

# **PRACTICAL FILE**

## **CLOUD COMPUTING**

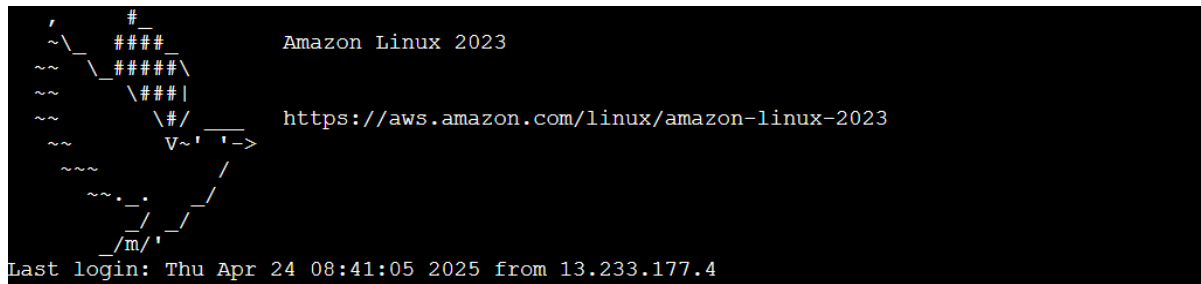
'

# INDEX

<u>S NO.</u>	<u>PRACTICALS</u>
1	Launch a Linux EC2 instance.
2	Create an EBS volume with 20 GB of storage and attach it to the created EC2 instance.
3	Resize the attached volume (in pre and make sure it reflects in the connected instance.
4	Create an S3 Bucket for file storage. Upload 5 objects with different file extensions
5	Use the created bucket in the previous task to host static websites, and upload an index.html file and error.html page.
6	Create a CloudWatch billing alarm that goes off when the estimated charges go above \$500.
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8	Set up a local OpenStack environment for practice.
9	Create a virtual machine (VM) using OpenStack.

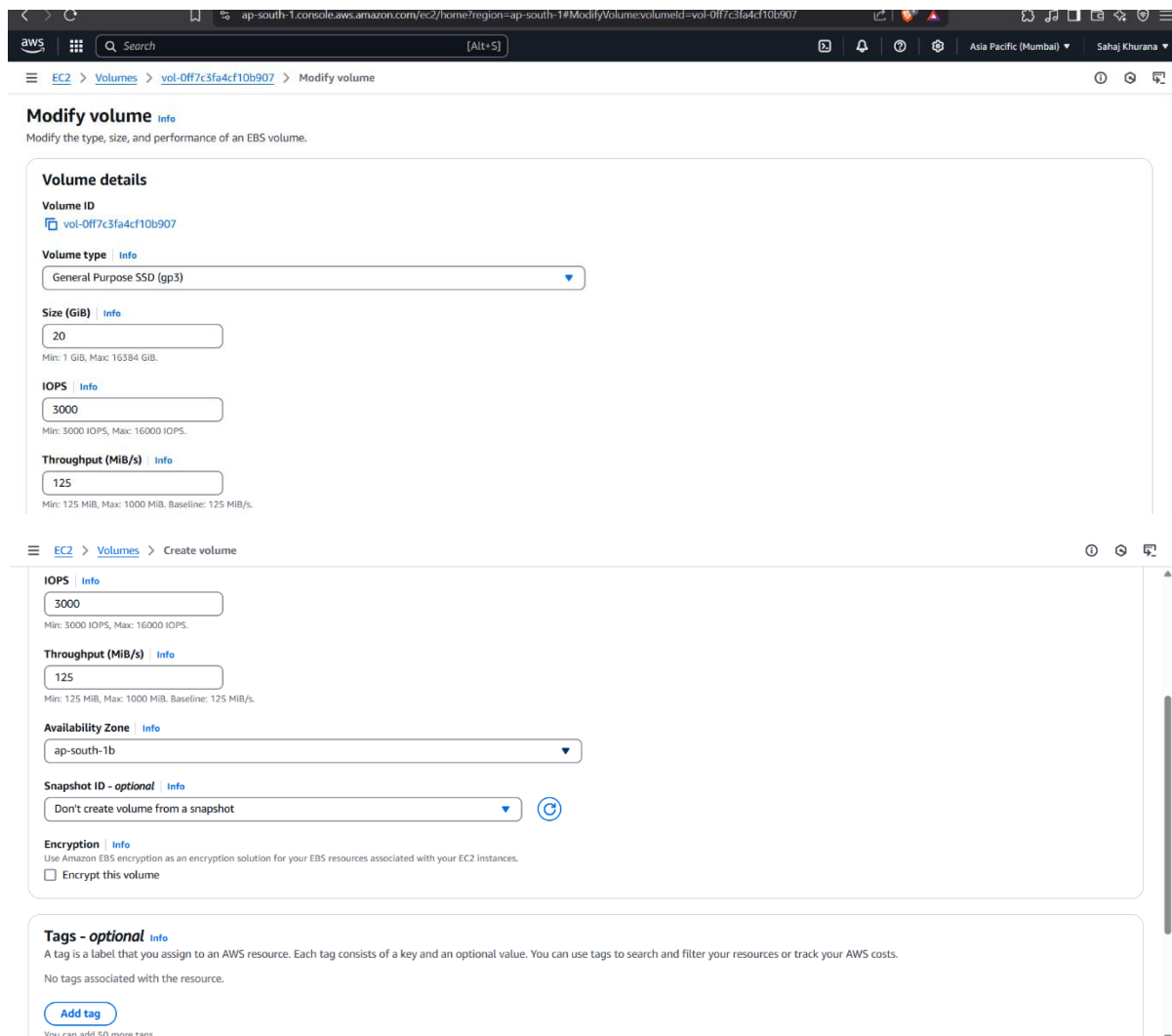
# Ques 1:

