

Introduction to Week 4

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Week 4 Wrap Up and Resources

Exercise 4.1: Make Amazon Lex Smarter

Exercise 4.1: Make LEX smarter

We have done well. We have a working server-less data driven website on a content delivery network :) We now are going to leverage the Amazon LEX bot you created in week 1 and turn our application from a text app to a voice enabled app.

Therefore the API endpoint that we used for the text application will no longer work if we point it to a Lambda function that is expecting a conversation LEX-style "phrase".

So, out with the old and in with the new.

The goal of this exercise is to swap out the Lambda function currently sitting behind API Gateway for a new one that simply takes a "text phrase" from the browser and passes it over to LEX to interpret. When LEX replies to this message we pass that messages all the way back to the browser.

This new lambda function's code is just passing messages back and forth between the browser and LEX, nothing more. Ma will call this function `getWeather`.

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We are leveraging the fact that the Chrome browser can listen to your device microphone and convert what you say to text in real time. This is a JavaScript API, that you don't need to worry about as we wrote the code for this already. There is another JavaScript API that converts text back to speech! Super useful. We shall be leveraging that too :)

This way we can literally "talk" to the browser, and essentially be communicating with LEX, in what feels like "real time".

We are going to approach this exercise in multiple steps:

- 1) We need to make your Lex bot smarter with what we call a **validation hook**. This way it can extract data from DynamoDB and provide weather information, just like our text app did.
- 2) Test you smarter LEX bot in the LEX console. You should notice the difference in smarts
- 3) Create a lambda function to proxy text phrases to and from your new smarter LEX bot, and test it.
- 3) Change the API gateway configuration so it points to this new proxy function, and test it.
- 4) Go to a NEW secret website (that you upload when you did week 2) and may not have realized it called **weather.lex**.

1. Steps to creating a validation Lambda function for the Lex bot.

This will make LEX smarter :)

- Sign in to the AWS Management Console and in the **Find Services** search box type lambda and

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• For **function name** type in **getWeather**.

- Again leave the **Runtime** as: **Node.js 8.10**.
- For **Execution role** leave it as **Use an existing role**.
- For **Existing role** choose **service-role/Get-Weather**.

Basic information

Function name
Enter a name for your function. You can use alphanumeric characters and hyphens.

getWeather

Runtime: node
Choose a runtime for your function. You can use alphanumeric characters and hyphens.

lambda:nodejs4.10

Permissions: role
Choose a role for your function. You can use alphanumeric characters and hyphens.

lambda:nodejs4.10

Click Create Function.

Paste the following into the **index.js** tab in the inline code editor.

```
1 // exports.handler = function(event, ctx, callback) {
2   // ...
3   // myResponse = {}
4 }
```

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96 // ...
97 // ...
98 // ...
99 // ...
100 // ...
```

This code checks for an existence of a slot (the city), if it's there, wonderful. Look it up in Dynamo and return the temperature.

If not, LEX will need to ask for a city. Once LEX has established the city, meaning there is existence of the slot, it can just do a look up.

You get the idea.

- Scroll down to **Basic settings** and change the timeout to 1 min and 5 sec.
- Click **Save**.
- Let's test it with a dummy LEX payload before we tie it into LEX and publish it. Click **Test**.
- Leave the **Event template** as **Hello World**.
- Click **Event template as Hello World**.

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89 // ...
90 // ...
91 // ...
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94 // ...
95 // ...
96 // ...
97 // ...
98 // ...
99 // ...
100 // ...
```

Click **Create**.

Click **Test**.

You should see the following output:

```
1 {
2   "sessionId": "123",
3   "city": "DENVER",
4   "weather": "Sunny",
5   "temperature": "75",
6   "humidity": "45",
7   "windSpeed": "10",
8   "visibility": "10",
9   "airQuality": "Good",
10  "forecast": "Partly cloudy",
11  "alerts": [],
12  "timestamp": "2019-01-01T00:00:00Z",
13  "region": "us-east-1"
14 }
```

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```

Click **Save**.

Click **Test**.

You should see the following output:

```
1 {
2   "sessionId": "123",
3   "city": "DENVER",
4   "weather": "Sunny",
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```

Click **Save**.

Click **Test**.

You should see the following output:

```
1 {
2   "sessionId": "123",
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```

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Awesome it is all working, we now have a function that we know works

We just need to wire it up to LEX and try it in the LEX console.

