we will cover everything you need to know about **Amazon RDS**, **Features and Benefits of RDS, Amazon RDS Pricing,** and a step-by-step tutorial to create a Relational Database on AWS.

Topics covered in this blog:

What is Amazon RDS?

Amazon RDS is a **Relational Database Service** by Amazon Web Services. A relational database is a type of database that stores data in tables with rows and columns. Amazon RDS provides an industry-standard relational database that is cost-efficient with resizable capacity. It gives users solutions for easier setup, operation, and scale of a relational database in the cloud.

Check Also: Free AWS Training and Certifications

Features of Amazon RDS

- It manages software patching, automatic failure detection, backups, and recovery.
- Offers flexibility to opt for automated backups or manual backup snapshots. In case of data loss, you can restore the backups at any time.
- Flexibility to pick your database engine among **MySQL**, **MariaDB**, **PostgreSQL**, **Oracle**, and **Microsoft SQL Server**.
- Enable more security with **AWS IAM** (Identity and Access Management) to ensure that access remains only for the selected users with limited permissions.

Benefits of Amazon RDS

- **Ease of use:** AWS RDS is a fully managed service, which means that Amazon takes care of all the details of database administration, such as provisioning hardware, installing software, and managing backups. This frees up your developers and IT staff to focus on other tasks.

- **Scalability**: AWS RDS is highly scalable, so you can easily add or remove database capacity as needed. This makes it ideal for applications that experience fluctuating traffic patterns.
- **Security:** AWS RDS offers a wide range of security features, such as encryption, access control, and auditing. This helps you to protect your data from unauthorized access.
- **Cost-effectiveness:** AWS RDS is a cost-effective way to host your databases. You only pay for the resources that you use, so you can save money by only provisioning the capacity that you need.

Database Engine Selection in RDS

When using AWS RDS (Relational Database Service), choosing the right database engine is a crucial decision that impacts the performance, compatibility, and functionality of your applications. AWS RDS supports several popular database engines, including MySQL, PostgreSQL, Oracle, SQL Server, and Amazon Aurora. Each engine has its strengths and use cases, so it's essential to consider the following factors when making your selection:

1. **Performance and Scalability:** Evaluate the performance requirements of your application. Consider factors such as transaction throughput, read and write operations, and response time. MySQL and PostgreSQL are known for their performance and scalability capabilities, making them suitable for high-traffic applications. Amazon Aurora, a MySQL and PostgreSQL-compatible database, offers enhanced performance and scalability with its innovative storage and replication architecture.
2. **Features and Functionality:** Examine the specific features and functionality provided by each database engine. MySQL is popular for its ease of use, wide community support, and compatibility with various applications. PostgreSQL offers advanced features such as JSON support, full-text search capabilities, and robust transaction management. Oracle and SQL Server are suitable for enterprises requiring comprehensive enterprise-grade features, such as advanced analytics, security, and high availability options.
3. **Application Compatibility:** Consider the compatibility of the database engine with your existing applications and frameworks. If you have applications developed with MySQL or PostgreSQL, it may be beneficial to stick with the same engine for seamless migration and reduced development effort. AWS RDS provides tools and resources to facilitate database migration between engines, allowing you to switch engines if needed.
4. **Vendor Lock-In and Portability:** Evaluate the potential vendor lock-in and portability concerns associated with the database engine. AWS RDS provides managed services for popular open-source engines like MySQL and PostgreSQL, allowing you to migrate your databases to self-managed environments or other cloud providers if necessary. If you anticipate the need for portability and flexibility in the future, choosing an open-source engine might be a suitable option.

5. **Licensing and Cost:** Consider the licensing requirements and associated costs of the database engine. Oracle and SQL Server are commercial database engines with additional licensing costs, while MySQL and PostgreSQL are open-source and typically have lower licensing costs. AWS RDS offers options for both licensed and open-source engines, allowing you to select the engine that aligns with your budget and licensing requirements.

Amazon RDS Pricing

Amazon RDS is free to try, and you can test your environment with basic settings. If you are setting up Amazon RDS for your organization with more frequent usage, then the charges depend on the usage of the resources. There are various database engines on which the Amazon RDS pricing depends like **Amazon Aurora**, **My SQL**, **PostgreSQL**, **Maria DB**, **Oracle**, and **Microsoft SQL Server**. On running Amazon RDS, the charges are made on the following parameters.

- On-Demand DB Instances
- Reserved Instances
- Database Storage
- Backup Storage
- Snapshot Export
- Data Transfer

If you want to learn the exact Amazon RDS Pricing, you can check here.

Also Check: Our blog post on **Cloud Service Models**.