Launch a Linux EC2 instance.



# Ques 2:

Create an EBS volume with 20 GB of storage and attach it to the created EC2 instance.



EC2 > Volumes > vol-05700df74c6277039 > Attach volume

Attach volume

Info

Attach a volume to an instance to use it as you would a regular physical hard disk drive.

Basic details

Volume ID

vol-05700df74c6277039

Availability Zone

ap-south-1b

Instance

Info

i-08ecf28420b2241f9  
(sahaj-ec2-instance) (stopped)

Only instances in the same Availability Zone as the selected volume are displayed.

Device name

Info

/dev/xvda

Recommended device names for Linux: /dev/xvda for root volume, /dev/sd[f-p] for data volumes.

Newer Linux kernels may rename your devices to /dev/xvdf through /dev/xvdp internally, even when the device name entered here (and shown in the details) is /dev/sdf through /dev/sdp.

Cancel

Attach volume

CloudShell

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ENG IN

20:43 29-04-2025

Final practical list 2025 - Cloud Computing Sem Static Website Creation Volumes | EC2 | ap-south-1 x (5/7) New BMW X7 vs Mercede Attach an Amazon EBS volume

ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#Volumes:

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EC2

Dashboard

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Launch Templates

Spot Requests

Savings Plans

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Images

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Volumes

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Lifecycle Manager

Successfully attached volume vol-05700df74c6277039 to instance i-08ecf28420b2241f9.

Volumes (2)

Info

Save filter sets

Choose filter set

Search

1

Snapshot ID

Created

Availability Zone

Volume state

Alarm status

Attached resources

Status check

-

2025/04/29 20:43 GMT+5:30

ap-south-1b

In-use

No alarms

+

i-08ecf28420b2241f9 (sahaj-ec2-instance) (stopped)

Okay

snap-06eac1cf...

2025/04/29 20:37 GMT+5:30

ap-south-1b

Available

No alarms

+

-

Okay

Fault tolerance for all volumes in this Region

Snapshot summary

Recently backed up volumes / Total # volumes

0 / 2

Last updated on Tue, Apr 29, 2025, 08:41:29 PM (GMT+05:30)

Data Lifecycle Manager default policy for EBS Snapshots status

No default policy set up | Create policy

CloudShell

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Final practical list 2025 - Cloud Computing Static Website Creation Volumes | EC2 | ap-south-1 x Instances | EC2 | ap-south-1 x (5/7) New BMW X7 vs Mercedes Attach an Amazon EBS volume

ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#Instances:

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Lifecycle Manager

Instances (1/3)

Info

Last updated 1 minute ago

Connect

Instance state

Actions

Launch instances

Find instance by attribute or tag (case-sensitive)

