

## Advanced DevOps Exp-12

Sanket More

D15A 30

**Aim:** To create a Lambda function which will log “An Image has been added” once you add an object to a specific bucket in S3.

### Theory:

**AWS Lambda and S3 Integration:** AWS Lambda allows you to execute code in response to various events, including those triggered by Amazon S3. When an object is added to an S3 bucket, it can trigger a Lambda function to execute, allowing for event-driven processing without managing servers.

### Workflow:

#### 1. Create an S3 Bucket:

- First, create an S3 bucket that will store the objects. This bucket will act as the trigger source for the Lambda function.

#### 2. Create the Lambda Function:

- Set up a new Lambda function using AWS Lambda’s console. You can choose a runtime environment like Python, Node.js, or Java.
- Write code that logs a message like “An Image has been added” when triggered.

#### 3. Set Up Permissions:

- Ensure that the Lambda function has the necessary permissions to access S3. You can do this by attaching an IAM role with policies that allow reading from the bucket and writing logs to CloudWatch.

#### 4. Configure S3 Trigger:

- Link the S3 bucket to the Lambda function by setting up a trigger. Specify that the function should be triggered when an object is created in the bucket (e.g., when an image is uploaded).

#### 5. Test the Setup:

- Upload an object (e.g., an image) to the S3 bucket to test the trigger. The Lambda function should execute and log the message “An Image has been added” in AWS CloudWatch Logs.

## Procedure:-

### 1. Create an S3 bucket of the same location as that of the Lambda function

[Amazon S3](#) > [Buckets](#) > Create bucket

## Create bucket Info

Buckets are containers for data stored in S3.

### General configuration

AWS Region  
Europe (Stockholm) eu-north-1

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

sanketbucket123

Bucket name must be unique within the global namespace and follow the bucket naming rules. [See rules for bucket naming](#)

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

**Choose bucket**

Format: s3://bucket/prefix

aws Services Search [Alt+S] Stockholm SanketMore

[Amazon S3](#) > [Buckets](#) > sanketbucket123

## sanketbucket123 Info

[Objects](#) [Properties](#) [Permissions](#) [Metrics](#) [Management](#) [Access Points](#)

**Objects (0) Info** [Refresh](#) [Copy S3 URI](#) [Copy URL](#) [Download](#) [Open](#) [Delete](#) [Actions](#) [Create folder](#) [Upload](#)

Objects are the fundamental entities stored in Amazon S3. You can use [Amazon S3 inventory](#) to get a list of all objects in your bucket. For others to access your objects, you'll need to explicitly grant them permissions. [Learn more](#)

Find objects by prefix

Name	Type	Last modified	Size	Storage class
No objects You don't have any objects in this bucket.				

[Upload](#)

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Create function [Info](#)

Choose one of the following options to create your function.

☒ **Author from scratch**  
Start with a simple Hello World example.

☐ **Use a blueprint**  
Build a Lambda application from sample code and configuration presets for common use cases.

☐ **Container image**  
Select a container image to deploy for your function.

☐ **Browse serverless app repository**  
Deploy a sample Lambda application from the AWS Serverless Application Repository.

**Basic information**

**Function name**  
Enter a name that describes the purpose of your function.  
  
Use only letters, numbers, hyphens, or underscores with no spaces.