Amazon RDS Tutorial

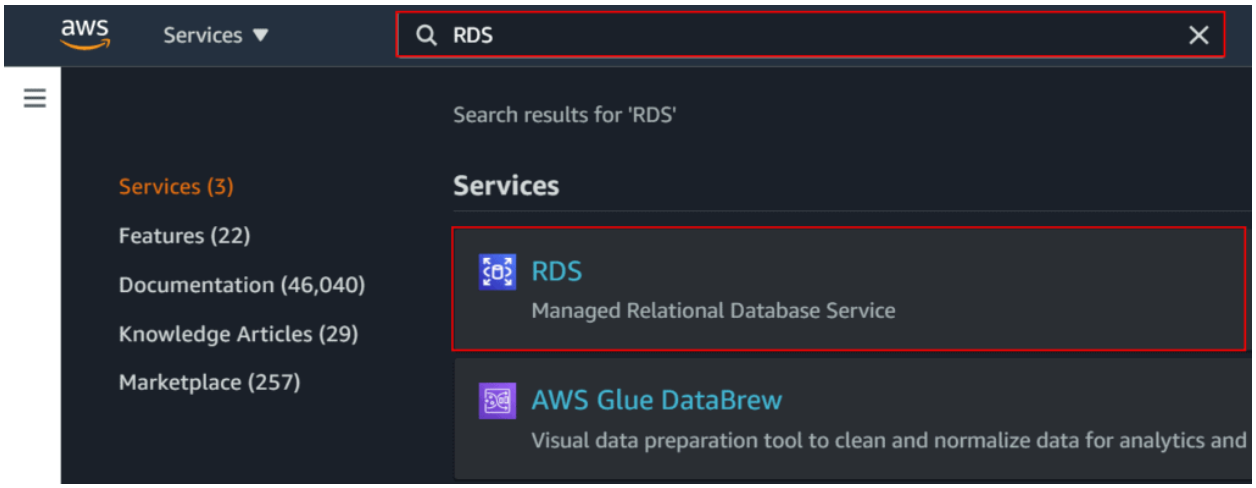
If you are a beginner and don't have an AWS account, see our blog on creating an **AWS Free Tier Account.**

Now, I assume that you already have an AWS account ready with you. To start using **Relational Database Service**, visit **console.aws.amazon.com** and log in with your credentials.

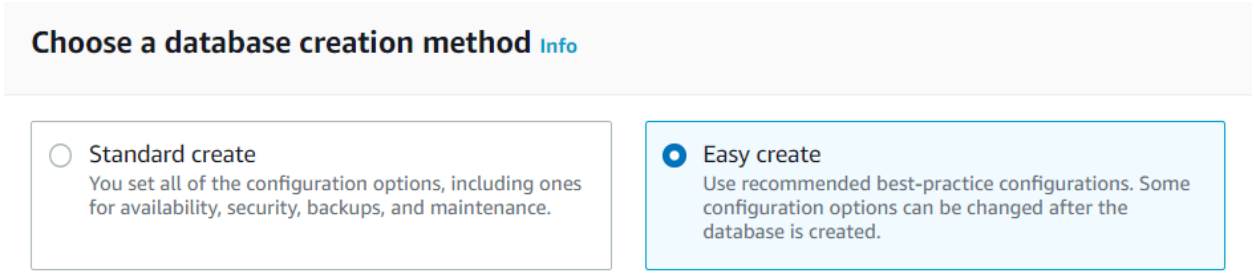
Step 1) Create Amazon RDS

After log in to the AWS console, follow the below steps.

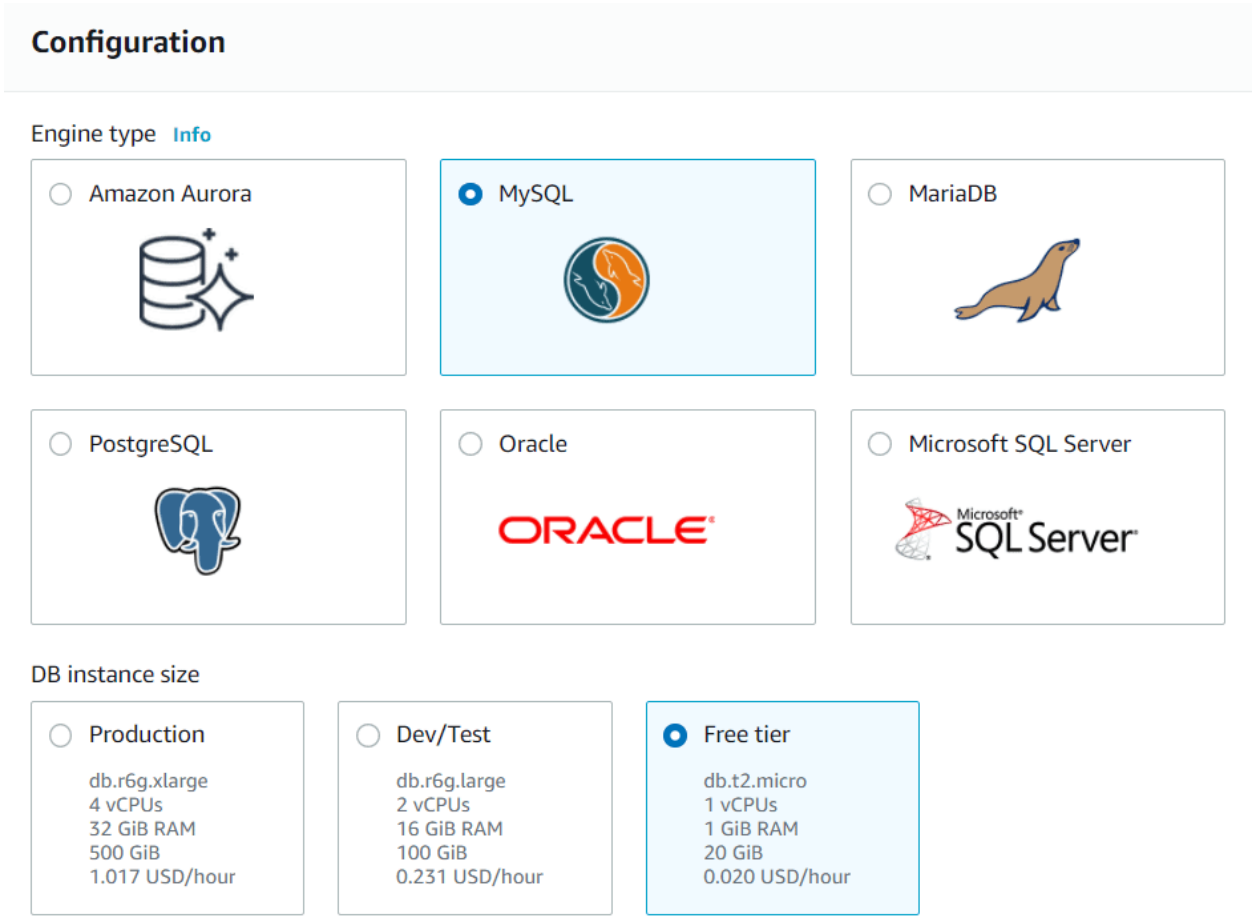
1) After visiting your AWS console, search for RDS in the top search bar. Click on the RDS Service as highlighted in the image below.