All states

1

Monitoring

Security group name

Key name

Launch time

Platform

Managed

Operator

disabled

-

New Pair

2025/04/24 14:05 GMT+5:30

Linux/UNIX

false

-

disabled

launch-wizard-3

New Pair

2025/04/29 20:37 GMT+5:30

Linux/UNIX

false

-

disabled

-

New Pair

2025/04/29 20:30 GMT+5:30

Linux/UNIX

false

-

i-08ecf28420b2241f9 (sahaj-ec2-instance)

Filter block devices

Volume ID

Device name

Volume size (GiB)

Volume State

Attachment status

Attachment time

vol-05700df74c6277039

/dev/xvda

20

In-use

Attached

2025/04/29 20:43 GMT+5:30

Volume monitoring (1)

Investigate with AI - new

3h 1d 1w 1h

UTC timezone

Explore related

CloudShell

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## Ques 3:

Resize the attached volume (in pre and make sure it reflects in the connected instance).

The screenshot shows the 'Modify volume' page in the AWS Management Console. The volume ID is 'vol-05700df74c6277039'. The volume type is 'General Purpose SSD (gp3)'. The size is set to '25' GiB. The IOPS is set to '3000'. The throughput is set to '125' MiB/s. The 'Modify' button is highlighted in orange.

**Modify volume** [Info](#)

Modify the type, size, and performance of an EBS volume.

**Volume details**

**Volume ID**  
vol-05700df74c6277039

**Volume type** [Info](#)  
General Purpose SSD (gp3)

**Size (GiB)** [Info](#)  
25  
Min: 1 GiB, Max: 16384 GiB.

**IOPS** [Info](#)  
3000  
Min: 3000 IOPS, Max: 16000 IOPS.

**Throughput (MiB/s)** [Info](#)  
125  
Min: 125 MiB, Max: 1000 MiB, Baseline: 125 MiB/s.

[Cancel](#) [Modify](#)

The screenshot shows the 'Instances' page in the AWS Management Console. It displays a list of instances, including 'sahaj-ec2-inst...' with ID 'i-08ecf28420b2241f9' in a 'Stopped' state. Below the list, the details for instance 'i-08ecf28420b2241f9 (sahaj-ec2-instance)' are shown, including a table of attached block devices. The device 'dev/xvda' is attached with volume 'vol-05700df74c6277039' and a size of 25 GiB.

**Instances (1/3)** [Info](#)

Last updated less than a minute ago

[Connect](#) [Instance state](#) [Actions](#) [Launch instances](#)

[All states](#)

<input type="checkbox"/>	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IP
<input type="checkbox"/>	My First EC2 In...	i-0f3b0c93010ecfb40	Terminated	t2.micro	-	<a href="#">View alarms +</a>	ap-south-1b	-
<input checked="" type="checkbox"/>	sahaj-ec2-inst...	i-08ecf28420b2241f9	Stopped	t2.micro	-	<a href="#">View alarms +</a>	ap-south-1b	-
<input type="checkbox"/>	sahaj_ec2_inst...	i-0bf12b5fbc4e89a38	Terminated	t2.micro	-	<a href="#">View alarms +</a>	ap-south-1b	-

**i-08ecf28420b2241f9 (sahaj-ec2-instance)**

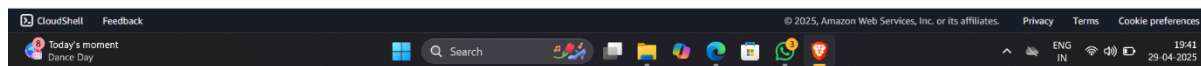
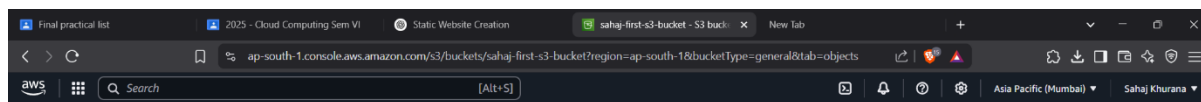
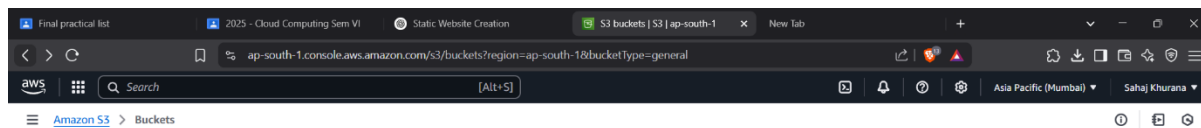
<input checked="" type="checkbox"/>	Volume ID	Device name	Volume size (GiB)	Volume State	Attachment status	Attachment time
<input checked="" type="checkbox"/>	vol-05700df74c6277039	/dev/xvda	25	In-use	Attached	2025/04/29 20:43 GMT+5:30

