Assignment 6

Submitted by :	
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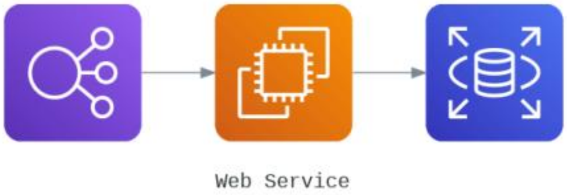
Que: Complete the below task:

1. Explain the below AWS Architecture

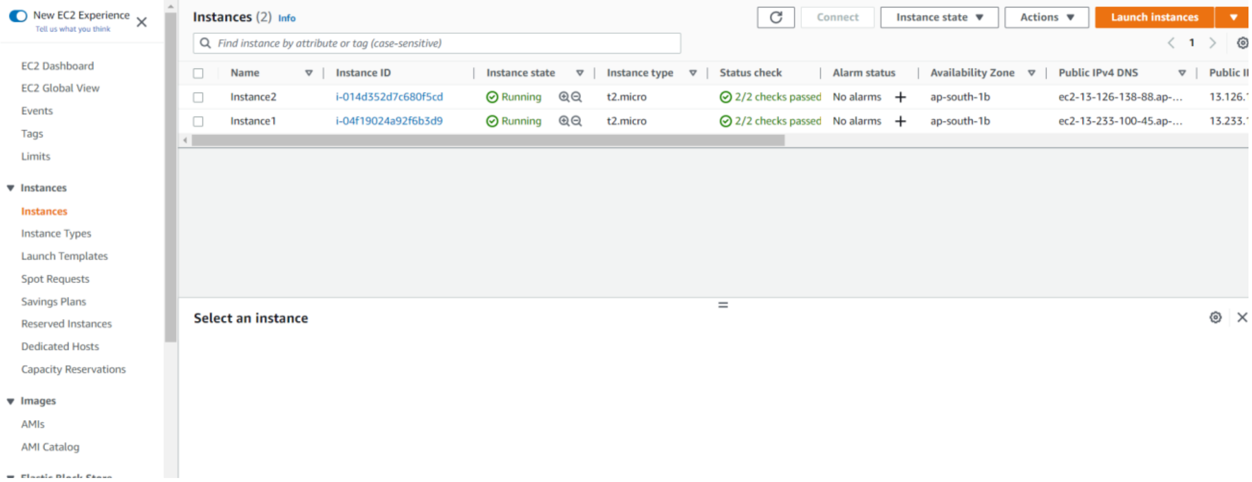
2. Implement the same in the AWS (only do a proper connection between service)



Answer:

- Here in above AWS Architecture, Elastic Load Balancer has connection to EC2 instance and then EC2 instance has connection to RDS database.
- Please find below attached screenshots for this implementation.

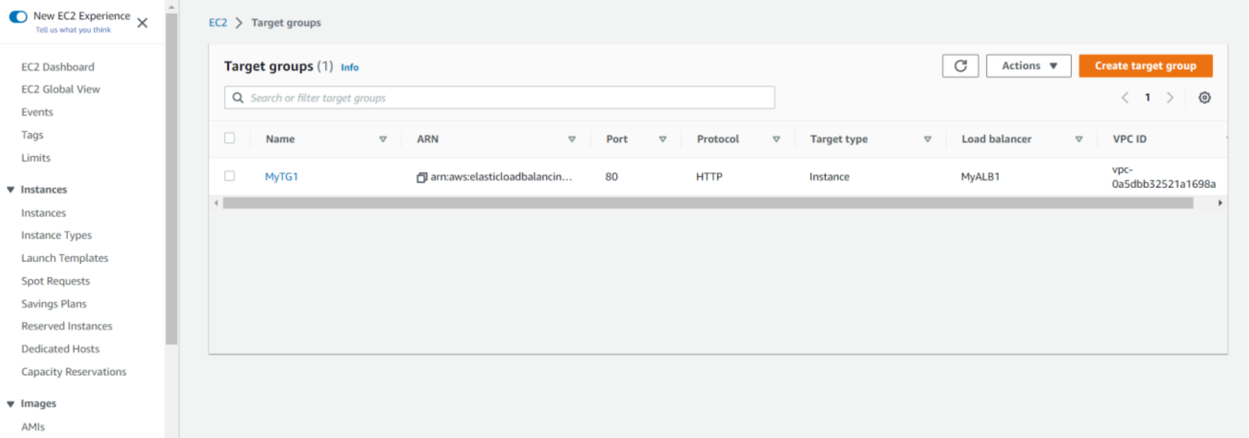
- Launched two EC2 instances(Instance1 & Instance2)



