LESSON 6

In this lesson, you can delete videos posted on the website from the website. To do this we are going to:

1. Set up Amazon SNS so that you can send notifications to the Lambda function.
2. Create a new IAM role and allow operations on SNS and S3.
3. Add a new Lambda function called "***delete-transcoded-url-from-firebase***" that deletes the URL of the movie from the Firebase database.
4. Add a new Lambda function "***delete-uploaded-video***" and "***delete-transcoded-video***" to delete moving picture files from S3.
5. Configure the API Gateway and call the above Lambda function from the website so that the URL of the movie can be deleted from the Firebase database.
6. Update the website so that you can delete the movie.

NOTE: PLEASE CREATE ALL YOUR RESOURCES IN THE N. VIRGINIA REGION (US-EAST-1)

1. CREATE AMAZON SNS TOPIC

First, I will create SNS topics in the AWS management console. This SNS topic is used as a trigger to execute the Lambda function to delete the video file saved in S3.

- Go to ***Simple Notification Service (SNS)*** in the AWS Management Console.
- Click ***Create topic,*** creating a new topic.
- Enter the ***Topic name***. (e.g. ***delete-videos***)
- Click ***Create topic*** button to create a topic.
- ***Topic ARN*** of the created topic is necessary, so it is a good idea to note somewhere.

2. CREATE IAM ROLE

Create a new IAM role to run the Lambda function. Add the necessary privileges to publish the message to SNS and the authority necessary to delete the object from S3.

- Go to **IAM** in the AWS Management Console.
- Click ***Roles*** in the left navigation menu.
- Click the ***Create role*** button in the top left.
- In the ***Trust*** step, choose ***AWS service*** and ***Lambda***, and then click ***Next: Permissions*** button.
- In the ***Permissions*** step, search for and check the boxes next to:
  - ***AWSLambdaBasicExecutionRole***
    - ☑ ***Note: Make sure the names you select match exactly what is shown here.***
- Click ***Next: Review*** button to attach policy to the role.
- In the ***Review*** step, name the role ***lambda-s3-delete-role***, and then click ***Create role*** button to save.
- You will be taken back to the role ***Summary*** page. Click ***lambda-s3-delete-role*** again to see the attached policy.
- On the ***Summary*** screen, open the ***Permissions*** tab and click ***Add inline policy***.
- Click the ***Custom Policy*** radio button and click the ***Select*** button.
- Enter " ***delete-policy*** " for ***Policy Name***.
- Copy the following to the ***Policy Document*** and save (make sure to specify your **upload bucket name**, **transcoded bucket name**, **SNS topic ARN** in the policy).
- After creation, it transits to the ***Summary*** screen of ***lambda-s3-delete-role***.
- On the ***Summary*** screen, open the ***Permissions*** tab and make sure that the ***Inline policy*** " ***delete-policy*** " has been added.

3. CREATE A LAMBDA FUNCTION TO DELETE THE VIDEO URL FROM FIREBASE

This Lambda function deletes the URL of the movie from the Firebase database, and notifies Amazon SNS of the ID of the deleted video as a message.

It's located in lab-6/lambda/delete-transcoded-url-from-firebase.

- Open a terminal / command-prompt and navigate to the following folder:

  lab-6/lambda/delete-transcoded-url-from-firebase

- Install npm packages by typing:

  npm install

- Copy the Firebase service account JSON file.

  As before, make sure that the JSON file of the downloaded Firebase service account is included in this folder (*lab-6/lambda/delete-transcoded-url-from-firebase*).

  The JSON file must be included with the Lambda function for it to work.

- **Now ZIP up your lambda function**

  For OS X / Linux Users

  Now create create a ZIP file of the function, by typing:

  npm run predeploy

  For Windows

  You will need to zip up all the files in the "***lab-6/lambda/delete-transcoded-url-from-firebase"*** folder via the Windows Explorer GUI, or using a utility such as 7zip. (**Note: don't zip the "*delete-transcoded-url-from-firebase"* folder. Zip up the files inside of it**).

