

Introduction to AWS Lambda Hands-on Lab

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Lab overview

In this lab, I highlighted a basic explanation of AWS Lambda. It demonstrated the steps required to create a Lambda function in an event-driven environment.

What is AWS Lambda?

AWS Lambda is a compute service that automatically runs users' code in response to events and manages the compute resources for them. This functionality makes it easy to build applications that can quickly respond to new information (AWS, 2025).

AWS Lambda executes code within milliseconds of events, such as an image upload, in-app activity, website clicks, or output from connected devices. Additionally, it can be used to create new back-end services, where compute resources are triggered automatically based on custom requests (AWS, 2025).

Objectives

At the end of this lab, I was equipped with the following:

- Creating an AWS Lambda function
- Configuring an Amazon S3 bucket as a Lambda Event Source
- Triggering a Lambda function by uploading an object to Amazon S3
- Monitoring AWS Lambda S3 functions through Amazon CloudWatch Logs

Lab Environment

In this lab, I demonstrated my knowledge on how to create a serverless **image thumbnail application**. The following diagram illustrates the application flow as follows:

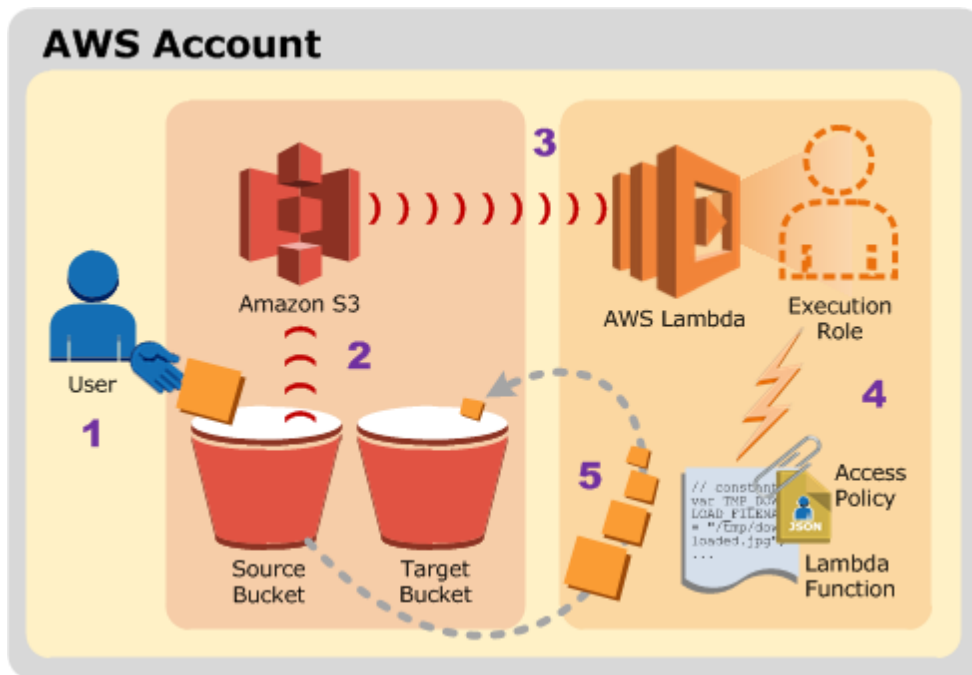


Figure 1: Environment overview (source: AWS, 2025)

Task 1: Create the Amazon S3 buckets

- Step 1: Look or the “S3” bucket in the search bar as follows:

