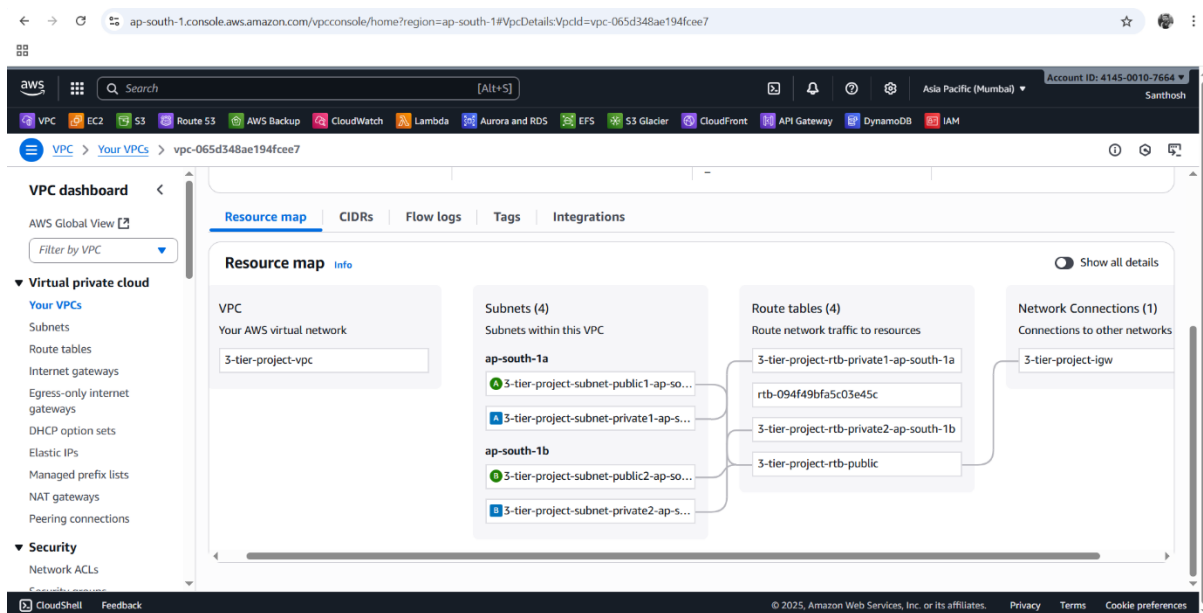


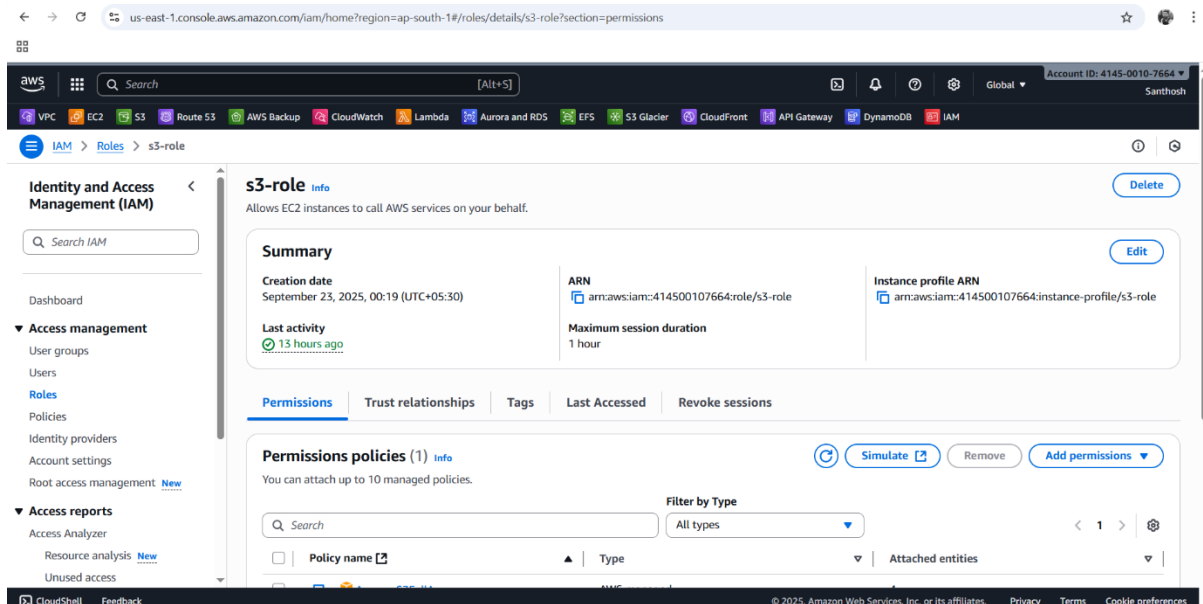
Tier-1 Presentation layer (network, Route 53, CloudFront).