**Volume monitoring (1)**

[Investigate with AI - new](#) [3h](#) [1d](#) [1w](#) [1h](#) [UTC timezone](#) [Explore related](#)

# Ques 4:

Create an S3 Bucket for file storage. Upload 5 objects with different file extensions.



Final practical list2025 - Cloud Computing Sem VIStatic Website CreationUpload objects - S3 bucket sahajNew Tab

ap-south-1.console.aws.amazon.com/s3/upload/sahaj-first-s3-bucket?region=ap-south-1&bucketType=general

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Amazon S3> Buckets> sahaj-first-s3-bucket> Upload

Drag and drop files and folders you want to upload here, or choose [Add files](#) or [Add folder](#).

Files and folders (8 total, 214.8 MB)

All files and folders in this table will be uploaded.

☐

Name

▼

Folder

▼

Type

▼

Size

▼

☐ New Infinity.mp4

-

video/mp4

194.7 MB

☐ spotify.csv

-

text/csv

103.8 KB

☐ Spotify.py

-

-

2.1 KB

☐ College Banner.png

-

image/png

1.6 MB

☐ cloud-computing-bible1.pdf

-

application/pdf

18.2 MB

☐ error.html

-

text/html

1.1 KB

☐ index.html

-

text/html

1.1 KB

☐ SignUp.png

-

image/png

153.8 KB

Remove

Add files

Add folder

Destination info

Destination

[s3://sahaj-first-s3-bucket](#)

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Final practical list2025 - Cloud Computing Sem VIStatic Website CreationUpload objects - S3 bucket sahajD553 New BMW X7 vs Merced-

ap-south-1.console.aws.amazon.com/s3/upload/sahaj-first-s3-bucket?region=ap-south-1&bucketType=general

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Upload succeeded

For more information, see the [Files and folders](#) table.

Files and foldersConfiguration

Files and folders (8 total, 214.8 MB)

Name

Folder

▼

Type

▼

Size

▼

Status

▼

Error

▼

[New Infinity.mp4](#)

-

video/mp4

194.7 MB

✓ Succeeded

-

[spotify.csv](#)

-

text/csv

103.8 KB

✓ Succeeded

-

[Spotify.py](#)

-

-

2.1 KB

✓ Succeeded

-

[College Banner.png](#)

-

image/png

1.6 MB

✓ Succeeded

-

[cloud-computing-bible1.pdf](#)

-

application/pdf

18.2 MB

✓ Succeeded

-

[error.html](#)

-

text/html

1.1 KB

✓ Succeeded

-

[index.html](#)

-

text/html

1.1 KB

✓ Succeeded

-

[SignUp.png](#)

-

image/png

153.8 KB

✓ Succeeded

-

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# Ques 5:

Use the created bucket in the previous task to host static websites, and upload an index.html file and error.html page.

aws

Search

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Amazon S3

Buckets

sahaj-first-s3-bucket

Edit static website hosting

Edit static website hosting

Static website hosting

Use this bucket to host a website or redirect requests.

Static website hosting

Disable

Enable

Hosting type

Host a static website

Redirect requests for an object

For your customers to access content at the website endpoint, you must make all your content publicly readable. To do so, you can edit the S3 Block Public Access settings for the bucket. For more information, see Using Amazon S3 Block Public Access

Index document

index.html

Error document - optional

error.html

aws

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Amazon S3

Buckets

sahaj-first-s3-bucket

Edit Block public access (bucket settings)

Edit Block public access (bucket settings)

Block public access (bucket settings)

Public access is granted to buckets and objects through access control lists (ACLs), bucket policies, access point policies, or all. In order to ensure that public access to all your S3 buckets and objects is blocked, turn on Block all public access. These settings apply only to this bucket and its access points. AWS recommends that you turn on Block all public access, but before applying any of these settings, ensure that your applications will work correctly without public access. If you require some level of public access to your buckets or objects within, you can customize the individual settings below to suit your specific storage use cases.

