



Semester: V  
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Class / Branch: TE IT  
Subject: Advanced Devops Lab (ADL)  
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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

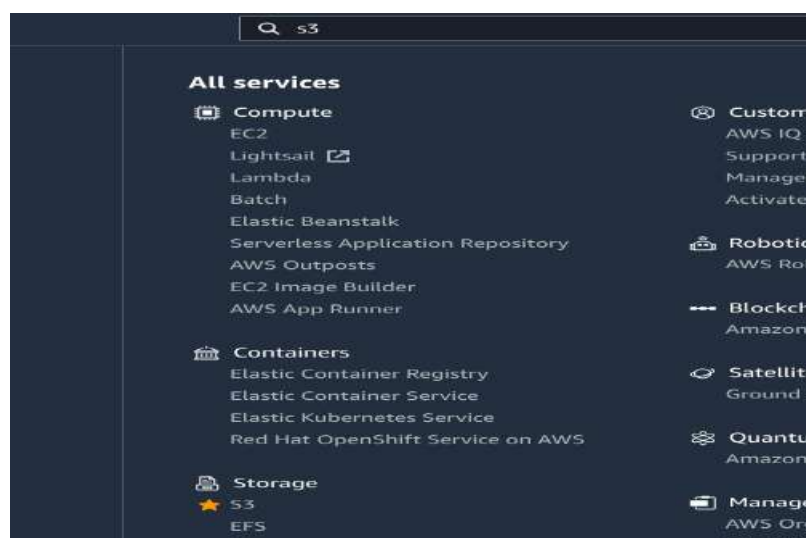
### Theory:

#### Creating S3 Bucket

Let us start first by creating a s3 bucket in AWS console using the steps given below –

#### Step 1

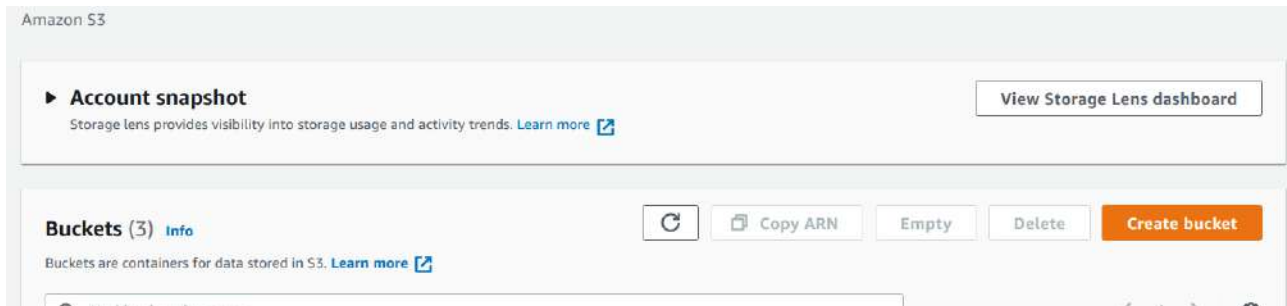
Go to Amazon services and click **S3** in storage section as highlighted in the image given below –