2) After clicking on the RDS Service, a new window will appear on your screen. You will be provided with two options to create. One is **Standard Create** which will offer you to choose all the additional settings and configurations. The other is **Easy Create,** which will automatically pick the default configurations for your RDS. Depending on your need, you can pick any option, but I will pick the Easy Create option for a simple creation process for beginners.



3) Now, you need to pick the RDS Engine. The types of RDS Engines available are Amazon Aurora, My SQL, Maria DB, PostgreSQL, Oracle, and Microsoft SQL Server. Based on your need, you can pick any of the RDS engines. I have picked MySQL in my case.



After selecting RDS Engine, there will be some options to choose the DB instance size, and these options change with the selection you made above. Also, based on your RDS Engine and DB instance size, the payment is made accordingly.

4) Now, in the settings of the Amazon RDS, fill in all the details. First is the DB cluster identifier field. Fill it with the name you want to assign to your database.

Then, assign the username and password for your database. You can also pick the auto-generated password option that will generate a strong password for you.

5) For the Easy Create option, only this much is needed to be configured, and for the rest, all the default settings are used. In the end, all the default settings used for your AWS RDS are shown, and you can match them with your needs.

6) Now, the final step is to click on the Create Database button at the end, as highlighted below.

Also Check: Our bog post on **AWS SNS**.

Step 2) Manage Amazon RDS

After the database is created, you are redirected to the screen where all your databases are present. You can search your database name in the search field if you have multiple databases created. Soon after creating your database, the status is shown. It will take a few minutes to be completely available. From this window, you can also modify and delete your created databases.

Also Read: Our blog post on **AWS Secrets Manager**.

Step 3) Connect to Amazon RDS

To connect your database, you need to get the endpoint and port for your database. And to access it, you will require an SQL client.

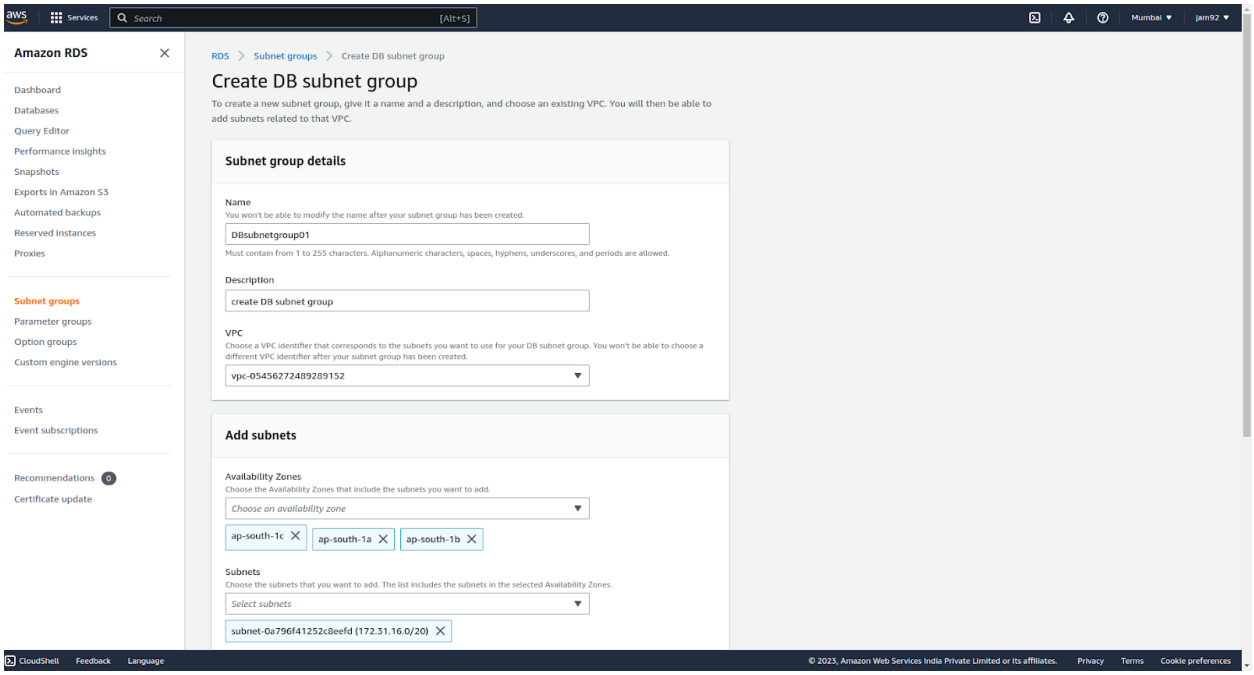
1) Visit your database by clicking on your created RDS name as highlighted in the above image. Now you will see all the details of your database. Click on connectivity & security and copy your endpoint URL and port number. Both these values are used to connect a database.