Block all public access

Block public access to buckets and objects granted through new access control lists (ACLs)

Block public access to buckets and objects granted through any access control lists (ACLs)

Block public access to buckets and objects granted through new public bucket or access point policies

Block public and cross-account access to buckets and objects through any public bucket or access point policies

Cancel

Save changes

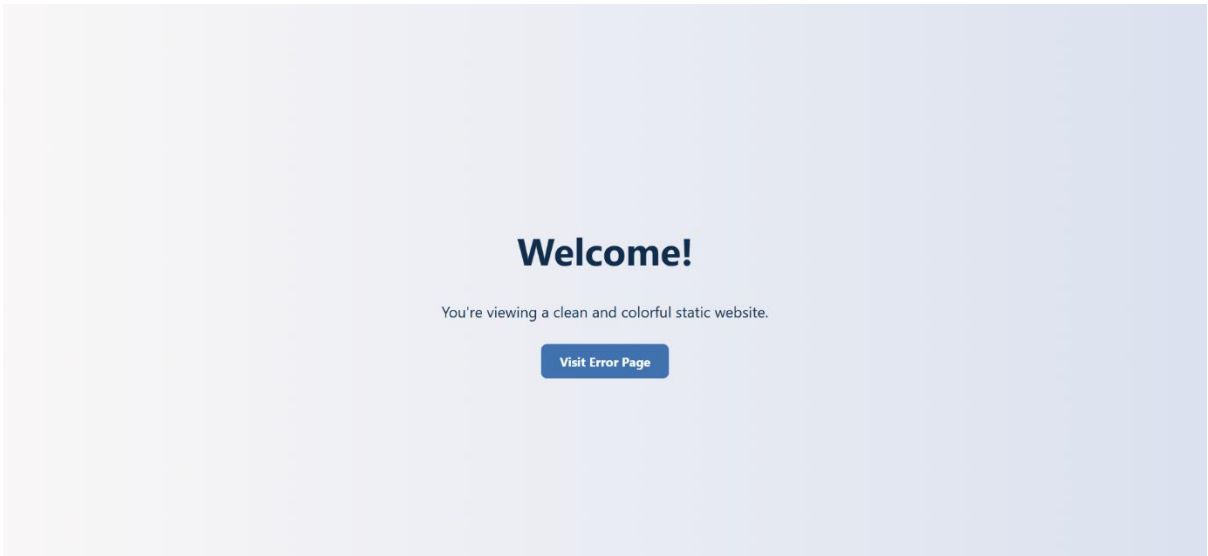
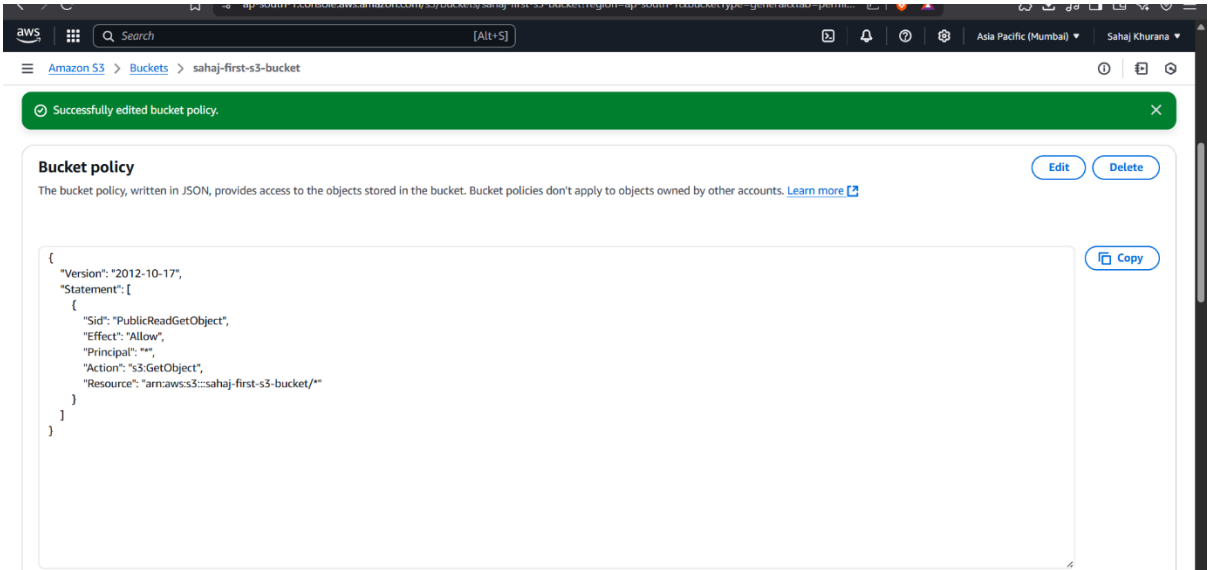
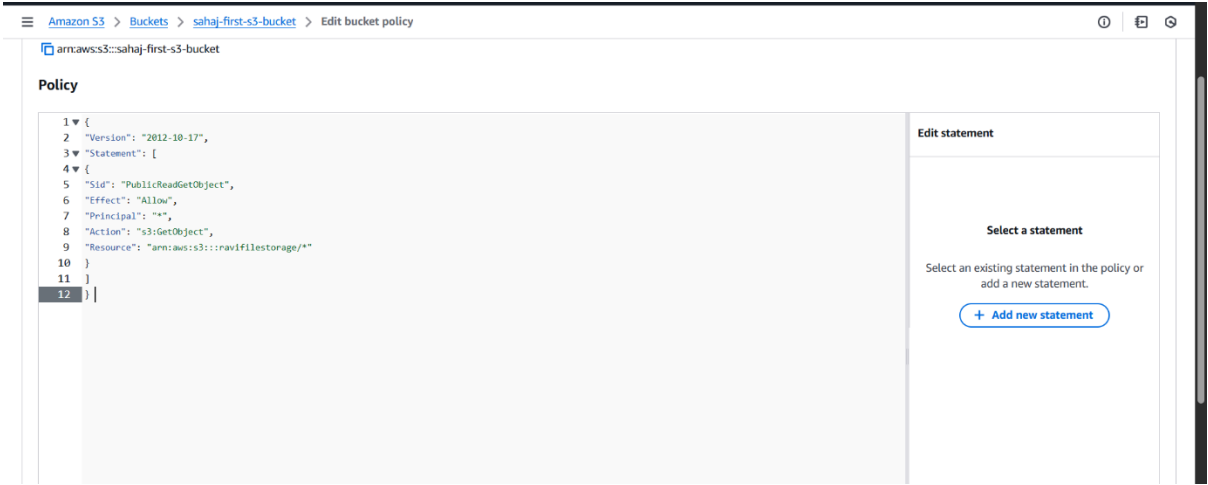
## 403 Forbidden