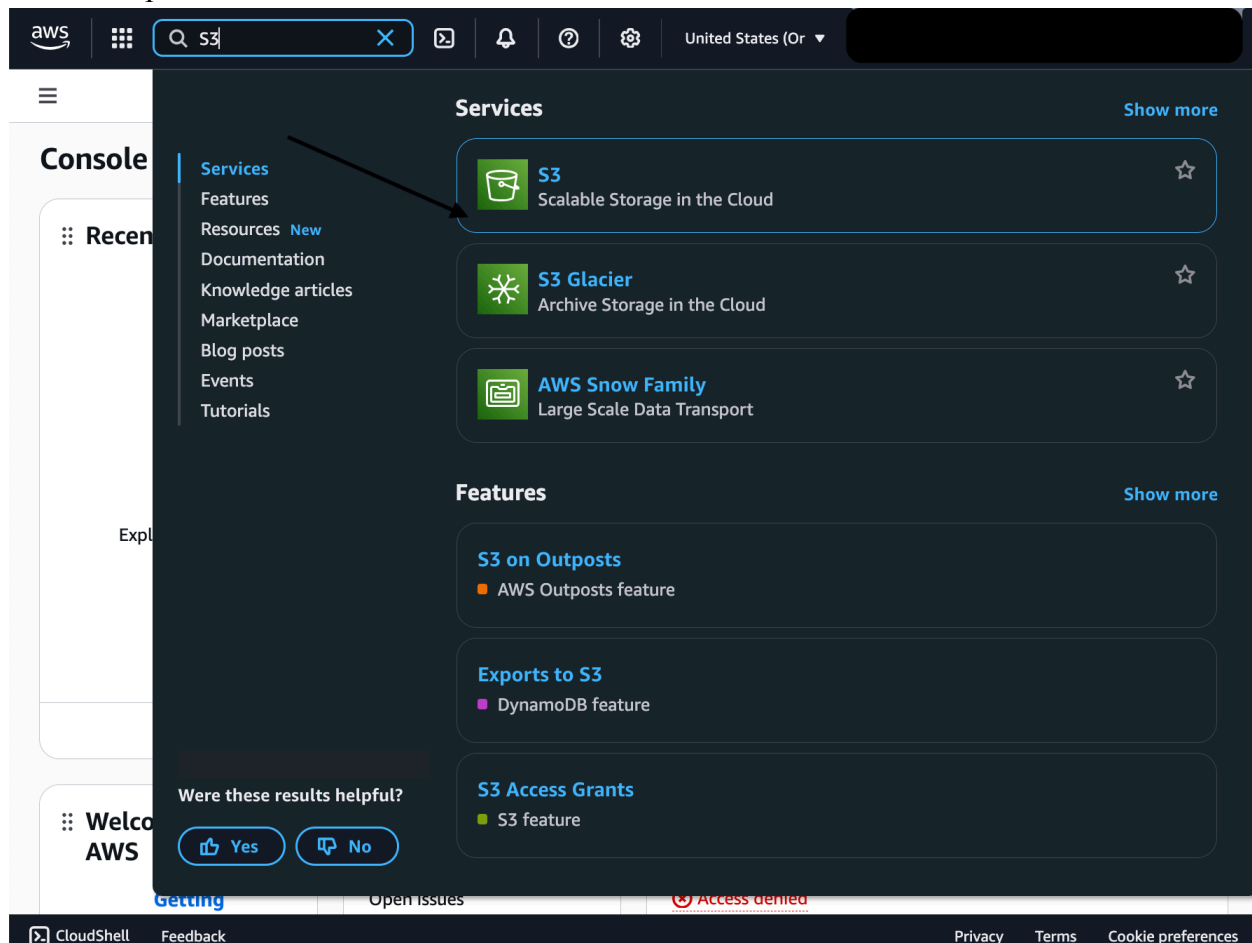


Figure 2: S3 search (source: personal collection)

- Step 2: Choose “Create bucket” for the input as follows:

The screenshot shows the Amazon S3 console interface. On the left is a navigation sidebar with categories like 'Amazon S3', 'Storage Lens', and 'IAM Access Analyzer for S3'. The main content area is titled 'General purpose buckets (2)' and includes a search bar, a table of existing buckets, and a 'Create bucket' button highlighted with an orange arrow. Below the table is an 'Account snapshot' section with a 'View dashboard' button.

General purpose buckets (2) Info

Buttons: Refresh, Copy ARN, Empty, Delete, **Create bucket**

Buckets are containers for data stored in S3.

