

School of Computer Science, Engineering and Applications (SCSEA)
B.C.A. TY (CCSA)
Subject: Advanced Cloud Computing (P)

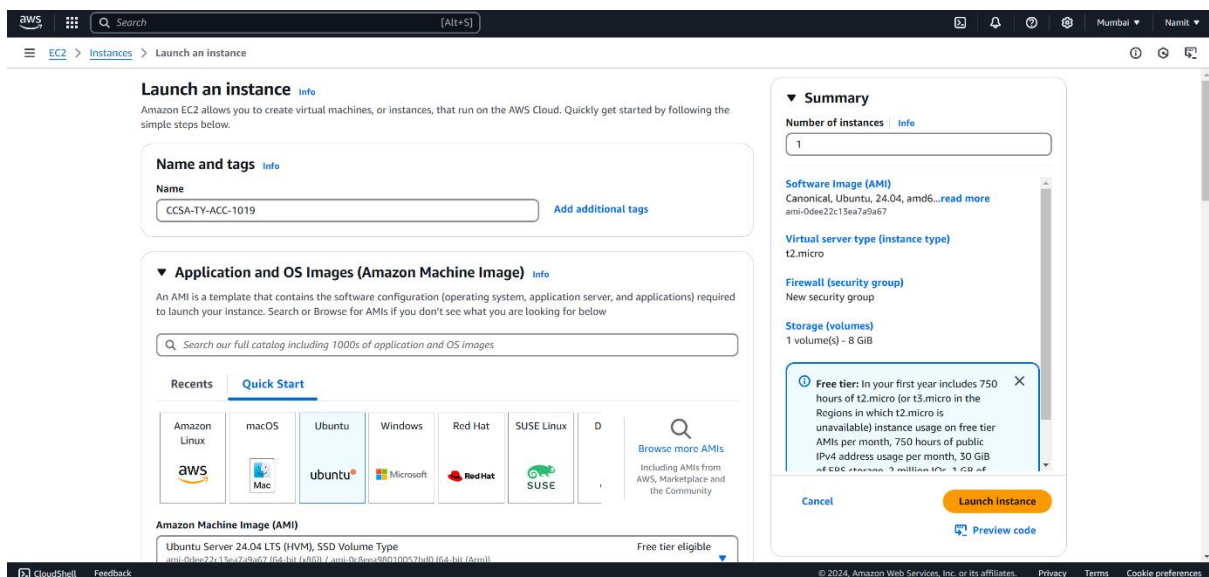
Name of the Student: Namit Agarwal

PRN: 20220801019

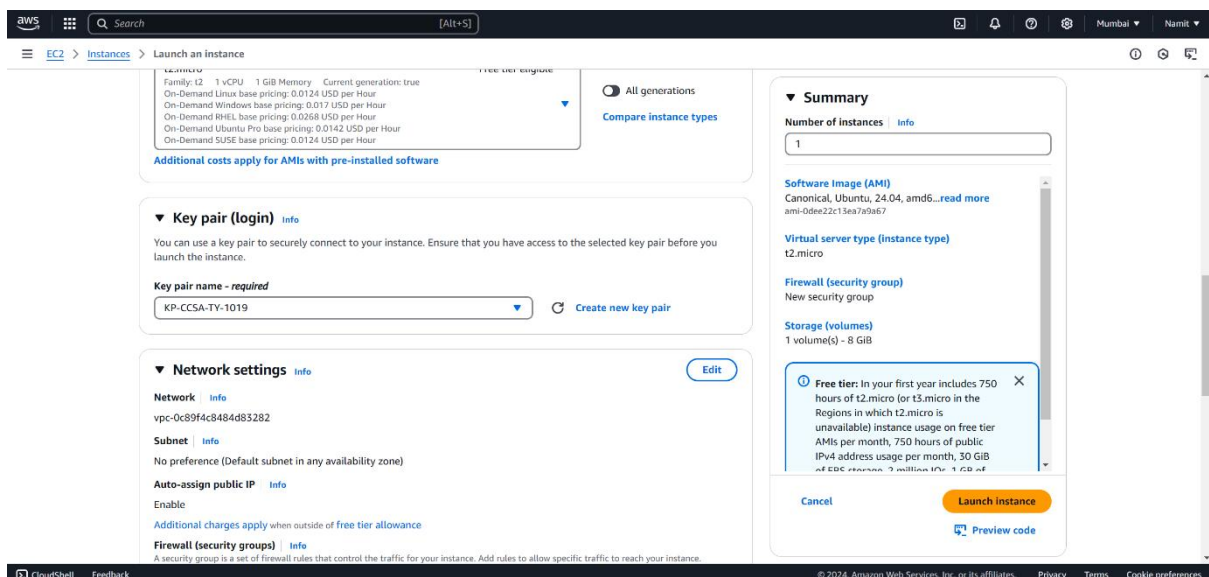
Title of Practical: Access S3 bucket through EC2 using IAM role