- Code: AccessDenied
- Message: Access Denied
- RequestId: SH467KKTAMRVZSHQ
- HostId: u5EmTxsSDRV8pQtrvYYVImOxQC2Gu/SBFqhKL24BkYAAftHf/eMN8MB+i/vtSGpjPbWVj92ESc=

### An Error Occurred While Attempting to Retrieve a Custom Error Document

- Code: AccessDenied
- Message: Access Denied





## Oops! Something went wrong

The page you are looking for doesn't exist or encountered an error.

[Back to Home](#)

## QUES 6:

Create CloudWatch Billing Alarm Over \$500

To create a billing alarm when estimated AWS charges exceed \$500.

Tools Used: AWS Management Console, CloudWatch Service

Procedure:

1. Open CloudWatch.
2. Navigate to Alarms > Create Alarm.
3. Choose Billing Metric → EstimatedCharges.
4. Set threshold as Greater than 500.
5. Add notification using SNS (Simple Notification Service).
6. Complete the setup.

## Ques 7:

Create a CloudWatch alarm which goes off to an Alarm state when the CPU utilization of an EC2 instance goes above 65%. Also, add an SNS topic so that it notifies the person when the threshold is crossed.

Select metric

Untitled graph

1h 3h 12h 1d 3d 1w Custom UTC timezone Line

Your CloudWatch graph is empty.  
Select some metrics to appear here.