Instances (2) Info

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public II
Instance2	i-014d352d7c680f5cd	Running	t2.micro	2/2 checks passed	No alarms	ap-south-1b	ec2-13-126-138-88.ap-...	13.126.
Instance1	i-04f19024a92f6b3d9	Running	t2.micro	2/2 checks passed	No alarms	ap-south-1b	ec2-13-233-100-45.ap-...	13.233.

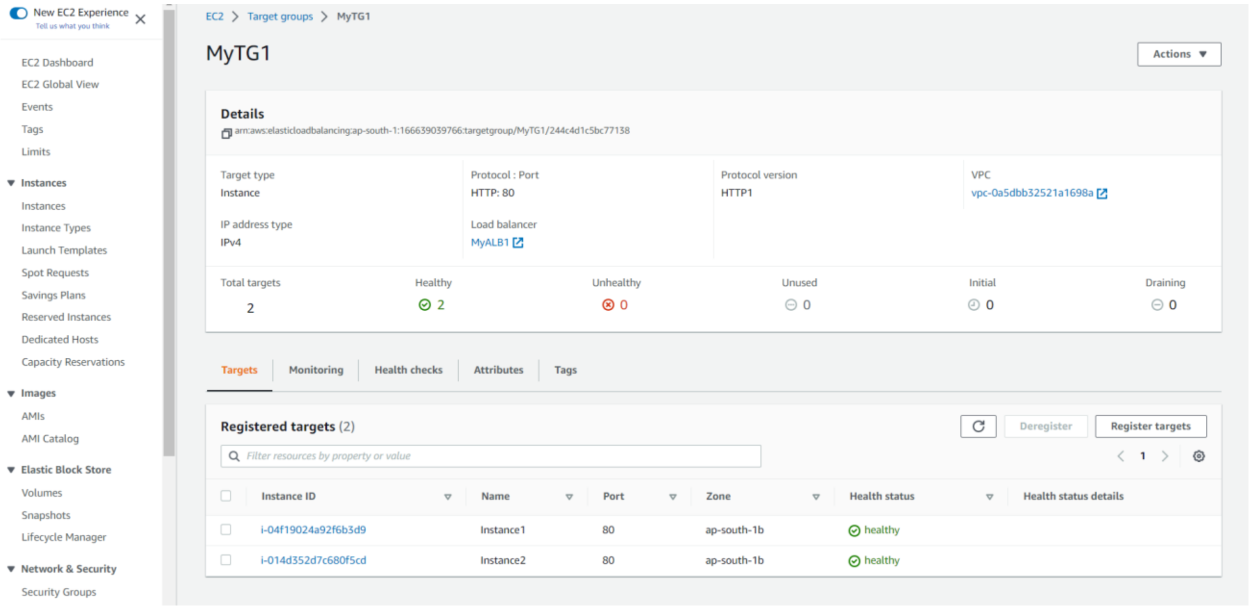
- Created Target group(MyTG1)



Target groups (1) Info

Name	ARN	Port	Protocol	Target type	Load balancer	VPC ID
MyTG1	arn:aws:elasticloadbalancin...	80	HTTP	Instance	MyALB1	vpc-0a5dbb32521a1698a

- Registered those two instances (Instance1 & Instance2) under newly created target group (TG1)



MyTG1

Details

arn:aws:elasticloadbalancing:ap-south-1:166639039766:targetgroup/MyTG1/244c4d1c5bc77138