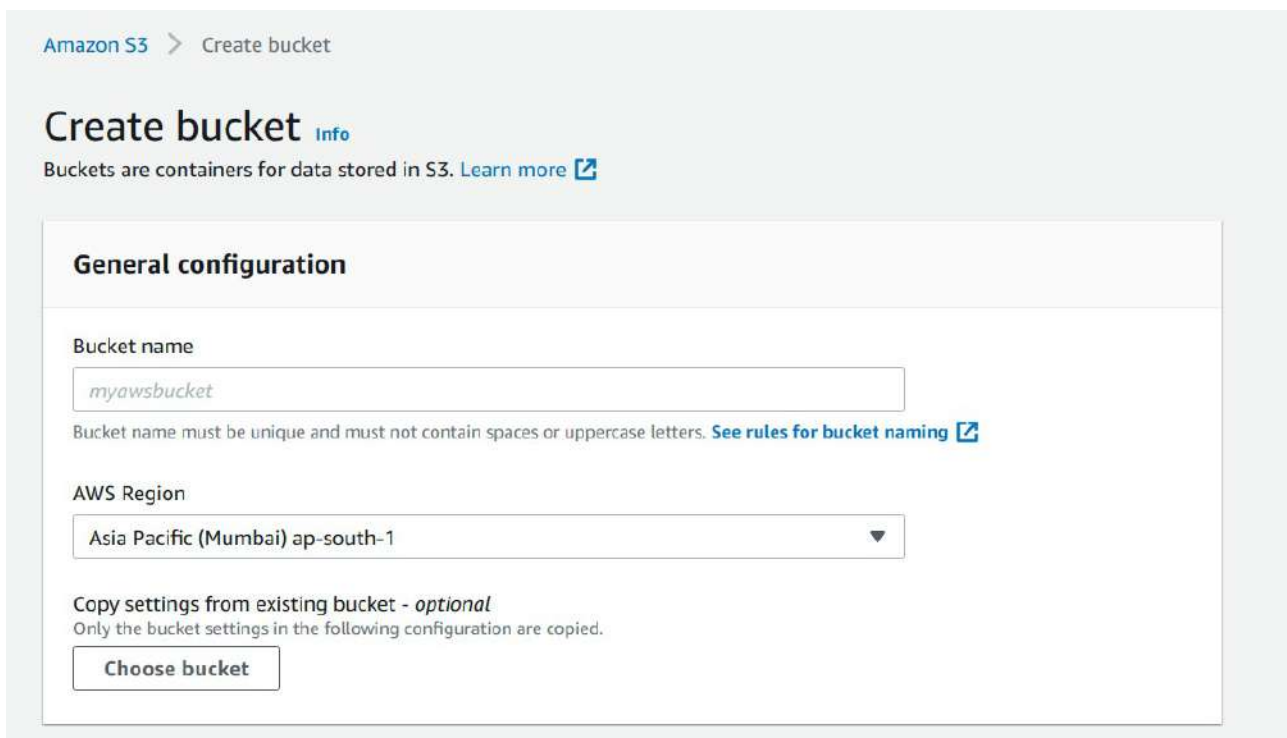
## Step 2

Click **S3** storage and **Create bucket** which will store the files uploaded.



3

Once you click Create bucket button, you can see a screen as follows –



4

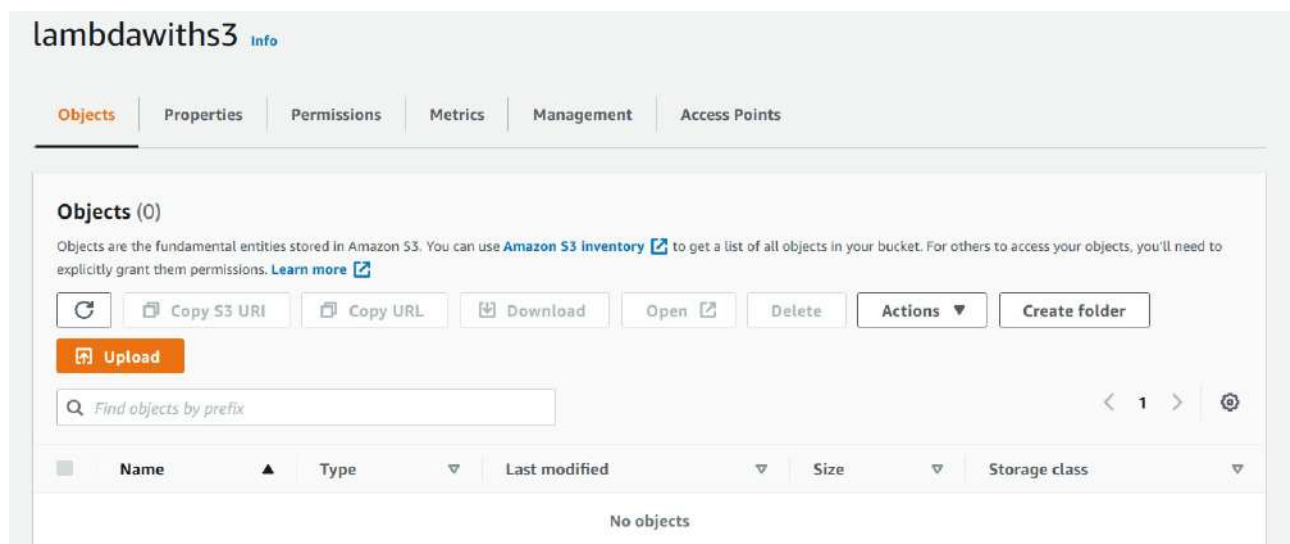
Enter the details Bucket name, Select the Region and click Create button at the bottom left side. Thus, we have created bucket with name :