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

▼

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

☒ x86\_64

☐ arm64

2. Add roles while creating the Lambda function and give permissions for accessing the S3 bucket

▼ **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

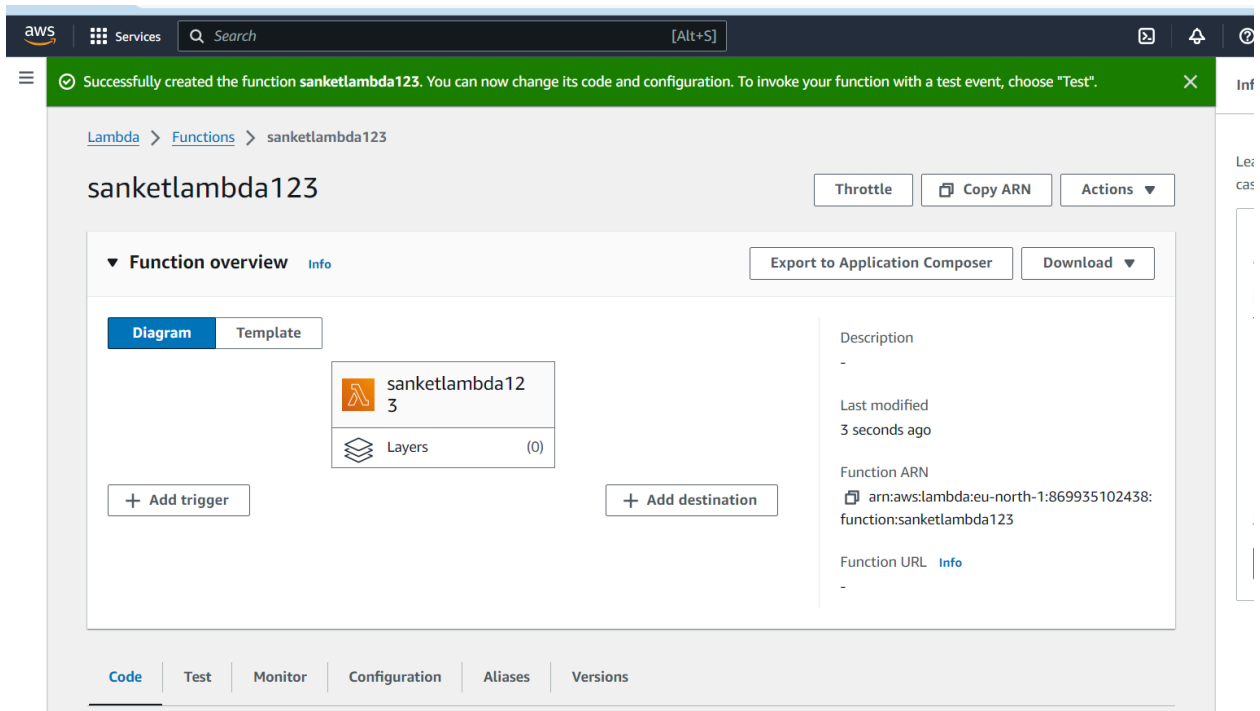
Role creation might take a few minutes. Please do not delete the role or edit the trust or permissions policies in this role.

**Role name**  
Enter a name for your new role.  
  
Use only letters, numbers, hyphens, or underscores with no spaces.

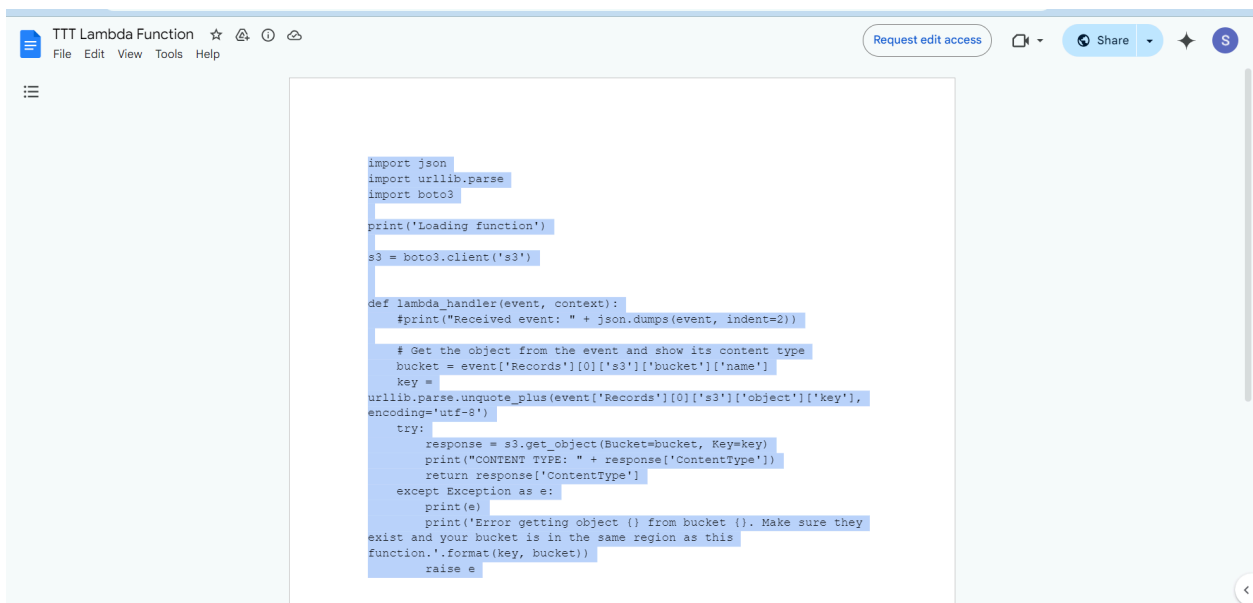
**Policy templates - optional** [Info](#)  
Choose one or more policy templates.