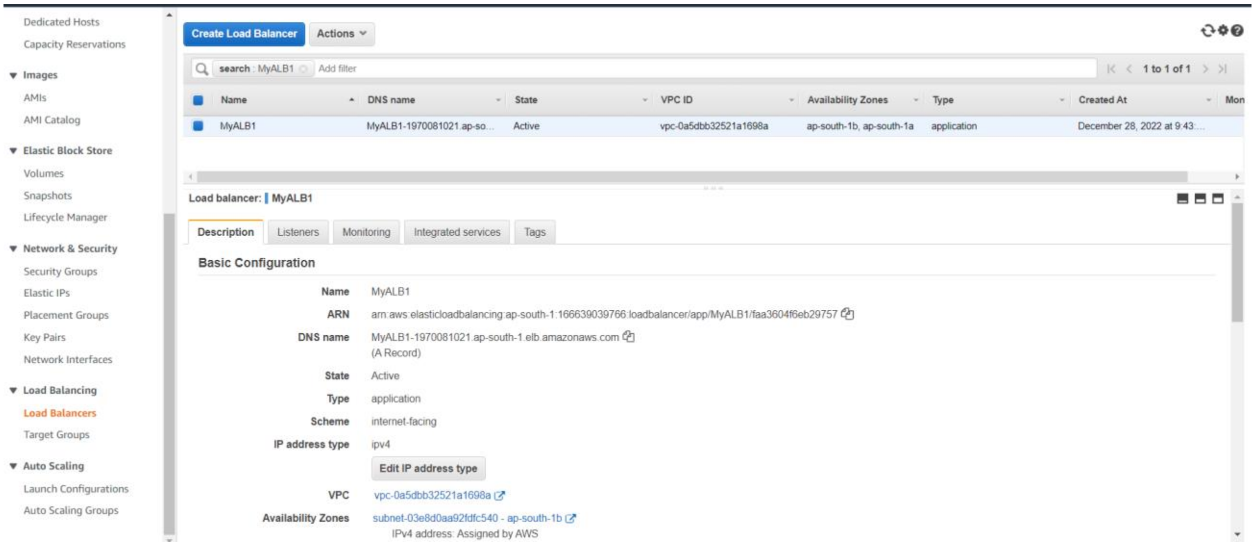
Target type Instance	Protocol : Port HTTP: 80	Protocol version HTTP1	VPC vpc-0a5dbb32521a1698a
IP address type IPv4	Load balancer MyALB1		

Total targets	Healthy	Unhealthy	Unused	Initial	Draining
2	2	0	0	0	0

Registered targets (2)

	Instance ID	Name	Port	Zone	Health status	Health status details
□	i-04f19024a92f6b3d9	Instance1	80	ap-south-1b	✓ healthy	
□	i-014d352d7c680f5cd	Instance2	80	ap-south-1b	✓ healthy	

- Created Application Load Balancer(MyALB1)



