1 *	149 East 23rd St
Address 2	#438
City *	New York
State *	New York
Zip code/Postal code *	10159
Customer support email address	
Customer support phone	
Customer support website	

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Registration

-  1. Profile Information  2. App Distribution Agreement  3. Payments

* indicates a required field.

Do you plan to monetize your digital content, such as charging for apps or games or selling in-app items or in-game items, or by receiving cash rewards for your skills? *

- No Yes

Do you plan to monetize apps by displaying ads from the [Amazon Mobile Ad Network](#) or [Mobile Associates](#)? *

- No Yes

Note: You may still monetize later if you select "No" by entering payment and tax information from the Settings menu.

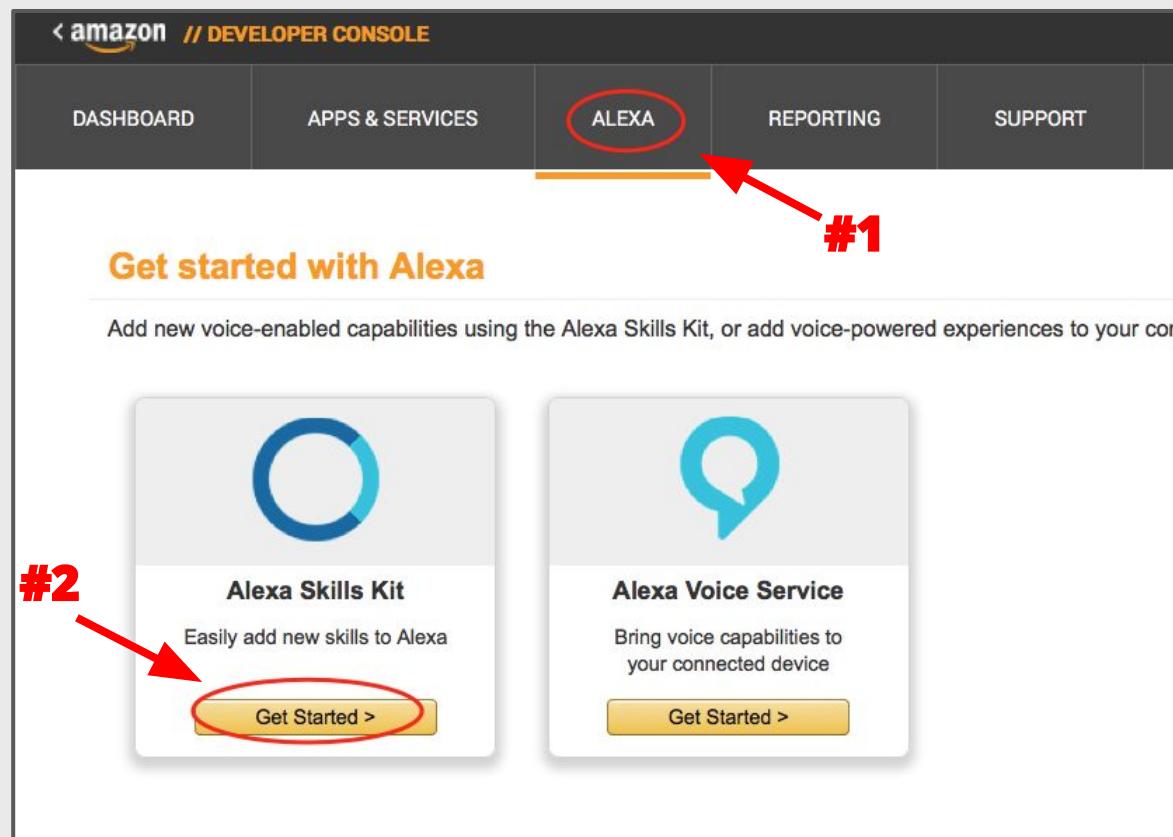
Cancel

Save and Continue

Create a New Alexa Skill.

Instructions

Navigate to the Alexa tab.



Create a New Alexa Skill

Instructions

Click on "Getting Started" under "Alexa Skills Kit."
Click "Add a New Skill" in the top right.

Building Alexa Skills with the Alexa Skills Kit

To learn more about building Alexa skills, see [Getting Started with the Alexa Skills Kit](#). To start building an Alexa skill for free using AWS Lambda, see [Creating an AWS Lambda Function for a Custom Skill](#).

We encourage you to visit the [Alexa Developer Forum](#) to collaborate with Alexa team members and fellow Alexa developers.

