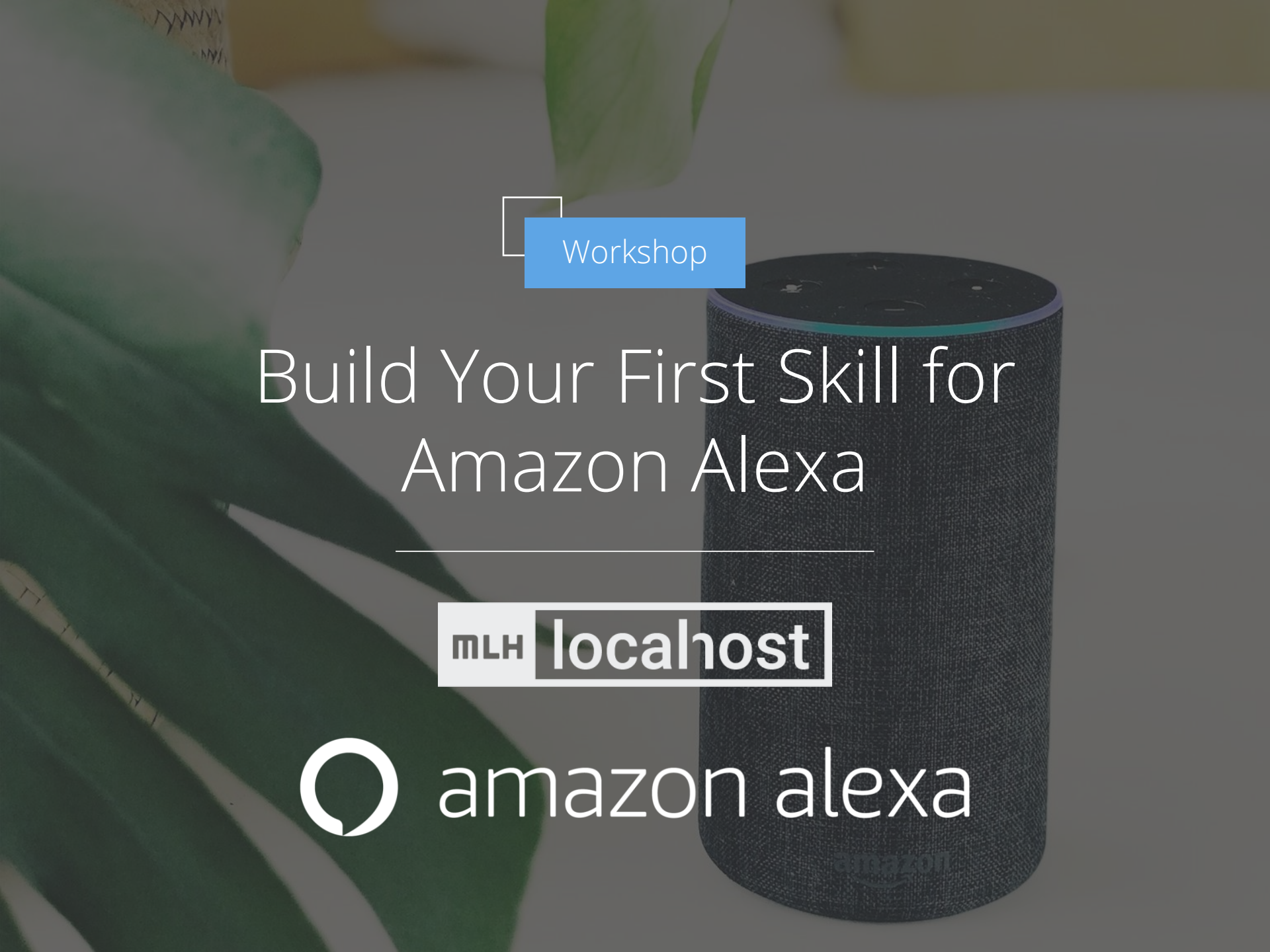

Workshop

Build Your First Skill for Amazon Alexa

MLH localhost

amazon alexa

1

Using your Web Browser,
Open this URL:

http://mlhlocal.host/lhd-resources

2

Click on the workshop you're attending, and find:

- Setup Instructions
- The Code Samples
- A demo project
- A Workshop FAQ
- These Workshop Slides
- More Learning Resources

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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

What is Alexa?

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

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?”

What can you build with Alexa?

"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

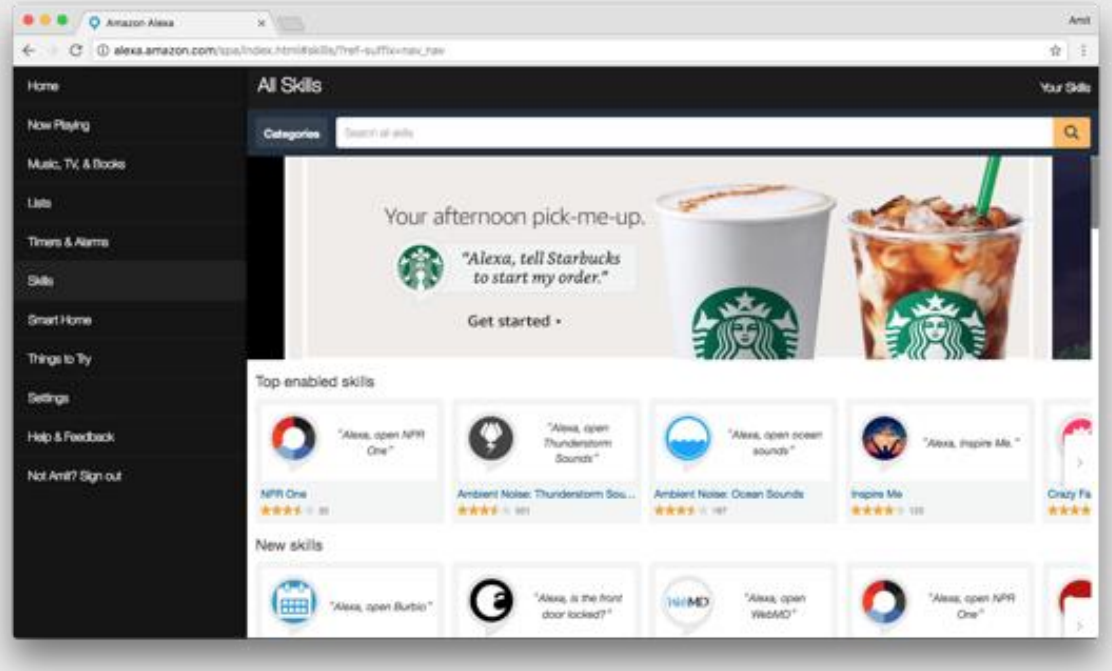
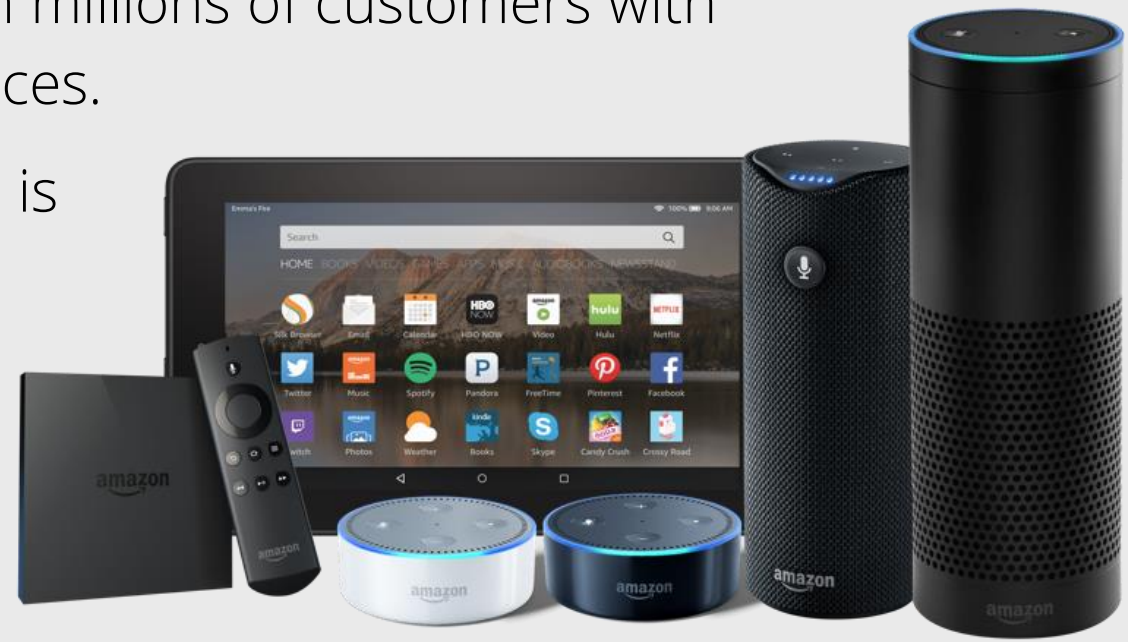


Table of Contents

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:

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

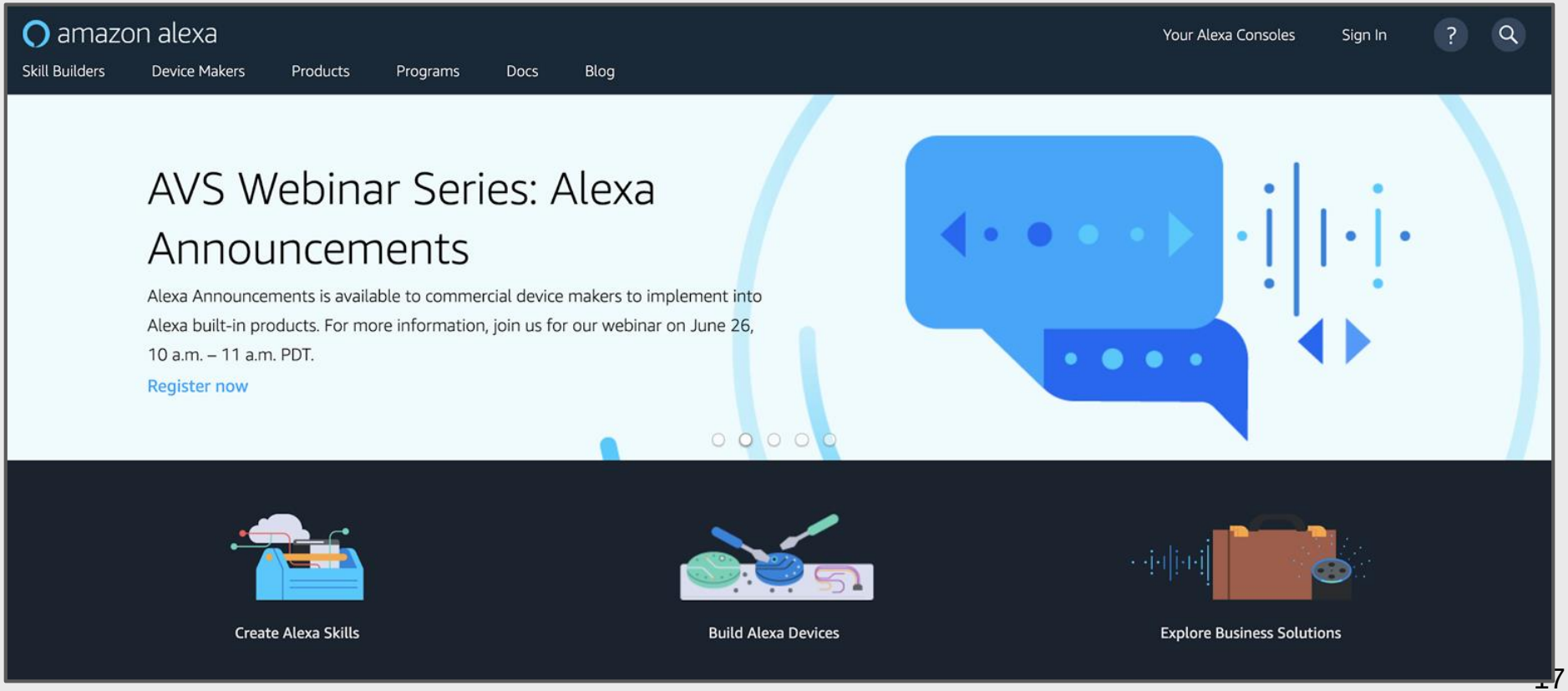
1. **Back End -** The logic code that actually powers our app. Usually this is written using the Alexa Code Editor.

Table of Contents

Now that you know more about how Alexa works, let's make an Alexa Developer account.