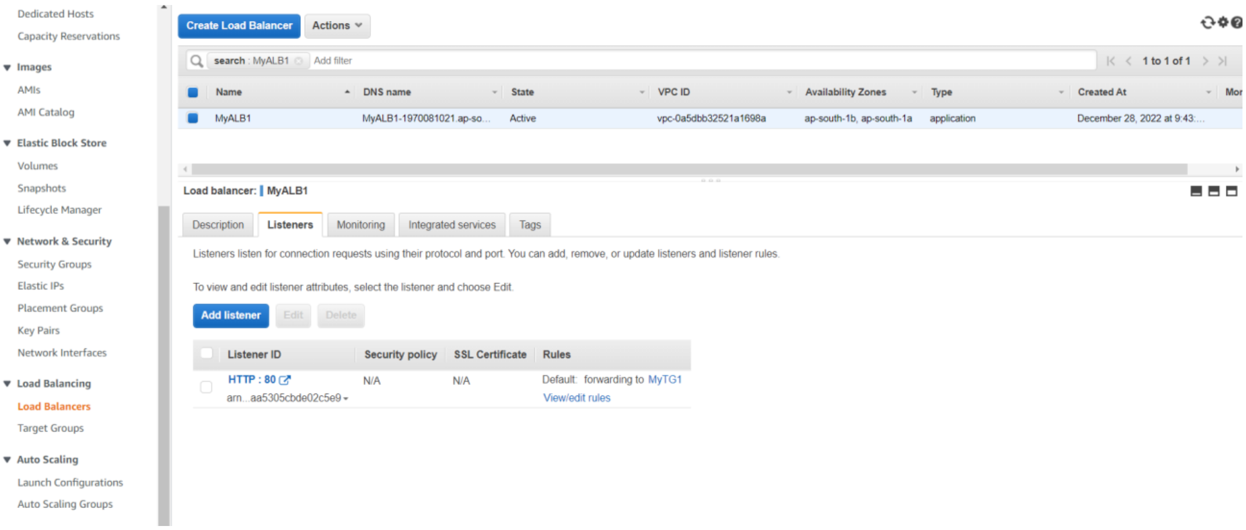
	Name	DNS name	State	VPC ID	Availability Zones	Type	Created At	Mon
■	MyALB1	MyALB1-1970081021.ap-so...	Active	vpc-0a5dbb32521a1698a	ap-south-1b, ap-south-1a	application	December 28, 2022 at 9:43:...	

Load balancer: MyALB1

Basic Configuration

Name	MyALB1
ARN	arn:aws:elasticloadbalancing:ap-south-1:166639039766:loadbalancer/app/MyALB1/faa3604f6eb29757
DNS name	MyALB1-1970081021.ap-south-1.elb.amazonaws.com (A Record)
State	Active
Type	application
Scheme	internet-facing
IP address type	ipv4
VPC	vpc-0a5dbb32521a1698a
Availability Zones	subnet-03e8d0aa92fdfc540 - ap-south-1b IPv4 address: Assigned by AWS

- Mapped Target group (TG1) to this newly created Application Load balancer (MyALB1)



Name	DNS name	State	VPC ID	Availability Zones	Type	Created At	Mor
MyALB1	MyALB1-1970081021.ap-so...	Active	vpc-0a5dbb32521a1698a	ap-south-1b, ap-south-1a	application	December 28, 2022 at 9:43:...	