Find buckets by name

	Name	AWS Region	Creation date
<input type="radio"/>	awslabs-resources-krxqqla59sui8d-us-east-1-419826376089	US East (N. Virginia) us-east-1	October 6, 2020, 03:28:46 (UTC+03:00)
<input type="radio"/>	awslabs-resources-r5b3y6ojjszcap-us-east-1-419826376089	US East (N. Virginia) us-east-1	October 23, 2023, 20:02:26 (UTC+03:00)

Account snapshot Info

Updated daily

Storage Lens provides visibility into storage usage and activity trends.

[View dashboard](#)

External access summary - new...

Figure 3: Create bucket (source: personal collection)

aws

Search [Option+S]

United Stat

Amazon S3

Buckets

Create bucket

1

Create bucket [Info](#)

Buckets are containers for data stored in S3.

General configuration

AWS Region
US West (Oregon) us-west-2

Bucket type [Info](#)

☒ **General purpose**
Recommended for most use cases and access patterns. General purpose buckets are the original S3 bucket type. They allow a mix of storage classes that redundantly store objects across multiple Availability Zones.

☐ **Directory**
Recommended for low-latency use cases. These buckets use only the S3 Express One Zone storage class, which provides faster processing of data within a single Availability Zone.

Bucket name [Info](#)

images-252025

Bucket names must be 3 to 63 characters and unique within the global namespace. Bucket names must also begin and end with a letter or number. Valid characters are a-z, 0-9, periods (.), and hyphens (-). [Learn More](#)

Copy settings from existing bucket - optional
Only the bucket settings in the following configuration are copied.

[Choose bucket](#)

Format: s3://bucket/prefix

Object Ownership [Info](#)

CloudShell

Feedback

Privacy

Terms

Cookie preferences

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Figure 4: bucket name (source: personal collection)

aws

Search [Option+S]

United Stat

Amazon S3

Buckets

Successfully created bucket "images-252025"

To upload files and folders, or to configure additional bucket settings, choose [View details](#).

General purpose buckets

All AWS Regions

Directory buckets

General purpose buckets (3) Info

Copy ARN

Empty

Delete

Create bucket

Buckets are containers for data stored in S3.

Find buckets by name

< 1 >

	Name	AWS Region	Creation date
<input type="radio"/>	awslabs-resources-krxqqla59sui8d-us-east-1-419826376089	US East (N. Virginia) us-east-1	October 6, 2020, 03:28:46 (UTC+03:00)
<input type="radio"/>	awslabs-resources-r5b3y6ojjszcap-us-east-1-419826376089	US East (N. Virginia) us-east-1	October 23, 2023, 20:02:26 (UTC+03:00)
<input type="radio"/>	images-252025	US West (Oregon) us-west-2	September 25, 2025, 16:37:20 (UTC+03:00)

Account snapshot Info

Updated daily

Storage Lens provides visibility into storage usage and activity trends.

View dashboard

External access summary - new Info

Updated daily

External access findings help you identify bucket permissions that allow public access or access from other AWS accounts.

CloudShell

Feedback

Privacy

Terms

Cookie preferences

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Figure 5: bucket name created (source: personal collection)

- Step 3: Create another bucket for the output as follows:

Create bucket [Info](#)

Buckets are containers for data stored in S3.

General configuration

AWS Region
US West (Oregon) us-west-2

Bucket type [Info](#)

☒ **General purpose**
Recommended for most use cases and access patterns. General purpose buckets are the original S3 bucket type. They allow a mix of storage classes that redundantly store objects across multiple Availability Zones.

☐ **Directory**
Recommended for low-latency use cases. These buckets use only the S3 Express One Zone storage class, which provides faster processing of data within a single Availability Zone.

Bucket name [Info](#)

images-252025-resized

Bucket names must be 3 to 63 characters and unique within the global namespace. Bucket names must also begin and end with a letter or number. Valid characters are a-z, 0-9, periods (.), and hyphens (-). [Learn More](#)

Copy settings from existing bucket - optional
Only the bucket settings in the following configuration are copied.

[Choose bucket](#)

Format: s3://bucket/prefix

Object Ownership

[Info](#)

CloudShell Feedback Privacy Terms Cookie preferences

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Figure 6: output bucket configuration (source: personal collection)

aws

Search [Option+S]

United Stat

Amazon S3

Buckets

Successfully created bucket "images-252025-resized"

To upload files and folders, or to configure additional bucket settings, choose [View details](#).