Step 1: Launch an EC2 Instance

1. Go to EC2 service and click on Launch Instance.
2. Give a name to the EC2 instance.



3. Select the AMI for your instance, e.g., Ubuntu.



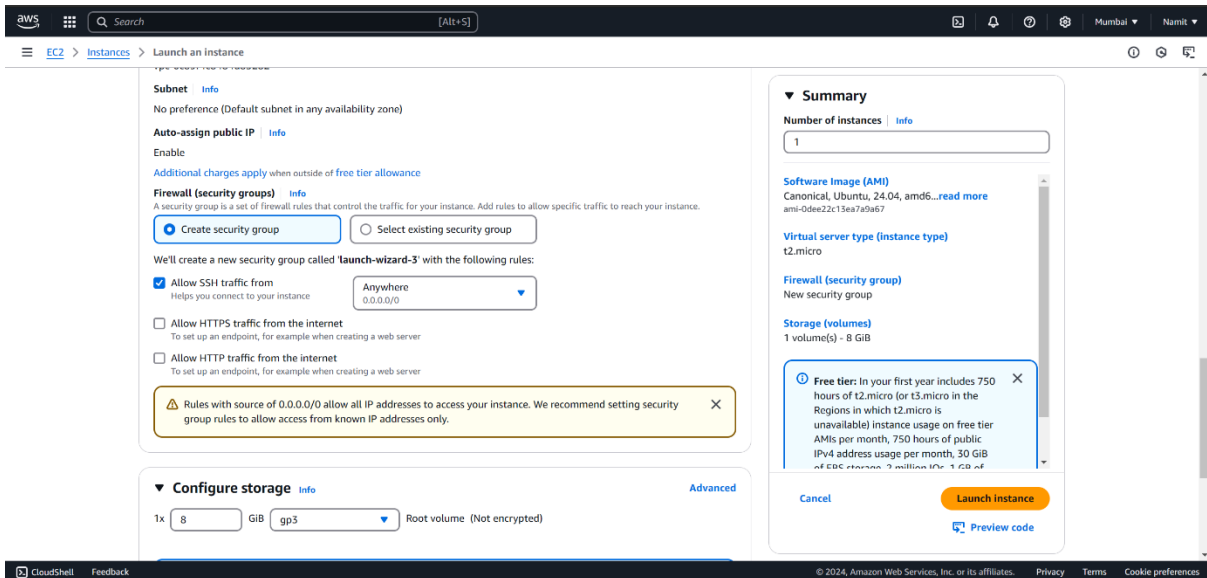
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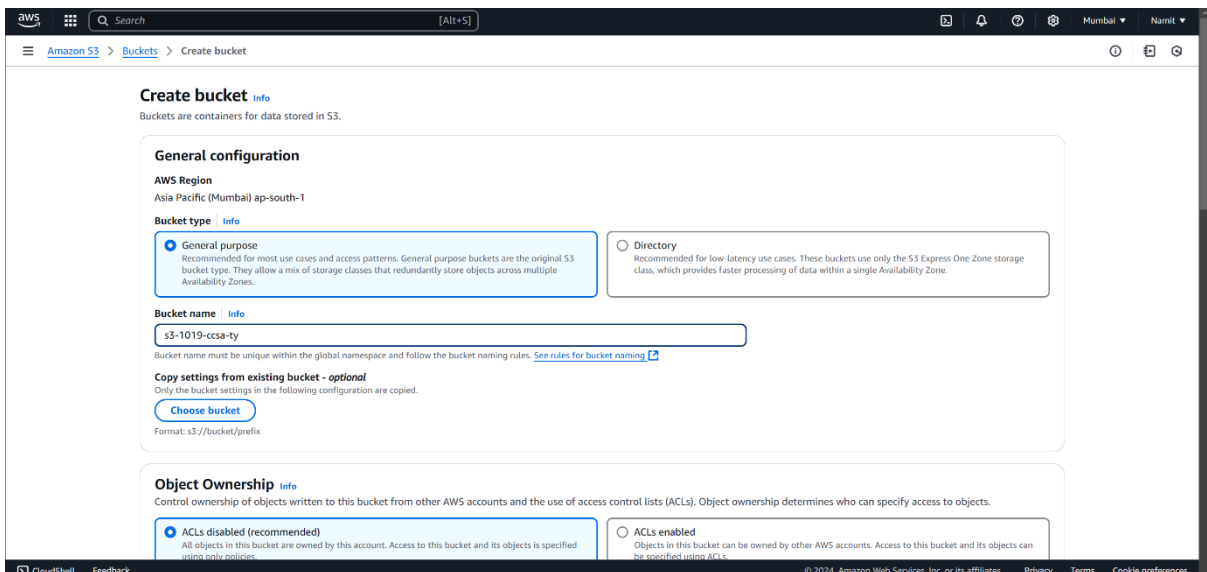
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- Use existing keypair that we used earlier and launch instance