Creating virtual private network in cloud with 2 public subnets and 2 private subnets.

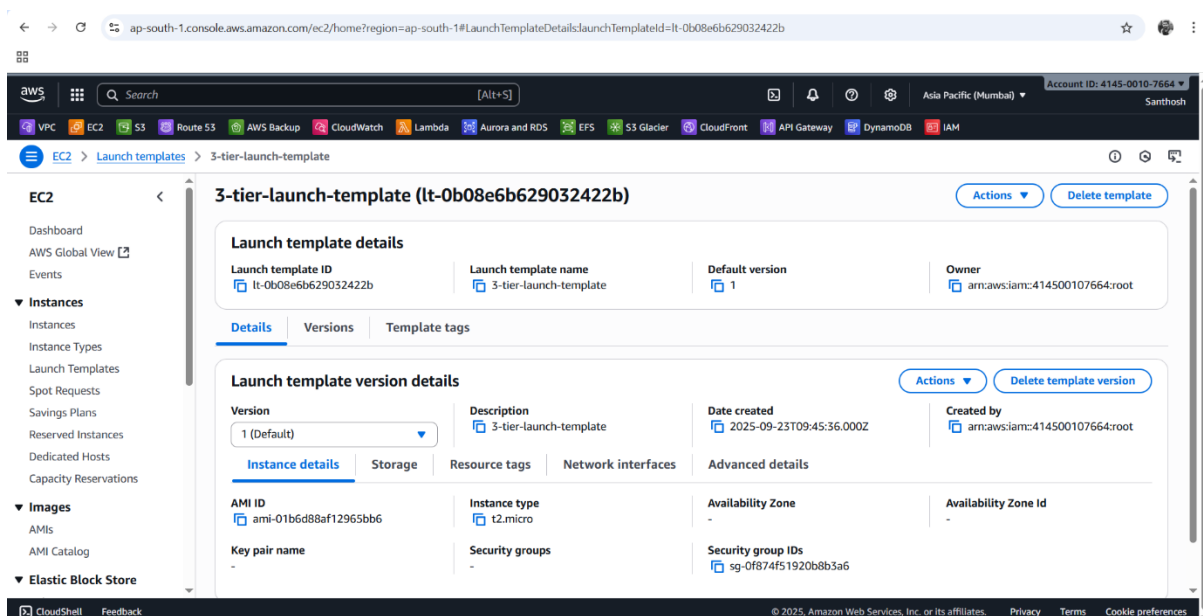


Tier 2 Application layer frontend deployment (static files, images to serve EC2 from S3).

IAM role for EC2 to access the objects in s3 bucket.



Launch template (prior provisioning for scalability)



Load balancer for to handle unexpected/ Sudden spike in traffic .

The screenshot displays the AWS Management Console for a 3-tier-lb Load Balancer. The left sidebar shows the navigation menu with categories like Network & Security, Load Balancing, and Auto Scaling. The main content area shows the details of the 3-tier-lb Load Balancer, including its type (Application), status (Provisioning), VPC (vpc-065d348ae194fce7), and availability zones (subnet-06e1a5ce5ec8a2232 and subnet-0c047c145a0fc7bc7). The Load balancer ARN is arn:aws:elasticloadbalancing:ap-south-1:414500107664:loadbalancer/app/3-tier-lb/c41c69d4fba51c1b. The DNS name is 3-tier-lb-77484119.ap-south-1.elb.amazonaws.com (A Record). The bottom section shows the Listeners and rules tab with one listener.