General purpose buckets

All AWS Regions

Directory buckets

General purpose buckets (4) Info

Copy ARN

Empty

Delete

Create bucket

Buckets are containers for data stored in S3.

Find buckets by name

< 1 >

	Name	AWS Region	Creation date
<input type="radio"/>	awslabs-resources-krxqqla59sui8d-us-east-1-419826376089	US East (N. Virginia) us-east-1	October 6, 2020, 03:28:46 (UTC+03:00)
<input type="radio"/>	awslabs-resources-r5b3y6ojjszcap-us-east-1-419826376089	US East (N. Virginia) us-east-1	October 23, 2023, 20:02:26 (UTC+03:00)
<input type="radio"/>	images-252025	US West (Oregon) us-west-2	September 25, 2025, 16:37:20 (UTC+03:00)
<input type="radio"/>	images-252025-resized	US West (Oregon) us-west-2	September 25, 2025, 16:48:44 (UTC+03:00)

Account snapshot Info

Updated daily

Storage Lens provides visibility into storage usage and activity

View dashboard

External access summary - new Info

Updated daily

External access findings help you identify bucket permissions

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Figure 7: Output bucket created (source: personal collection)

- Step 4: Upload an image in the bucket as follows:

The screenshot shows the AWS S3 console interface. At the top, the navigation bar includes the AWS logo, a search bar, and a dropdown menu for 'United States'. Below the navigation bar, the breadcrumb trail reads 'Amazon S3 > Buckets > images-252025-resized > Upload'. A message states: 'Drag and drop files and folders you want to upload here, or choose **Add files** or **Add folder**.' Below this, a section titled 'Files and folders (1 total, 128.2 KB)' contains a table of files. The table has columns for 'Name', 'Folder', 'Type', and 'Size'. One file is listed: 'HappyFace.jpg' with a size of '128.2 KB'. An arrow points from the 'HappyFace.jpg' entry to the 'Destination' section below. The 'Destination' section shows the path 's3://images-252025-resized' and includes expandable sections for 'Destination details', 'Permissions', and 'Properties'. At the bottom right, there are 'Cancel' and 'Upload' buttons. The footer contains 'CloudShell', 'Feedback', and copyright information for Amazon Web Services, Inc. or its affiliates.

aws [Search] [Option+S] United States

Amazon S3 > Buckets > images-252025-resized > Upload

Drag and drop files and folders you want to upload here, or choose **Add files** or **Add folder**.

Files and folders (1 total, 128.2 KB) Remove Add files Add folder

All files and folders in this table will be uploaded.

Find by name < 1 >

<input type="checkbox"/>	Name	Folder	Type	Size
<input type="checkbox"/>	HappyFace.jpg	-	image/jpeg	128.2 KB

Destination Info

Destination

<s3://images-252025-resized>

► **Destination details**

Bucket settings that impact new objects stored in the specified destination.

► **Permissions**

Grant public access and access to other AWS accounts.

► **Properties**

Specify storage class, encryption settings, tags, and more.

Cancel Upload

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Figure 8: Image uploaded (source: personal collection)

Task 2: Create an AWS Lambda function.

- Step 1: Select “Lambda” from the search bar as follows:

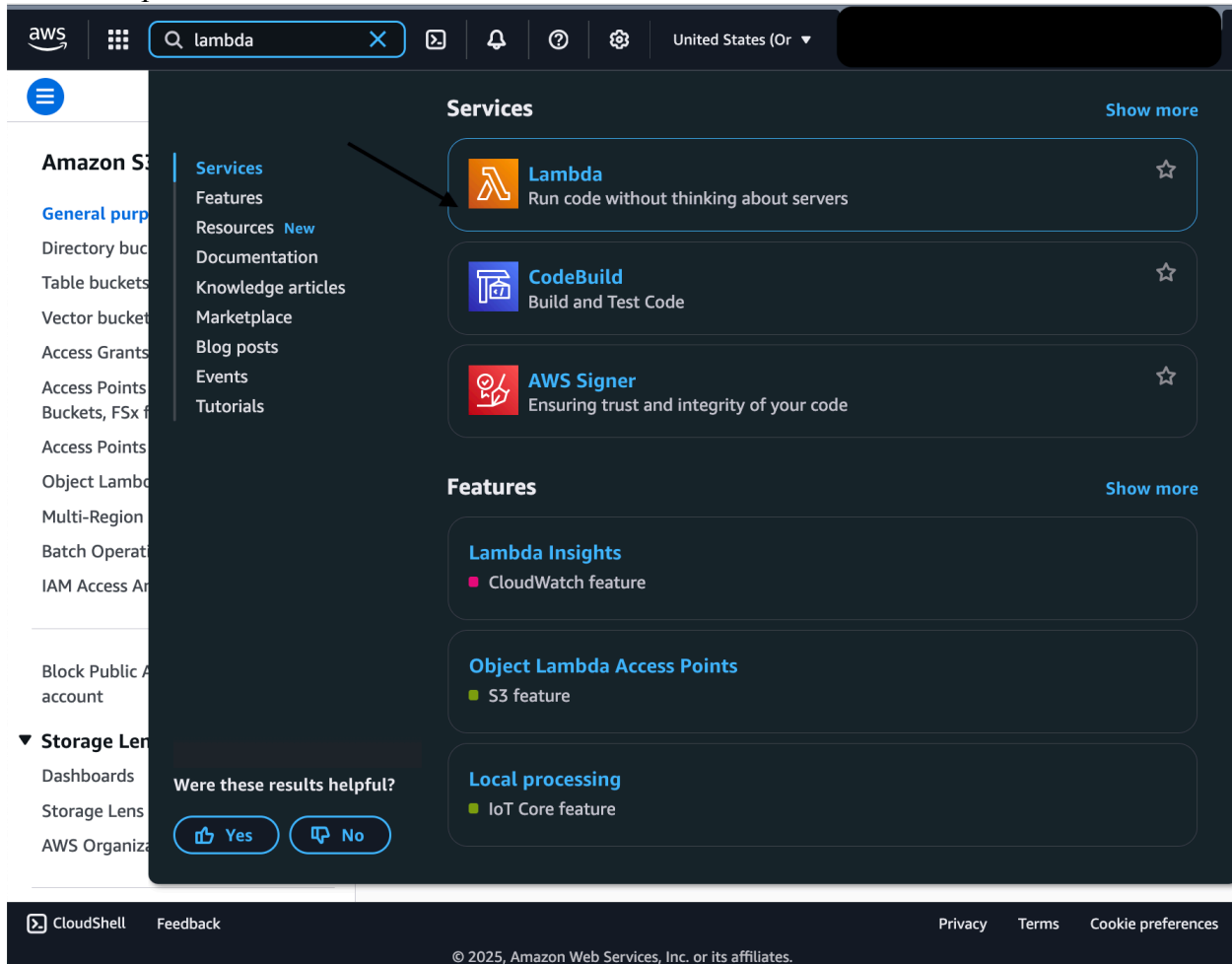


Figure 10: lambda search (source: personal collection)

- Step 2: Creating a function

Runtime | [Info](#)
Choose the language to use to write your function. Note that the console code editor supports only Node.js, Python, and Ruby.

Python 3.9

Architecture | [Info](#)
Choose the instruction set architecture you want for your function code.

☐ arm64
☒ x86_64

Permissions | [Info](#)
By default, Lambda will create an execution role with permissions to upload logs to Amazon CloudWatch Logs. You can customize this default role later when adding triggers.

▼ **Change default execution role**

Execution role
Choose a role that defines the permissions of your function. To create a custom role, go to the [IAM console](#).

☐ Create a new role with basic Lambda permissions
☒ Use an existing role
☐ Create a new role from AWS policy templates

Existing role
Choose an existing role that you've created to be used with this Lambda function. The role must have permission to upload logs to Amazon CloudWatch Logs.

lambda-execution-role

[View the lambda-execution-role role](#) on the IAM console.