Step 2: Create an S3 Bucket

1. Navigate to the S3 service and click on Create Bucket.
2. Enter a name for your S3 bucket.



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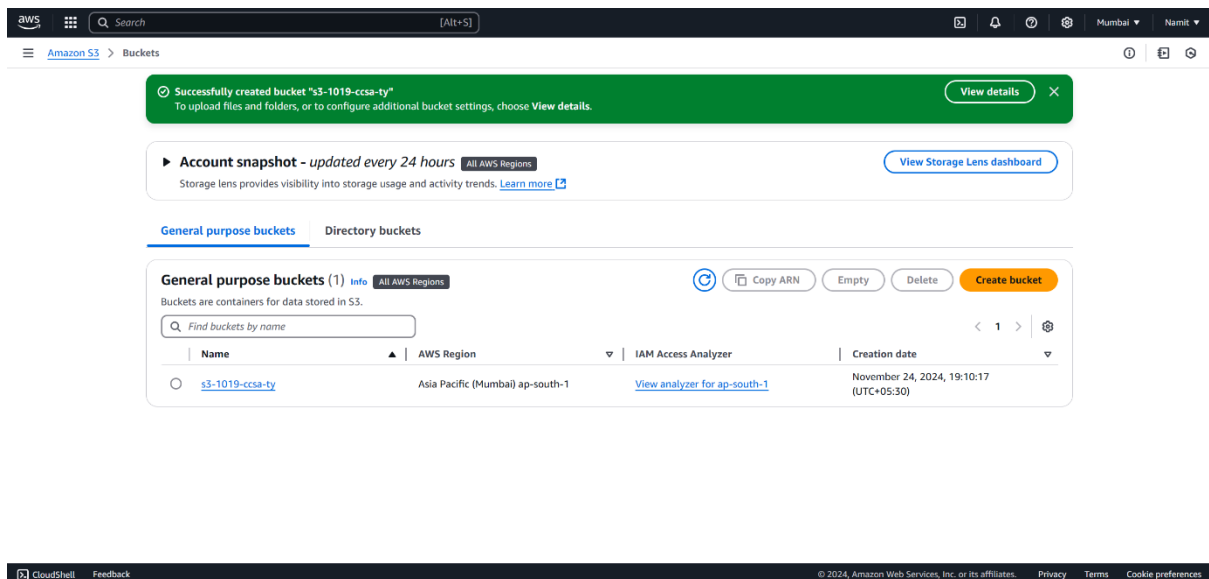
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3. Click on Create Bucket to finish creating the bucket.



The screenshot shows the AWS Management Console interface. At the top, a green banner indicates "Successfully created bucket 's3-1019-ccsa-ty'". Below this, there's a section for "Account snapshot" and a "View Storage Lens dashboard" link. The main content area is titled "General purpose buckets" and shows a list of buckets. The list has columns for Name, AWS Region, IAM Access Analyzer, and Creation date. One bucket is listed: "s3-1019-ccsa-ty" in the "Asia Pacific (Mumbai) ap-south-1" region, created on "November 24, 2024, 19:10:17 (UTC+05:30)".

Name	AWS Region	IAM Access Analyzer	Creation date
s3-1019-ccsa-ty	Asia Pacific (Mumbai) ap-south-1	View analyzer for ap-south-1	November 24, 2024, 19:10:17 (UTC+05:30)

Step 3: Upload Files to the S3 Bucket

1. Go to the S3 bucket you just created and click on **Upload**.
2. Click on **Add Files** and select the files you want to upload.
3. Scroll down and click on **Upload**.

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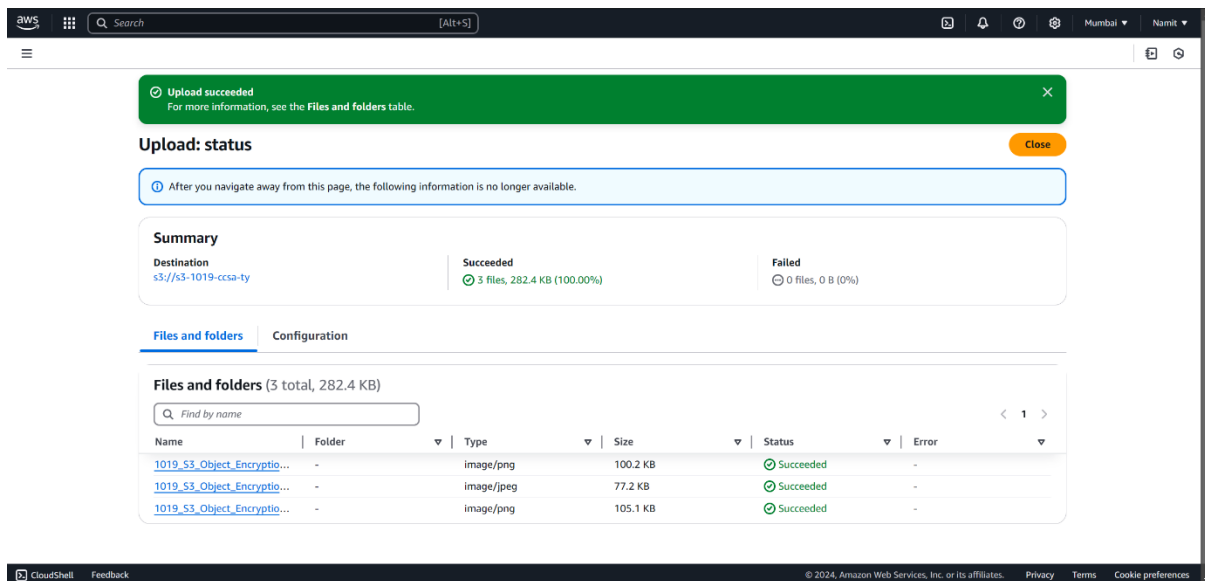
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The screenshot shows the AWS S3 console interface. At the top, there's a green notification bar stating "Upload succeeded" with a close button. Below it, the "Upload: status" section shows a summary of the upload process. The destination is "s3://s3-1019-ccsa-ty". The summary indicates that 3 files, totaling 282.4 KB, were successfully uploaded (100.00%), and 0 files, 0 B, failed (0%). Below the summary, the "Files and folders" tab is selected, showing a table of the uploaded files.