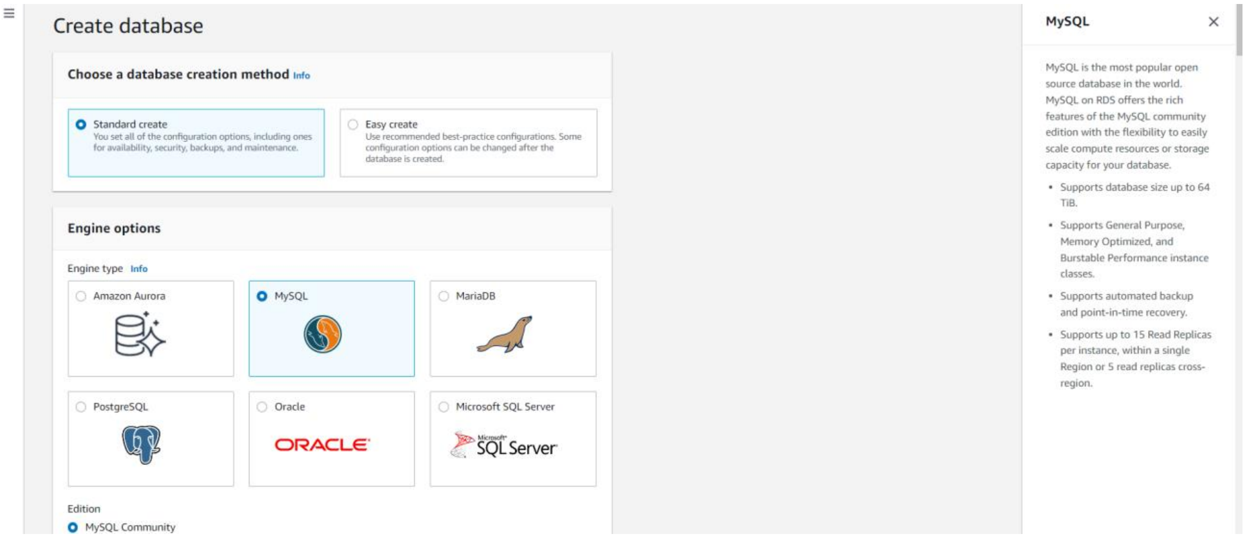
Load balancer: MyALB1

Listeners listen for connection requests using their protocol and port. You can add, remove, or update listeners and listener rules.

To view and edit listener attributes, select the listener and choose Edit.

Listener ID	Security policy	SSL Certificate	Rules
HTTP : 80 arn...aa5305cbde02c5e9	N/A	N/A	Default: forwarding to MyTG1 View/edit rules

- Created new RDS having MySQL as Engine type



Create database

Choose a database creation method Info

● Standard create
You set all of the configuration options, including ones for availability, security, backups, and maintenance.

○ Easy create
Use recommended best-practice configurations. Some configuration options can be changed after the database is created.

Engine options

Engine type Info

○ Amazon Aurora
● MySQL
○ MariaDB
○ PostgreSQL
○ Oracle
○ Microsoft SQL Server

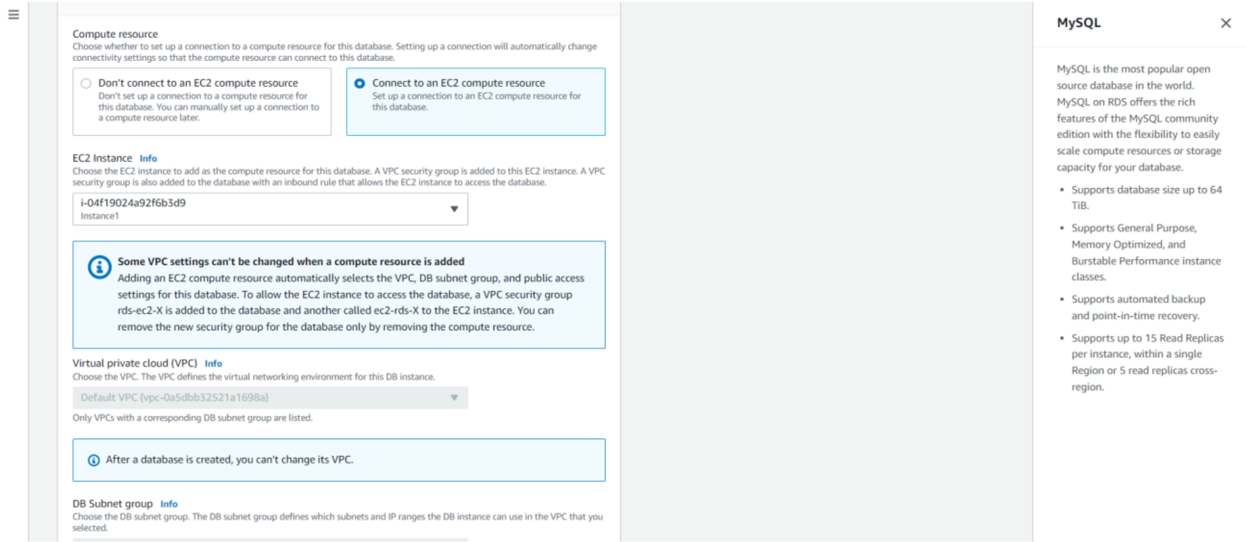
Edition
● MySQL Community

MySQL

MySQL is the most popular open source database in the world. MySQL on RDS offers the rich features of the MySQL community edition with the flexibility to easily scale compute resources or storage capacity for your database.