<input type="radio"/>	lambdawiths3	Asia Pacific (Mumbai) ap-south-1	Bucket and objects not public	August 3, 2021, 11:22:23 (UTC+05:30)
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## Step 5

Now, click the bucket name and it will ask you to upload files as shown below –



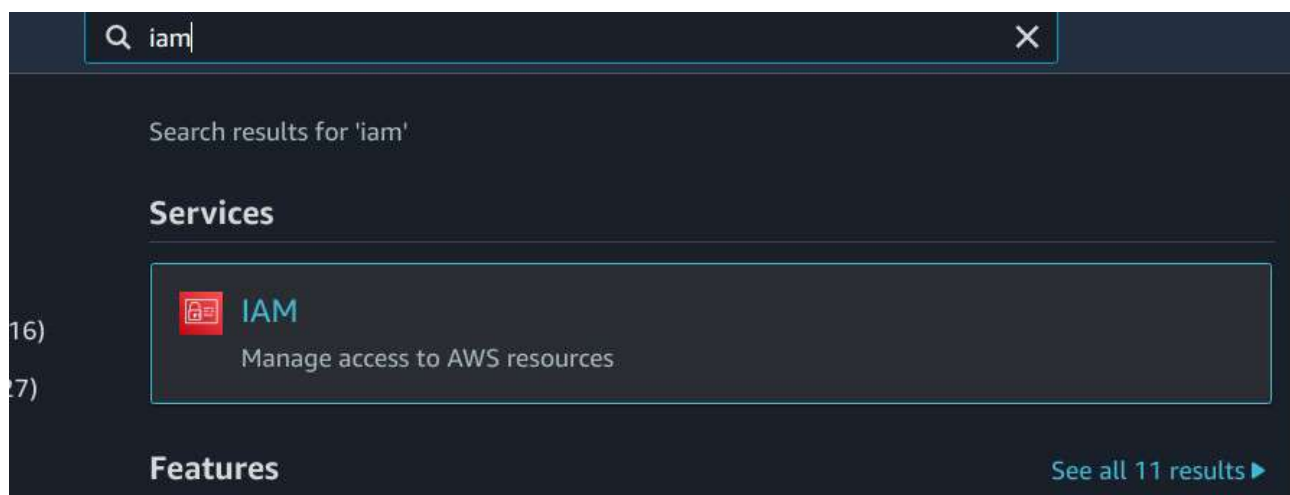
Thus, we are done with bucket creation in S3.

## Create Role that Works with S3 and Lambda

To create role that works with S3 and Lambda, please follow the Steps given below –

