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## **EXPERIMENT NO - 12**

**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.

## Outcomes:

The image displays two screenshots from the AWS Management Console. The top screenshot shows the 'Create bucket' page for Amazon S3. The 'General configuration' section is active, showing the AWS Region as 'Europe (Stockholm) eu-north-1'. Under 'Bucket type', 'General purpose' is selected. The 'Bucket name' field contains 'exp12buck'. Below this, there is a section for 'Copy settings from existing bucket - optional' with a 'Choose bucket' button. The bottom screenshot shows the 'Lambda' console for the function 'lambdafunc'. A green notification bar at the top states: 'The trigger exp12buck was successfully added to function lambdafunc. The function is now receiving events from the trigger.' The 'Function overview' section shows a diagram with 'lambdafunc' as the function and 'S3' as the trigger. The 'Configuration' tab is selected, showing details like 'Function ARN' and 'Function URL'. On the right, there is a 'Tutorials' sidebar with a 'Create a simple web app' tutorial.

**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](#)  
exp12buck

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

---

**eu-north-1.console.aws.amazon.com/lambda/home?region=eu-north-1#/functions/lambdafunc?tab=configure**

**Lambda > Functions > lambdafunc**

Throttle Copy ARN Actions

**lambdafunc**

The trigger exp12buck was successfully added to function lambdafunc. The function is now receiving events from the trigger.

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

Export to Application Composer Download

**Diagram** **Template**

lambdafunc

Layers (0)

S3

+ Add destination

+ Add trigger

**Description**  
-

**Last modified**  
4 minutes ago

**Function ARN**  
arn:aws:lambda:eu-north-1:026090558619:function:lambdafunc

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

**Code** **Test** **Monitor** **Configuration** **Aliases** **Versions**

**Info** **Tutorials**

Learn how to implement common use cases in AWS Lambda.

**Create a simple web app**

In this tutorial you will learn how to:

- Build a simple web app, consisting of a Lambda function with a function URL that outputs a webpage
- Invoke your function through its function URL

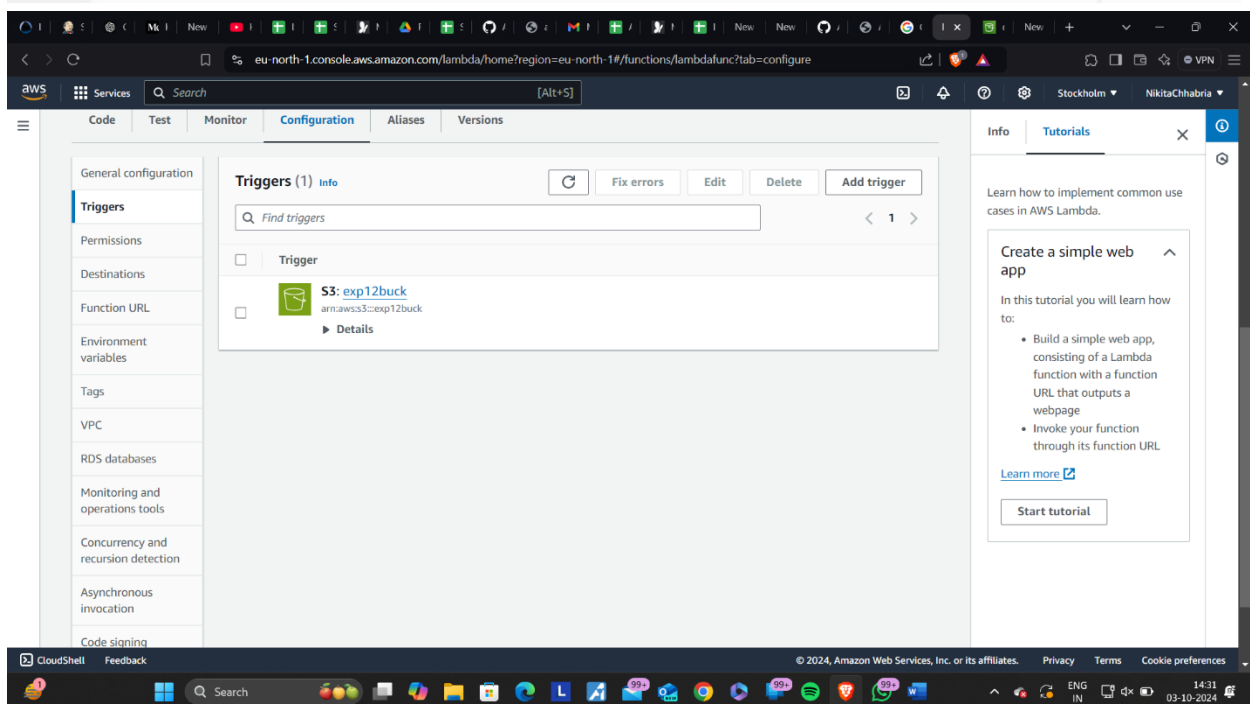
[Learn more](#)

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```
lambda_function × Environment Var × +
1 import json
2
3 def lambda_handler(event, context):
4     # Extract bucket name and object key from the event
5     bucket_name = event['Records'][0]['s3']['bucket']['name']
6     object_key = event['Records'][0]['s3']['object']['key']
7
8     # Log a message
9     print(f"An Image has been added to the bucket {bucket_name}: {object_key}")
10
11     return {
12         'statusCode': 200,
13         'body': json.dumps('Log entry created successfully')
14     }
15
```



The image displays two screenshots from the AWS management console. The top screenshot shows the S3 'Upload succeeded' page for a bucket named 'exp12buck' in the 'eu-north-1' region. A green banner at the top indicates 'Upload succeeded'. Below, a summary shows 1 file (41.0 KB) uploaded successfully. The 'Files and folders' section lists a file named 'pngwing.co...' of type 'image/png' with a size of 41.0 KB, status 'Succeeded', and no errors.

The bottom screenshot shows the AWS CloudWatch 'Log groups' page for the log group '/aws/lambda/lambdafunc' in the 'eu-north-1' region. The 'Log events' section shows a list of events. The most recent event is a 'REPORT' event with a message indicating the duration and memory usage of a function execution. The event details are as follows:

Timestamp	Message
2024-10-03T14:32:51.304+05:30	INIT_START Runtime Version: nodejs20.v39 Runtime Version ARN: arn:aws:lambda:eu-north-1::runtime:ad9b28ae231dfc4c3325e183024ccb4d9d1aa14796d98295f898140041...
2024-10-03T14:32:51.454+05:30	START RequestId: abbd7b5f-9a9c-419a-8490-ed167f46eb05 Version: \$LATEST
2024-10-03T14:32:51.467+05:30	An image has been added to the bucket lambdafunc: image.png
2024-10-03T14:32:51.468+05:30	REPORT RequestId: abbd7b5f-9a9c-419a-8490-ed167f46eb05 Duration: 12.70 ms Billed Duration: 13 ms Memory Size: 128 MB Max Memory Used: 62 MB Init Duration: 14...

## Conclusion:

Integrating AWS Lambda with S3 allows for real-time, automated processing of events such as file uploads. In this example, a Lambda function is configured to log a message whenever an image is added to a specific S3 bucket.