Good news! Developers can earn money for the most engaging skills

We're rewarding developers who design Alexa skills that customers love most! Developers can earn money each month for eligible skills that have the highest customer engagement in eligible skill categories. What's your next big idea? [Learn more](#).

Name	Language	Type	Modified	Status	Actions
------	----------	------	----------	--------	---------

What is the Invocation Name?

This is a **1-3 word phrase** that users will say out loud to launch your skill.

Alexa, open MLH facts.



Wake Word

Launch

Skill Invocation
Name

Name your Skill

Instructions

1. Select “*Custom Interaction Model*” for Skill Type
2. Enter a Name for your Skill.
3. Enter an Invocation Name for your Skill.
4. Select the "No" option under Audio Player and click “Next”.

The screenshot shows the configuration interface for a new Alexa skill. It includes fields for Skill Type, Language, Name, Invocation Name, and a note about the Audio Player.

Skill Type Define a custom interaction model or use one of the predefined skill APIs. Learn more	<input checked="" type="radio"/> Custom Interaction Model <input type="radio"/> Smart Home Skill API <input type="radio"/> Flash Briefing Skill API
Language Language of your skill	English (U.S.) ▾
Name Name of the skill that is displayed to customers in the Alexa app. Must be between 2-50 characters.	Major League Hacking (MLH) Facts
Invocation Name The name customers use to activate the skill. For example, "Alexa ask Tide Pooler...". Invocation Name Guidelines	MLH Facts

Grab the Intent Schema JSON

There's a file called `SpeechAssets/IntentSchema.json` inside the code you downloaded earlier with the following JSON:

```
01  {
02      "intents": [
03          { "intent": "GetNewFactIntent" },
04          { "intent": "AMAZON.HelpIntent" },
05          { "intent": "AMAZON.StopIntent" },
06          { "intent": "AMAZON.CancelIntent" }
07      ]
08  }
```

This code tells Alexa which code to trigger in our Lambda Function and some basic defaults like “STOP” and “HELP”.

Paste the JSON into the Intent Schema Box

Instructions

Copy the code you found in [SpeechAssets/IntentSchema.json](#) into the box on the Alexa Developer dashboard.

Intent Schema

The schema of user intents in JSON format. For more information, see [Intent Schema](#).
Also see [built-in slots](#) and [built-in intents](#).

```
1 {
2   "intents": [
3     { "intent": "GetNewFactIntent" },
4     { "intent": "AMAZON.HelpIntent" },
5     { "intent": "AMAZON.StopIntent" },
6     { "intent": "AMAZON.CancelIntent" }
7   ]
8 }
```

Customize your Utterances

Instructions

Open up [SpeechAssets/SampleUtterances.txt](#) and replace “Major League Hacking” with your name:



```
01 GetNewFactIntent a fact
02 GetNewFactIntent a Major League Hacking fact
03 GetNewFactIntent tell me a fact
04 GetNewFactIntent tell me a Major League Hacking fact
05 GetNewFactIntent give me a fact
06 GetNewFactIntent give me a Major League Hacking fact
07 GetNewFactIntent tell me trivia
08 GetNewFactIntent tell me a Major League Hacking trivia
09 GetNewFactIntent give me trivia
10 GetNewFactIntent give me a Major League Hacking trivia
11 GetNewFactIntent give me some information
12 GetNewFactIntent give me some Major League Hacking information
13 GetNewFactIntent tell me something
14 GetNewFactIntent give me something
```

Paste your Custom Utterances into the Sample Utterances Box

Instructions

Copy your customized `SpeechAssets/SampleUtterances.txt` into the box on the Alexa Developer dashboard.

Sample Utterances

These are what people say to interact with your skill. Type or paste in all the ways that people can invoke the intents. [Learn more](#)

Up to 3 of these will be used as Example Phrases, which are hints to users.

```
1 GetNewFactIntent a fact
2 GetNewFactIntent a Major League Hacking fact
3 GetNewFactIntent tell me a fact
4 GetNewFactIntent tell me a Major League Hacking fact
5 GetNewFactIntent give me a fact
6 GetNewFactIntent give me a Major League Hacking fact
7 GetNewFactIntent tell me trivia
8 GetNewFactIntent tell me a Major League Hacking trivia
9 GetNewFactIntent give me trivia
10 GetNewFactIntent give me a Major League Hacking trivia
11 GetNewFactIntent give me some information
```

Save your Interaction Model and Continue.

Instructions

Once you've defined your intent schema & sample utterances, hit "next" in the bottom corner to move on.