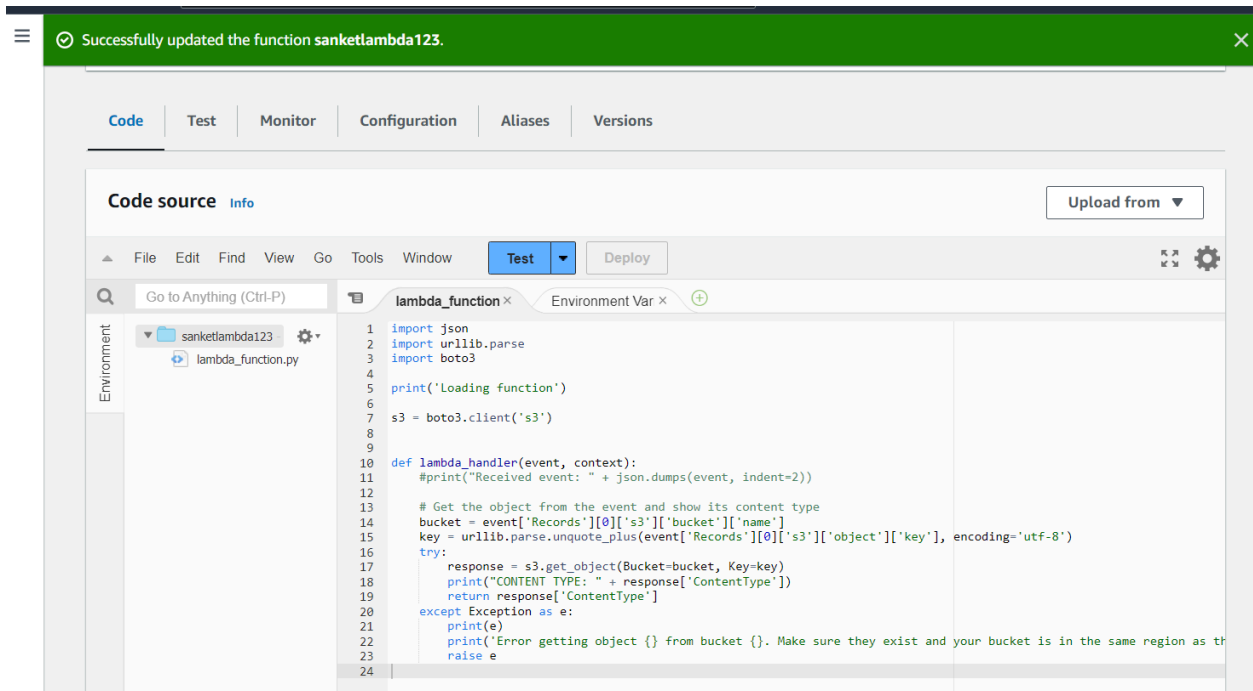
**Amazon S3 object read-only permissions**

