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**Subject : Adv Devops Exp No 12**

**Aim :** The aim of this project is to create an AWS Lambda function that automatically logs a message whenever an image is added to a specific Amazon S3 bucket. This functionality can be useful for monitoring changes in the bucket and ensuring that any new images are tracked effectively.

**Theory :**

AWS Lambda is a serverless compute service that lets you run code in response to events without provisioning or managing servers. It supports various event sources, including Amazon S3.

Amazon S3 (Simple Storage Service) is a scalable object storage service that allows users to store and retrieve any amount of data at any time from anywhere on the web. By integrating S3 with Lambda, you can create automated workflows that respond to bucket events, such as object creation.

**Steps to Implement the Lambda Function**

1. Create an S3 Bucket: Set up an S3 bucket where images will be uploaded.
2. Set Bucket Event Notifications: Configure the S3 bucket to trigger a Lambda function when an object is created (specifically for image files).
3. Create the Lambda Function:
  - Use the AWS Lambda console or CLI to create a new Lambda function.
  - Write code that logs the message "An Image has been added" whenever an image is uploaded to the bucket.
4. Set Permissions: Ensure that the Lambda function has the appropriate permissions to log messages (using AWS CloudWatch) and to read from the S3 bucket.
5. Test the Setup: Upload an image to the S3 bucket and check the logs in CloudWatch to verify that the message is being logged as expected.

**Steps :**

**1. Create an S3 Bucket**

- Go to the AWS Management Console.
- Navigate to the S3 service.
- Click on "Create bucket."
- Enter a unique bucket name and choose a region.
- Configure other settings as needed and click "Create bucket."

## Create bucket [Info](#)

Buckets are containers for data stored in S3.

### General configuration

AWS Region  
US East (N. Virginia) us-east-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](#)

nidhi12

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

✔ Successfully created bucket "nidhi12"

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

[View details](#)

[Amazon S3](#) > Buckets

▶ **Account snapshot** - updated every 24 hours [All AWS Regions](#) [View Storage Lens dashboard](#)

Storage lens provides visibility into storage usage and activity trends. [Learn more](#) [↗](#)

[General purpose buckets](#) | [Directory buckets](#)

**General purpose buckets (1)** [Info](#) [All AWS Regions](#)

Buckets are containers for data stored in S3.

< 1 > ⚙

	Name	AWS Region	IAM Access Analyzer	Creation date
<input type="radio"/>	<a href="#">nidhi12</a>	US East (N. Virginia) us-east-1	<a href="#">View analyzer for us-east-1</a>	August 29, 2024, 14:49:30 (UTC+05:30)

## 2. Create a Lambda Function

- Go to the AWS Management Console.
- Navigate to the Lambda service.
- Click on "Create function."
- Choose "Author from scratch."
- Enter a name for your function, e.g., **S3ImageLogger**
- Select a runtime (e.g., Python 3.x or Node.js).
- Click "Create function."

## 3. Write the Lambda Function Code

- In the Lambda function console, scroll down to the code editor.

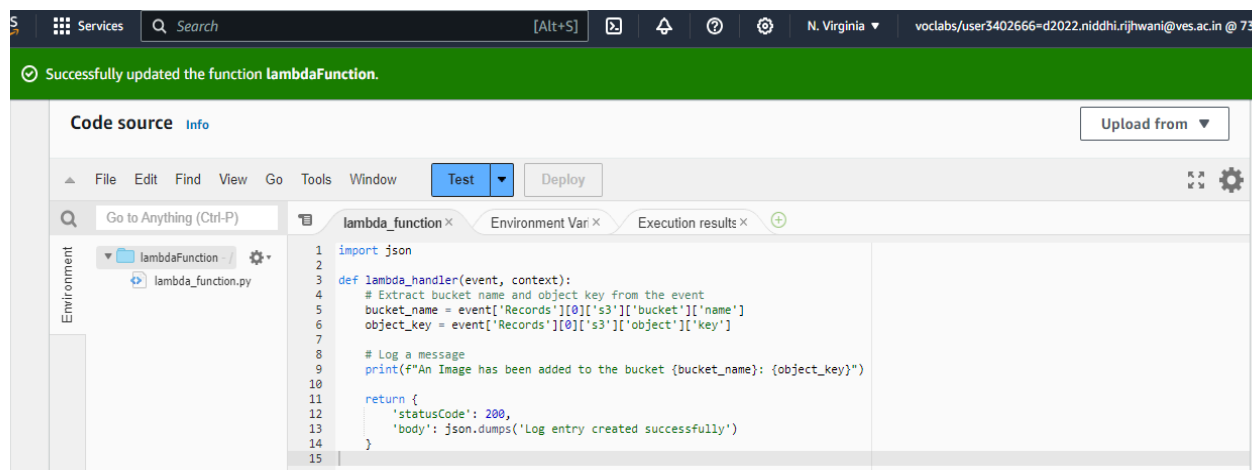
Replace the default code with the following code snippet (assuming you're using Python):