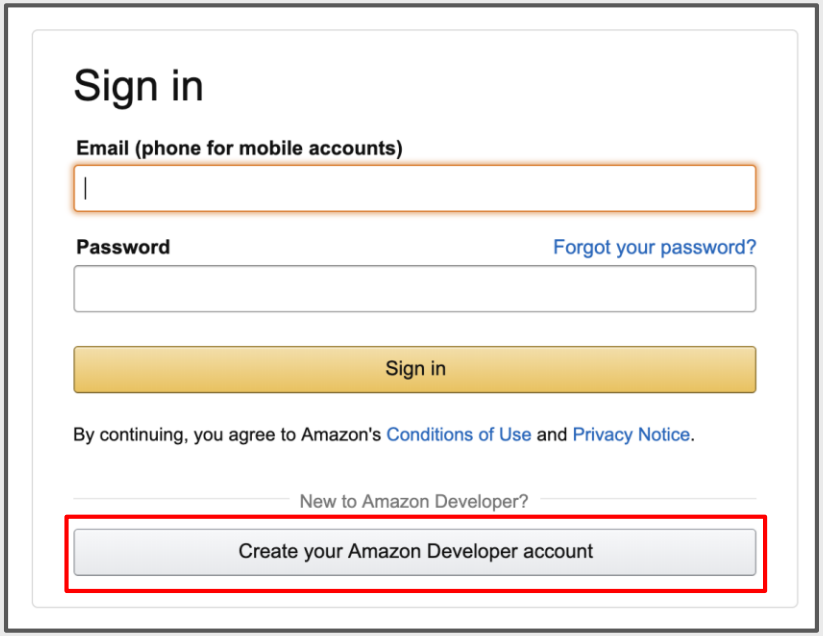
Sign into the Amazon Developer Portal

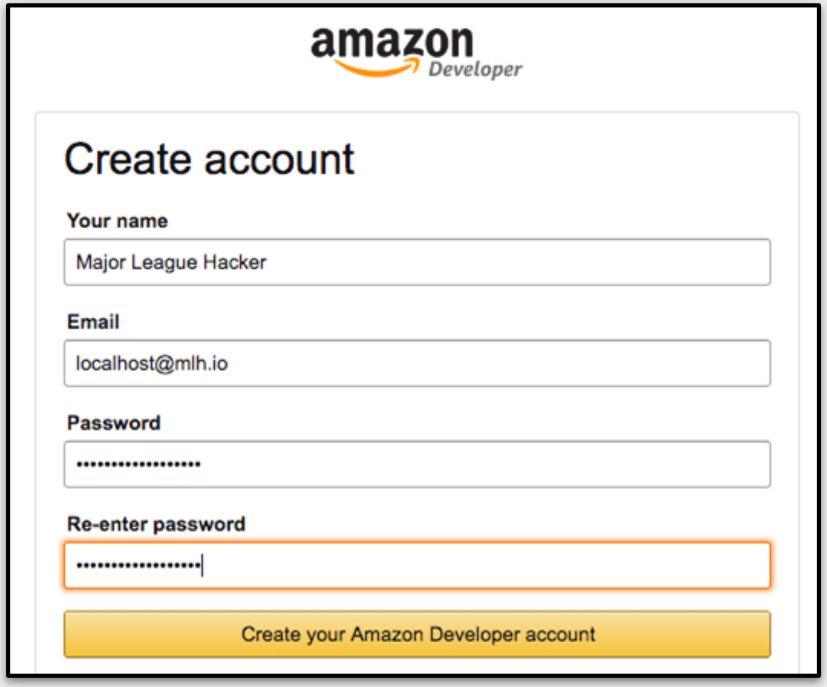
1. Navigate to **mlhlocal.host/alexa-portal**.
2. Click **Sign In**.



Create your account

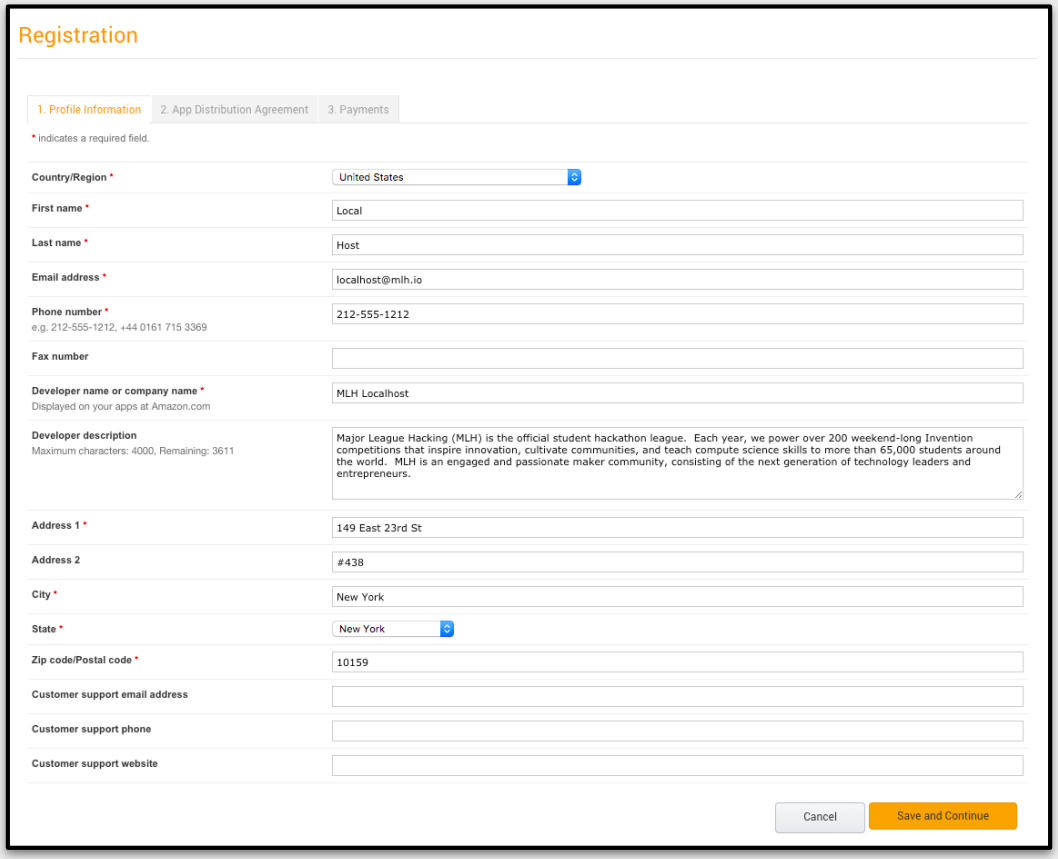
3. If you have an Amazon Developer Account, sign in. If you do not, select **Create your Amazon Developer account**.





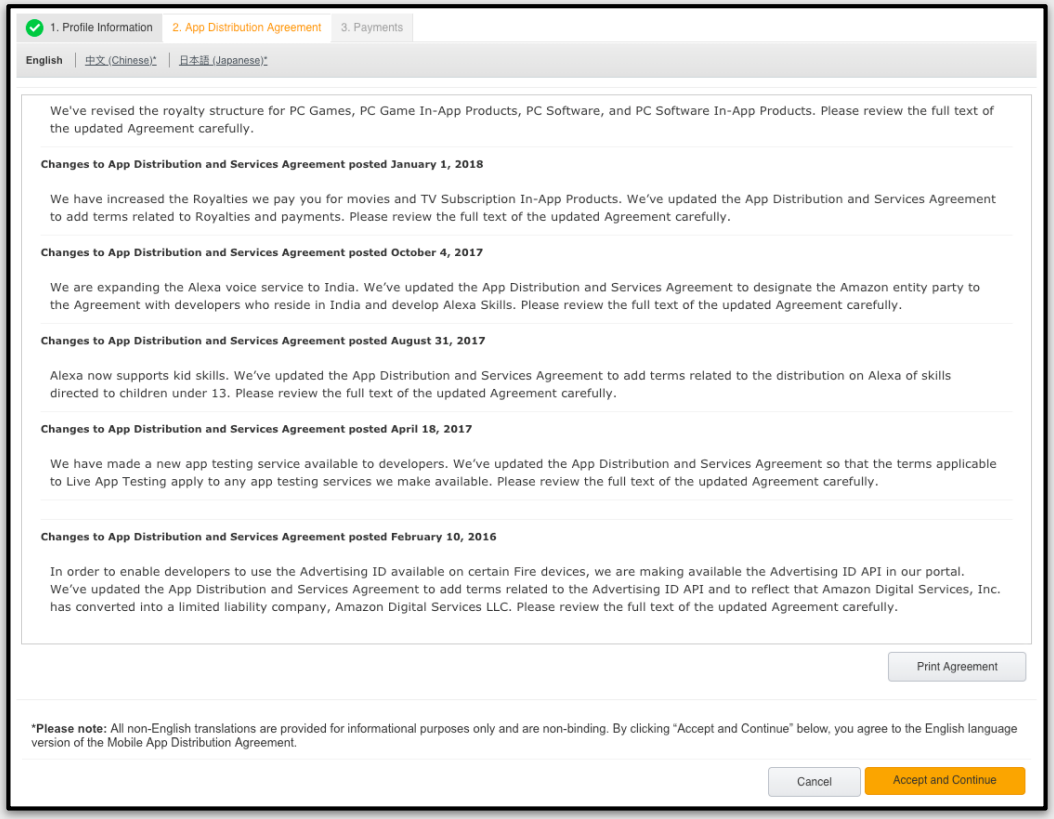
Create your Developer Profile

4. Fill out the registration form.



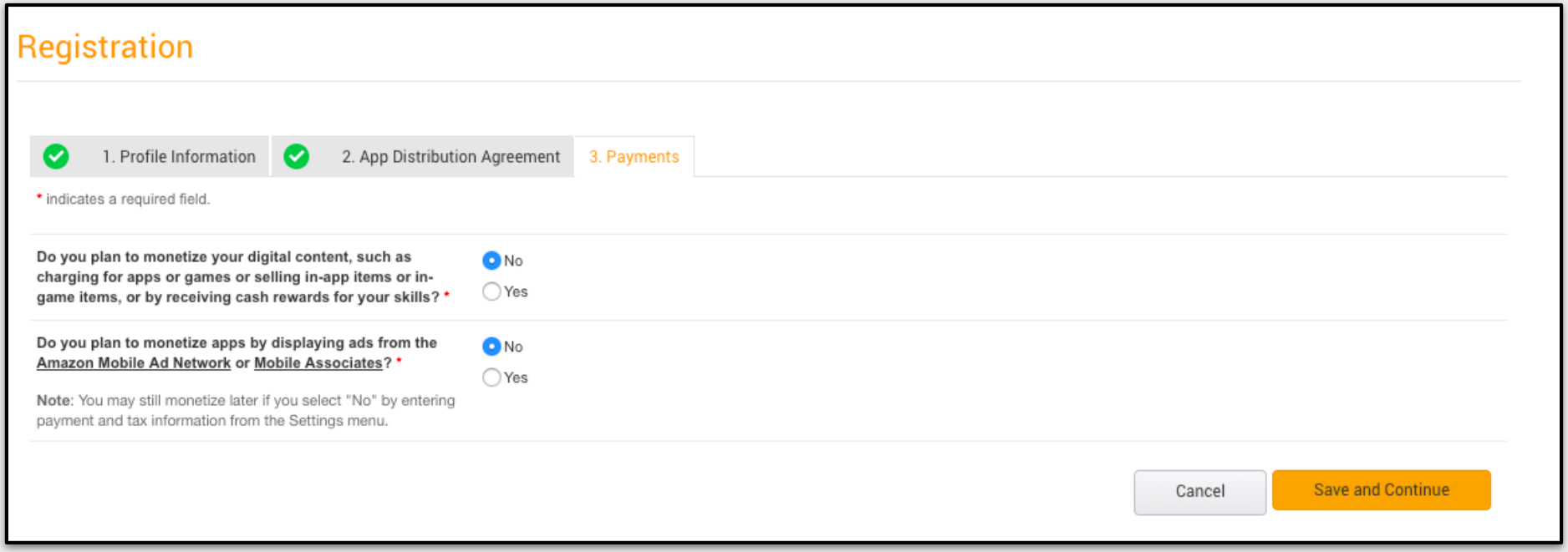
Create your Developer Profile

5. Agree to the Terms of Use.



Create your Developer Profile

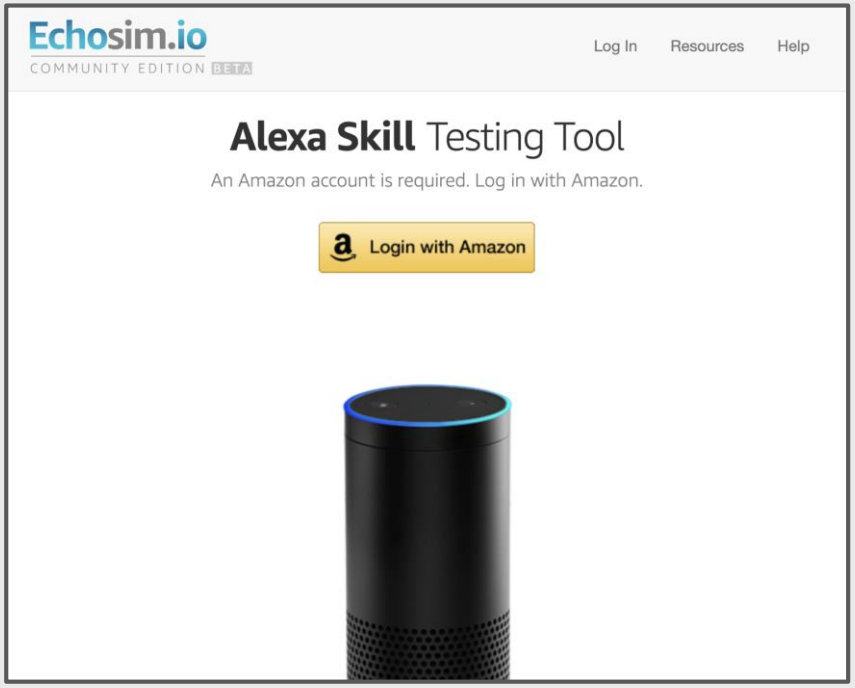
6. Select "**No**" for both options on this screen.
7. Save and Continue.