Browse Multi source query Graphed metrics Options Source

Metrics (196)

Mumbai

EBS 24 EC2 48 Events 1 Logs 2 Usage 121

Cancel Select a single metric to continue

Select metric

Untitled graph

1h 3h 12h 1d 3d 1w Custom UTC timezone Line

Percent

14.2 8.82 3.43

14:30 14:45 15:00 15:15 15:30 15:45 16:00 16:15 16:30 16:45 17:00 17:15 17:30

CPUUtilization

Browse Multi source query Graphed metrics (1) Options Source

Resource	Metric	Unit	Alarms
sahaj-ec2-instance	EBSByteBalance%	%	No alarms
sahaj-ec2-instance	CPUUtilization	%	No alarms
sahaj-ec2-instance	MetadataNoToken	Count	No alarms
sahaj-ec2-instance	NetworkPacketsOut	Count	No alarms
sahaj-ec2-instance	NetworkIn	Count	No alarms
sahaj-ec2-instance	NetworkPacketsIn	Count	No alarms
sahaj-ec2-instance	NetworkOut	Count	No alarms

Cancel Select metric

CloudWatch > Alarms > Create alarm

Period

5 minutes

Conditions

Threshold type

Static Use a value as a threshold

Anomaly detection Use a band as a threshold

Whenever CPUUtilization is...

Define the alarm condition.

Greater > threshold

Greater/Equal >= threshold

Lower/Equal <= threshold

Lower < threshold

than...

Define the threshold value.

65

Must be a number

Additional configuration

CloudWatch

Alarms

Create alarm

Step 1

Specify metric and conditions

Step 2

Configure actions

Step 3

Add name and description

Step 4

Preview and create

Alarm recommendations

View details

Specify metric and conditions

Metric

Graph

This alarm will trigger when the blue line goes above the red line for 1 datapoints within 5 minutes.

Percent

65

34.2

3.43

14:30

15:00

15:30

16:00

16:30

17:00

17:30

CPUUtilization

Namespace

AWS/EC2

Metric name

CPUUtilization

InstanceId

i-08ecf28420b2241f9

Instance name

sahaj-ec2-instance

Statistic

Average

Period

5 minutes

CloudShell

Feedback

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Step 1

Specify metric and conditions

Step 2

Configure actions

Step 3

Add name and description

Step 4

Preview and create

Configure actions

Notification

Alarm state trigger

Define the alarm state that will trigger this action.

In alarm

The metric or expression is outside of the defined threshold.

OK

The metric or expression is within the defined threshold.

Insufficient data

The alarm has just started or not enough data is available.

Send a notification to the following SNS topic

Define the SNS (Simple Notification Service) topic that will receive the notification.

Select an existing SNS topic

Create new topic

Use topic ARN to notify other accounts

Create a new topic...

The topic name must be unique.

Default\_CloudWatch\_Alarms\_Topic

SNS topic names can contain only alphanumeric characters, hyphens (-) and underscores (\_).

Email endpoints that will receive the notification...

Add a comma-separated list of email addresses. Each address will be added as a subscription to the topic above.