3-tier-lb

Details

Load balancer type: Application

Status: Provisioning

VPC: vpc-065d348ae194fce7

Load balancer IP address type: IPv4

Scheme: Internet-facing

Hosted zone: ZP97RAFLXTNZK

Availability Zones: subnet-06e1a5ce5ec8a2232 (aps1-az1), subnet-0c047c145a0fc7bc7 (aps1-az3)

Load balancer ARN: arn:aws:elasticloadbalancing:ap-south-1:414500107664:loadbalancer/app/3-tier-lb/c41c69d4fba51c1b

DNS name info: 3-tier-lb-77484119.ap-south-1.elb.amazonaws.com (A Record)

Date created: September 23, 2025, 15:18 (UTC+05:30)

Listeners and rules (1) Info

A listener checks for connection requests on its configured protocol and port. Traffic received by the listener is routed according to the default action and any additional rules.

created target group to provide load balancer destination where the traffic should be sent.

The screenshot displays the AWS Management Console for a 3-tier-target-group Target Group. The left sidebar shows the navigation menu with categories like EC2, Instances, Images, and Elastic Block Store. The main content area shows the details of the 3-tier-target-group Target Group, including its ARN (arn:aws:elasticloadbalancing:ap-south-1:414500107664:targetgroup/3-tier-target-group/7891f305d19a2877), VPC (vpc-065d348ae194fce7), and protocol (HTTP1). The target group has 0 total targets, 0 healthy, 0 unhealthy, 0 unused, 0 initial, and 0 draining. The bottom section shows the Targets tab with 0 registered targets.

3-tier-target-group

Details

arn:aws:elasticloadbalancing:ap-south-1:414500107664:targetgroup/3-tier-target-group/7891f305d19a2877