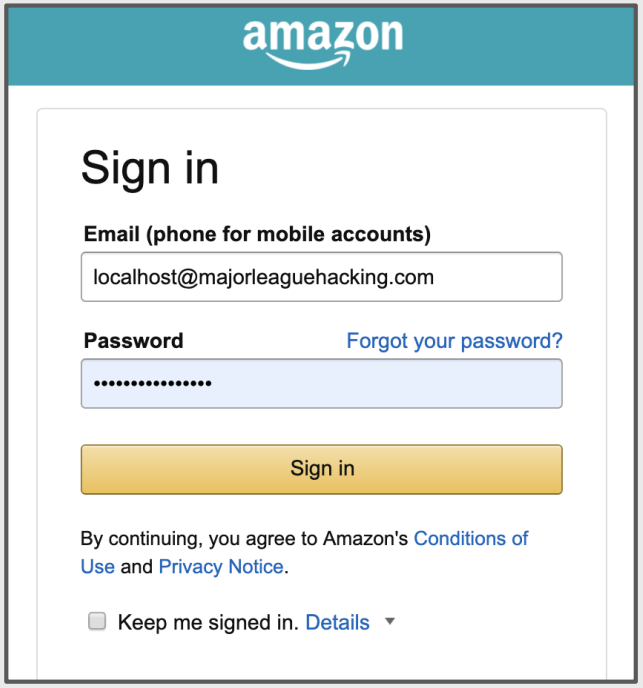


Now that you have an Amazon Developer account, we can test the skill we're going to build!

Demo: Cake Walk Skill

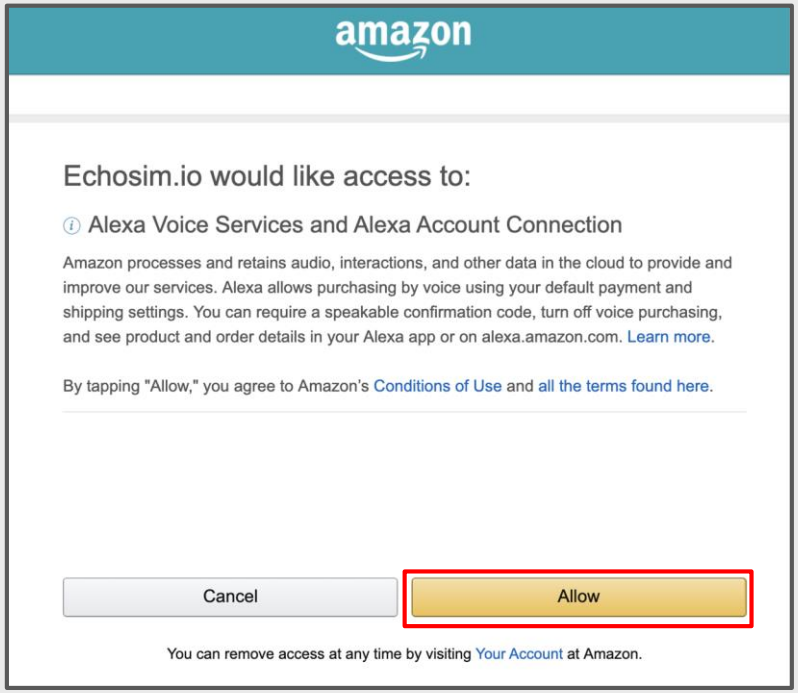
1. In another tab in your browser, navigate to **Echosim.io**.
2. Select **Login with Amazon**.
3. Enter your information and sign in.

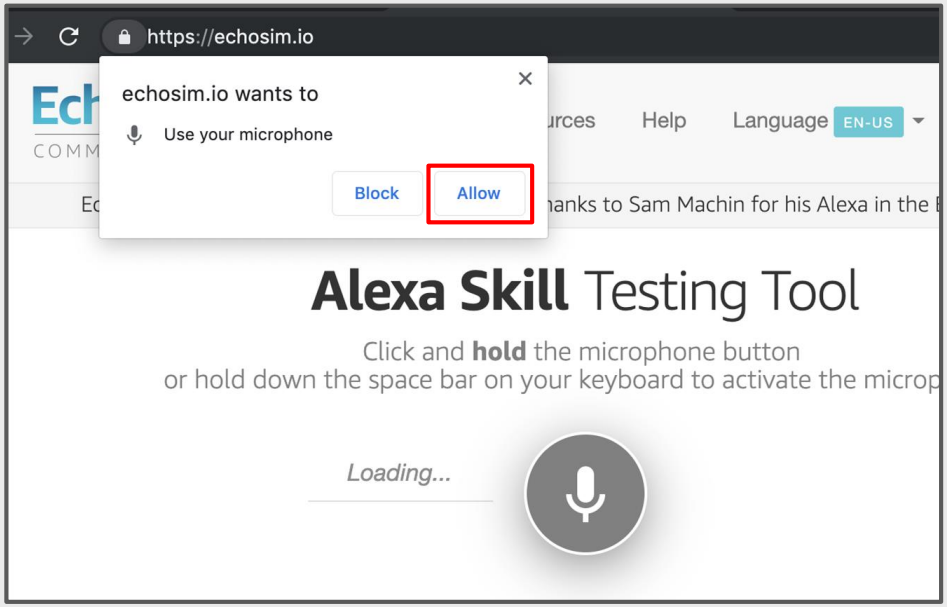




Demo: Cake Walk Skill

4. Select **Allow** to connect your account.
5. If prompted, allow the browser to use your microphone.



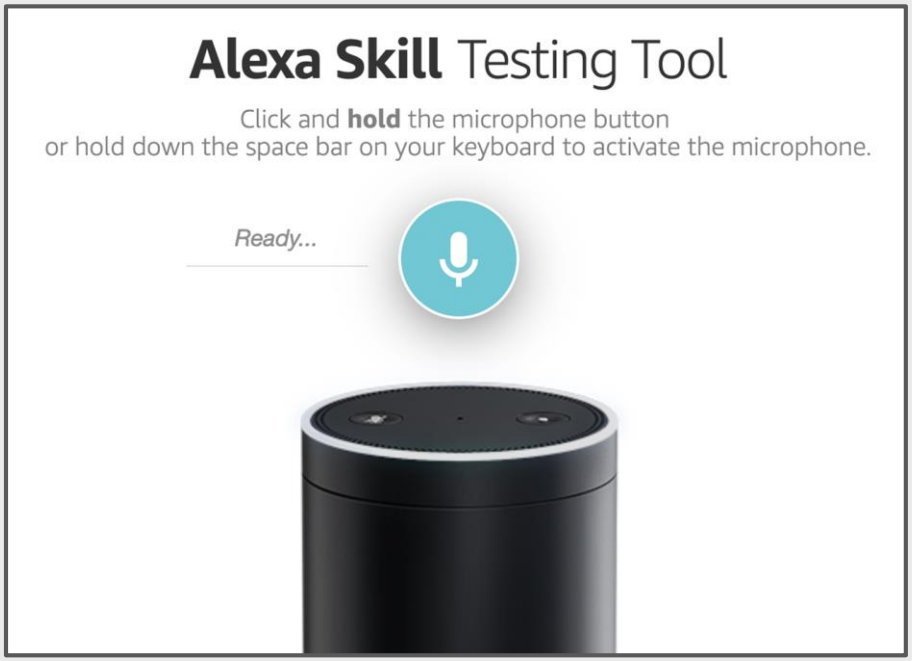


Demo: Cake Walk Skill

6. Select the microphone button. Then, say the following:

"Alexa, open Cake Walk."

"Alexa, ask Cake Walk for my birthday."

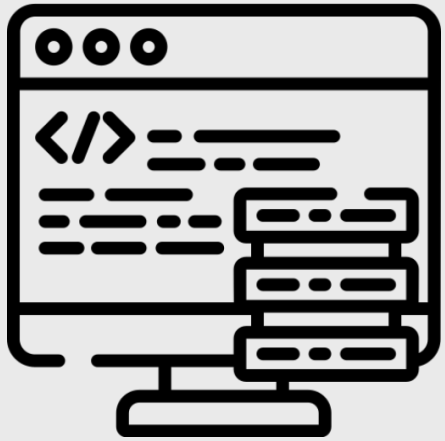


Awesome! Now that you know what you're going to build, let's return to the Alexa Developer Portal.

Steps to Build Your Skill:

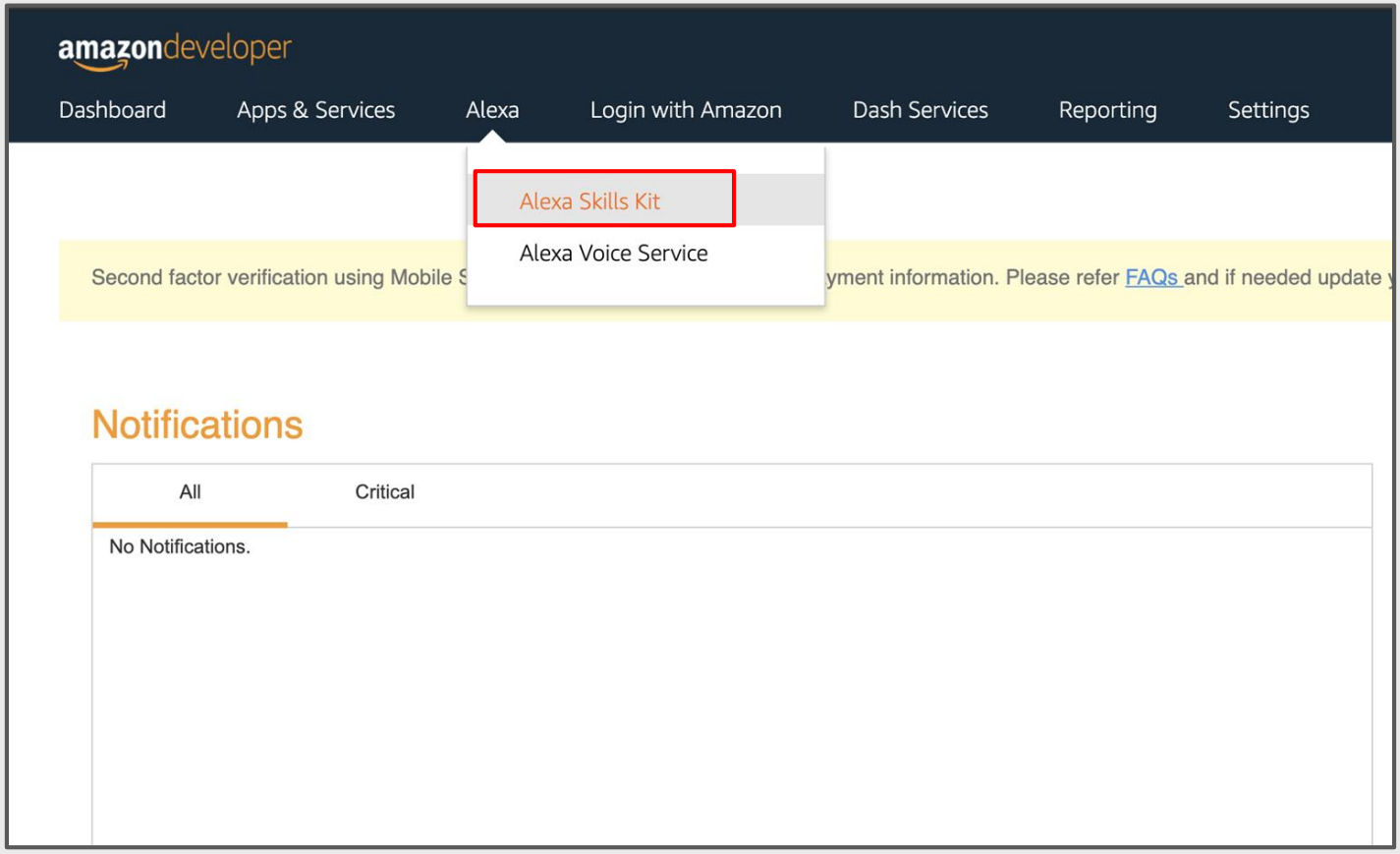
To build your first skill, we'll complete the following steps:

1. Create an Alexa Skill in the Developer Portal
2. Write the Backend Code for Your Skill
3. Test your Skill
4. Publish Your Skill