## Step 1

Go to AWS services and select IAM as shown below –





## Step 2

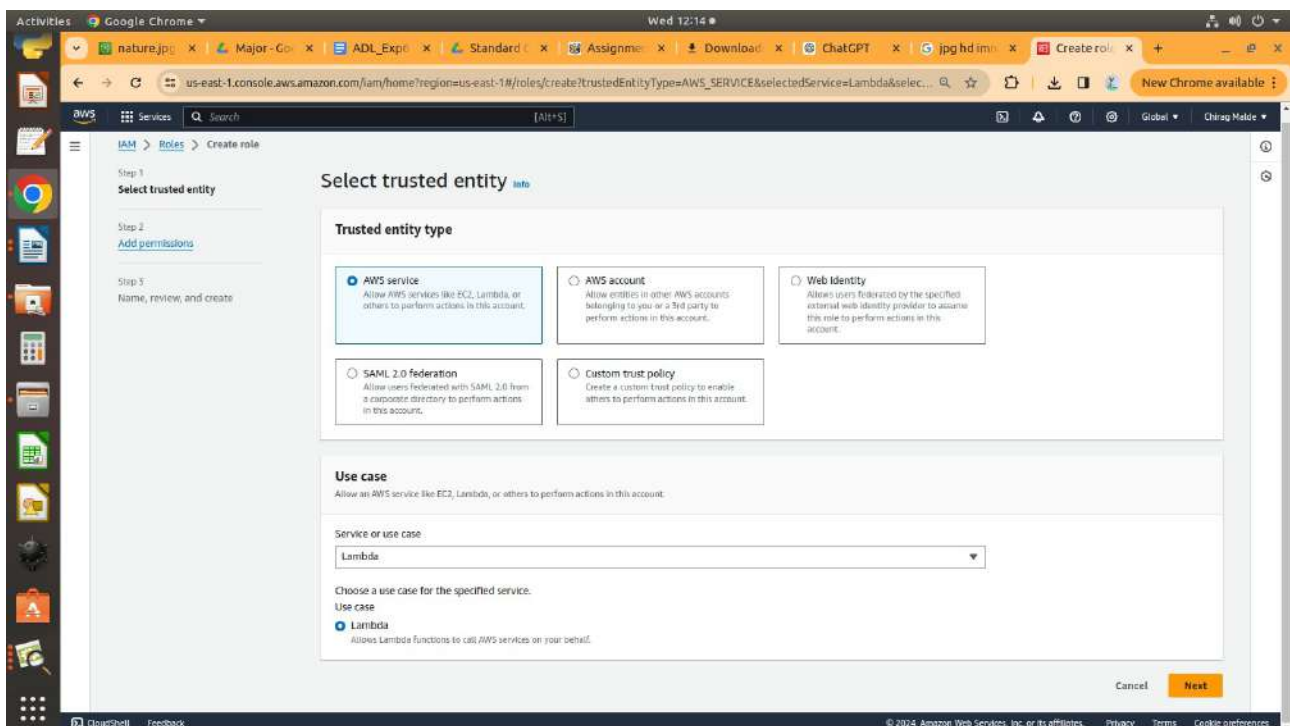
Now, click **IAM** -> **Roles** as shown below –



S

## Step 3

Now, click **Create role** and choose the services that will use this role. Select Lambda and click **Permission** button.



## Step 4



Add the permission from below and click Review.

**AmazonS3FullAccess, AWSLambdaFullAccess and CloudWatchFullAccess.**

## Step 5

Observe that we have chosen the following permissions –

### Create role

1 2 3

#### Review

Provide the required information below and review this role before you create it.

Role name\*

Use alphanumeric and '+', '@', '-' characters. Maximum 64 characters.

Role description

Allows Lambda functions to call AWS services on your behalf.

Maximum 1000 characters. Use alphanumeric and '+', '@', '-' characters.

Trusted entities

AWS service: lambda.amazonaws.com

Policies

 AmazonS3FullAccess [↗](#)

 AWSLambda\_FullAccess [↗](#)

 CloudWatchFullAccess [↗](#)

Permissions boundary

Permissions boundary is not set

No tags were added.