Name	Folder	Type	Size	Status	Error
1019_S3_Object_Encryptio...	-	image/png	100.2 KB	Succeeded	-
1019_S3_Object_Encryptio...	-	image/jpeg	77.2 KB	Succeeded	-
1019_S3_Object_Encryptio...	-	image/png	105.1 KB	Succeeded	-

Step 4: Connect to the EC2 Instance

1. Go back to the **EC2 instance** and connect to it.
2. **Install AWS CLI** in the instance using:

```
sudo snap install aws-cli --classic
```

3. Verify the installation by typing **aws** in the command line.

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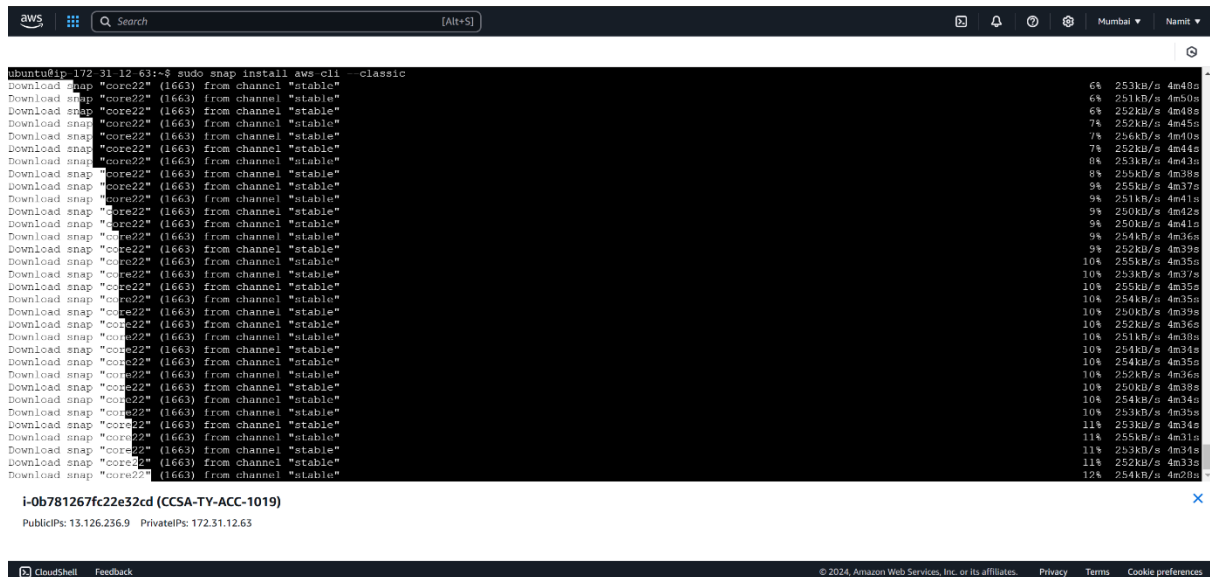
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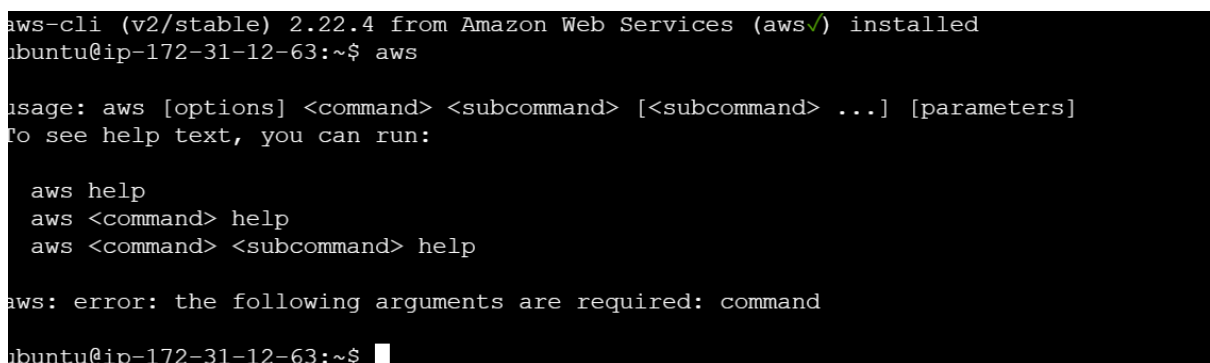
PRN: 20220801019

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```
awscli [Alt+S] Mumbai Namit
ubuntu@ip-172-31-12-63:~$ sudo snap install aws-cli --classic
Download snap "core22" (1663) from channel "stable" 6% 253kB/s 4m48s
Download snap "core22" (1663) from channel "stable" 6% 251kB/s 4m50s
Download snap "core22" (1663) from channel "stable" 6% 252kB/s 4m48s
Download snap "core22" (1663) from channel "stable" 7% 252kB/s 4m45s
Download snap "core22" (1663) from channel "stable" 7% 256kB/s 4m10s
Download snap "core22" (1663) from channel "stable" 7% 252kB/s 4m44s
Download snap "core22" (1663) from channel "stable" 8% 253kB/s 4m43s
Download snap "core22" (1663) from channel "stable" 8% 255kB/s 4m38s
Download snap "core22" (1663) from channel "stable" 9% 255kB/s 4m37s
Download snap "core22" (1663) from channel "stable" 9% 251kB/s 4m41s
Download snap "core22" (1663) from channel "stable" 9% 250kB/s 4m12s
Download snap "core22" (1663) from channel "stable" 9% 250kB/s 4m41s
Download snap "core22" (1663) from channel "stable" 9% 254kB/s 4m36s
Download snap "core22" (1663) from channel "stable" 9% 252kB/s 4m39s
Download snap "core22" (1663) from channel "stable" 10% 255kB/s 4m35s
Download snap "core22" (1663) from channel "stable" 10% 253kB/s 4m37s
Download snap "core22" (1663) from channel "stable" 10% 255kB/s 4m35s
Download snap "core22" (1663) from channel "stable" 10% 252kB/s 4m36s
Download snap "core22" (1663) from channel "stable" 10% 251kB/s 4m38s
Download snap "core22" (1663) from channel "stable" 10% 254kB/s 4m34s
Download snap "core22" (1663) from channel "stable" 10% 254kB/s 4m35s
Download snap "core22" (1663) from channel "stable" 10% 252kB/s 4m36s
Download snap "core22" (1663) from channel "stable" 10% 250kB/s 4m38s
Download snap "core22" (1663) from channel "stable" 10% 254kB/s 4m34s
Download snap "core22" (1663) from channel "stable" 10% 253kB/s 4m35s
Download snap "core22" (1663) from channel "stable" 11% 253kB/s 4m34s
Download snap "core22" (1663) from channel "stable" 11% 255kB/s 4m31s
Download snap "core22" (1663) from channel "stable" 11% 253kB/s 4m34s
Download snap "core22" (1663) from channel "stable" 11% 252kB/s 4m33s
Download snap "core22" (1663) from channel "stable" 12% 254kB/s 4m28s