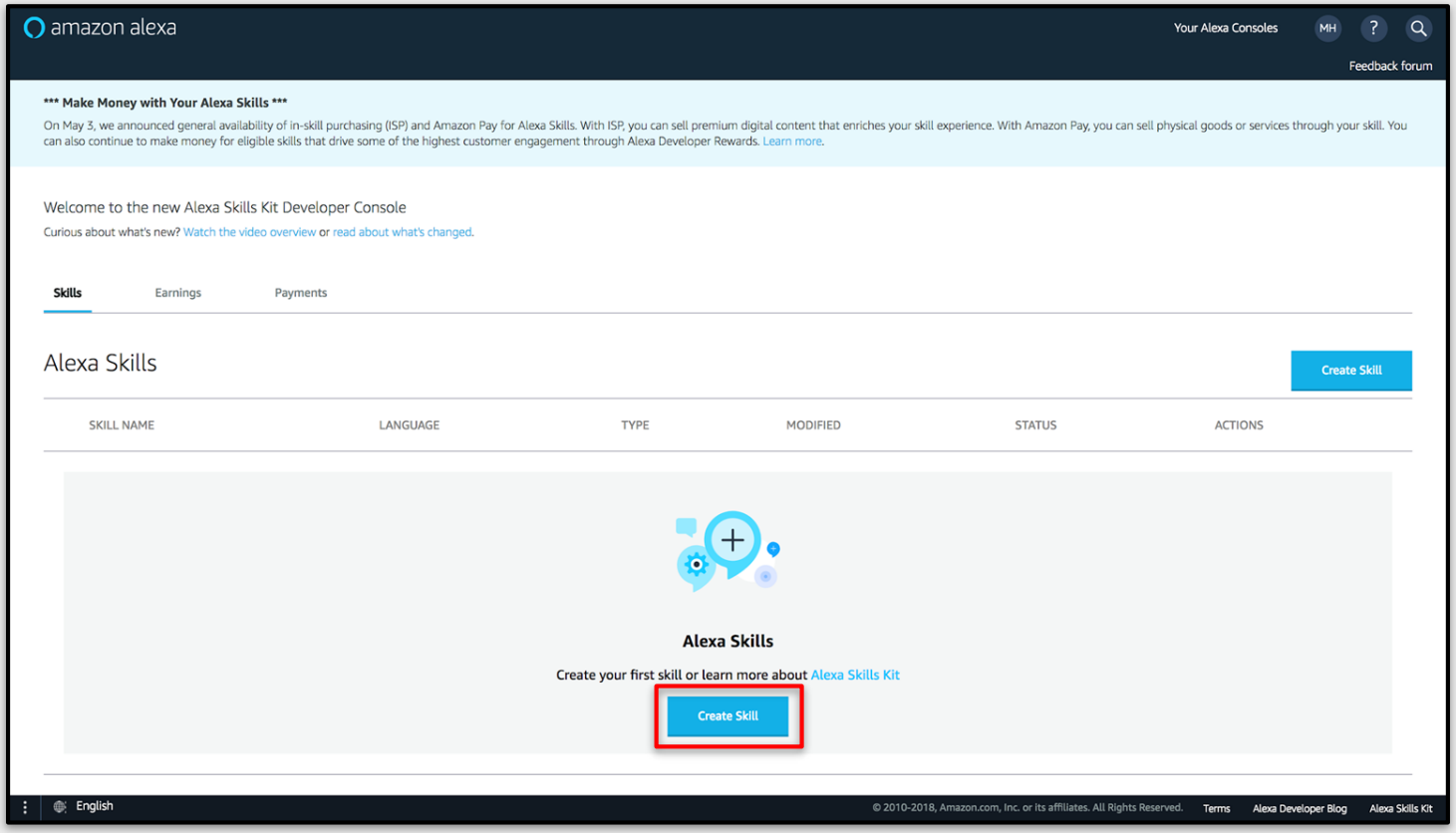
Create a New Alexa Skill

1. Navigate to Alexa Skills Kit.



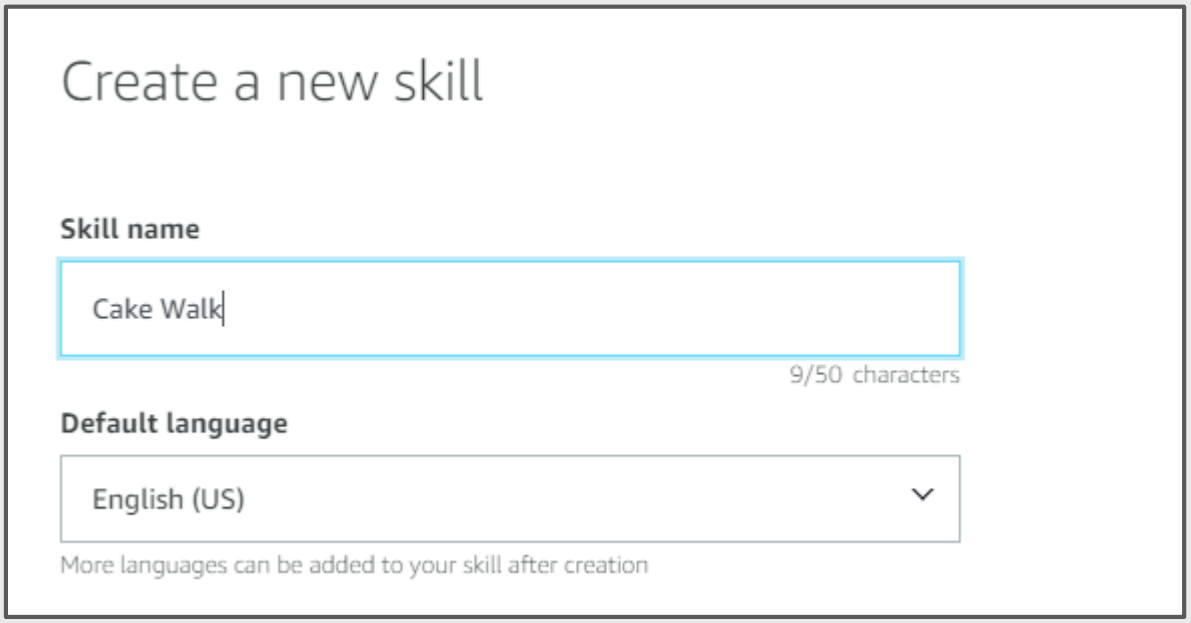
Create a New Alexa Skill

2. Select **Create Skill**.



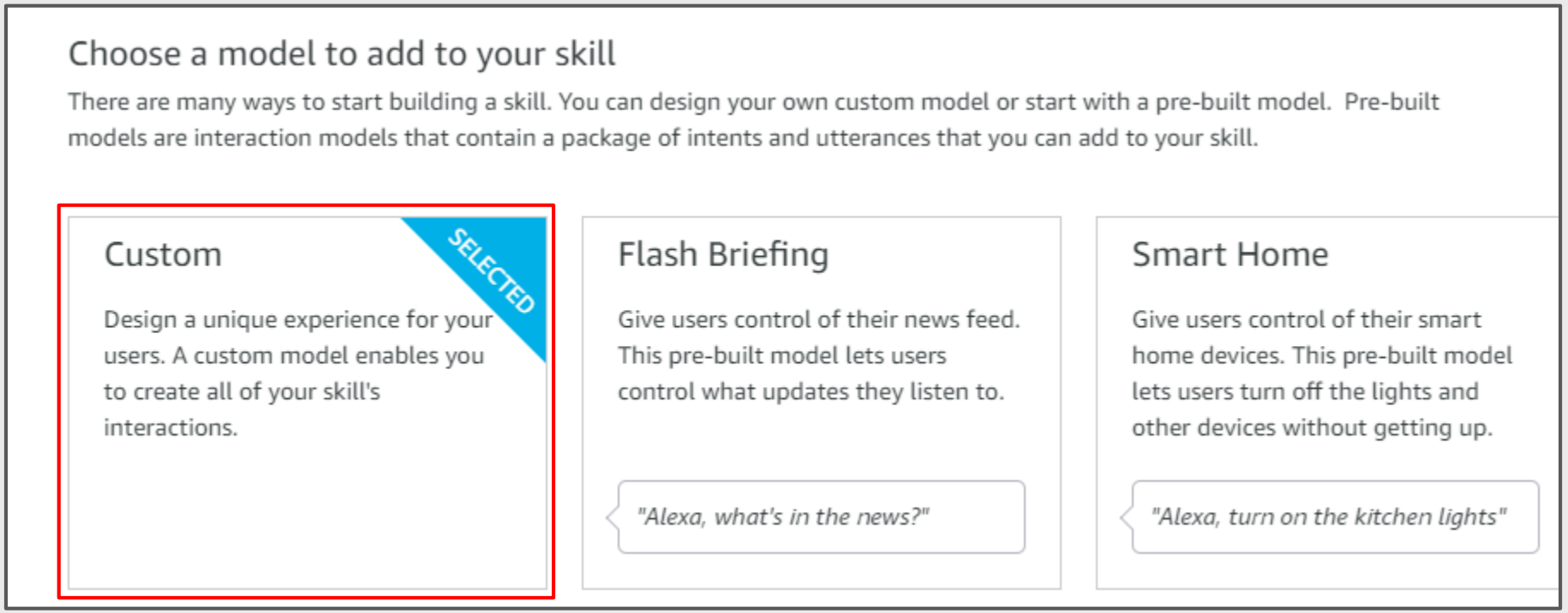
Create a New Alexa Skill

3. Name your skill Cake Walk (or whatever you wish).



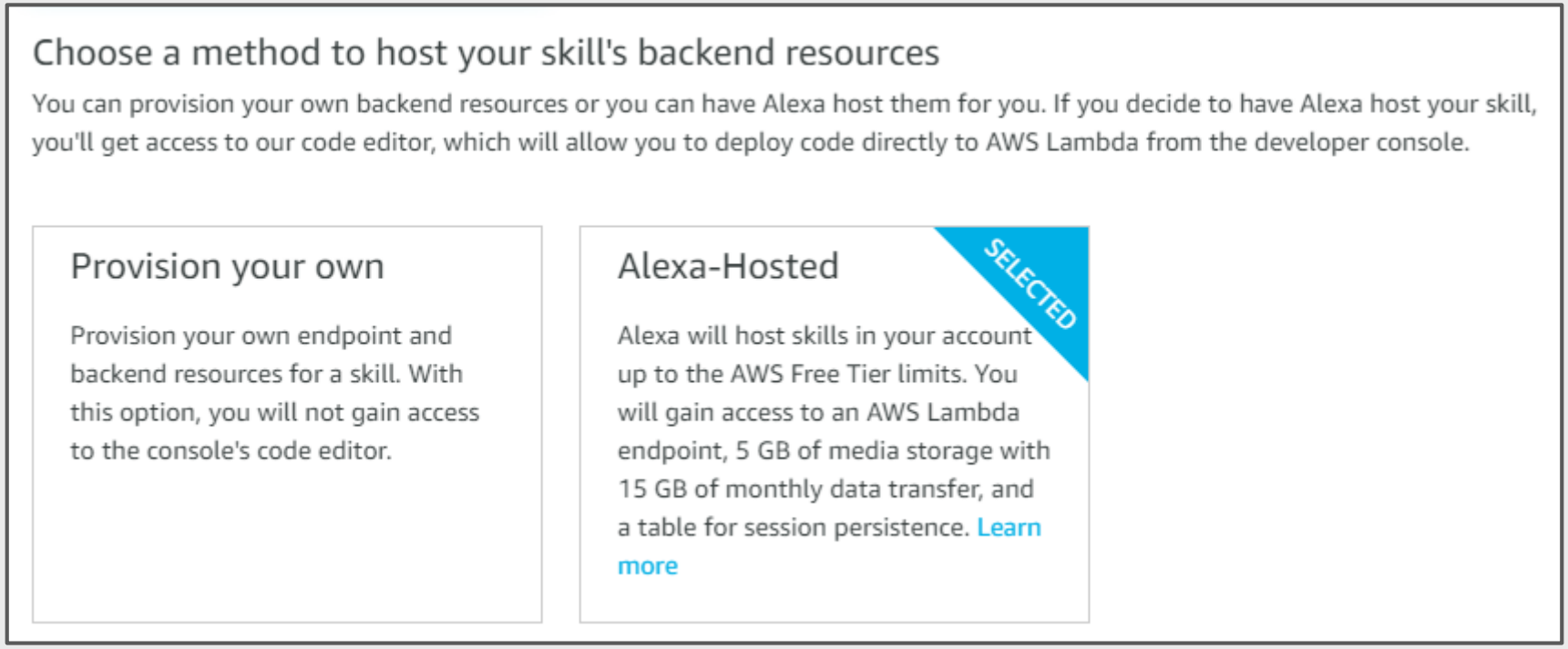
Create a New Alexa Skill

4. Select **Custom** for Skill Model Type.



Create a New Alexa Skill

5. Select **Alexa-Hosted** for Skill Backend Resource.



Create a New Alexa Skill

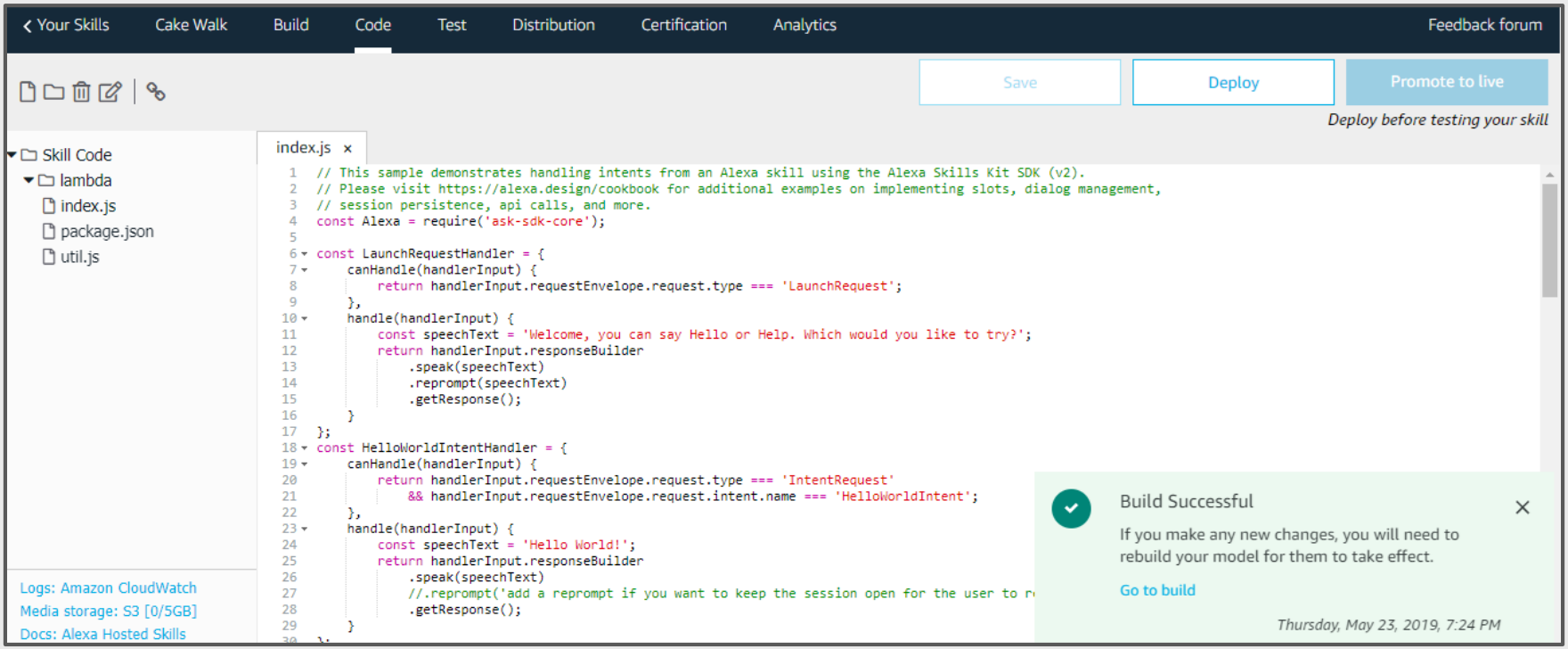
6. Scroll back to the top. Select **Create skill** in the top right corner.