- In the AWS Management Console, go to Lambda and create a function as before, with the following settings:
  - **Name**: delete-transcoded-url-from-firebase
  - **Role**: lambda-s3-delete-role
  - **Runtime**: Node.js 4.3
  - **Function package:** The .zip file you just created.

- **Timeout**: 30 秒
- **Environment variables**:
  - **SERVICE_ACCOUNT**: Enter the JSON file name of the service account downloaded from Firebase.
  - **DATABASE_URL**: Enter the Firebase database URL.
  - **TOPIC_ARN**: Enter the Topic ARN of the created Amazon SNS.

- Don't forget to click the **Save** button at the top of the page.

4. CREATE A LAMBDA FUNCTION TO DELETE MOVIE FILES FROM S3

This step adds two Lambda functions. These Lambda functions delete moving picture files from S3 when receiving notification from SNS.

First, add the Lambda function to delete files from the S3 bucket for uploading videos.

It's located in lab-6/lambda/delete-uploaded-video.

- Open a terminal / command-prompt and navigate to the following folder:

  ```
  lab-6/lambda/delete-uploaded-video
  ```

- Install npm packages by typing:

  ```
  npm install
  ```

- **Now ZIP up your lambda function**

  For OS X / Linux Users

  Now create create a ZIP file of the function, by typing:

  ```
  npm run predeploy
  ```

  For Windows

You will need to zip up all the files in the "*lab-6/lambda/delete-uploaded-video*" folder via the Windows Explorer GUI, or using a utility such as 7zip. (**Note: don't zip the "*delete-uploaded-video*" folder. Zip up the files inside of it**).

- In the AWS Management Console, go to Lambda and create a function as before, with the following settings:
  - **Name**: delete-uploaded-video
  - **Role**: lambda-s3-delete-role
  - **Runtime**: Node.js 4.3
  - **Function package:** The .zip file you just created.
  - **Timeout**: 30 秒
  - **Environment variables**:
    - **UPLOAD_BUCKET**: Enter the S3 bucket name for uploading videos.
- Don't forget to click the **Save** button at the top of the page.

Next, add the Lambda function to delete the file from the S3 bucket for video transcoded.

It's located in lab-6/lambda/delete-transcoded-video.

- Open a terminal / command-prompt and navigate to the following folder:

  ```
  lab-6/lambda/delete-transcoded-video
  ```

- Install npm packages by typing:

  ```
  npm install
  ```

- **Now ZIP up your lambda function**

  For OS X / Linux Users

  Now create create a ZIP file of the function, by typing:

  ```
  npm run predeploy
  ```

  For Windows

You will need to zip up all the files in the "***lab-6/lambda/delete-transcoded-video***" folder via the Windows Explorer GUI, or using a utility such as 7zip. (**Note: don't zip the "*delete-transcoded-video*" folder. Zip up the files inside of it**).

- In the AWS Management Console, go to Lambda and create a function as before, with the following settings:
  - **Name**: delete-transcoded-video
  - **Role**: lambda-s3-delete-role
  - **Runtime**: Node.js 4.3
  - **Function package:** The .zip file you just created.
  - **Timeout**: 30 秒
  - **Environment variables**:
    - **TRANSCODED_BUCKET**: Enter the S3 bucket name for video transcoded.
- Don't forget to click the **Save** button at the top of the page.

5. SET TO RUN LAMBDA FUNCTION WITH SNS TRIGGER

Delete movie file from S3 added in the previous step Set up the Lambda function so that it can be activated with SNS trigger.

First, set it to "***delete-uploaded-video***" Lambda function.

- In the Lambda console for the "***delete-uploaded-video***" function you just created, click on the ***Triggers*** tab and click ***Add trigger***.
- In the popup dialog, click to the left of the orange lambda logo and scroll down the list until you find ***SNS*** and select that.
- Select the ***SNS topic*** to be the trigger. (e.g. ***delete-videos***)
- Confirm that the ***Enable trigger*** check box is checked.
- Press ***Submit*** button and AWS will link your ***SNS Topic*** and Lambda function.