Observe that the Policies that we have selected are **AmazonS3FullAccess, AWSLambdaFullAccess and CloudWatchFullAccess.**

## Step 6

Now, enter the Role name, Role description and click Create Role button at the bottom.



lambdawiths3service

AWS Service: lambda



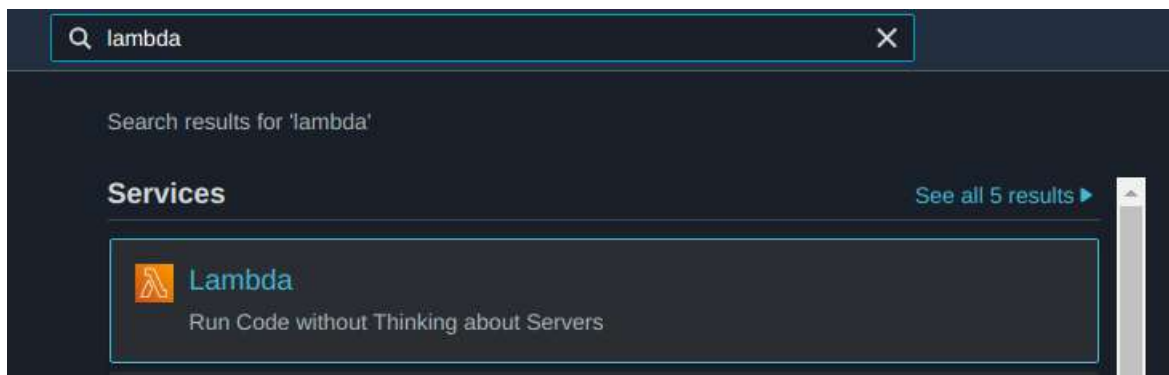
Thus, our role named `lambdawiths3service` is created.

## Create Lambda function and Add S3 Trigger

In this section, let us see how to create a Lambda function and add a S3 trigger to it. For this purpose, you will have to follow the Steps given below –

### Step 1

Go to AWS Services and select Lambda as shown below –



### Step 2

Click **Lambda** and follow the process for adding **Name**. Choose the **Runtime**, **Role** etc. and create the function. The Lambda function that we have created is shown in the screenshot below –





Lambda > Functions > Create function

## 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.

### Basic information

**Function name**  
Enter a name that describes the purpose of your function.

lambdawiths3bucket

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.

Node.js 14.x

**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

▼ 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.

lambdawiths3service

[View the lambdawiths3service role](#) on the IAM console.

### Step 3

Now let us add the S3 trigger.



Lambda > Functions > lambdawiths3bucket

lambdawiths3bucket

Throttle Copy ARN Actions

Function overview info

Code Test Monitor Configuration Aliases Versions

General configuration

Triggers

Permissions

Destinations

Environment variables

Tags

VPC

Triggers (0)

Find triggers

Trigger

No triggers  
No triggers are configured.  
Add trigger

4

Choose the trigger from above and add the details as shown below –

### Add trigger

#### Trigger configuration

**S3**  
aws storage

**Bucket**  
Please select the S3 bucket that serves as the event source. The bucket must be in the same region as the function.  
lambdawiths3

**Event type**  
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

**Prefix - optional**  
Enter a single optional prefix to limit the notifications to objects with keys that start with matching characters.  
e.g. images/

**Suffix - optional**  
Enter a single optional suffix to limit the notifications to objects with keys that end with matching characters.  
.jpg