Target type: Instance

Protocol : Port: HTTP: 80

VPC: vpc-065d348ae194fce7

IP address type: IPv4

Load balancer: None associated

0 Total targets

0 Healthy

0 Unhealthy

0 Unused

0 Initial

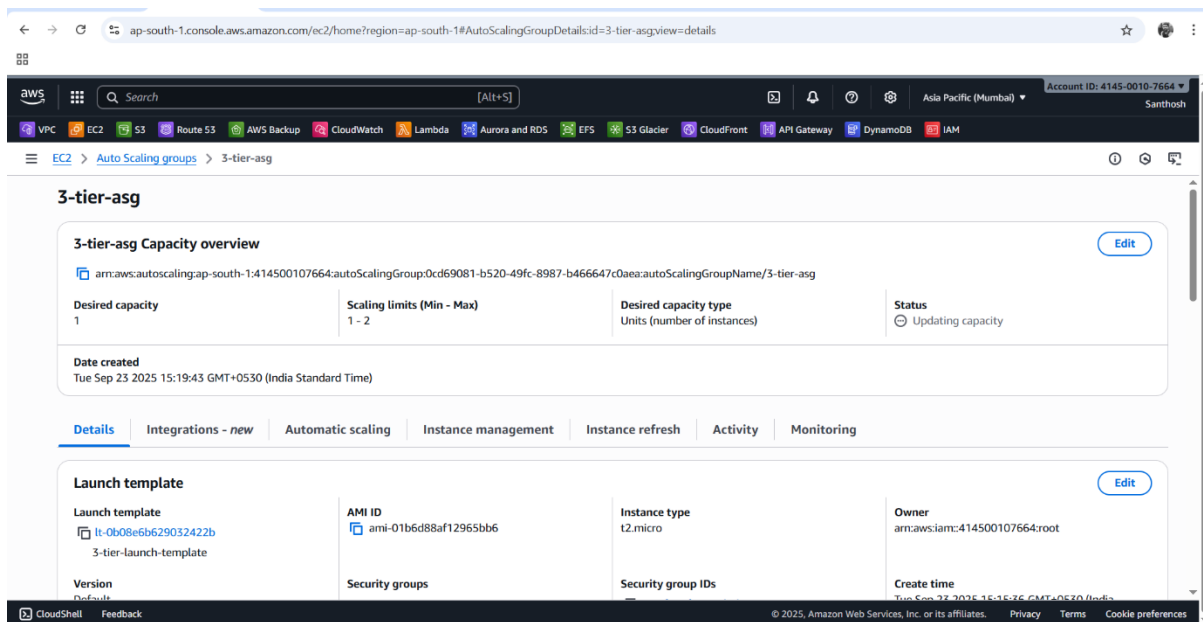
0 Draining

0 Anomalous

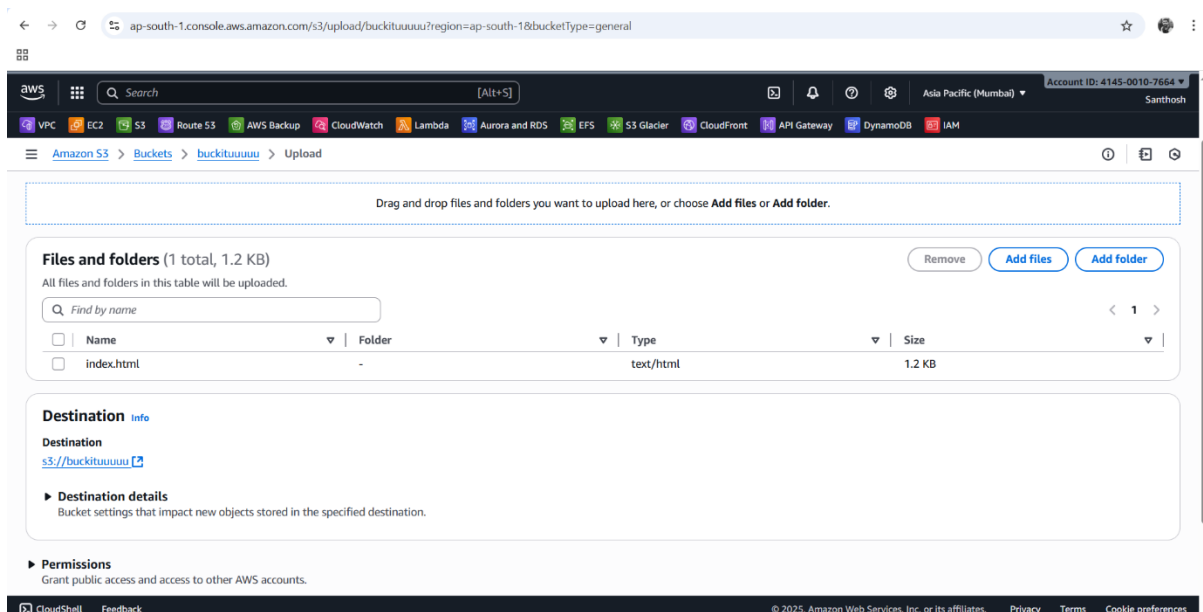
Targets

Registered targets (0)

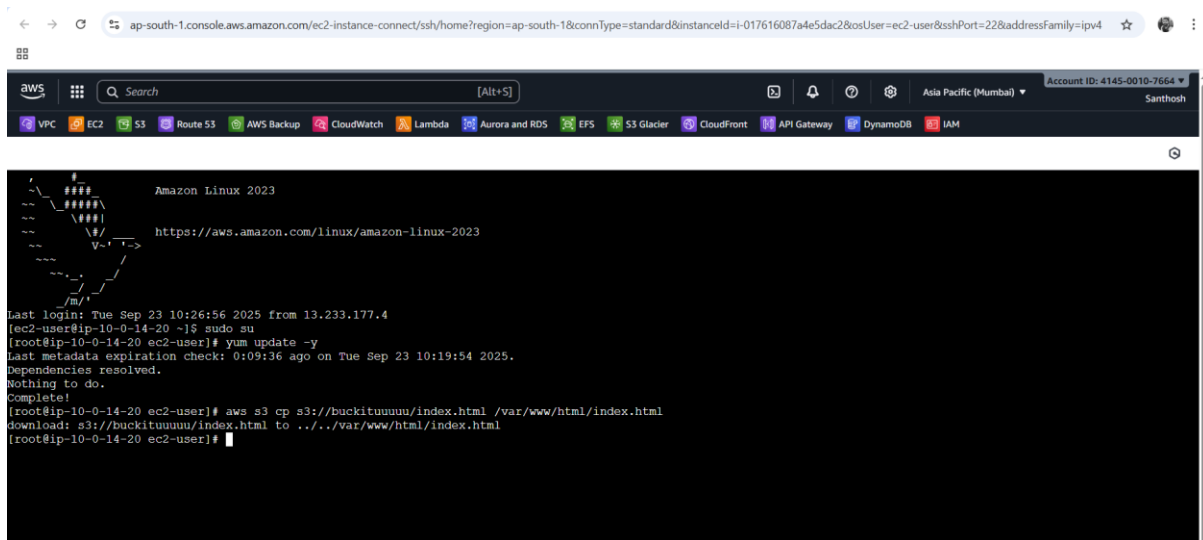
Autoscaling group for automatically scale in or scale out depending traffics request.