Copy code

```
import json
```

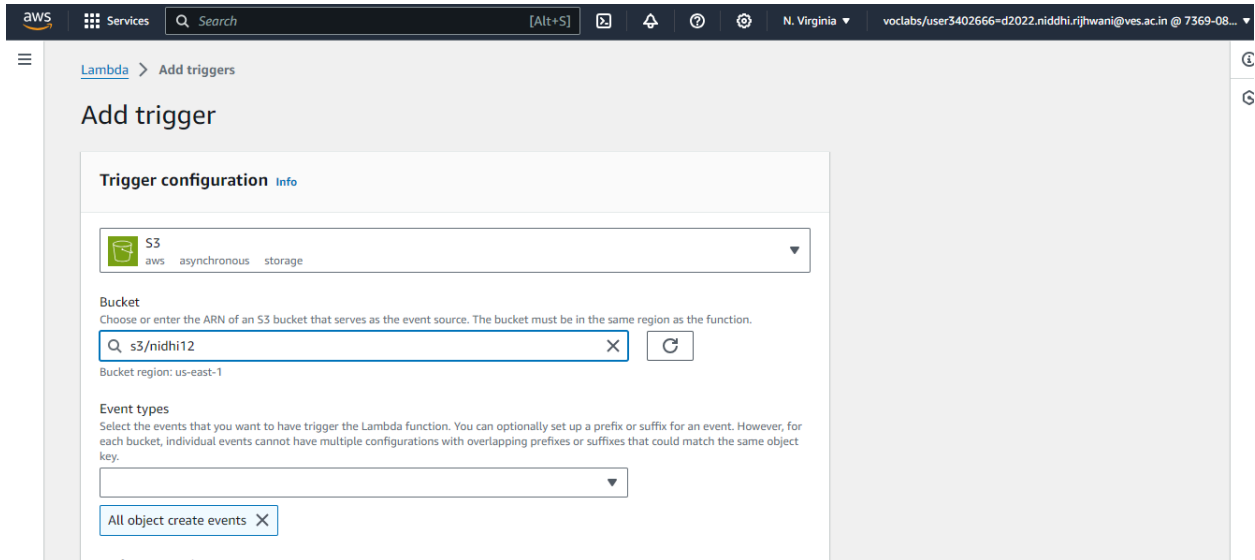
```
def lambda_handler(event, context):  
    # Extract bucket name and object key from the event  
    bucket_name = event['Records'][0]['s3']['bucket']['name']  
    object_key = event['Records'][0]['s3']['object']['key']  
  
    # Log a message  
    print(f"An Image has been added to the bucket {bucket_name}: {object_key}")  
  
    return {  
        'statusCode': 200,  
        'body': json.dumps('Log entry created successfully')  
    }
```

- Click "Deploy" to save your changes.



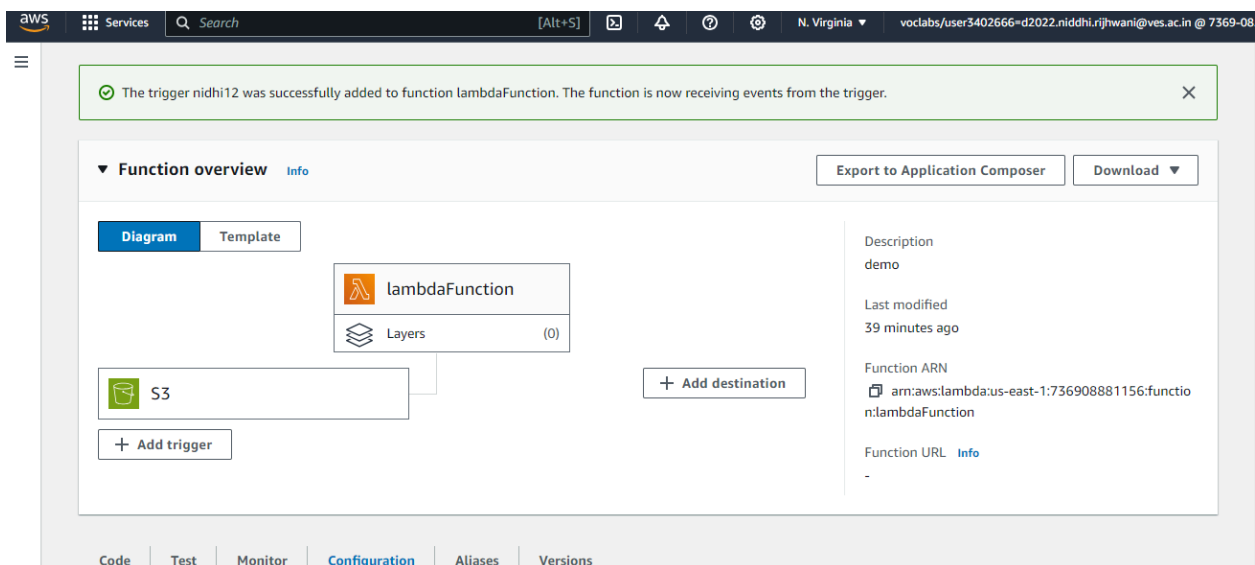
#### 4. Set Up S3 Trigger for the Lambda Function