Next, set it to " ***delete-transcoded-video*** " Lambda function.

- In the Lambda console for the "***delete-transcoded-video***" function you just created, click on the ***Triggers*** tab and click ***Add trigger***.
- In the popup dialog, click to the left of the orange lambda logo and scroll down the list until you find ***SNS*** and select that.
- Select the ***SNS topic*** to be the trigger. (e.g. ***delete-videos***)
- Confirm that the ***Enable trigger*** check box is checked.
- Press ***Submit*** button and AWS will link your ***SNS Topic*** and Lambda function.

6. CREATE RESOURCE & METHOD IN THE API GATEWAY

In this step we will create a resource and a method in the API Gateway. We will use it to invoke the Lambda function we deployed in the previous step.

- Go to ***API Gateway*** in the AWS Management Console.
- Select ***24-hour-video*** API.
- Under ***Resources*** in the second column, ensure that the / resource is selected.
- Select ***Actions*** and then click ***Create Resource***.
- Set the ***Resource Name*** to "***delete-video"***.
- Ensure that the ***Enable API Gateway CORS*** box is checked.
- Click ***Create Resource***.
- Make sure that "***delete-video"*** is selected under ***Resources*** and click ***Actions***.
- Click ***Create Method***.
- From the dropdown box under the resource name, select ***DELETE*** and click the tick/check ✔mark button to **save**.
- In the screen that appears:
  - **Integration type**: Select Lambda Function radio.
  - **Use Lambda Proxy integration**: Check the checkbox with the label ***Use Lambda Proxy Integration.***

- **Lambda Region**: Set ***us-east-1*** as the Lambda Region.
- **Lambda Function**: Type ***delete-transcoded-url-from-firebase*** in Lambda Function textbox.
- Click ***Save***. Click ***OK*** in the dialog box that appears.

- To make the custom authorizer invoke on the ***DELETE*** method, follow these steps:
  - Ensure you are still on the ***Resources*** tab in the left navigation menu.
  - Click ***DELETE*** under ***/delete-video*** in the second column.
  - Click ***Method Request*** in the ***/delete-video - DELETE - Method Execution*** section.
  - Click the pencil next to ***Authorization***.
  - From the dropdown select ***custom-authorizer*** and click the tick/check ✔mark button to **save**.
  - Click on the ***HTTP Request Headers*** section to expand it.
  - Click on the ***Add header*** link, put "**authorization**" for the name, and click the tick/check ✔mark button to **save**.

7. DEPLOY API GATEWAY

Finally, we need to deploy the API so that our changes go live.

- Click ***Actions*** at the top of the second column.
- Select ***Deploy API***.
- In the popup select ***dev*** as the ***Deployment stage***.
- Click ***Deploy*** to deploy the API.

8. TESTING

Now we are ready to test our delete functionality via the website.

- Just as before, copy the config.js file containing your account specific settings to "lab-6/website/js/config.js".

- Make sure the config.js file contains **Auth0**, **Firebase**, **API Gateway** configuration information.
- Open a terminal / command-prompt and navigate to the following folder:

```
lab-6/website
```

- Run the following command to make sure that required npm components are installed:

```
npm install
```

- Run the following command to start the website:

```
npm start
```

- Open the website (http://localhost:8100) and sign in. As before, click the **plus** button in the center of the screen to upload the movie.
- When the upload is completed, a **minus** button is displayed below the movie file. Click this button to delete the movie.
- Let's see the state of each S3 bucket for video uploading and video transcoding at AWS management console. Have you confirmed that randomly generated folders like a70e496a579b9fb21144fb108e6bf000747a98d3 have been deleted?
- Have you confirmed that items such as a70e496a579b9fb21144fb108e6bf000747a98d3 are deleted also on the Firebase console?
- If something didn't work make sure to check that:
    - Is Auth0's authentication information, API Gateway URL, Firebase setting information written correctly in the config.js file used for the website?
    - You have followed all steps exactly and copied everything exactly as specified in this lesson plan.

When you're done with this lab, exit the "npm start" command in your terminal by pressing <Control>-c.