2) Download your SQL client and configure it. For the MySQL engine, the **MySQL Workbench** tool is needed. You can download it from here.

```
PROMPT> mysql -h <endpoint> -P 3306 -u <mymasteruser> -p
```

Now, to create a connection to your database, run the above command. After running it, the database is connected to your SQL client.

We need to create the subnet group first


aws
Services
Search
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Mumbai
jam92
Amazon RDS
Dashboard
Databases
Query Editor
Performance Insights
Snapshots
Exports in Amazon S3
Automated backups
Reserved instances
Proxies
Subnet groups
Parameter groups
Option groups
Custom engine versions
Events
Event subscriptions
Recommendations 0
Certificate update
RDS > Subnet groups > Create DB subnet group
Create DB subnet group
To create a new subnet group, give it a name and a description, and choose an existing VPC. You will then be able to add subnets related to that VPC.
Subnet group details
Name
You won't be able to modify the name after your subnet group has been created.
DBsubnetgroup01
Must contain from 1 to 255 characters. Alphanumeric characters, spaces, hyphens, underscores, and periods are allowed.
Description
create DB subnet group
VPC
Choose a VPC identifier that corresponds to the subnets you want to use for your DB subnet group. You won't be able to choose a different VPC identifier after your subnet group has been created.
vpc-05456272489289152
Add subnets
Availability Zones
Choose the Availability Zones that include the subnets you want to add.
Choose an availability zone
ap-south-1c
ap-south-1a
ap-south-1b
Subnets
Choose the subnets that you want to add. The list includes the subnets in the selected Availability Zones.
Select subnets
subnet-0a796f41252c8eefd (172.31.16.0/20)
CloudShell
Feedback
Language
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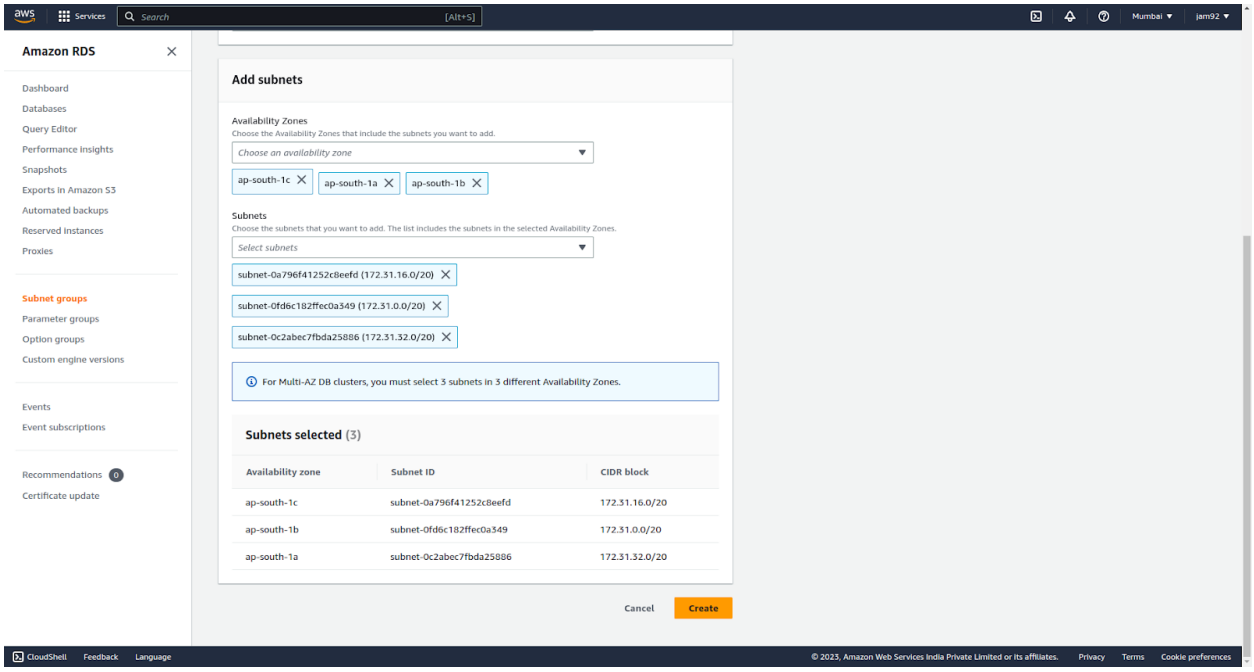
Privacy
Terms
Cookie preferences