Figure 11: Create a function (source: personal collection)

Note: In this step, I added configurations for this lab, including a VPC, Subnets, and Security groups.

aws

Search [Option+S]

United Stat

Lambda > Functions > Create-Thumbnail

Successfully created the function **Create-Thumbnail**. You can now change its code and configuration. To invoke your function with a test event, choose "Test".

Create-Thumbnail

Throttle

Copy ARN

Actions

Function overview Info

Export to Infrastructure Composer

Download

Diagram | Template

Create-Thumbnail

Layers (0)

+ Add trigger

+ Add destination

Description

-

Last modified

3 minutes ago

Function ARN

arn:aws:lambda:us-west-2:419826376089:function:Create-Thumbnail

Function URL Info

-

Code

Test

Monitor

Configuration

Aliases

Versions

Code source Info

Open in Visual Studio Code

Upload from

CloudShell

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Figure 12: Function created successfully (source: personal collection)

- Step 3: add a “Trigger configuration”

The screenshot shows the AWS Lambda console's 'Add triggers' page. At the top, the AWS logo and navigation bar are visible. The breadcrumb trail shows 'Lambda > Add triggers'. The main section is titled 'Trigger configuration' with an 'Info' link. A dropdown menu shows 'S3' as the selected event source, with 'aws', 'asynchronous', and 'storage' listed below it. The 'Bucket' section contains a text input field with 's3/images-252025' and a 'Refresh' icon (a circular arrow) to its right, which is pointed to by a black arrow. Below the input field, it says 'Bucket region: us-west-2'. The 'Event types' section has a description and a dropdown menu currently showing 'All object create events'. The 'Prefix - optional' section has a text input field with 'e.g. images/'. The 'Suffix - optional' section has a text input field with 'e.g. .jpg'. The 'Recursive invocation' section has a checkbox that is checked, with the text 'I acknowledge that using the same S3 bucket for both input and output is not'. At the bottom, there is a footer with 'CloudShell', 'Feedback', '© 2025, Amazon Web Services, Inc. or its affiliates.', 'Privacy', 'Terms', and 'Cookie preferences'.

Figure 13: Trigger configuration (source: personal collection)

Observation 2: In this task, I developed an AWS Lambda function that retrieves an image from S3, resizes it, and stores the resized image back in Amazon S3.

Task 3: Test your function

- Step 1: Testing the function after editing the JSON file

The screenshot displays the AWS Lambda console interface for a function named 'Create-Thumbnail'. The top navigation bar includes the AWS logo, search, and navigation icons. The breadcrumb trail shows 'Lambda > Functions > Create-Thumbnail'. The function's configuration is shown, including the 'Create-Thumbnail' icon, 'Layers (0)', and an 'S3' trigger with an 'Add trigger' button. A right-hand panel provides details: 'Create a thumbnail-s image', 'Last modified 3 minutes ago', 'Function ARN: arn:aws:lambda:us-east-1:739332850643:function:create-Thumbnail', and 'Function URL'. Below the configuration, a tabbed interface shows 'Code', 'Test' (selected), 'Monitor', 'Configuration', 'Aliases', and 'Versions'. The 'Test' tab displays a green success message: 'Executing function: succeeded (logs [link])' with a 'Details' link. At the bottom, the 'Test event' section includes 'CloudWatch Logs Live Tail', 'Save', and 'Test' buttons. The footer contains 'Feedback', 'Privacy', 'Terms', 'Cookie preferences', and a copyright notice for 2025.