The screenshot shows the AWS Lambda Skills Kit interface for a skill named "My Fact Skill". The "Interaction Model" tab is selected. In the "Intent Schema" section, there is a code editor containing the following JSON:

```
1 { "intents": [
2   {
3     "intent": "GetNewFactIntent"
4   },
5   {
6     "intent": "AMAZON.HelpIntent"
7   },
8   {
9     "intent": "AMAZON.StopIntent"
10 },
11 },
12 },
13 },
14 ],
15 }
16 }
```

In the "Custom Slot Types" section, there is a "Add Slot Type" button. In the "Sample Utterances" section, there is a list of 15 sample phrases:

- 1 GetNewFactIntent a fact
- 2 GetNewFactIntent tell me a fact
- 3 GetNewFactIntent tell me a space fact
- 4 GetNewFactIntent tell me a space
- 5 GetNewFactIntent give me a fact
- 6 GetNewFactIntent give me a space fact
- 7 GetNewFactIntent tell me trivia
- 8 GetNewFactIntent tell me a space trivia
- 9 GetNewFactIntent tell me a fact
- 10 GetNewFactIntent give me a space trivia
- 11 GetNewFactIntent give me some information
- 12 GetNewFactIntent give me some space information
- 13 GetNewFactIntent tell me something
- 14 GetNewFactIntent give me something
- 15

At the bottom, there are "Save" and "Submit for Certification" buttons, and a large yellow "Next" button which is highlighted with a red oval.

Go get your Lambda Function's ARN

Instructions

Remember the ARN we noted down earlier?
Time to put it to use, go grab it now!

The screenshot shows the AWS Lambda Functions interface. In the top left, the path 'Lambda > Functions > yourFunctionHere' is visible. In the top right, there is a red box highlighting the 'ARN - arn:aws:lambda:us-east-1:674783520507:function:yourFunctionHere' text. Below the ARN are three buttons: 'Qualifiers ▾', 'Actions ▾', and a dropdown menu set to 'GetNewMLHFact' with a 'Test' button next to it. The 'Triggers' tab is selected, showing one trigger named 'Alexa Skills Kit' with the URL 'alexa-appkit.amazon.com'. A blue info icon with the text 'To configure your Alexa skill, go to the Alexa Developer Portal.' is present. At the bottom, there are buttons for '+ Add trigger', 'Refresh triggers', and 'View function policy'.

Connect Your Lambda Function to Your Skill.

Instructions

Select AWS Lambda ARN and the Region closest to you.
Paste the ARN from your function in the text box.

Global Fields
These fields apply to all languages supported by the skill.

Endpoint

Service Endpoint Type:

AWS Lambda ARN (Amazon Resource Name) i HTTPS

AWS Lambda is a server-less compute service that runs your code in response to events and automatically manages the underlying compute resources for you.

[More info about AWS Lambda](#)
[How to integrate AWS Lambda with Alexa](#)

Default

arn:aws:lambda:us-east-1:674783520507:function:yourFunctionHere

Provide geographical region endpoints? (Optional) Yes No

Account Linking

Do you allow users to create an account or link to an existing account with you?

Yes No

[More info about Account Linking](#)
[Tips for successful Account Linking](#)

Test your Skill

Instructions

Type one of your sample utterances into the service simulator to see how Alexa would respond.

The screenshot shows the Service Simulator interface. At the top, it says "Service Simulator" and "Use Service Simulator to test your lambda function: arn:aws:lambda:us-east-1:541236211448:function:mlhFactSkill2". A red arrow points from the text "Type one of your sample utterances into the service simulator to see how Alexa would respond." to the "Enter Utterance" input field. The input field contains the text "Give me an M. L. H. fact". Below the input field are two buttons: "ASK Major League Hacking (MLH) Facts" and "Reset". The "Text" tab is selected, showing the Lambda Request and Lambda Response in a code editor-like format. The Lambda Request shows a JSON object with session, attributes, user, new, and request fields. The Lambda Response shows a JSON object with version, response, outputSpeech, and card fields, followed by a "Listen" button.

```
1 {  
2   "session": {  
3     "sessionId": "SessionId.8c3da3e1-6bbd-4fc6-  
4     "application": {  
5       "applicationId": "amzn1.ask.skill.2f6b3b6  
6     },  
7     "attributes": {},  
8     "user": {  
9       "userId": "amzn1.ask.account.AEFWLK23SWYI  
10    },  
11    "new": true  
12  },  
13  "request": {  
14    "type": "IntentRequest",  
15    "requestId": "EdwRequestId.c3ba0723-8da3-45  
16    "locale": "en-US",
```

```
1 {  
2   "version": "1.0",  
3   "response": {  
4     "outputSpeech": {  
5       "type": "SSML",  
6       "ssml": "<speak> Here's your fact: Hack  
7     },  
8     "card": {  
9       "content": "Hackers created over 12,000  
10      "title": "Major League Hacking (MLH) Fa  
11      "type": "Simple"  
12    },  
13    "shouldEndSession": true  
14  },  
15  "listen": true
```