Lets give LEX it's new brain :)

2. Wire it into Lex - (Turbo charge LEX)

- Click **Services** type in lex in the search box or select **Amazon Lex** from the **History** list.
- Click our **WeatherCatBot**
- Scroll down to **Lambda initialization and validation** and select **Initialization and validation code hook**.
- Select **getWeather** for our function and **Validation for Permissions or Alias**.

• At the **Add permission to Lambda function** click **OK**.

• Expand the **Confirmation prompt** and remove the check for **Confirmation prompt**.

• Click **Save Intent** at the bottom.

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Click **Test Chatbot** at the right if it is not already expanded.

Test out talking to your bot.

User	Chatbot
Can my cat go out in banana?	Please try another city, we couldn't find the weather for that city
Can my cat go out in DENVER	38
Can my cat go out?	Name the city your cat lives in, thanks
also	47
Will my cat be OK outside?	Name the city your cat lives in, thanks
Tempe	31

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Click **Configure test events**.

Change the event: (new user id - bump)

```
1 {
2   "message": "Can my cat go out in aliso?",
3   "user_id": "180120824"
4 }
```

Click **Create**.

Click **Test**.

You should see a similar response: **Perfect!**

```
1 {
2   "sessionId": "123",
3   "city": "DENVER",
4   "weather": "Sunny",
5   "temperature": "75",
6   "humidity": "45",
7   "windSpeed": "10",
8   "visibility": "10",
9   "airQuality": "Good",
10  "forecast": "Partly cloudy",
11  "alerts": [],
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```

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Click **Configure test events**.

Change the event: (new user id - bump)

```
1 {
2   "message": "Can my cat go out in aliso?",
3   "user_id": "180120824"
4 }
```

To

```
1 {
2   "message": "Can my cat go out in aliso?",
3   "user_id": "180120824"
4 }
```

Click **Save**.

Click **Test**.

You should see the following output:

```
1 {
2   "sessionId": "123",
3   "city": "DENVER",
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5   "temperature": "75",
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12  "timestamp": "2019-01-01T00:00:00Z",
13  "region": "us-east-1"
14 }
```

Since the **user_id** didn't change it will keep that same session open and return the correct data.

Awesome, you are nearly done.

We now just point API Gateway to this new proxy, disabling the old text (text.html) API. That webpage will no longer work.

Once you follow these next few steps you can visit the [/weather.lex](#) version of the website and test it.

Your bot will chat back with you :)

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function.

- Sign in to the AWS Management Console and in the **Find Services** search box type api and choose **API Gateway** or choose **API Gateway** from the **History** list.
- Under **APIs** click **CatWeather**.
- Click **POST** **POST**.
- Click **Integration Request**.
- Click the pencil icon next to **get_weather**.
- Type in I and select **lex-proxy** and click the check **g** to update it.
- Click **OK** on the **Add Permission to Lambda function** pop-up.
- Go back to the root **url** **url** under **Resources**.
- Click **Actions** and **Enable CORS**. Click **DEFAULT AXHX and DEFAULT SXHX**.
- Click **Enable CORS** and replace existing **CORS** headers.
- Click **Yes, replace existing values on the Confirm method changes pop-up**.
- Click **Actions** and **Deploy API**. Choose **test** for the **Deployment stage** and click **Deploy**.
- Pull up your CloudFront URL appending **/weather.lex** at the end

Ensure you have your microphone enabled if you see a pop up in the browser. Click **Push to talk** and utter a phrase like: "Can my cat go out in Denver?"

Your bot will chat back with you :)

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Congrats you are done.

BEFORE you close this out and head over to the next video, please tear down any applications you no longer want running. Outside of free tier some of these services are not free.*

Check the forums if you need help tearing down the services.

Exercise goal checklist

1. Create a simple chatbot using the Lex console.
2. Upload our website to S3.
3. Create a content-delivery network and lock-down S3.
4. Build an API gateway mock with CORS.
5. Build a lambda mock-use IAM, push logs to CloudWatch.
6. Create and seed a database with weather data.
7. Enhance the lambda so it can query the database.
8. Play with your new text-based data driven application.
9. Create a LEX proxy using Lambda.
10. Enhance API gateway to use the LEX proxy.
11. Play with your new voice web application.