S3

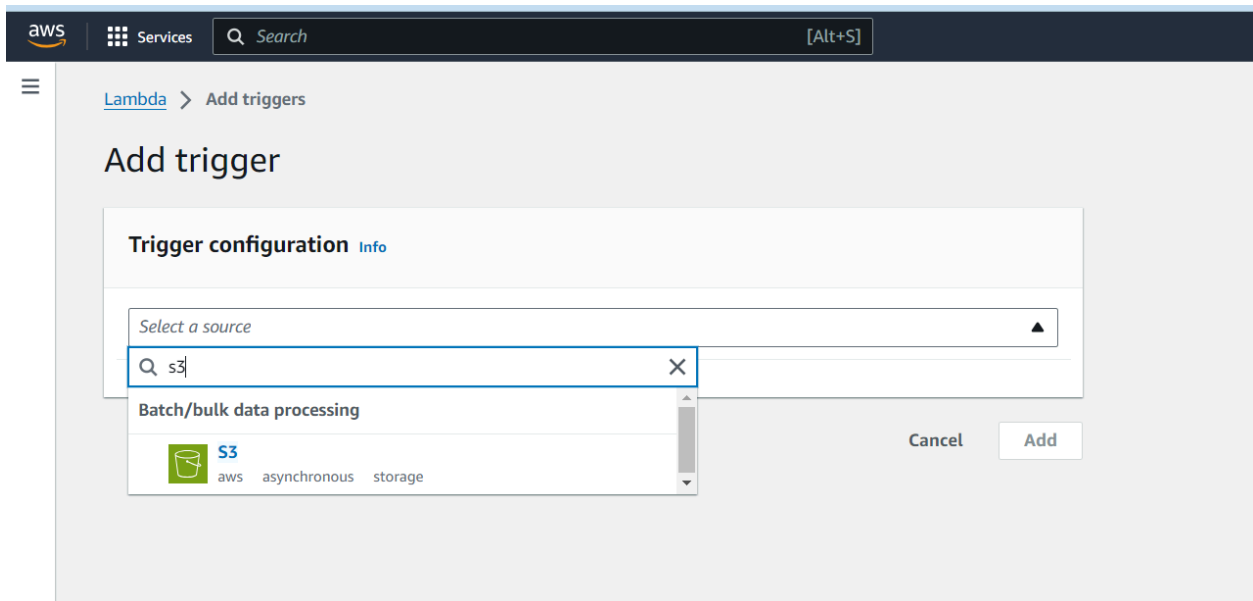


3. After creating the Lambda function copy a code available on the internet which allows the Lambda function to access the S3 bucket contents.





4. Add a trigger to the Lambda function so any changes in the S3 bucket will be first visible to the user.



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Lambda > Add triggers

Add trigger

Trigger configuration [Info](#)

S3

aws asynchronous storage

Bucket

Choose or enter the ARN of an S3 bucket that serves as the event source. The bucket must be in the same region as the function.

s3/sanketbucket123

X

↺

Bucket region: eu-north-1

Event types

Select the events that you want to have trigger the Lambda function. You can optionally set up a prefix or suffix for an event. However, for each bucket, individual events cannot have multiple configurations with overlapping prefixes or suffixes that could match the same object key.

All object create events X

Prefix - optional

Enter a single optional prefix to limit the notifications to objects with keys that start with matching characters. Any [special characters](#) must be URL encoded.

e.g. images/

Recursive invocation

If your function writes objects to an S3 bucket, ensure that you are using different S3 buckets for input and output. Writing to the same bucket increases the risk of creating a recursive invocation, which can result in increased Lambda usage and increased costs. [Learn more](#)

☒ I acknowledge that using the same S3 bucket for both input and output is not recommended and that this configuration can cause recursive invocations, increased Lambda usage, and increased costs.

Lambda will add the necessary permissions for AWS S3 to invoke your Lambda function from this trigger. [Learn more](#) about the Lambda permissions model.

Cancel

Add

Navigation: [Lambda](#) > [Functions](#) > sanketlambda123

## sanketlambda123

[Throttle](#) [Copy ARN](#) [Actions](#) ▼

✓ The trigger sanketbucket123 was successfully added to function sanketlambda123. The function is now receiving events from the trigger.