sahaj.224019@sggsc.ac.in

user1@example.com, user2@example.com

Create topic

CloudWatch

Alarms

Create alarm

Step 1

Specify metric and conditions

Step 2

Configure actions

Step 3

Add name and description

Step 4

Preview and create

Add name and description

Name and description

Alarm name

CPU Utilization Alarm

Alarm description - optional

View formatting guidelines

Edit

Preview

This is an Alarm that triggers when the CPU Threshold reaches 65% of usage

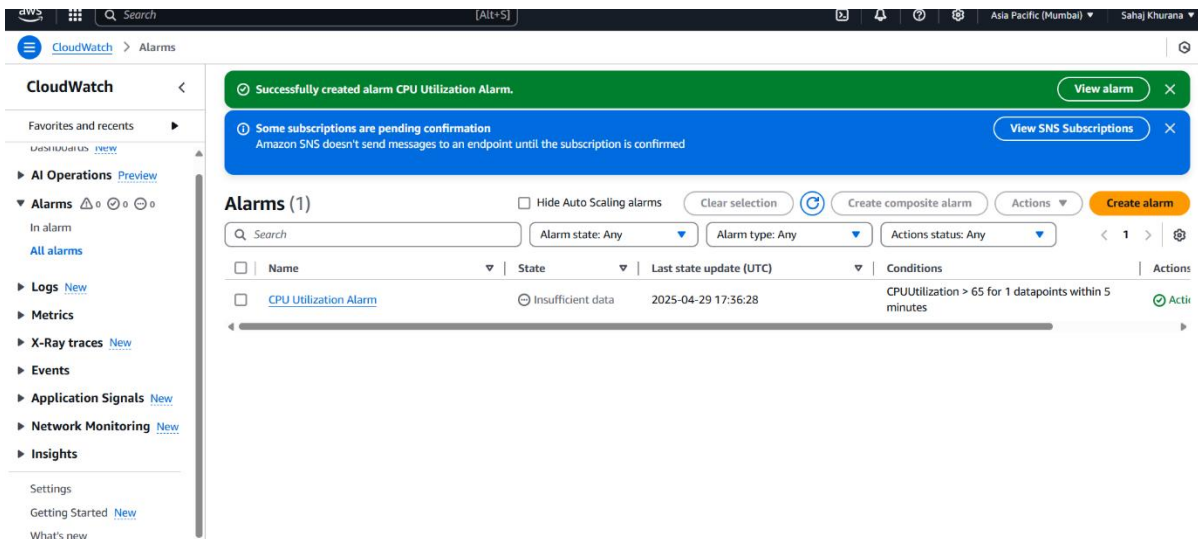
Up to 1024 characters (75/1024)

Markdown formatting is only applied when viewing your alarm in the console. The description will remain in plain text in the alarm notifications.

Cancel

Previous

Next



## QUES 8:

### OPENSTACK ENVIRONMENT

#### TASKS

Set up a local OpenStack environment for practice.

#### ANSWER

Setting up a local OpenStack environment for practice can be done using **DevStack**, a great tool for deploying OpenStack on a single machine.

##### STEP1: Prepare Your System

- Use a fresh installation of **Ubuntu 20.04 or later**.
- Ensure your system has at least **8GB RAM, 2 CPUs, and 50GB disk space**.
- Install dependencies: `sudo apt update && sudo apt install -y git python3-dev python3-pip`

##### STEP2: Clone DevStack Repository

- Navigate to your home directory and clone DevStack:  
git clone <https://opendev.org/openstack/devstack.git>  
cd devstack

##### STEP3: Create a Local Configuration File

- Inside the devstack directory, create a local.conf file: `nano local.conf`
- Add the following basic configuration:  
[[local|localrc]]  
ADMIN\_PASSWORD=secret  
DATABASE\_PASSWORD=secret  
RABBIT\_PASSWORD=secret

SERVICE\_PASSWORD=secret

#### STEP4: Run the Installation Script

- Start the installation process: `./stack.sh`

#### STEP5: Access OpenStack Dashboard

- Once installation is complete, access the **Horizon dashboard** via: `http://<your-server-ip>/dashboard`
- Log in using the credentials set in `local.conf`.

#### STEP6: Verify OpenStack Services

- Check running services: `openstack service list`

#### STEP7: Create Your First Instance

- Upload an image: `openstack image create --disk-format qcow2 --container-format bare --file ubuntu.qcow2 --public UbuntuImage`
- Launch an instance: `openstack server create --flavor m1.small --image UbuntuImage --network private --security-group default my-instance`

# QUES 9

## TASKS

**Create a virtual machine (VM) using OpenStack.**

## ANSWER

Creating a virtual machine (VM) in OpenStack involves several steps, from setting up the environment to launching an instance.

STEP1: Log in to OpenStack Dashboard

- Access the Horizon dashboard via your browser.
- Navigate to Project → Compute → Instances.

STEP2: Upload an Image

- Go to Project → Compute → Images.
- Click Create Image and upload a QCOW2 or RAW format image.

STEP3: Create a Network

- Navigate to Project → Network → Networks.
- Click Create Network, define subnets, and configure security groups.

STEP4: Allocate Floating IP

- Go to Project → Compute → Access & Security → Floating IPs.
- Allocate an IP to your project for external access.

STEP5: Launch an Instance

- Go to Project → Compute → Instances.
- Click Launch Instance and configure:
  - Instance Name
  - Flavor (CPU, RAM, Disk)
  - Image (Uploaded in Step 2)
  - Network (Created in Step 3)
  - Security Groups
  - Key Pair (for SSH access)

STEP6: Access the VM

- Assign a floating IP to the instance.
- SSH into the VM using: `ssh -i my-key.pem ubuntu@<floating-ip>`