- Supports database size up to 64 TiB.
- Supports General Purpose, Memory Optimized, and Burstable Performance instance classes.
- Supports automated backup and point-in-time recovery.
- Supports up to 15 Read Replicas per instance, within a single Region or 5 read replicas cross-region.

- While configuring RDS under Compute resource, there is an option for connection to an EC2 compute resource. After selecting that option, choose appropriate EC2 instance from EC2 dropdown. By doing so we are setting up a connection from this EC2 instance to this database.



Compute resource

Choose whether to set up a connection to a compute resource for this database. Setting up a connection will automatically change connectivity settings so that the compute resource can connect to this database.

○ Don't connect to an EC2 compute resource
Don't set up a connection to a compute resource for this database. You can manually set up a connection to a compute resource later.

● Connect to an EC2 compute resource
Set up a connection to an EC2 compute resource for this database.

EC2 Instance Info

Choose the EC2 instance to add as the compute resource for this database. A VPC security group is added to this EC2 instance. A VPC security group is also added to the database with an inbound rule that allows the EC2 instance to access the database.

i-04f19024a92f6b3d9
Instance1

Some VPC settings can't be changed when a compute resource is added
Adding an EC2 compute resource automatically selects the VPC, DB subnet group, and public access settings for this database. To allow the EC2 instance to access the database, a VPC security group rds-ec2-X is added to the database and another called ec2-rds-X to the EC2 instance. You can remove the new security group for the database only by removing the compute resource.

Virtual private cloud (VPC) Info

Choose the VPC. The VPC defines the virtual networking environment for this DB instance.

Default VPC (vpc-0a5dbb32521a1698a)

Only VPCs with a corresponding DB subnet group are listed.

After a database is created, you can't change its VPC.

DB Subnet group Info

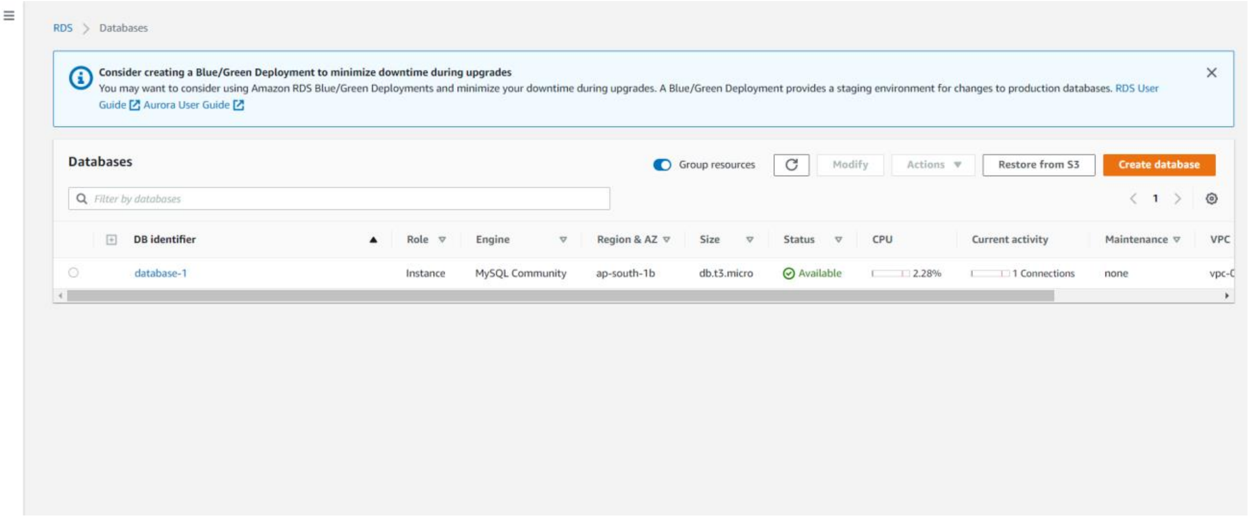
Choose the DB subnet group. The DB subnet group defines which subnets and IP ranges the DB instance can use in the VPC that you selected.