It will take about a minute for your skill to provision. Then, you will be redirected to the Skill Builder.

Table of Contents

Code The Backend

1. Select the Code tab at the top of the Skill Builder. Let's understand what the code inside **`index.js`** does.



Code Review: The Handlers Object

- Alexa skills are composed of **`handlers`**.
- A **`handler`** object tells Alexa how to handle various actions.
- **`LaunchRequestHandler{}`** contains the code that our Skill will run when someone invokes our skill.

Index.js

```
6  const LaunchRequestHandler = {
7      canHandle(handlerInput) {
8          return handlerInput.requestEnvelope.request.type === 'LaunchRequest';
9      },
10     handle(handlerInput) {
11         const speechText = 'Welcome, you can say Hello or Help. Which would you like to try?';
12         return handlerInput.responseBuilder
13             .speak(speechText)
14             .reprompt(speechText)
15             .getResponse();
16     }
17 };
```

Code Review: The Handler Function

- In the last lines of **`index.js`**, we export each handler so that they can be used by other parts of the app.
- These are the default handlers included with the Cake Walk Skill. You can also write your own!

Index.js

```
108 exports.handler = Alexa.SkillBuilders.custom()
109     .addRequestHandlers(
110         LaunchRequestHandler,
111         HelloWorldIntentHandler,
112         HelpIntentHandler,
113         CancelAndStopIntentHandler,
114         SessionEndedRequestHandler,
115         IntentReflectorHandler) // IntentReflectorHandler is last to not ove
116     .addErrorHandlers(
117         ErrorHandler)
118     .lambda();
119
```

Edit your Code

1. When a user opens an Alexa Skill, Alexa replies with a greeting to let the user know it has opened. Customize what Alexa will say when users invoke your skill on line 11.

Index.js

```
 6 const LaunchRequestHandler = {
 7     canHandle(handlerInput) {
 8         return handlerInput.requestEnvelope.request.type === 'LaunchRequest';
 9     },
10     handle(handlerInput) {
11         const speechText = 'Welcome, you can say Hello or Help. Which would you like to try?';
12         return handlerInput.responseBuilder
13             .speak(speechText)
14             .reprompt(speechText)
15             .getResponse();
16     }
17 };
```

Edit your Code

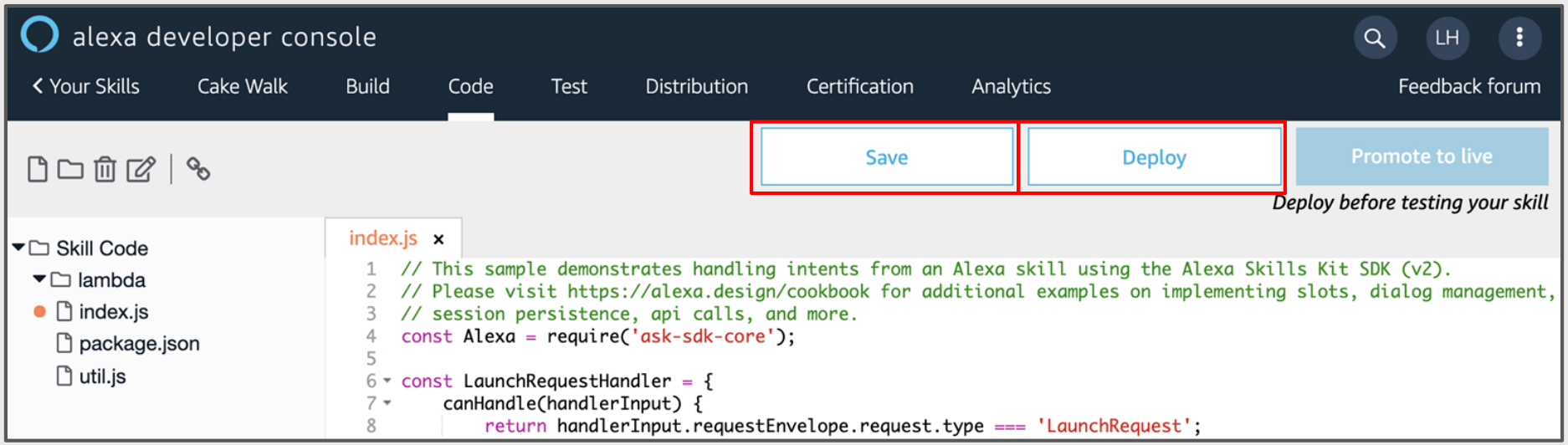
2. The Alexa Skills SDK has some built in functions to help us. One of those is **`.reprompt()`**, which tells the app to repeat. We don't want to repeat, so add 2 slashes (//) in front of **`.reprompt()`** to comment it out.

Index.js

```
 6 const LaunchRequestHandler = {
 7     canHandle(handlerInput) {
 8         return handlerInput.requestEnvelope.request.type === 'LaunchRequest';
 9     },
10     handle(handlerInput) {
11         const speechText = 'Welcome, you can say Hello or Help. Which would you like to try?';
12         return handlerInput.responseBuilder
13             .speak(speechText)
14             //.reprompt(speechText)
15             .getResponse();
16     }
17 };
```

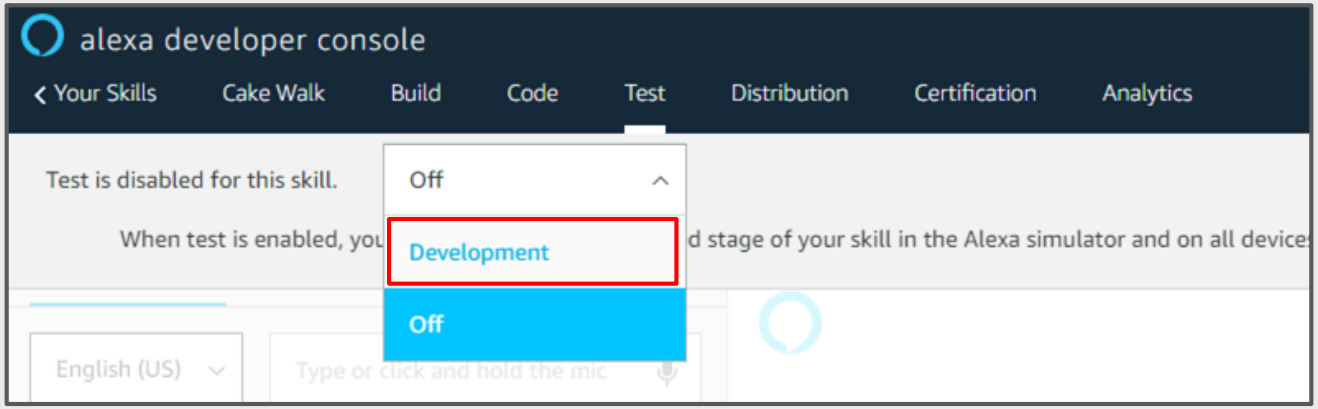
Save And Deploy

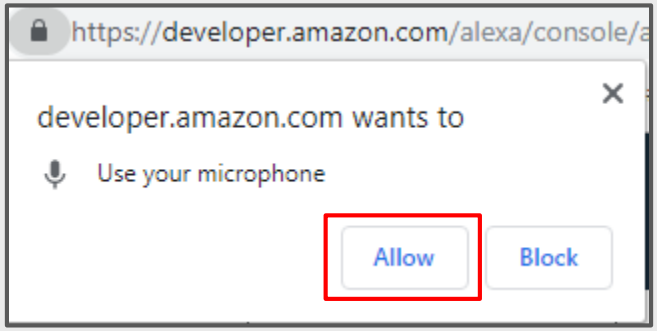
3. Save your Skill.
4. Then Deploy it so that we can test it!



Test Your Skill

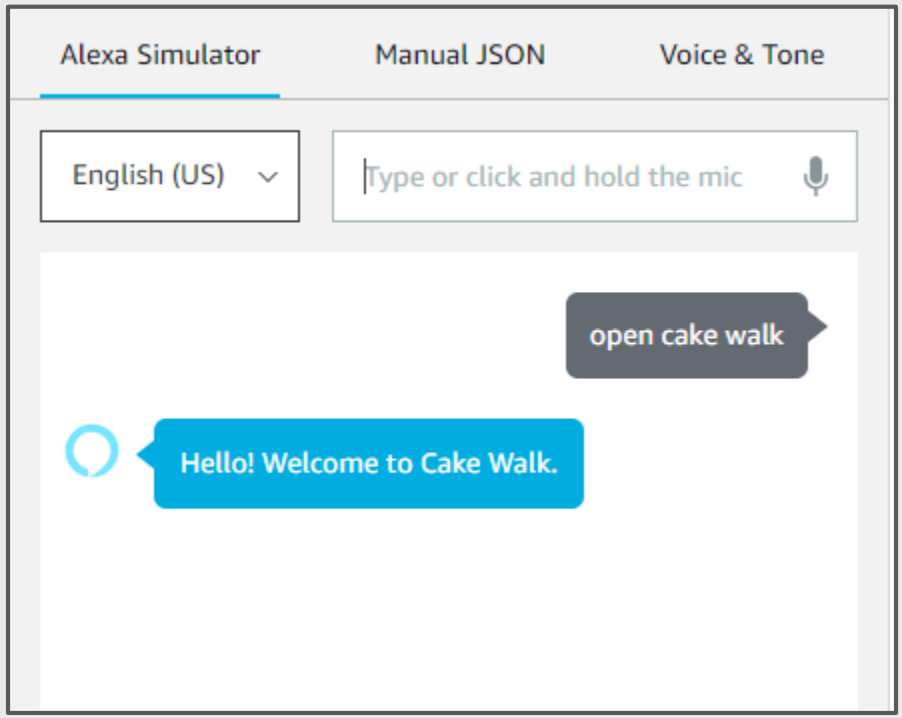
5. Select the **Test** tab at the top of the page.
6. Enable testing by clicking **Development**.
7. Allow microphone access if prompted.





Test Your Skill

8. You can speak to your Skill or use the type in the text text field. Say "Open Cake Walk."



Great! Now you have created and tested a simple skill.

Let’s improve this now.

Steps to Build Your Skill

Now that your skill is working, we're going to add the following functionality:

1. Ask the User a question.
2. Listen for the answer.
3. Respond.

Customizing Your Skill

We will now ask the user for their birthday when the app launches.

1. Return to the Code tab.
2. In **index.js**, edit the speechText variable to ask for the user's birthday.

```
const LaunchRequestHandler = {
    canHandle(handlerInput) {
        return handlerInput.requestEnvelope.request.type === 'LaunchRequest';
    },
    handle(handlerInput) {
        const speechText = 'Welcome to Cake Walk! When is your birthday?';
        return handlerInput.responseBuilder
            .speak(speechText)
            //.reprompt(speechText)
            .getResponse();
    }
};
```

Customizing Your Skill

3. Now we want to allow the Skill to re-prompt the user. Remove the slashes you added before.

```
const LaunchRequestHandler = {
    canHandle(handlerInput) {
        return handlerInput.requestEnvelope.request.type === 'LaunchRequest';
    },
    handle(handlerInput) {
        const speechText = 'Welcome to Cake Walk! When is your birthday?';
        return handlerInput.responseBuilder
            .speak(speechText)
            .reprompt(speechText)
            .getResponse();
    }
};
```

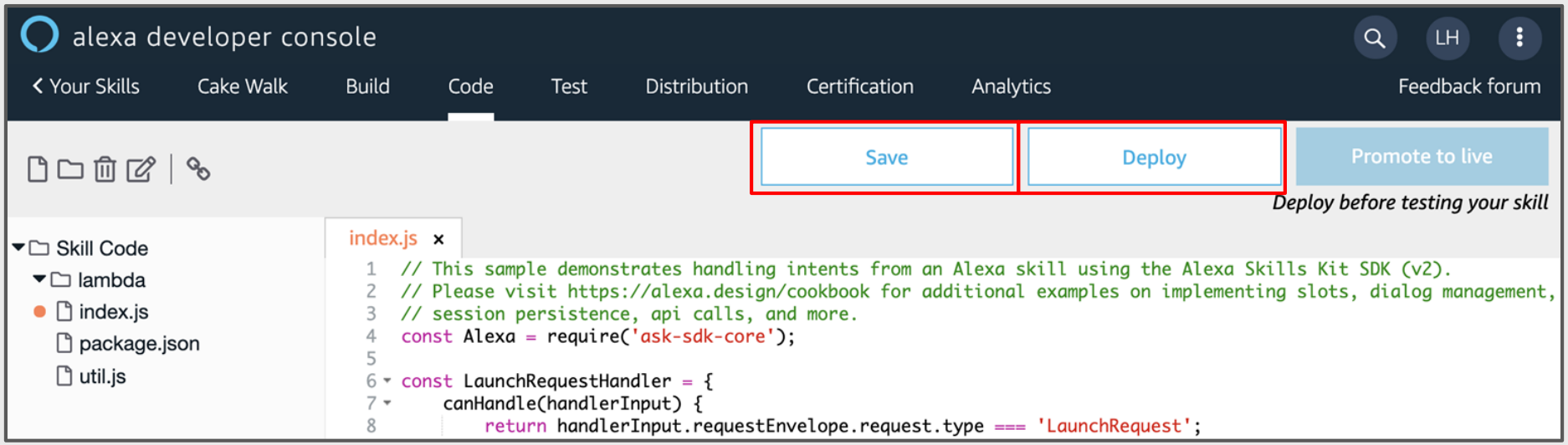
Customizing Your Skill

4. The best practice is to keep the speech and reprompt text different, so now we're going to add a variable for the reprompt text. Add Line 12 to your code.
5. Then, change the variable name on Line 15 to **`repromptText`**.

```
 6 const LaunchRequestHandler = {
 7     canHandle(handlerInput) {
 8         return handlerInput.requestEnvelope.request.type === 'LaunchRequest';
 9     },
10     handle(handlerInput) {
11         const speechText = 'Welcome to Cake Walk! When is your birthday?';
12         const repromptText = "Sorry, I didn't catch that. When is your birthday?";
13         return handlerInput.responseBuilder
14             .speak(speechText)
15             .reprompt(repromptText)
16             .getResponse();
17     }
18 };
```