S3 bucket store the static files ,images and give access for the resources consume data from anywhere in the world.



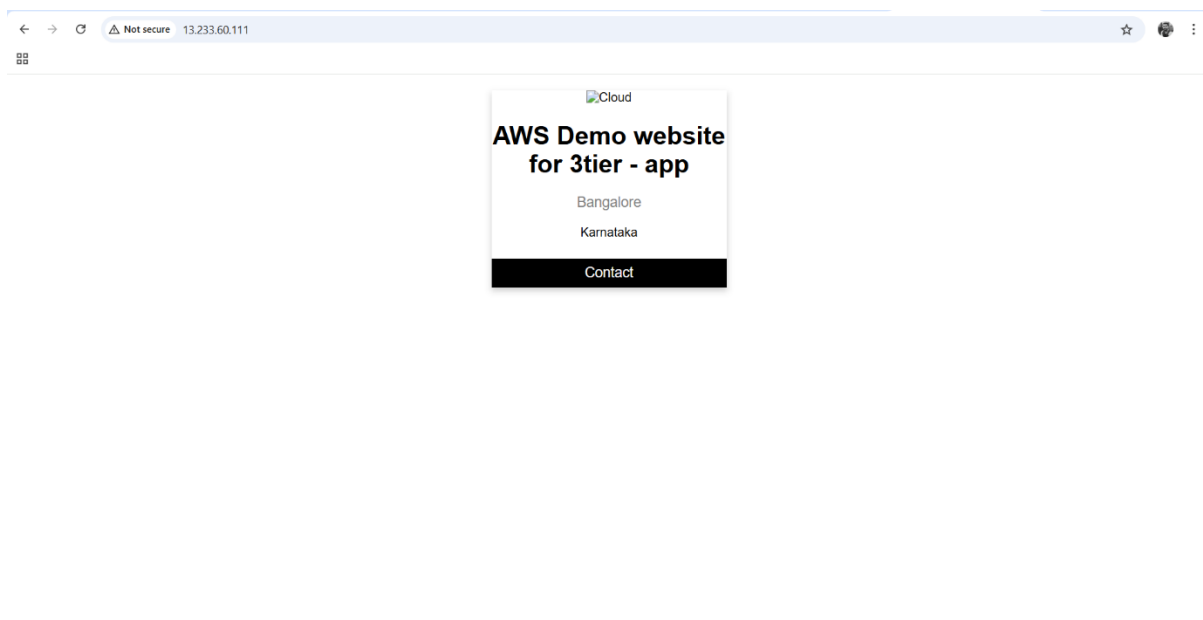
Accessing the S3 bucket through EC2 server by role and downloading the content from S3.



```
Amazon Linux 2023
https://aws.amazon.com/linux/amazon-linux-2023

Last login: Tue Sep 23 10:26:56 2025 from 13.233.177.4
[ec2-user@ip-10-0-14-20 ~]$ sudo su
[root@ip-10-0-14-20 ec2-user]# yum update -y
Last metadata expiration check: 0:09:36 ago on Tue Sep 23 10:19:54 2025.
Dependencies resolved.
Nothing to do.
Complete!
[root@ip-10-0-14-20 ec2-user]# aws s3 cp s3://buckituuuuu/index.html /var/www/html/index.html
download: s3://buckituuuuu/index.html to ../../var/www/html/index.html
[root@ip-10-0-14-20 ec2-user]#
```

Frontend deployed successfully we can see the data in the browser.



Tier 3 Database layer (deploying database in private subnets not accessible public.)

Create database in private Subnet.