▼ **Function overview** [Info](#) [Export to Application Composer](#) [Download](#) ▼

**Diagram** [Template](#)

```
graph LR; S3[S3] --> sanketlambda123[sanketlambda123];
```

+ Add trigger

**Layers** (0)

+ Add destination

**Description**

-

**Last modified**

5 minutes ago

**Function ARN**

arn:aws:lambda:eu-north-1:869935102438:function:sanketlambda123

**Function URL** [Info](#)

-

[Code](#) [Test](#) [Monitor](#) [Configuration](#) [Aliases](#) [Versions](#)

5. In the event notification of the S3 bucket we can see that it has been connected to the Lambda function .

No data events to display. [Configure in CloudTrail](#)

### Event notifications (1)

Send a notification when specific events occur in your bucket. [Learn more](#)

[Edit](#) [Delete](#) [Create event notification](#)

<input type="checkbox"/>	Name	Event types	Filters	Destination type	Destination
<input type="checkbox"/>	905f180d-6a25-4474-941b-66671d74e4cd	All object create events	-	Lambda function	<a href="#">sanketlambda123</a>

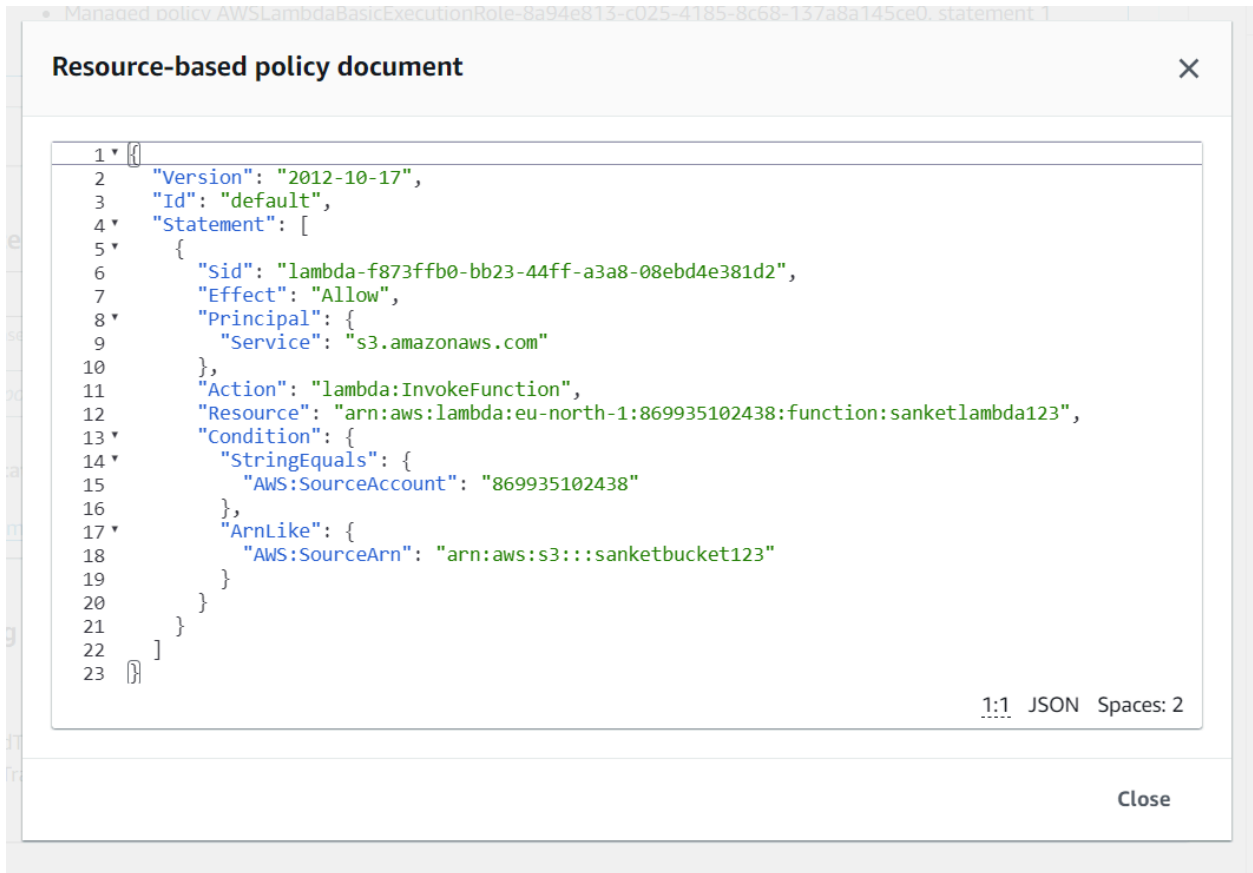
### Amazon EventBridge

For additional capabilities, use Amazon EventBridge to build event-driven applications at scale using S3 event notifications. [Learn more](#) or [see EventBridge pricing](#)

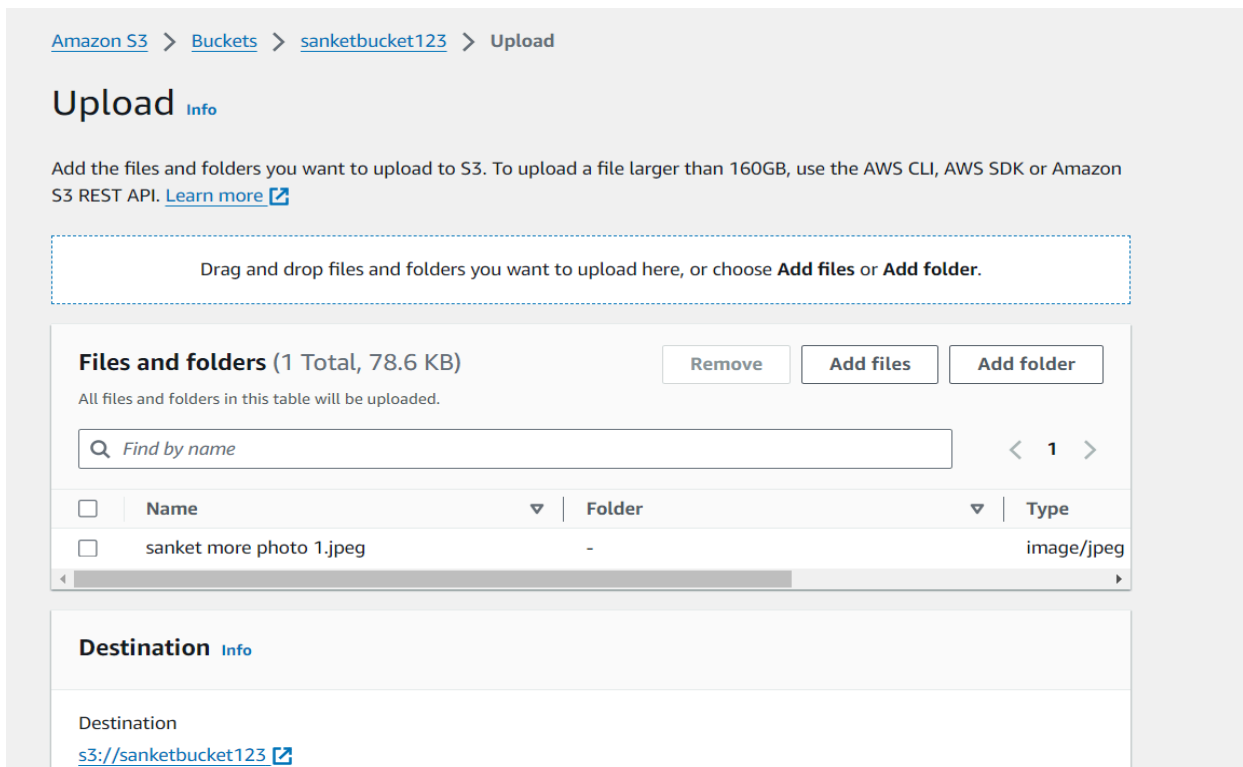
[Edit](#)