MySQL

MySQL is the most popular open source database in the world. MySQL on RDS offers the rich features of the MySQL community edition with the flexibility to easily scale compute resources or storage capacity for your database.

- Supports database size up to 64 TiB.
- Supports General Purpose, Memory Optimized, and Burstable Performance instance classes.
- Supports automated backup and point-in-time recovery.
- Supports up to 15 Read Replicas per instance, within a single Region or 5 read replicas cross-region.

- After doing configuration for RDS, click on create database and then it will start creating RDS. Wait for some time until it shows status as available.



RDS > Databases

Consider creating a Blue/Green Deployment to minimize downtime during upgrades
You may want to consider using Amazon RDS Blue/Green Deployments and minimize your downtime during upgrades. A Blue/Green Deployment provides a staging environment for changes to production databases. RDS User Guide Aurora User Guide

Databases

	DB identifier	Role	Engine	Region & AZ	Size	Status	CPU	Current activity	Maintenance	VPC
○	database-1	Instance	MySQL Community	ap-south-1b	db.t3.micro	Available	2.28%	1 Connections	none	vpc-(

- Once RDS is up and running, click on that RDS. There under connectivity & security you will find its Endpoint & Port. Now connect to that EC2 instance and perform below steps to connect to RDS :

Steps for RDS connection from EC2 (having AMI as Amazon Linux 2)

- To install the MySQL command-line client

➢ yum install mariadb

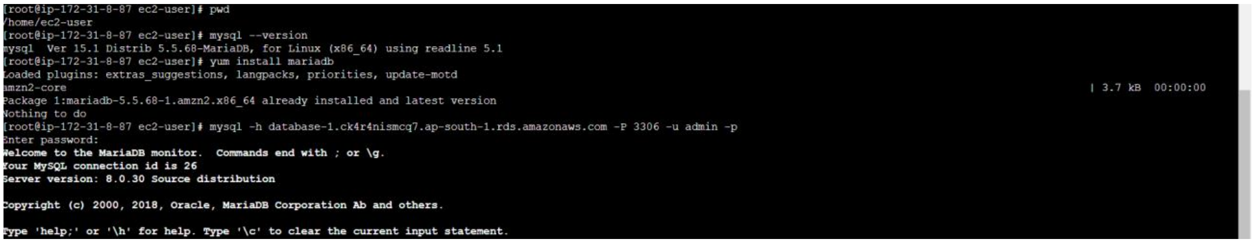
- To check the version of your MySQL command-line client

➢ mysql –version

- To connect to a DB instance using the MySQL command-line client

➢ mysql -h <Endpoint>-P <Port> -u <Master username>-p

Doing so, will get connection to RDS from EC2 as per below screenshot.

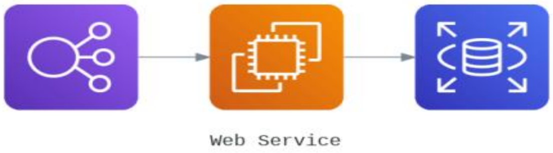


```
[root@ip-172-31-8-87 ec2-user]# pwd
/home/ec2-user
[root@ip-172-31-8-87 ec2-user]# mysql --version
mysql  Ver 15.1 Distrib 5.5.68-MariaDB, for Linux (x86_64) using readline 5.1
[root@ip-172-31-8-87 ec2-user]# yum install mariadb
Loaded plugins: extras_suggestions, langpacks, priorities, update-motd
amzn2-core                                                                                                   | 3.7 kB  00:00:00
Package 1:mariadb-5.5.68-1.amzn2.x86_64 already installed and latest version
Nothing to do
[root@ip-172-31-8-87 ec2-user]# mysql -h database-1.ck4r4nismcq7.ap-south-1.rds.amazonaws.com -P 3306 -u admin -p
Enter password:
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MySQL connection id is 26
Server version: 8.0.30 Source distribution

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

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

So, as per infra diagram I have done the connection from Elastic Load Balancer to an EC2 instance and from an EC2 instance to a RDS database.


Web Service