aws
Services
Search
[Alt+S]
Mumbai
jam92
Amazon RDS
Dashboard
Databases
Query Editor
Performance Insights
Snapshots
Exports in Amazon S3
Automated backups
Reserved instances
Proxies
Subnet groups
Parameter groups
Option groups
Custom engine versions
Events
Event subscriptions
Recommendations 0
Certificate update
Add subnets
Availability Zones
Choose the Availability Zones that include the subnets you want to add.
Choose an availability zone
ap-south-1c
ap-south-1a
ap-south-1b
Subnets
Choose the subnets that you want to add. The list includes the subnets in the selected Availability Zones.
Select subnets
subnet-0a796f41252c8eefd (172.31.16.0/20)
subnet-0fd6c182ffec0a349 (172.31.0.0/20)
subnet-0c2abec7fbda25886 (172.31.32.0/20)
For Multi-AZ DB clusters, you must select 3 subnets in 3 different Availability Zones.
Subnets selected (3)
Availability zone
Subnet ID
CIDR block
ap-south-1c
subnet-0a796f41252c8eefd
172.31.16.0/20
ap-south-1b
subnet-0fd6c182ffec0a349
172.31.0.0/20
ap-south-1a
subnet-0c2abec7fbda25886
172.31.32.0/20
Cancel
Create
CloudShell
Feedback
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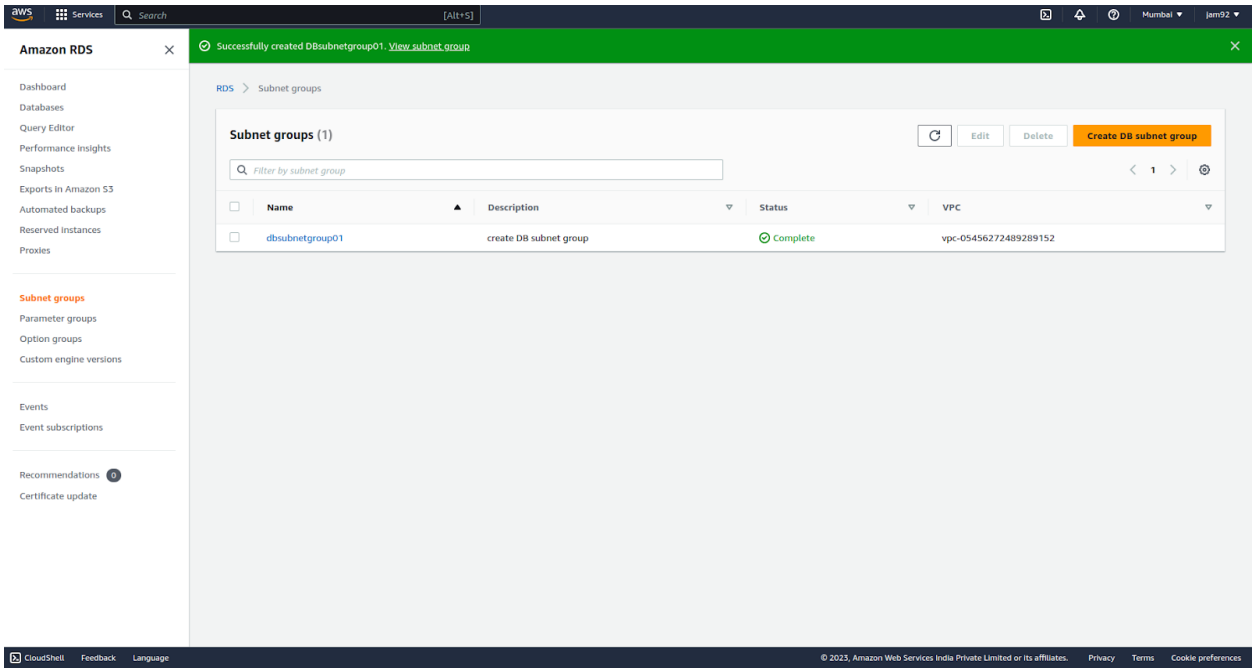
You can see we had created the DB subnet group in the below image