Figure 14: test result (source: personal collection)

- Step 2: downloading the resized image to the local machine

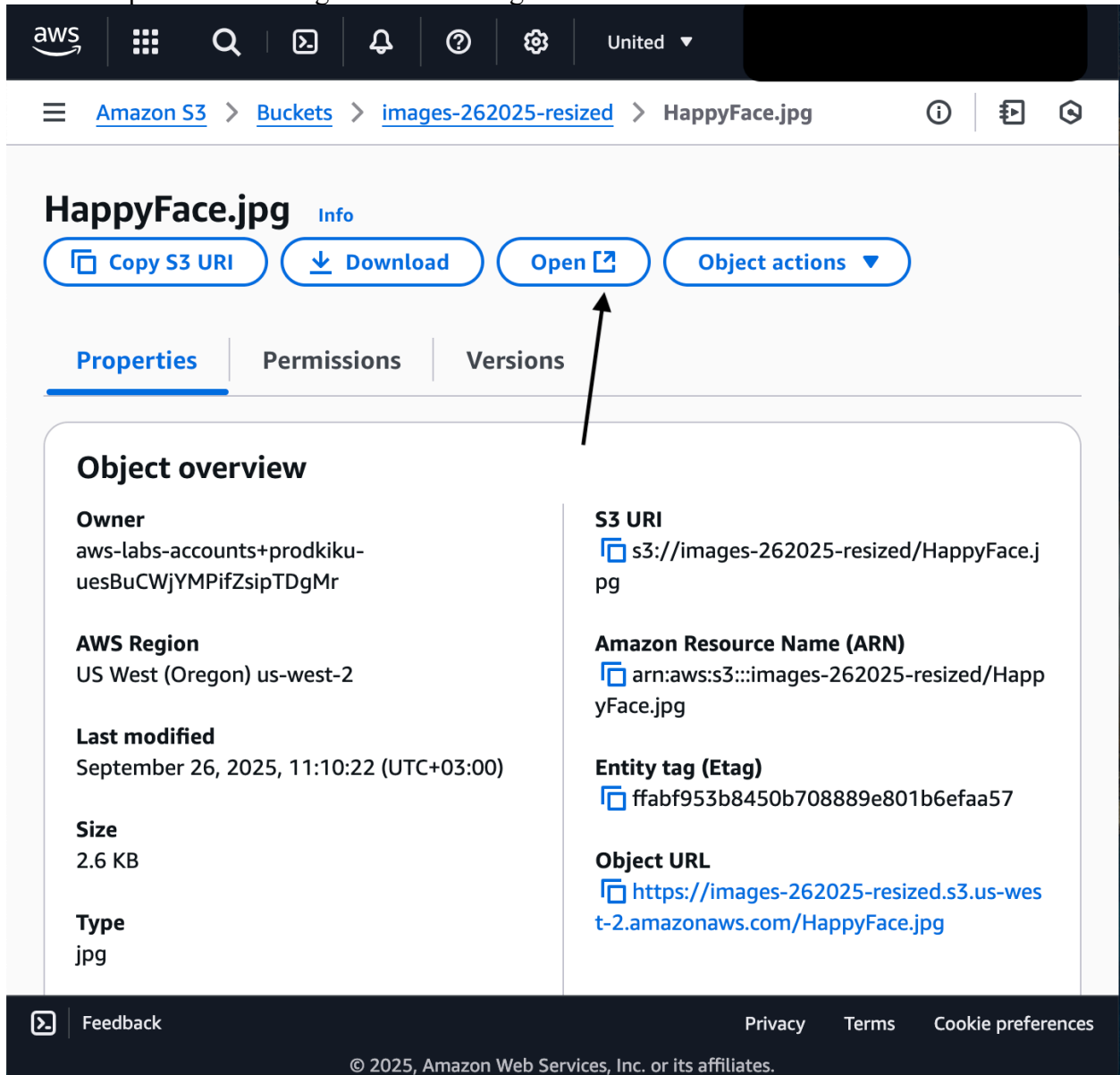


Figure 15: Resized image overview (source: personal collection)