Save And Deploy

6. Save your Skill.
7. Then Deploy it so that we can test it!

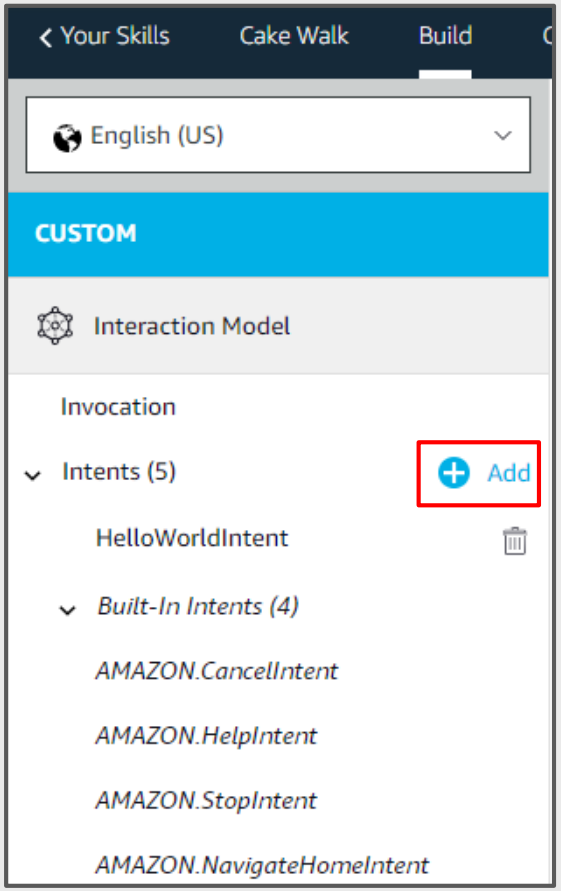


Great! You told Alexa to ask for input. But how are you going to save it and respond to it?

Create An Intent

We need to create an intent!

1. Return to the **Build** tab.
2. You should be able to see a list of **Intents** on the left hand side.
3. Click on the **Add** button to create a new intent.

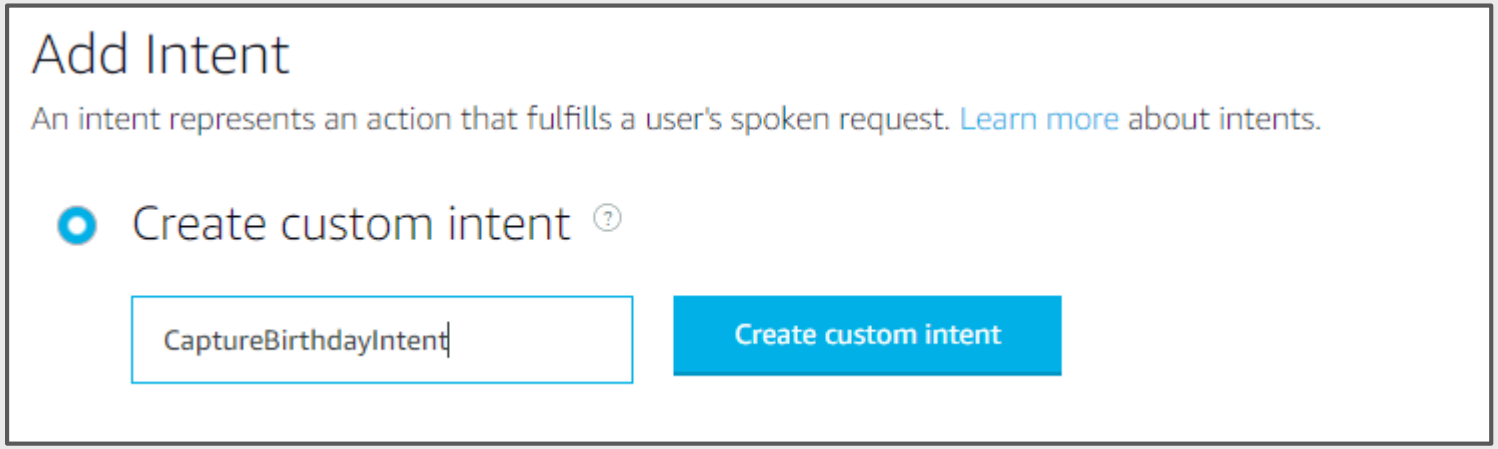


Key Term

Intent: an action to fulfill a user's request

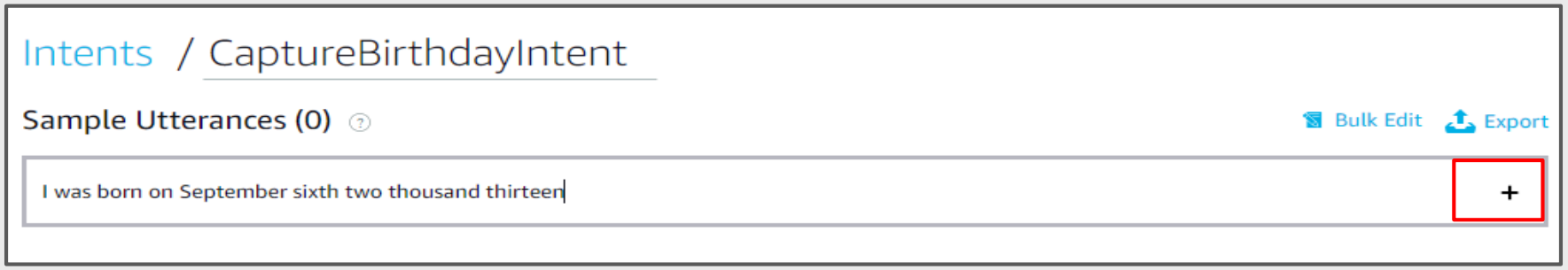
Create An Intent

4. Name the intent **`CaptureBirthdayIntent`**, and click on **Create custom intent**.



Customize your Utterances

5. In the Sample Utterances field, type I was born on September Sixth Two Thousand Fourteen.
6. Add a few other ways someone might tell Alexa their birthday, such as, "My birthday is October Thirteenth Nineteen Eighty-Nine" or simply, "March Fourth."



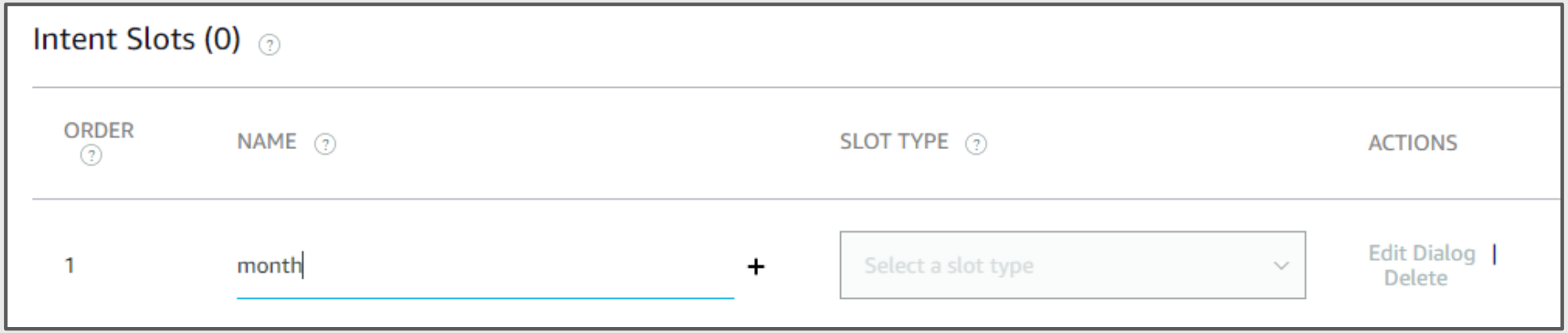
Add Slots

We need Alexa to collect 3 pieces of information - the date, the month and the year of the user's birthday. These are called **slots.**

Key Term

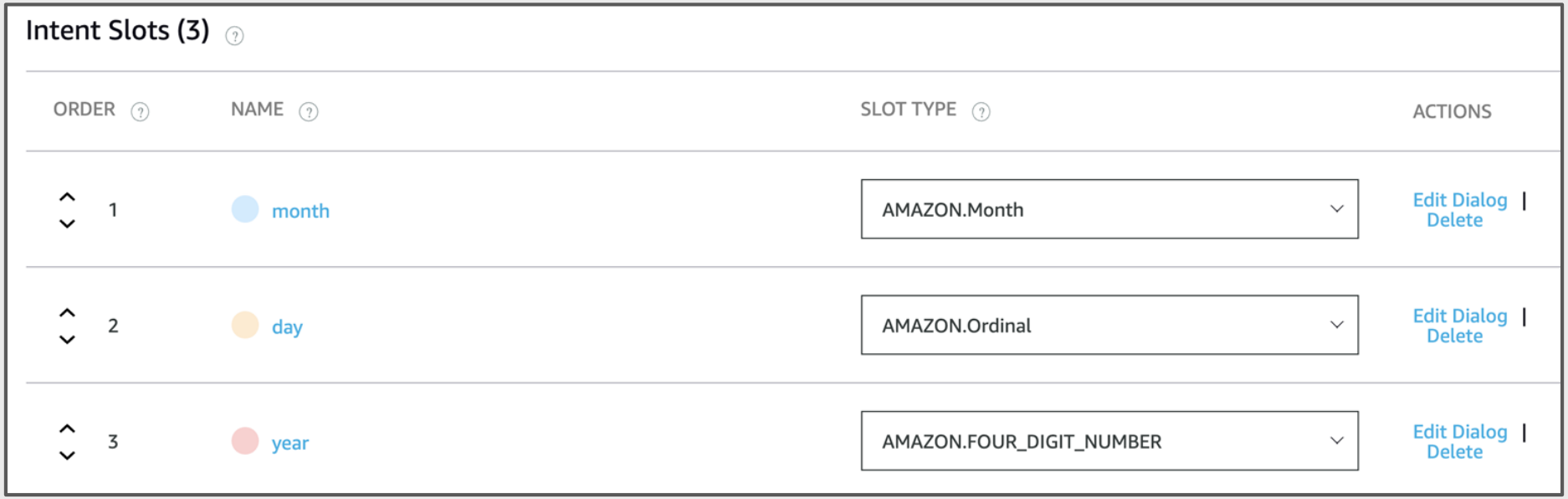
Slot: a piece of information Alexa can capture.

1. Scroll down to the Intent slots section.
2. Name the slot `month` and click the `+` button.



Add Slots

3. Add slots for day and year as well.
4. SLOT TYPE for Month is amazon.month
5. Date is amazon.ordinal. Year is amazon.fourdigit
6. Save.