i-0b781267fc22e32cd (CCSA-TY-ACC-1019)
PublicIPs: 13.126.236.9 PrivateIPs: 172.31.12.63
```



```
awscli (v2/stable) 2.22.4 from Amazon Web Services (aws✓) installed
ubuntu@ip-172-31-12-63:~$ aws

usage: aws [options] <command> <subcommand> [<subcommand> ...] [parameters]
To see help text, you can run:

    aws help
    aws <command> help
    aws <command> <subcommand> help

aws: error: the following arguments are required: command
ubuntu@ip-172-31-12-63:~$
```

Step 5: Create an IAM Role

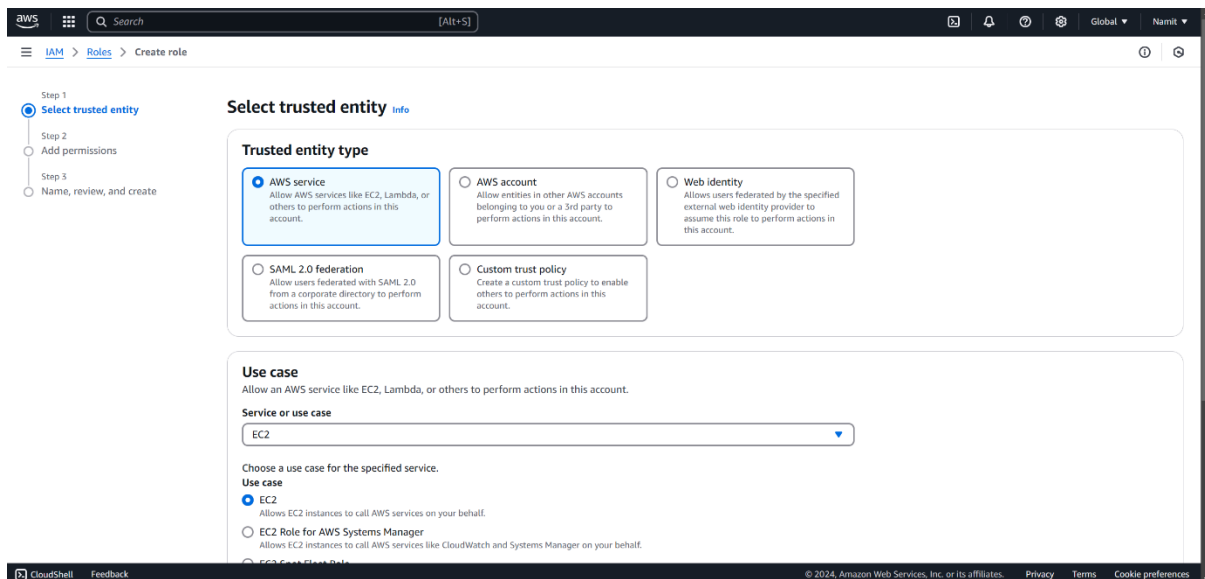
1. Go to the **IAM service**, then to **Roles**, and click on **Create Role**.
2. Select **Trusted Entity Type** as **AWS Service** and **Use Case** as **EC2**, then click **Next**.

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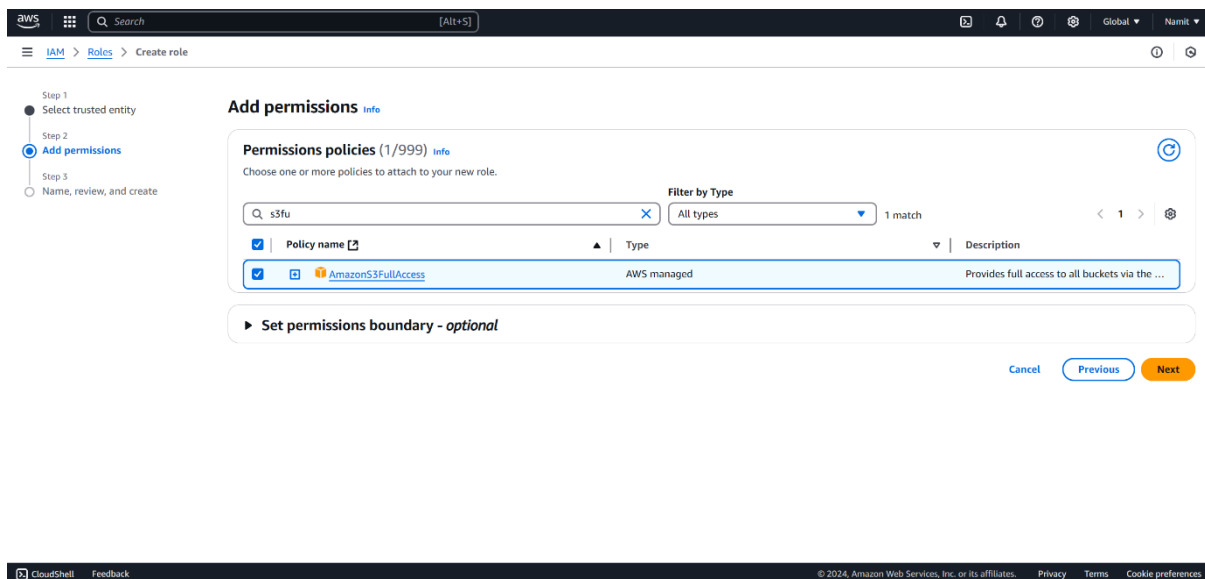


The screenshot shows the AWS IAM console 'Create role' wizard, Step 1: Select trusted entity. The 'Trusted entity type' section has five options:

- AWS service** (selected): Allow AWS services like EC2, Lambda, or others to perform actions in this account.
- AWS account: Allow entities in other AWS accounts belonging to you or a 3rd party to perform actions in this account.
- Web identity: Allows users federated by the specified external web identity provider to assume this role to perform actions in this account.
- SAML 2.0 federation: Allow users federated with SAML 2.0 from a corporate directory to perform actions in this account.