Send notifications to Amazon EventBridge for all events in this bucket

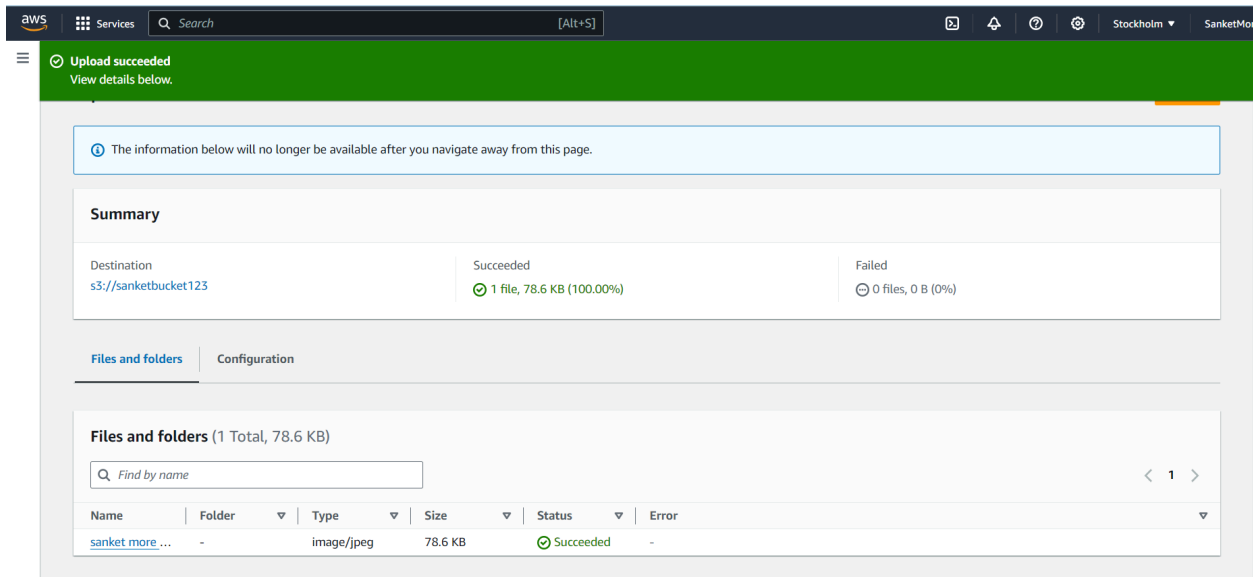
Off



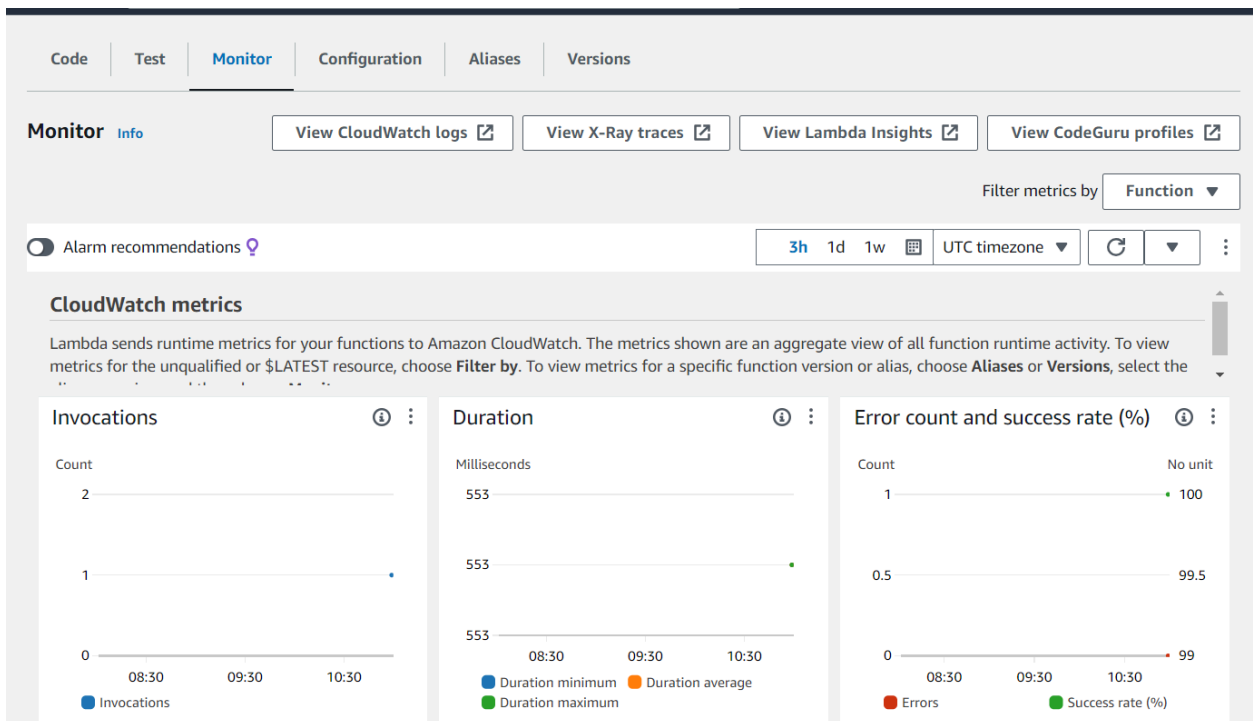
## 6. Upload a photo to the S3 bucket







7. Now run the function and in the cloud watch logs of AWS you can see the message printed and all the other details of the working of the Lambda function.



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Services

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Stockholm

Sanket

CloudWatch

Favorites and recents

Dashboards

Alarms

Logs

Log groups

Log Anomalies

Live Tail

Logs Insights

Contributor Insights

Metrics

X-Ray traces

Events

Application Signals

Network monitoring

Insights

CloudWatch > Log groups > /aws/lambda/sanketlambda123

/aws/lambda/sanketlambda123

Actions

View in Logs Insights

Start tailing

Search log group

Log group details

Log class  
Standard

ARN  
arn:aws:logs:eu-north-1:869935102438:log-group:/aws/lambda/sanketlambda123:\*

Creation time  
3 minutes ago

Retention  
Never expire

Stored bytes  
-

Metric filters  
0

Subscription filters  
0

Contributor Insights rules  
-

KMS key ID  
-

Anomaly detection  
Configure

Data protection  
-

Sensitive data count  
-

Log streams

Tags

Anomaly detection

Metric filters

Subscription filters

Contributor Insights

Data protection

aws