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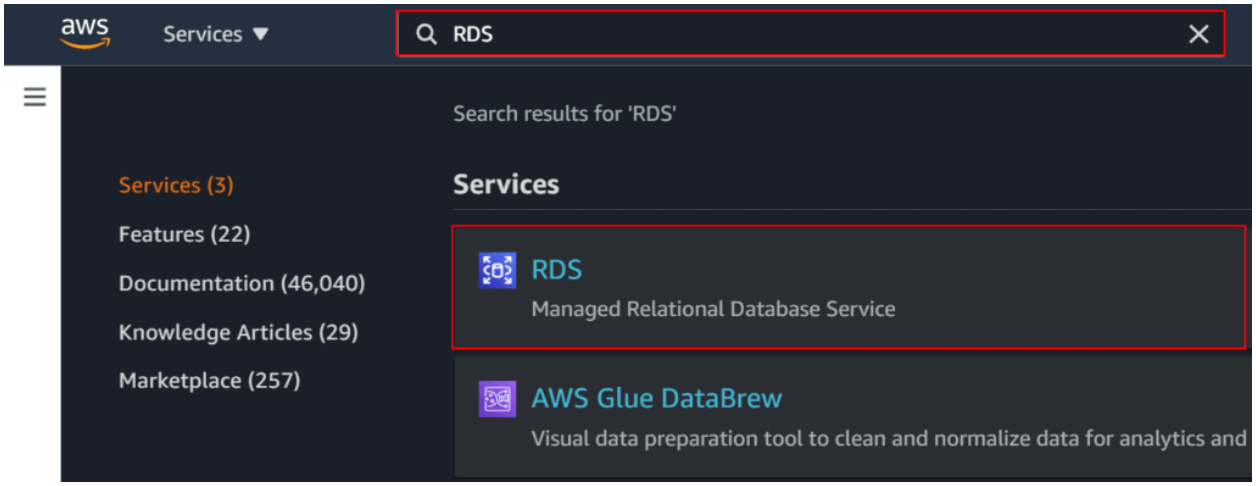

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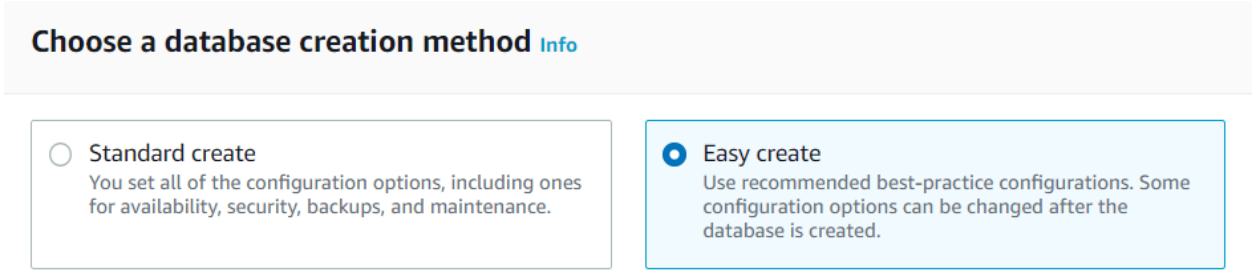

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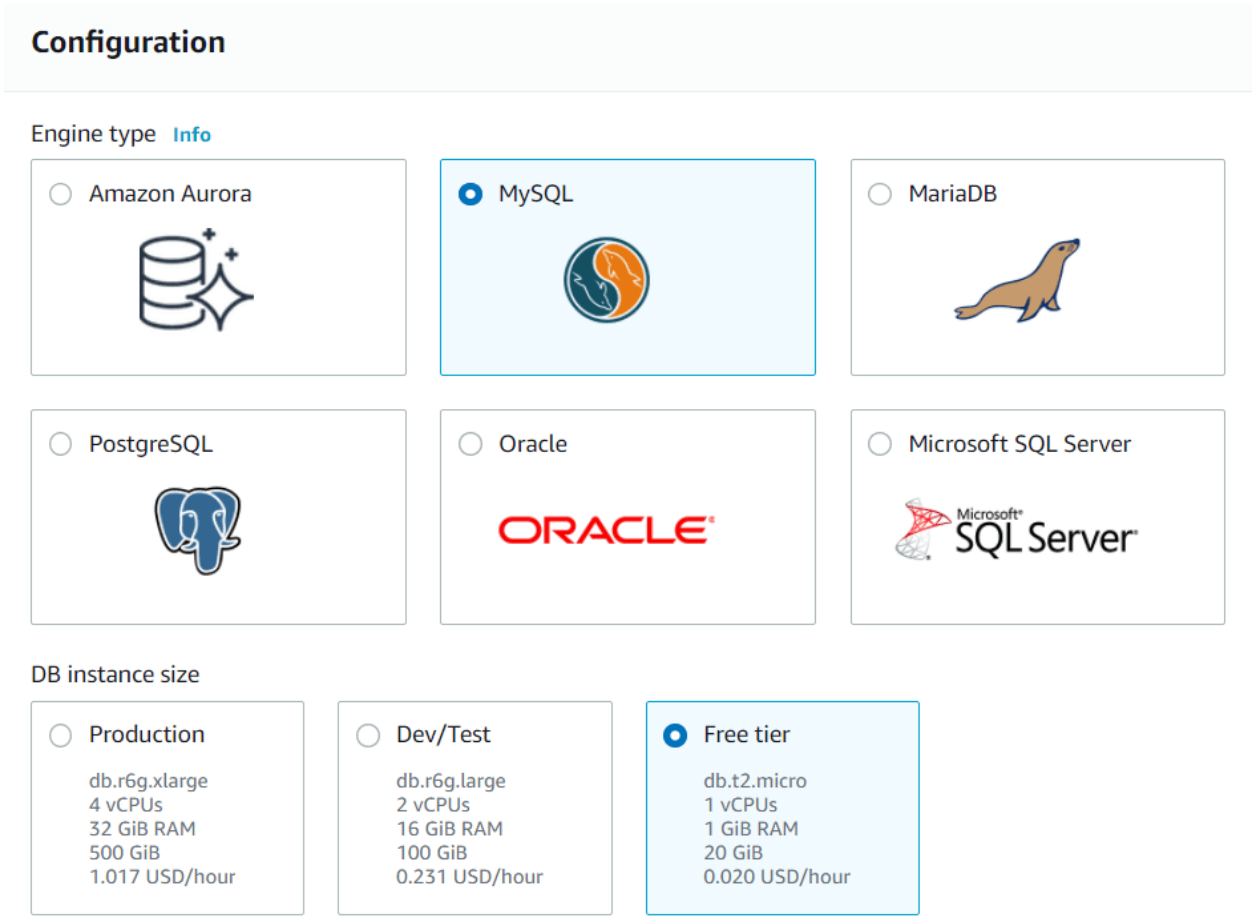