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

**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.

Cancel Add

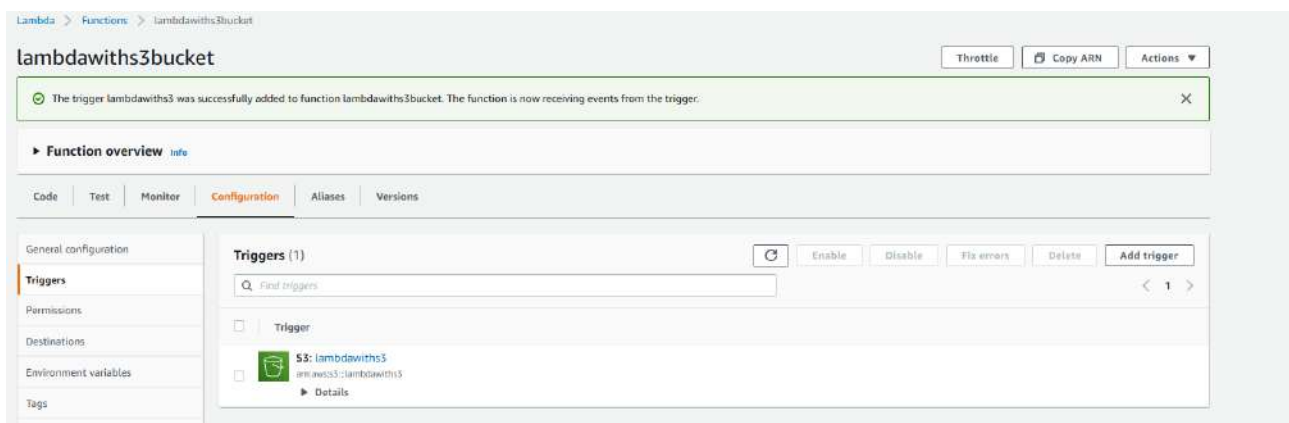




You can add Prefix and File pattern which are used to filter the files added. For Example, to trigger lambda only for .jpg images. as we need to trigger Lambda for all jpg image files uploaded. Click Add button to add the trigger.

### Step 5

You can find the the trigger display for the Lambda function as shown below –



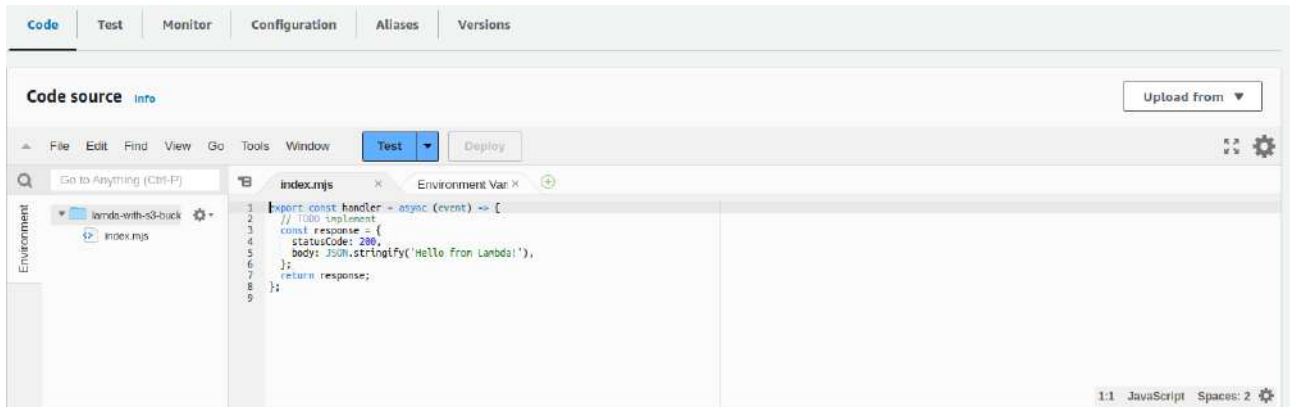
### Step 6

Let's add the details for the aws lambda function. Here, we will use the online editor to add our code and use nodejs as the runtime environment.

To trigger S3 with AWS Lambda, we will have to use S3 event in the code as shown below –