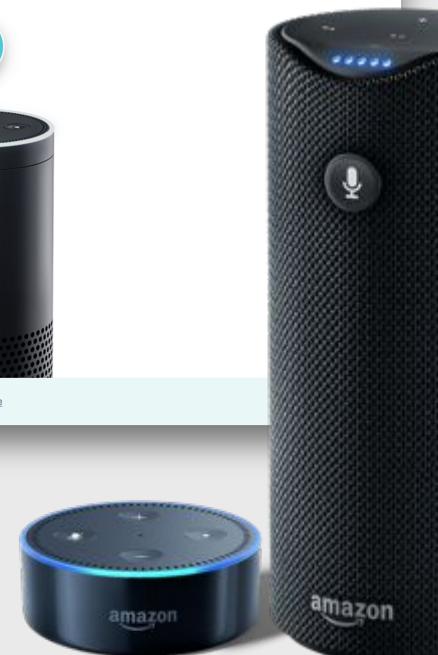
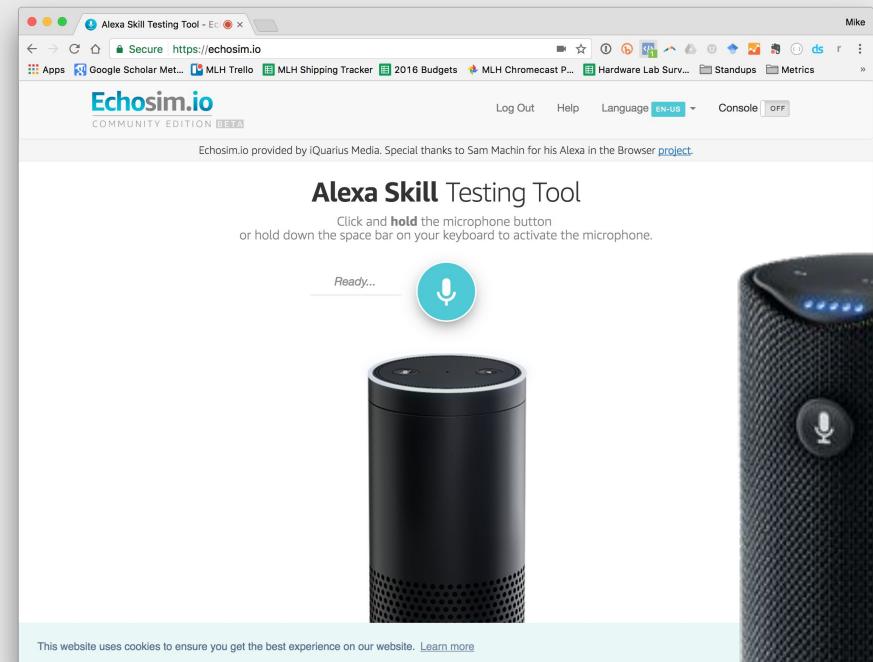
Hear what Alexa would say by clicking "Listen".

Try out Your Skill!

Head to [EchoSim.io](https://echosim.io) to try out your fact.

"Alexa, open [Your Invocation Name]."

If you want to try your skill on an Alexa Device, pair it with your account first!



Troubleshooting Your Skill

If you aren't getting a valid response, check the following:

1. Do you have the right ARN copied from your Developer Portal/Skill into your Lambda function?
2. Are you calling the right invocation name?
3. Are you saying launch, start or open?
4. Are you sure you have no other skills in your accounts with the same invocation name?

Table of Contents

0. Welcome to MLH Localhost
1. Introduction to Alexa & Voice UIs
2. Developing for Alexa
3. Build Your First Alexa Skill
-  4. Review & Quiz
5. Next Steps



Let's recap quickly...

- 1 Voice User Interfaces allow us to physically separate ourselves from devices.
- 2 Amazon Alexa makes it easy for you to create apps (skills) that utilize Voice User Interfaces.
- 3 Alexa takes care of speech recognition and context so you can focus on making a great app.

What did you learn today?

We created a fun quiz to test your knowledge and see what you learned from this workshop.

<http://mlhlocal.host/quiz>

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- 3. Build Your First Alexa Skill**
- 4. Review & Quiz**
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Get credit & freebies from Amazon!