Add More Sample Utterances

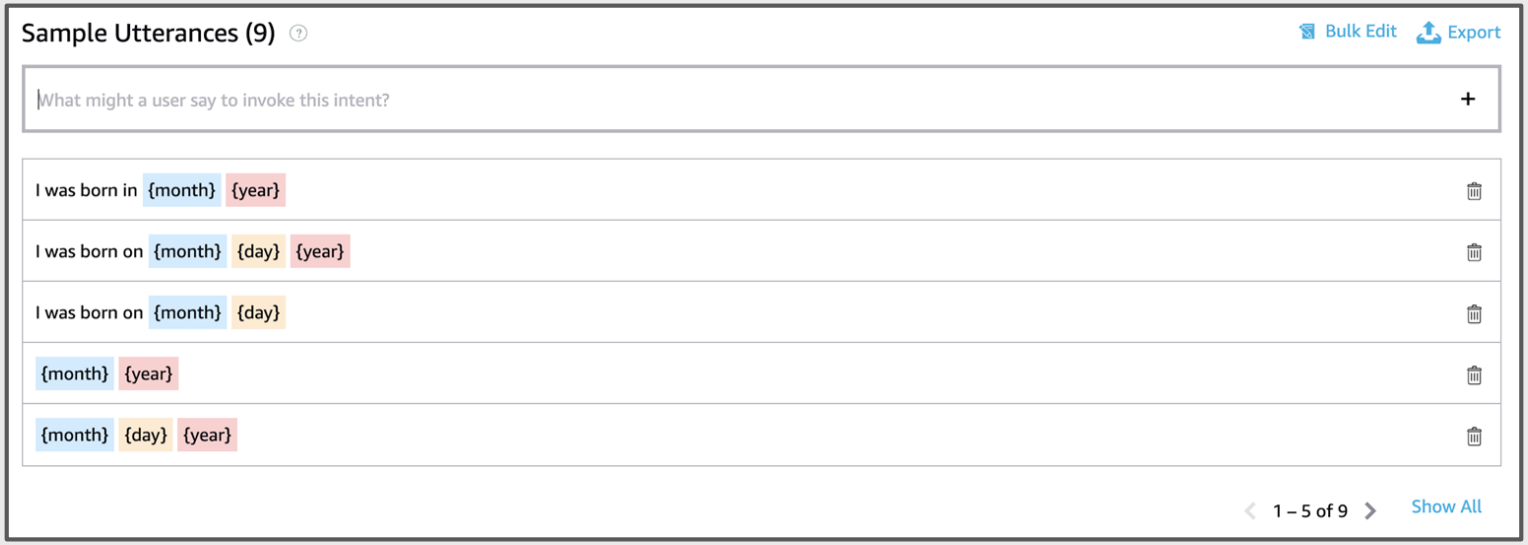
In the sample utterances, we can replace exact words with the slot variables. For example,

`I was born on September sixth two thousand thirteen`

can be written as

`I was born on {month} sixth two thousand thirteen`

Add the following sample utterances to the list as well:



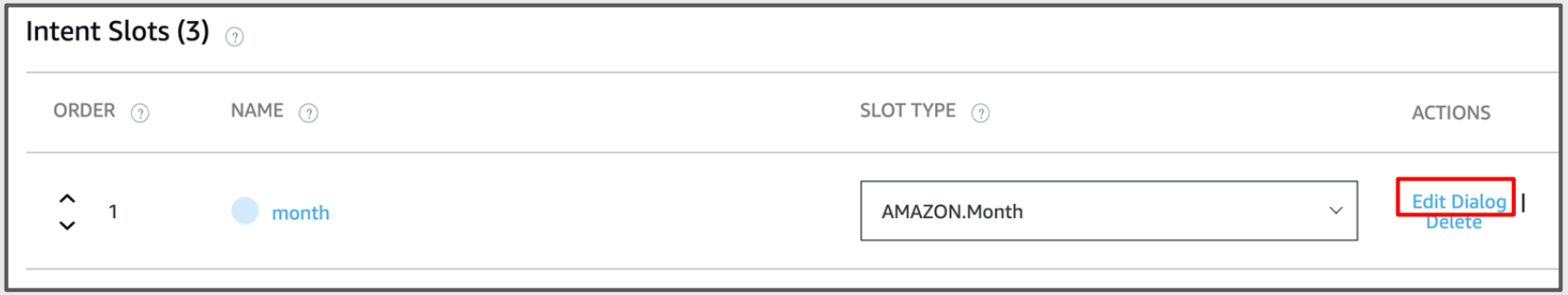
Now Alexa has a way to ask for input and somewhere to save it. But what if it goes wrong?

Add Dialog Management

- What if the user does not give out all the information in one go? What if he gives only the month or date?
- Dialog management can help us get the information to fill the missing slots.
- If you need a given value from the user, you can designate a slot as required and Alexa will ensure that the value of the slot is collected.

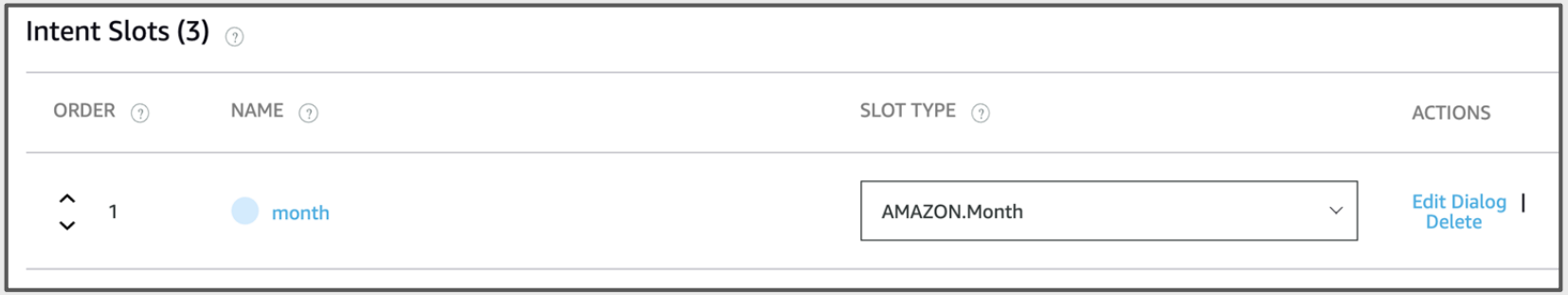
Add Dialog Management

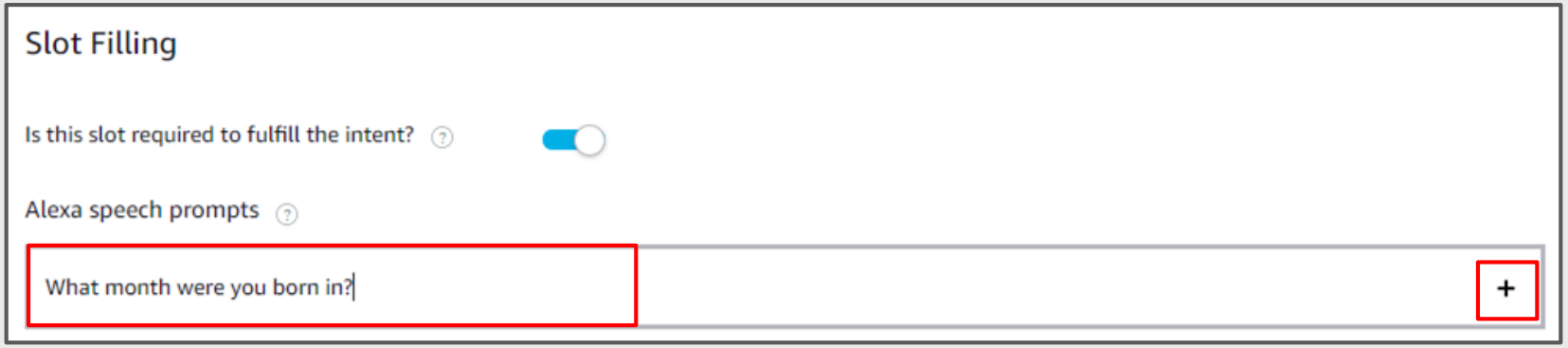
1. Go back to the Intent slots section. Click on the **Edit Dialog** option next to the month slot.
2. Turn on **Is this slot required to fulfill the intent?**



Add Dialog Management

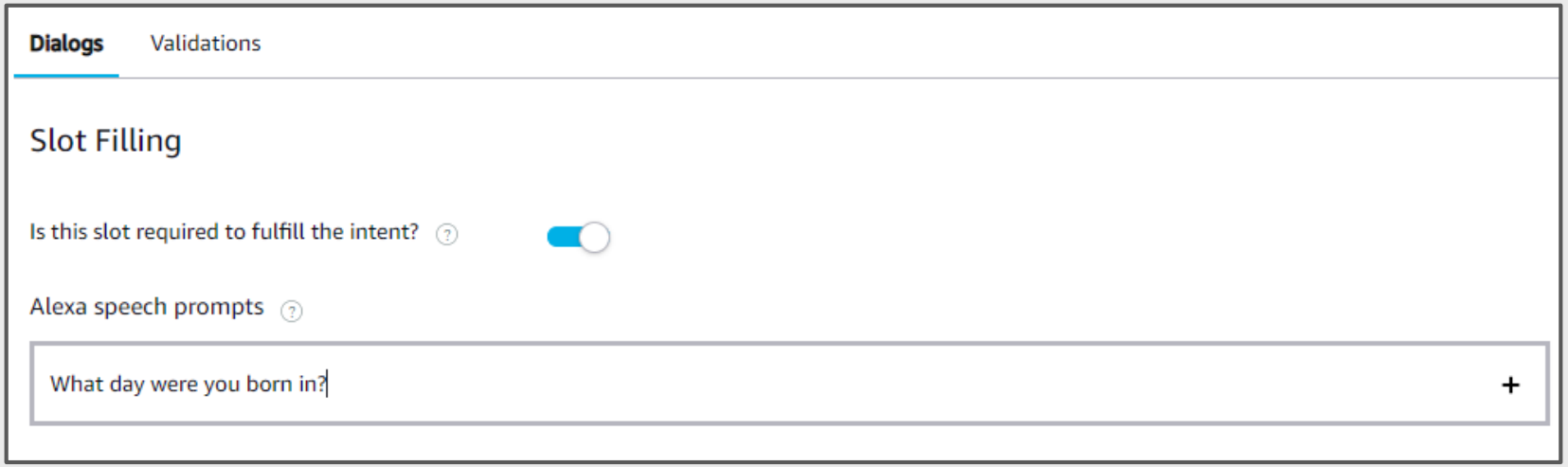
3. Add a question Alexa can use to prompt the user if they don't say the month.
4. Click the + sign to add the prompt.





Add Dialog Management

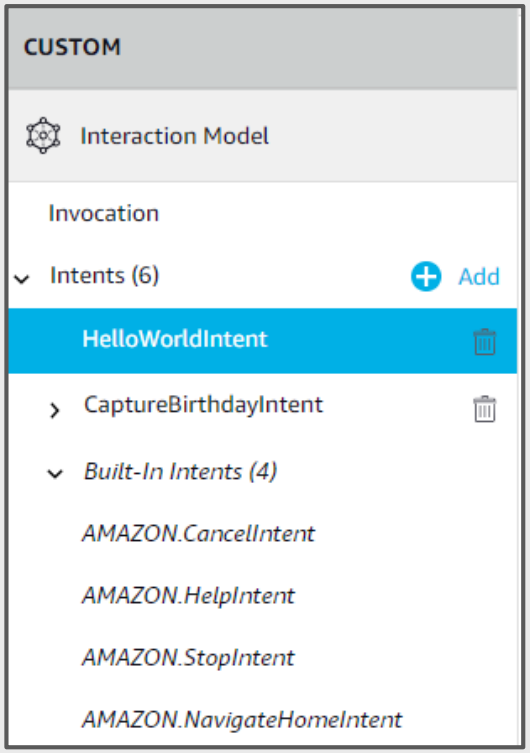
5. Repeat for day and year.

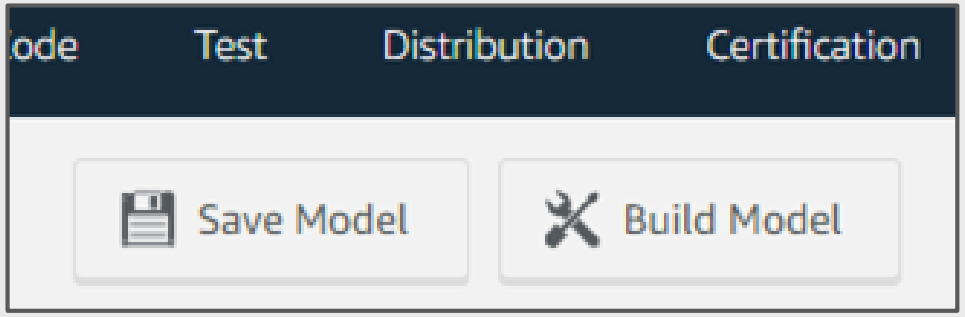


Now Alexa can use the user for their birth month, day, and year if any of them is missing.

Build the Model

1. You will see a **`HelloWorldIntent`** above the **`CaptureBirthdayIntent`**. Delete the **HelloWorldIntent**.
2. Do NOT delete the built-in intents.
3. Save and build the model.