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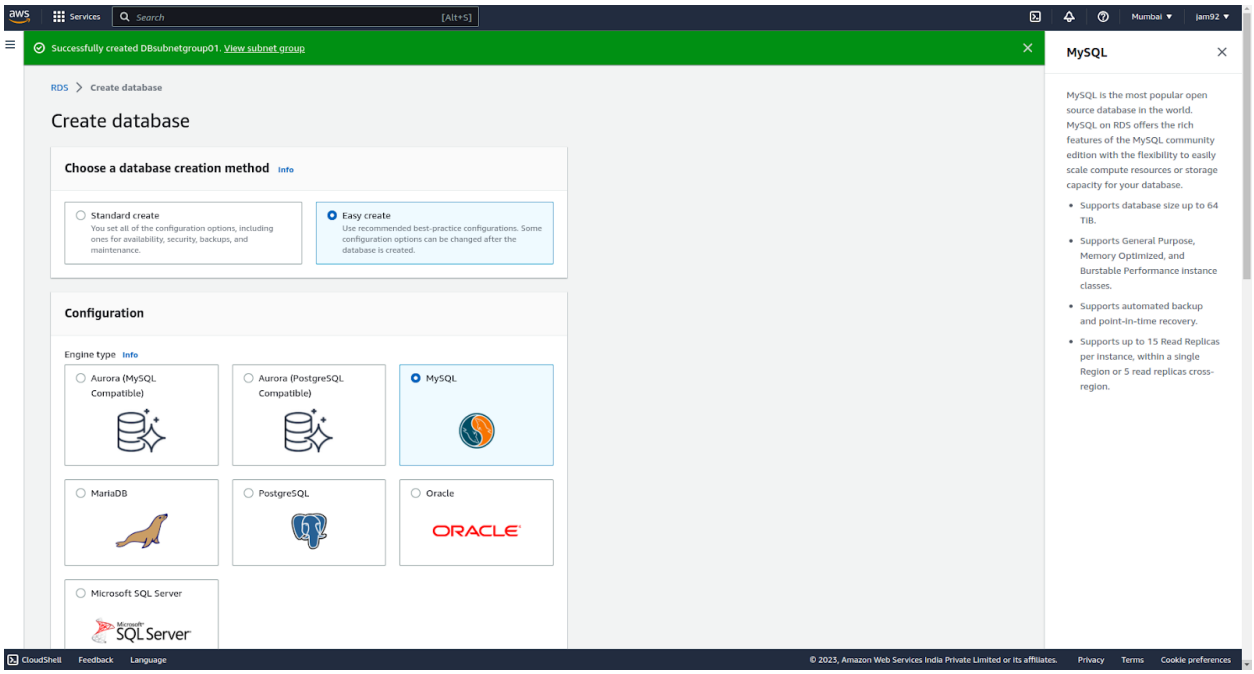
aws
Services
Search
[Alt+S]
Mumbai
jam92
Successfully created DBsubnetgroup01. View subnet group
RDS
Create database
Create database
Choose a database creation method Info
Standard create
You set all of the configuration options, including ones for availability, security, backups, and maintenance.
Easy create