- Scroll down to the "Function overview" section in the Lambda console.
- Click on "Add trigger."
- Select "S3" from the list of triggers.
- Choose the S3 bucket you created earlier.
- In the "Event type" dropdown, select "All objects create events."
- Optionally, specify a prefix or suffix to filter the events (e.g., for images only, you can use suffix `.jpg`, `.png`).
- Click "Add."



## 5. Grant Permissions to Lambda

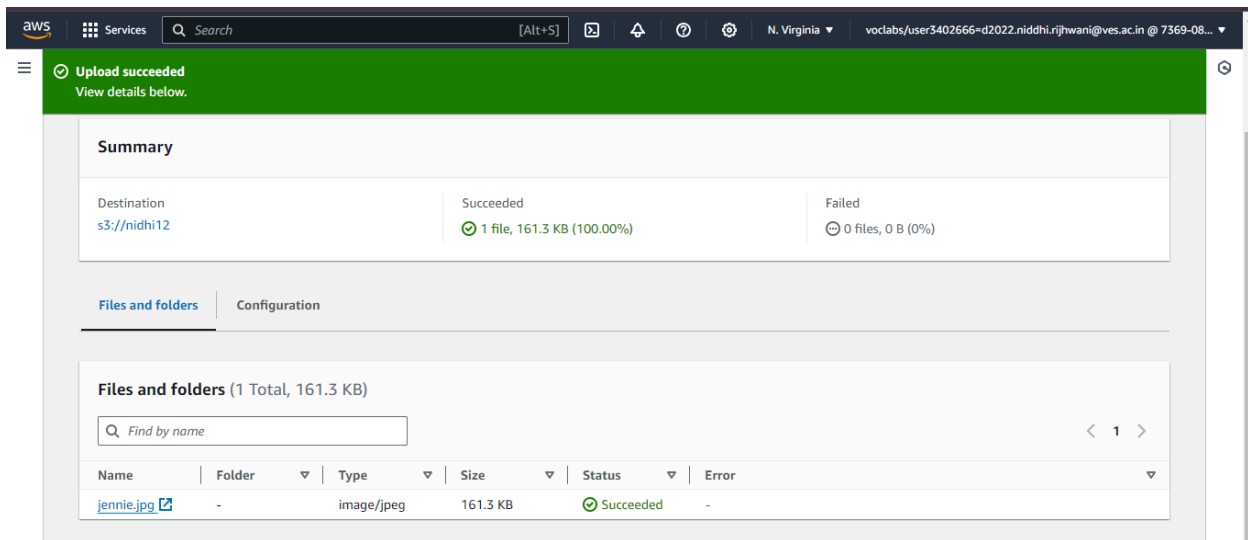
- Navigate to the "Permissions" tab of your Lambda function.
- Ensure the Lambda function's execution role has the necessary permissions to access the S3 bucket.
- If needed, attach the [AmazonS3ReadOnlyAccess](#) policy or create a custom policy with the necessary permissions.



## 6. Test the Setup

- Upload an image file to your S3 bucket.
- Go to the "Monitoring" tab in your Lambda function to check the logs.

- Alternatively, use CloudWatch Logs to view the output and confirm that the message "An Image has been added" has been logged.



This setup should ensure that each time an image is uploaded to the specified S3 bucket, the Lambda function will log the appropriate message

## Conclusion

By following the above steps, you can successfully implement a Lambda function that logs messages whenever images are added to an S3 bucket. This solution provides an efficient way to monitor object uploads without manual intervention. Automating this process helps in maintaining oversight of data management activities in S3 and can be extended to more complex workflows, such as processing images or triggering notifications based on uploads.