<http://mlhlocal.host/alexa-promo>

Our friends at Amazon Web Services run promotions in certain areas to reward hackers for making skills for the Amazon Alexa Platform.

Fill this out to get credit!

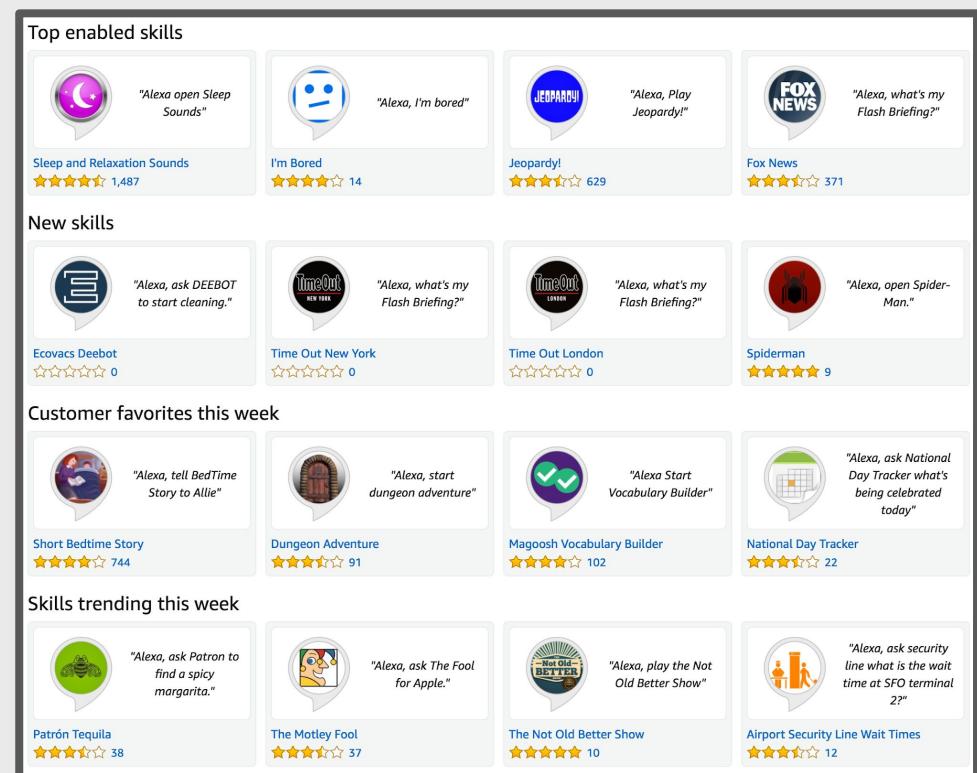


Next Steps: Publish your Skill!

You have a working skill, the next step is to publish it on the Alexa Skill Marketplace.

Instructions

- 1. Complete the “Publishing Information” and “Privacy and Compliance” sections on the developer portal.*
- 2. Ensure that your skill meets the basic requirements.*

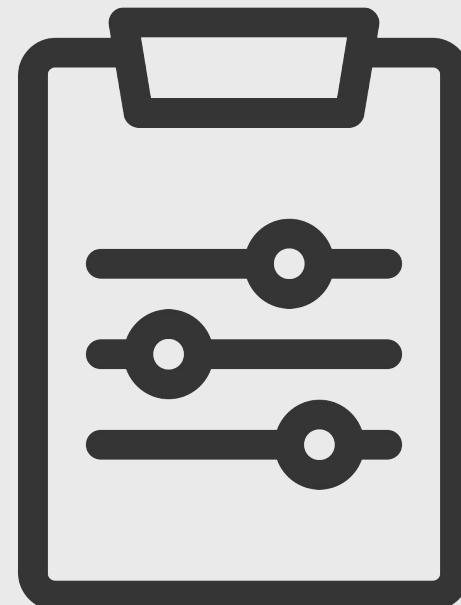


Next Steps: Use Slots to Customize Further

SLOTS enable you to pass additional data to your Lambda function. Use slots to return a fact in a specific category (Ex. “facts about my education”).

Instructions

1. *Read up about Slots and how to use them to pass data to your function.*
2. *Categorize your facts into a handful of groups.*
3. *Customize your function to return a fact based on the user specified category*



Learning shouldn't stop when the workshop ends...



Check your email for access to:

- These workshop slides
- Practice problems to keep learning
- Deeper dives into key topics
- Instructions to join the community
- More opportunities from MLH!

Workshop

Hacking with Amazon Alexa