- Custom trust policy: Create a custom trust policy to enable others to perform actions in this account.

 The 'Use case' section shows 'EC2' selected in the 'Service or use case' dropdown. Below, 'Choose a use case for the specified service' shows 'EC2' selected, with the description: 'Allows EC2 instances to call AWS services on your behalf.'

3. In the **Add Permissions** section, search for S3FullAccess and select the policy, then click **Next**.



The screenshot shows the AWS IAM console 'Create role' wizard, Step 2: Add permissions. The 'Permissions policies (1/999)' section shows a search for 's3fu' with 1 match. The table below shows the search results:

Policy name	Type	Description
<input checked="" type="checkbox"/> AmazonS3FullAccess	AWS managed	Provides full access to all buckets via the ...

Below the table, there is a link to 'Set permissions boundary - optional'. At the bottom right, there are buttons for 'Cancel', 'Previous', and 'Next'.

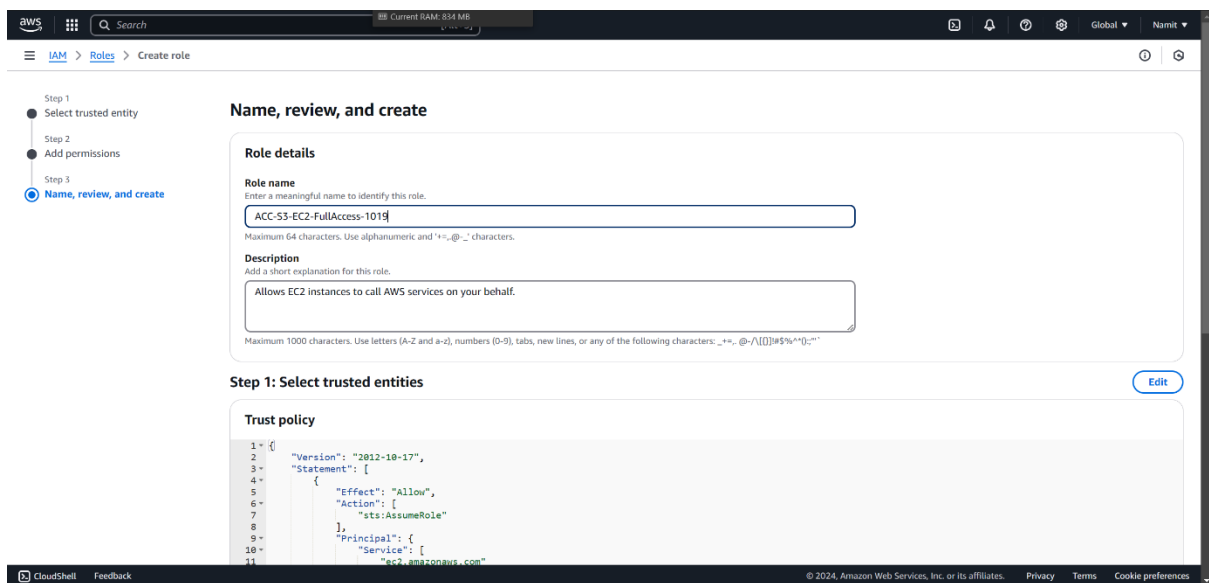
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4. Name your IAM role, then click Create Role.

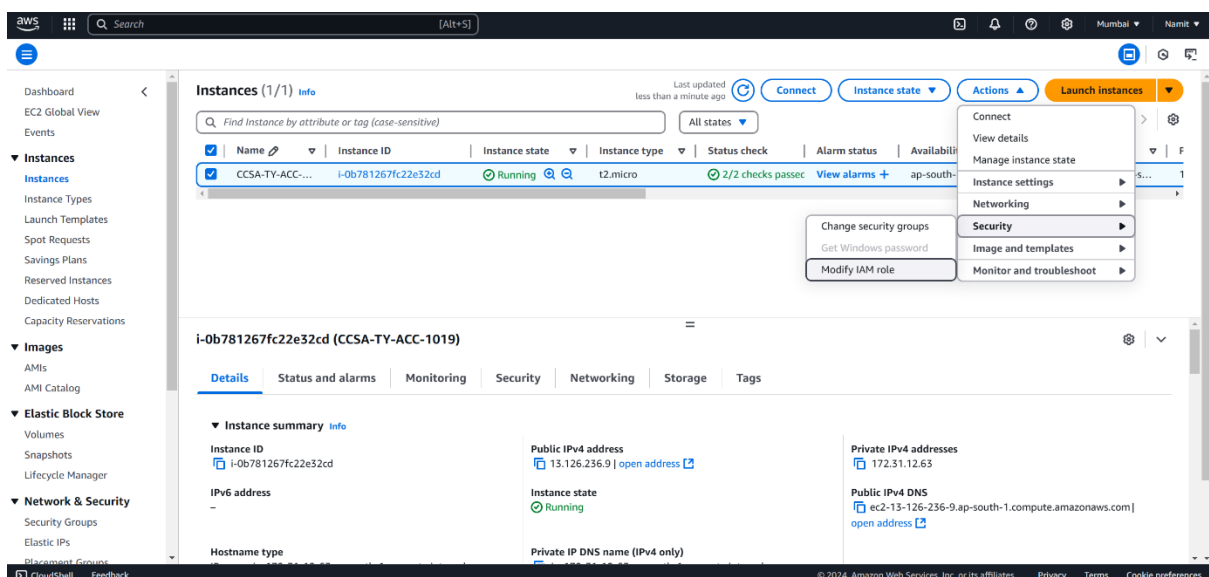


The screenshot shows the AWS IAM console 'Create role' page. The 'Role name' field is filled with 'ACC-S3-EC2-FullAccess-1019'. The 'Description' field contains 'Allows EC2 instances to call AWS services on your behalf.' The 'Step 1: Select trusted entities' section shows a 'Trust policy' with the following JSON:

```
1 {
2   "Version": "2012-10-17",
3   "Statement": [
4     {
5       "Effect": "Allow",
6       "Action": [
7         "sts:AssumeRole"
8       ],
9       "Principal": {
10        "Service": [
11          "ec2.amazonaws.com"
12        ]
13      }
14    ]
15  }
```

Step 6: Attach IAM Role to the EC2 Instance

1. Go to the **EC2 service**, select the instance, and click on the **Actions** dropdown.
2. Click on **Security**, then select **Modify IAM Role**.



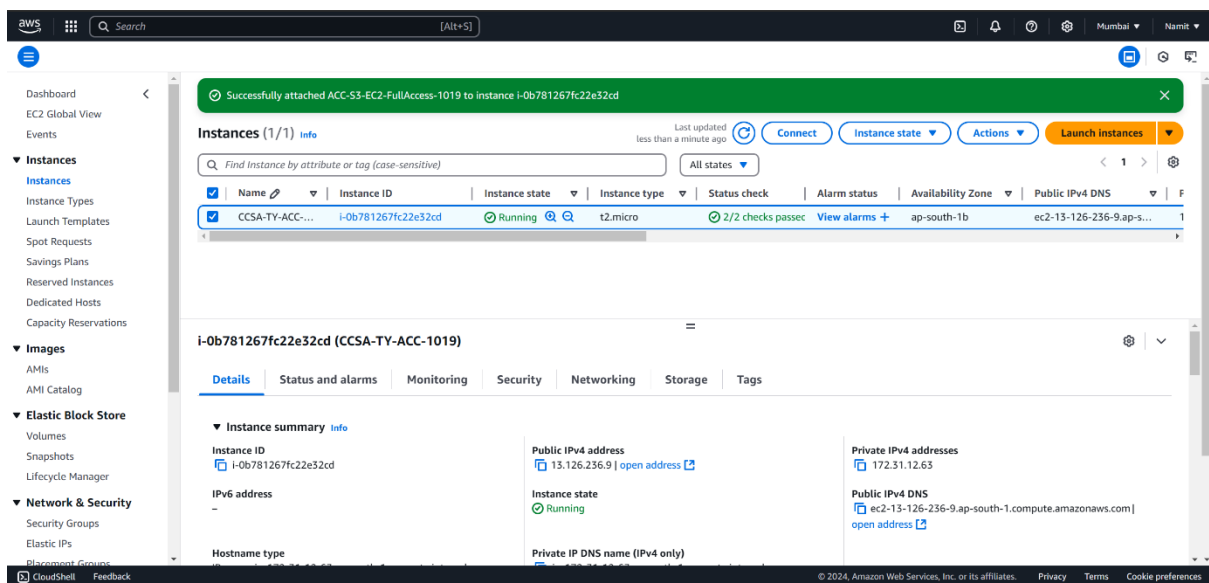
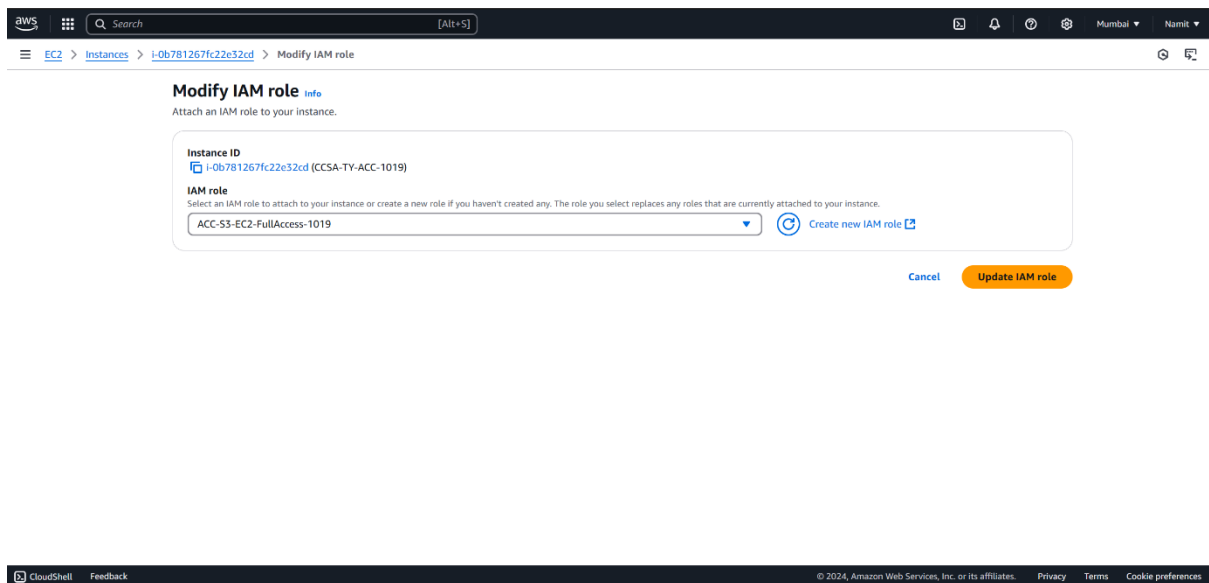
The screenshot shows the AWS EC2 console 'Instances' page. The 'Instances (1/1)' table lists one instance: 'CCSA-TY-ACC-...' with ID 'i-0b781267fc22e32cd', state 'Running', type 't2.micro', and availability zone 'ap-south-1'. The 'Actions' dropdown menu is open, showing options like 'Connect', 'View details', 'Manage instance state', 'Instance settings', 'Networking', 'Security', 'Image and templates', and 'Monitor and troubleshoot'. The 'Security' option is selected, and the 'Modify IAM role' option is highlighted.

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Step 7: Access the S3 Bucket from EC2

1. List the buckets:

```
aws s3 ls
```

2. List the contents of a specific S3 bucket:

```
aws s3 ls s3:// s3-1019-ccsa-ty
```

Step 8: Write Data to S3 Bucket

1. Create a file on the EC2 instance:

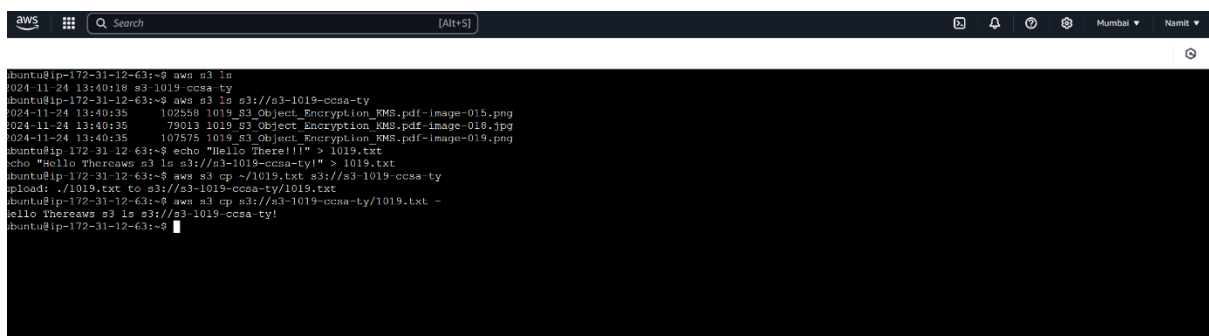
```
echo "Hello There!!!" > 1019.txt
```

2. Upload the file to S3:

```
aws s3 cp ~/1019.txt s3://s3-1019-ccsa-ty
```

3. Read the file from S3:

```
aws s3 cp s3:// s3-1019-ccsa-ty /1019.txt -
```



```
aws
[Alt+S]
buntu@ip-172-31-12-63:~$ aws s3 ls
2024-11-24 13:40:38 s3-1019-ccsa-ty
buntu@ip-172-31-12-63:~$ aws s3 ls s3://s3-1019-ccsa-ty
2024-11-24 13:40:35 102558 1019_S3_Object_Encryption_RMS.pdf-image-015.png
2024-11-24 13:40:35 79013 1019_S3_Object_Encryption_RMS.pdf-image-018.jpg
2024-11-24 13:40:35 107575 1019_S3_Object_Encryption_RMS.pdf-image-019.png
buntu@ip-172-31-12-63:~$ echo "Hello There!!!" > 1019.txt
buntu@ip-172-31-12-63:~$ aws s3 cp ~/1019.txt s3://s3-1019-ccsa-ty
upload: ./1019.txt to s3://s3-1019-ccsa-ty/1019.txt
buntu@ip-172-31-12-63:~$ aws s3 cp s3://s3-1019-ccsa-ty/1019.txt -
Hello There!!
buntu@ip-172-31-12-63:~$
```