The screenshot shows the AWS Management Console for the 'database-subnet-group' in the 'ap-south-1' region. The left sidebar lists navigation options under 'Aurora and RDS'. The main content area displays 'Subnet group details' with the following information:

- VPC ID:** vpc-065d348ae194fce7
- ARN:** arn:aws:rds:ap-south-1:414500107664:subgrp:database-subnet-group
- Supported network types:** IPv4
- Description:** database-subnet-group for launching mysql db

Below the details, a table lists the subnets in the group:

Availability zone	Subnet name	Subnet ID	CIDR block
ap-south-1b	3-tier-project-subnet-private2-ap-south-1b	subnet-0d4efe5a011ba90c2	10.0.144.0/20
ap-south-1a	3-tier-project-subnet-private1-ap-south-1a	subnet-0b0a69b6488301192	10.0.128.0/20

Creating MYSQL data base server.

The screenshot shows the AWS Management Console for the 'database-1' instance. A green notification bar at the top states 'Successfully created database-subnet-group. View subnet group'. The main content area displays the 'database-1' instance details under the 'Summary' tab. The instance is in the 'Creating' state.

DB identifier	Status	Role	Engine	Recommendations
database-1	Creating	Instance	MySQL Community	
CPU	Class	Current activity	Region & AZ	
-	db.t4g.micro		ap-south-1a	

Below the summary, the 'Connectivity & security' tab is selected, showing details for the endpoint and port, networking, and security groups.

Endpoint & port	Networking	Security
Endpoint	Availability Zone	VPC security groups
-	ap-south-1a	default (sg-05db048ee170a4444)
		Active

Accessing the database in private subnet through public subnet allowing only public instance in security group.

```
ap-south-1.console.aws.amazon.com/ec2-instance-connect/ssh/home?region=ap-south-1&connType=standard&instanceId=i-0a9dd4a04d3e4080f&osUser=ubuntu&sshPort=22&addressFamily=ipv4

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VPC EC2 S3 Route 53 AWS Backup CloudWatch Lambda Aurora and RDS EFS S3 Glacier CloudFront API Gateway DynamoDB IAM

43 updates can be applied immediately.
31 of these updates are standard security updates.
To see these additional updates run: apt list --upgradable

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

Last login: Tue Sep 23 10:36:54 2025 from 13.233.177.5
ubuntu@ip-10-0-19-237:~$ sudo apt update -y
Hit:1 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble InRelease
Hit:2 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:3 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu noble-backports InRelease
Hit:4 http://security.ubuntu.com/ubuntu noble-security InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
37 packages can be upgraded. Run 'apt list --upgradable' to see them.
ubuntu@ip-10-0-19-237:~$ sudo apt install mysql-client -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
mysql-client is already the newest version (8.0.43-0ubuntu0.24.04.2).
0 upgraded, 0 newly installed, 0 to remove and 37 not upgraded.
ubuntu@ip-10-0-19-237:~$ mysql -h database-1.ctsecmucsn3.ap-south-1.rds.amazonaws.com -u admin -p
Enter password:

i-0a9dd4a04d3e4080f (server2-by-asg)
PublicIPs: 13.235.69.219 PrivateIPs: 10.0.19.237
```

Successfully Accessed the database which is in Private through public instance.

```
ap-south-1.console.aws.amazon.com/ec2-instance-connect/ssh/home?region=ap-south-1&connType=standard&instanceId=i-0a9dd4a04d3e4080f&osUser=ubuntu&sshPort=22&addressFamily=ipv4

AWS Search [Alt+S] Account ID: 4145-0010-7664 Santhosh
VPC EC2 S3 Route 53 AWS Backup CloudWatch Lambda Aurora and RDS EFS S3 Glacier CloudFront API Gateway DynamoDB IAM

37 packages can be upgraded. Run 'apt list --upgradable' to see them.
ubuntu@ip-10-0-19-237:~$ sudo apt install mysql-client -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
mysql-client is already the newest version (8.0.43-0ubuntu0.24.04.2).
0 upgraded, 0 newly installed, 0 to remove and 37 not upgraded.
ubuntu@ip-10-0-19-237:~$ mysql -h database-1.ctsecmucsn3.ap-south-1.rds.amazonaws.com -u admin -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 11
Server version: 8.0.42 Source distribution

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owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql>
mysql>
mysql>
mysql>
mysql>
```