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Dashboards

Alarms

Logs

Log groups

Log Anomalies

Live Tail

Logs Insights

Contributor Insights

Metrics

X-Ray traces

Events

Application Signals

Network monitoring

Insights

Settings

CloudWatch > Log groups > /aws/lambda/sanketlambda123 > 2024/10/02/[\$LATEST]8ed57b1dcf54ab8b05688935ed748db

Log events

2024/10/02/[\$LATEST]8ed57b1dcf54ab8b05688935ed748db

Actions

Start tailing

Create metric filter

You can use the filter bar below to search for and match terms, phrases, or values in your log events. [Learn more about filter patterns](#)

Filter events - press enter to search

Clear

1m

30m

1h

12h

Custom

UTC timezone

Display

Timestamp

Message

No older events at this moment. [Retry](#)

2024-10-02T10:59:36.409Z INIT\_START Runtime Version: python:3.12.v36 Runtime Version ARN: arn:aws:lambda:eu-north-1::runtime:188d9ca2e2714ff5637bd2bb..

2024-10-02T10:59:36.001Z Loading function

2024-10-02T10:59:37.172Z START RequestId: df929631-f73a-46eb-8a07-56f2f4a810c8 Version: \$LATEST

2024-10-02T10:59:37.718Z CONTENT TYPE: image/jpeg

2024-10-02T10:59:37.725Z END RequestId: df929631-f73a-46eb-8a07-56f2f4a810c8

2024-10-02T10:59:37.725Z REPORT RequestId: df929631-f73a-46eb-8a07-56f2f4a810c8 Duration: 552.91 ms Billed Duration: 553 ms Memory Size: 128 MB Max PL.

No newer events at this moment. [Auto retry paused. Resume](#)