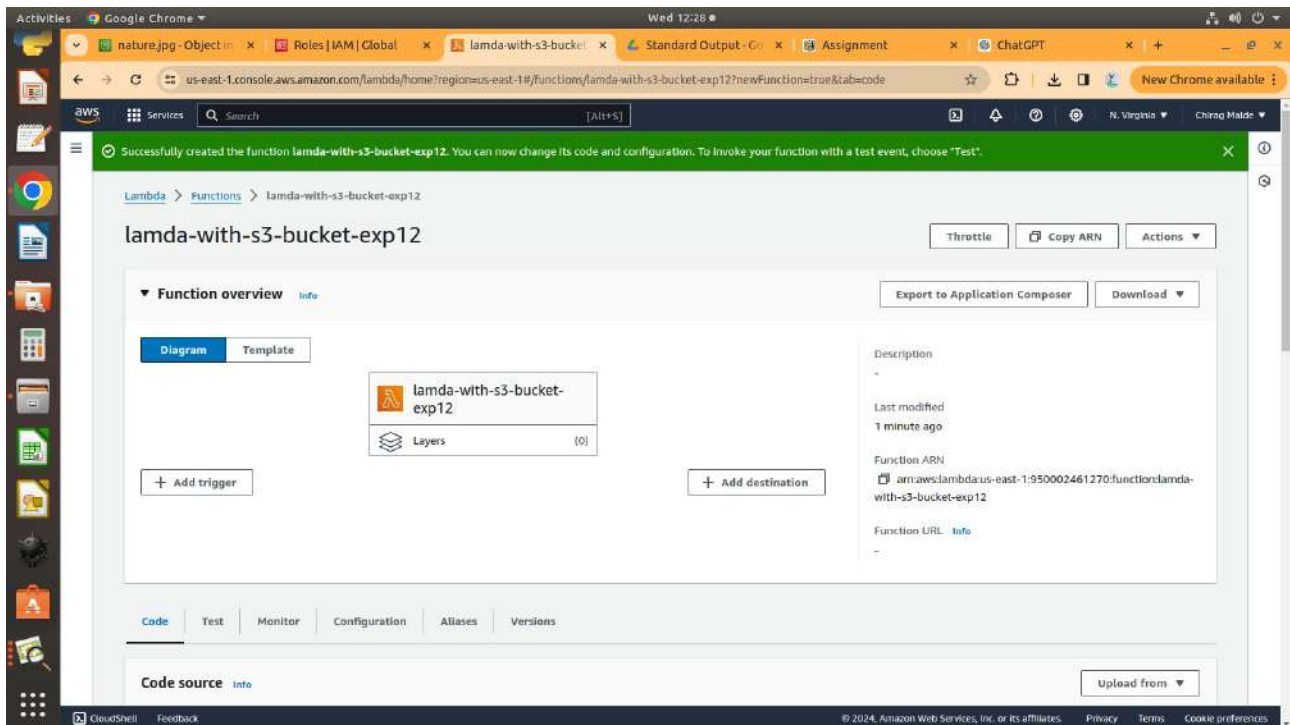


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### Step 7:

let us save the changes and test the lambda function with S3upload.





### Step 8:

Now, save the Lambda function. Open S3 from Amazon services and open the bucket we created earlier namely lambdawiths3.

Upload the image in it as shown below –

Click **Add files** to add files. You can also drag and drop the files. Now, click **Upload** button.

## Upload Info

Add the files and folders you want to upload to S3. To upload a file larger than 160GB, use the AWS CLI, AWS SDK or Amazon S3 REST API. [Learn more](#)

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

**Files and folders** (1 Total, 44.0 KB)  
All files and folders in this table will be uploaded.

[Remove](#) [Add files](#) [Add folder](#)

☐

**Name**

☐

**Folder**

☐

**Type**

☐

**Size**

☐

apsit\_logo.jpg

-

image/jpeg

44.0 KB

Thus, we have uploaded one image in our S3 bucket.

### Step 9

To see the trigger details, go to AWS service and select CloudWatch. Open the logs for the Lambda  
AWS Lambda function gets triggered when file is uploaded in S3 bucket and the details are logged in Cloudwatch as shown below –



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CloudWatch > Log groups > /aws/lambda/lambdawiths3bucket > 2021/08/03/[SLATEST]0f36a60d46ca40078172fc11de9d735f

### Log events

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](#)

Clear 1m

An image has been Added -> **apsit\_logo.jpg** you can see in cloudwatch logs.

**Conclusion:** The experiment successfully demonstrated how to create a Lambda function triggered by S3 events to log specific messages, effectively integrating serverless computing with S3 and CloudWatch. This setup automates notifications for file uploads, enhancing monitoring and responsiveness.