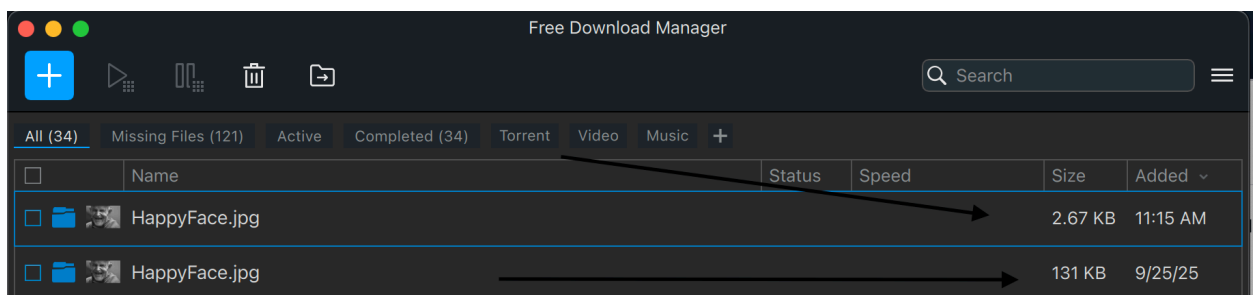


Figure 16: Resized image download confirmation (source: personal collection)

Observation 3: In this task, I tested the Lambda function using a simulated event that contained the same information sent from Amazon S3, indicating that a new object had been uploaded.

Task 4: Monitoring and logging

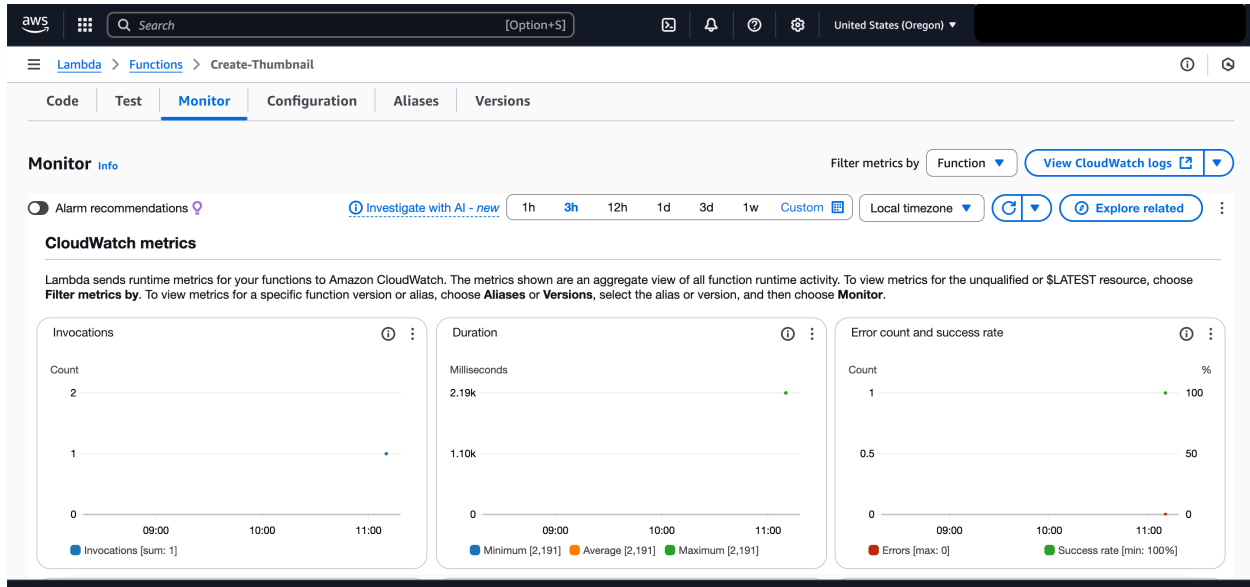


Figure 17: Monitor tab overview (source: personal collection)

Conclusion

In this lab, I learned the fundamentals of creating an Amazon S3 bucket and a Lambda function. The lab emphasized how to configure an S3 bucket as a source for Lambda, which triggers the function when an object is uploaded to S3.

Additionally, I explored how to monitor AWS Lambda S3 functions using Amazon CloudWatch Logs. I am excited to apply my skills to a meaningful real-world project.

Reference:

AWS Skill Builder. Introduction to AWS Lambda (n.d.). *Blueprint version spl-88: 2.3.32-970908b3*. Retrieved from <https://lab.builder-labs.skillbuilder.aws/lab/arn%3Aaws%3Alearningcontent%3Aus-east-1%3A470679935125%3Ablueprintversion%2Fspl-88%3A2.3.32-970908b3/en-US>