Update the Backend

1. Go back to the code editor.
2. If you look at the code, you will see a **`HelloWorldIntentHandler`**, but we deleted the **`HelloWorldIntent`**. We will modify the **`HelloWorldIntentHandler`** code we require.

```
19 const HelloWorldIntentHandler = {
20     canHandle(handlerInput) {
21         return handlerInput.requestEnvelope.request.type === 'IntentRequest'
22             && handlerInput.requestEnvelope.request.intent.name === 'HelloWorldIntent';
23     },
24     handle(handlerInput) {
25         const speechText = 'Hello World!';
26         return handlerInput.responseBuilder
27             .speak(speechText)
28             //.reprompt('add a reprompt if you want to keep the session open for the user to respond')
29             .getResponse();
30     }
31 };
```

Update the Backend

3. In line 19, replace **`HelloWorldIntentHandler`** with **`CaptureBirthdayIntentHandler.`**
4. In line 22, replace the **`HelloWorldIntent`** with **`CaptureBirthdayIntent.`**

```
19 const CaptureBirthdayIntentHandler = {
20     canHandle(handlerInput) {
21         return handlerInput.requestEnvelope.request.type === 'IntentRequest'
22             && handlerInput.requestEnvelope.request.intent.name === 'CaptureBirthdayIntent';
23     },
```

Update the Backend

5. Add lines 25, 26, and 27 to your code. Note that if the names of your slots are not exactly month, day, and year, this code won't work properly.

```
19 const CaptureBirthdayIntentHandler = {
20     canHandle(handlerInput) {
21         return handlerInput.requestEnvelope.request.type === 'IntentRequest'
22             && handlerInput.requestEnvelope.request.intent.name === 'CaptureBirthdayIntent';
23     },
24     handle(handlerInput) {
25         const year = handlerInput.requestEnvelope.request.intent.slots.year.value;
26         const month = handlerInput.requestEnvelope.request.intent.slots.month.value;
27         const day = handlerInput.requestEnvelope.request.intent.slots.day.value;
28         const speechText = 'Hello World!';
29         return handlerInput.responseBuilder
30             .speak(speechText)
```

Update the Backend

6. Update the value of speechText on or around Line 28 to match what you see below.

   Note that we have changed the single quotation marks (**''**) to be backticks (**``**) instead.

```
const day = handlerInput.requestEnvelope.request.intent.slots.day.value;
const speechText = `Thanks, I'll remember that your birthday is ${month} ${day} ${year}.`;
return handlerInput.responseBuilder
    .speak(speechText)
```

Update the Backend

The final **`handle()`** method should look like this.

```
const CaptureBirthdayIntentHandler = {
    canHandle(handlerInput) {
        return handlerInput.requestEnvelope.request.type === 'IntentRequest'
            && handlerInput.requestEnvelope.request.intent.name === 'CaptureBirthdayIntent';
    },
    handle(handlerInput) {
        const year = handlerInput.requestEnvelope.request.intent.slots.year.value;
        const month = handlerInput.requestEnvelope.request.intent.slots.month.value;
        const day = handlerInput.requestEnvelope.request.intent.slots.day.value;
        const speechText = `Thanks, I'll remember that your birthday is ${month} ${day} ${year}.`;
        return handlerInput.responseBuilder
            .speak(speechText)
            //.reprompt('add a reprompt if you want to keep the session open for the user to respo
            .getResponse();
    }
};
```

Update the Backend

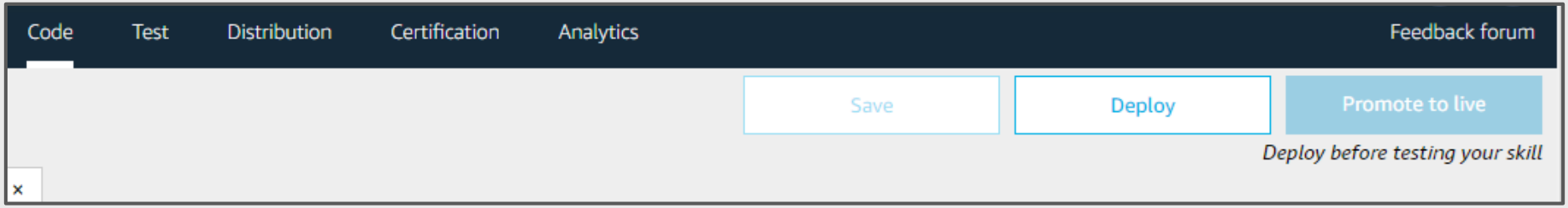
7. Finally, scroll to the bottom of your code and update the handler exports with the new handler you created by replacing **`HelloWorldIntentHandler`** with our new **`CaptureBirthdayIntentHandler`**.

```
exports.handler = Alexa.SkillBuilders
    .addRequestHandlers(
        LaunchRequestHandler,
        HelloWorldIntentHandler,
        HelpIntentHandler,
        CancelAndStopIntentHandler,
        SessionEndedRequestHandler,
        IntentReflectorHandler) // ma
custom intent handlers
    .addErrorHandlers(
        ErrorHandler)
    .lambda();
```

```
exports.handler = Alexa.SkillBuilders
    .addRequestHandlers(
        LaunchRequestHandler,
        CaptureBirthdayIntentHandler,
        HelpIntentHandler,
        CancelAndStopIntentHandler,
        SessionEndedRequestHandler,
        IntentReflectorHandler) // ma
custom intent handlers
    .addErrorHandlers(
        ErrorHandler)
    .lambda();
```

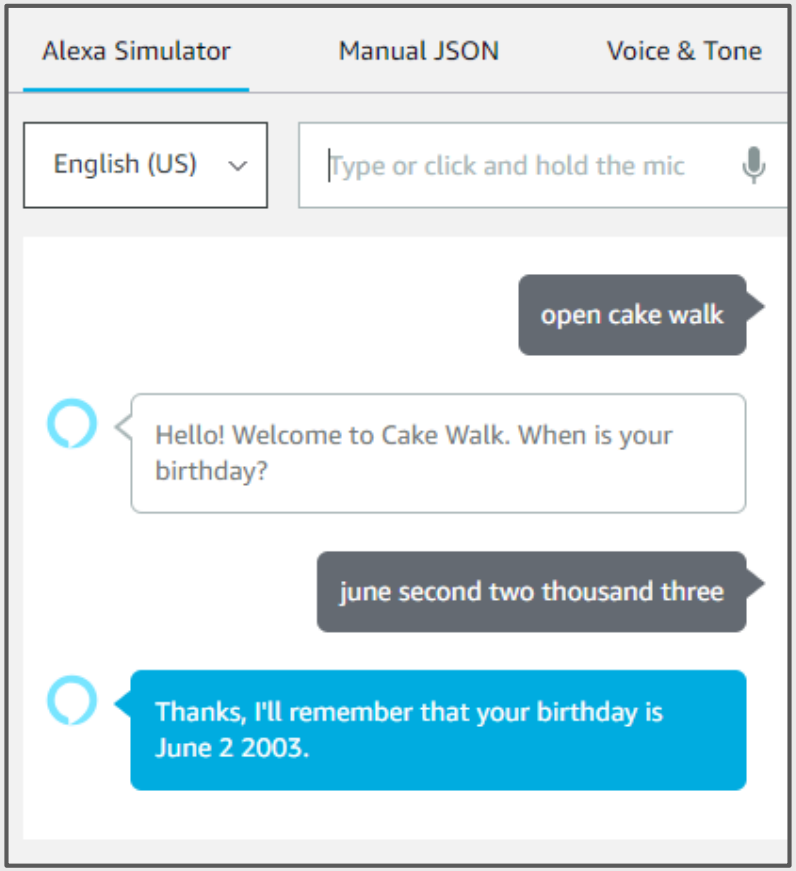
Save and Deploy

Once again, save and deploy the code.



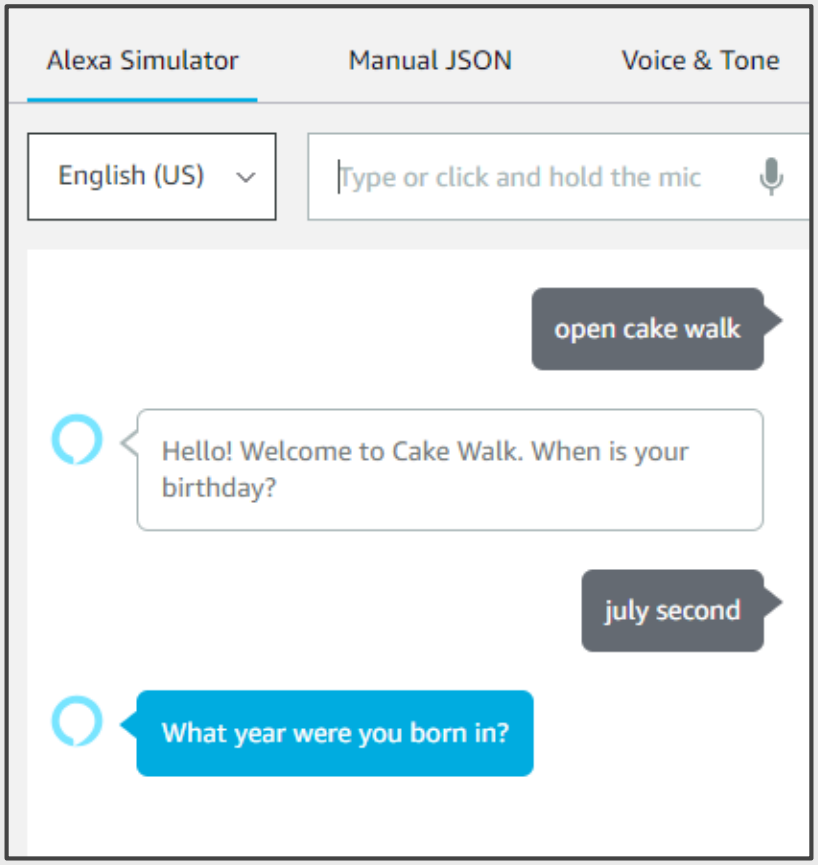
Test Your Skill

Go back to the test tab to test your skill.



Test Your Skill

What happens if you do not specify the month or date or year?



Troubleshooting Your Skill

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

1. Are you calling the right invocation name?
2. Are you saying launch, start or open?
3. Are you sure you have no other skills in your accounts with the same invocation name?
4. Did you Save and Deploy your changes?

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.

Table of Contents

What did you learn today?

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

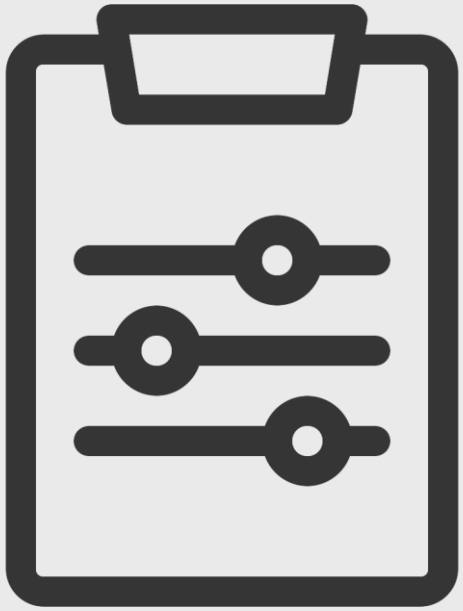
http://mlhlocal.host/quiz

Table of Contents

Next Steps: Store the user's birthday

Alexa also provides you with S3 storage that lets you persist data. See how you can leverage that to remember the user's birthday so that you do not ask them everytime.

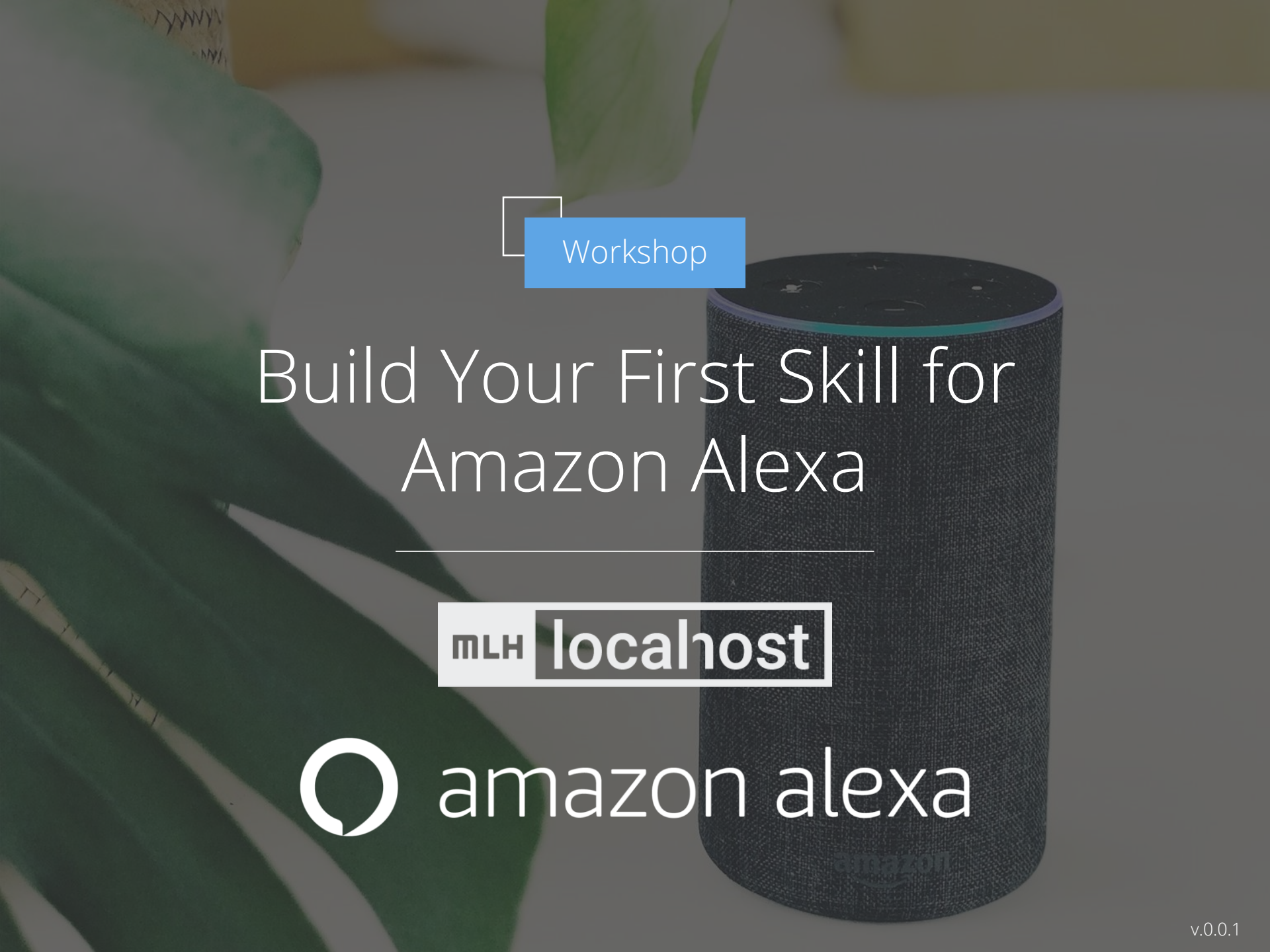
1. Read up about S3 storage and how to use them in the Alexa Code Editor.
2. Retrieve the user's birthday, if it exists, on launch, so that you can decide whether to ask the question or not.



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

Build Your First Skill for Amazon Alexa

MLH localhost

amazon alexa

v.0.0.1