Use recommended best-practice configurations. Some configuration options can be changed after the database is created.
Configuration
Engine type Info
Aurora (MySQL Compatible)
Aurora (PostgreSQL Compatible)
MySQL
MariaDB
PostgreSQL
Oracle
ORACLE
Microsoft SQL Server
SQL Server
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.
CloudShell
Feedback
Language
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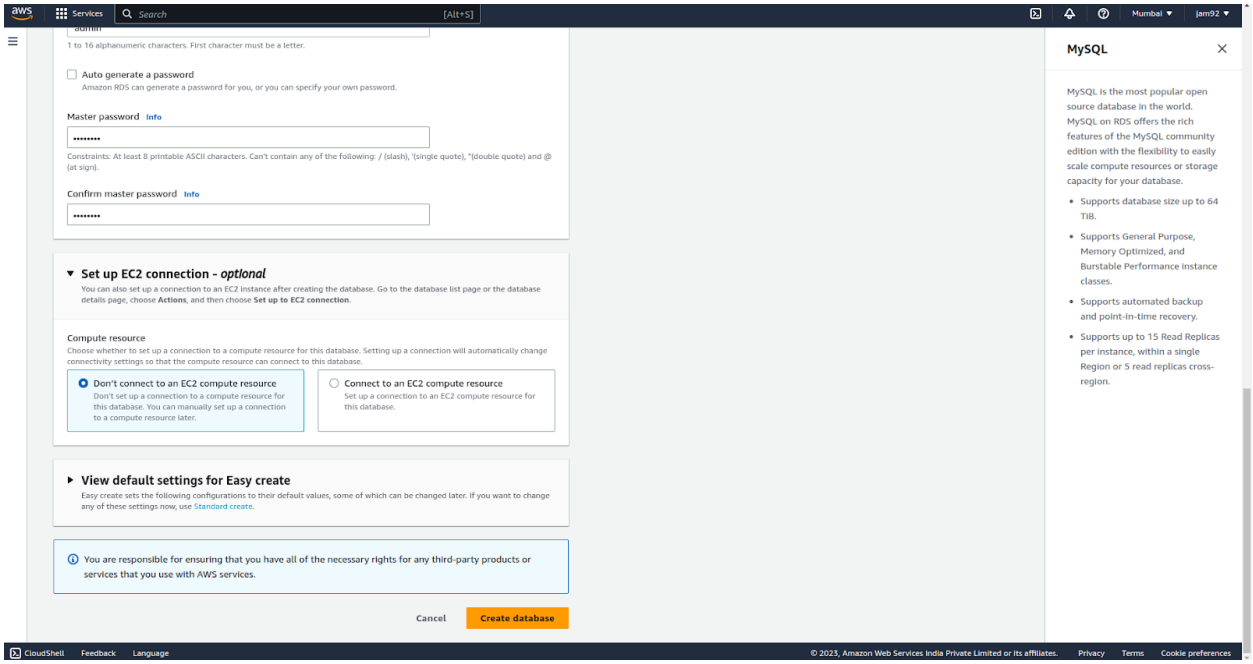
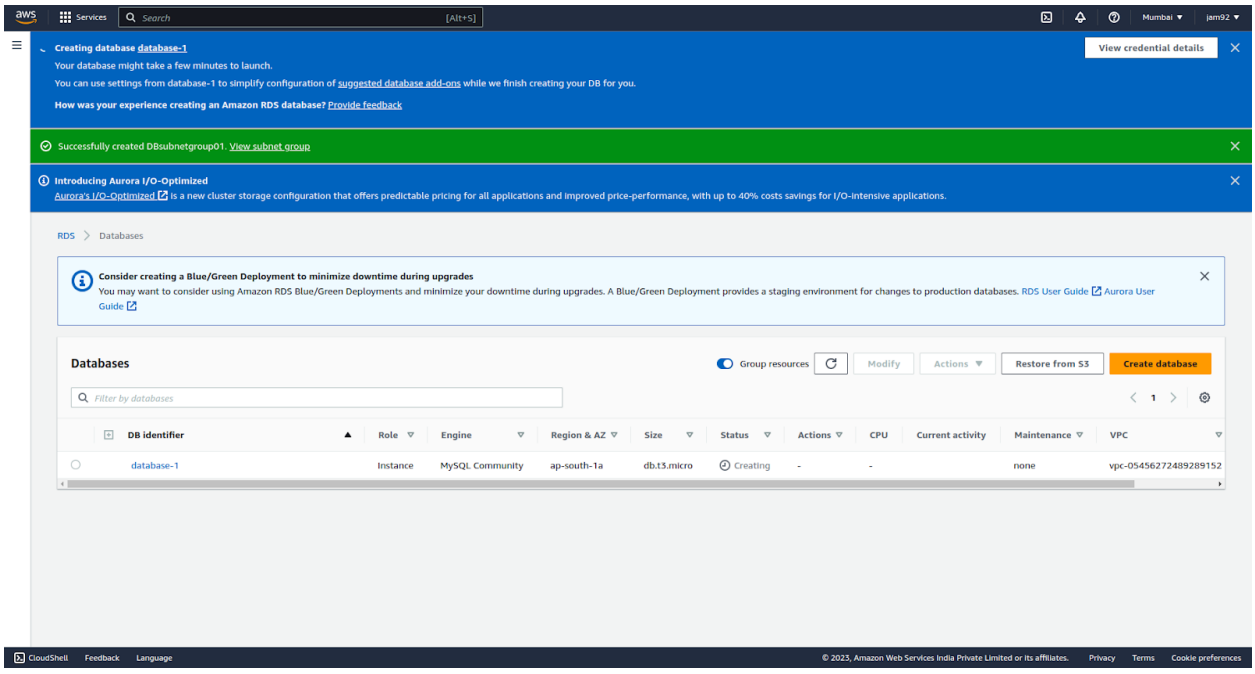
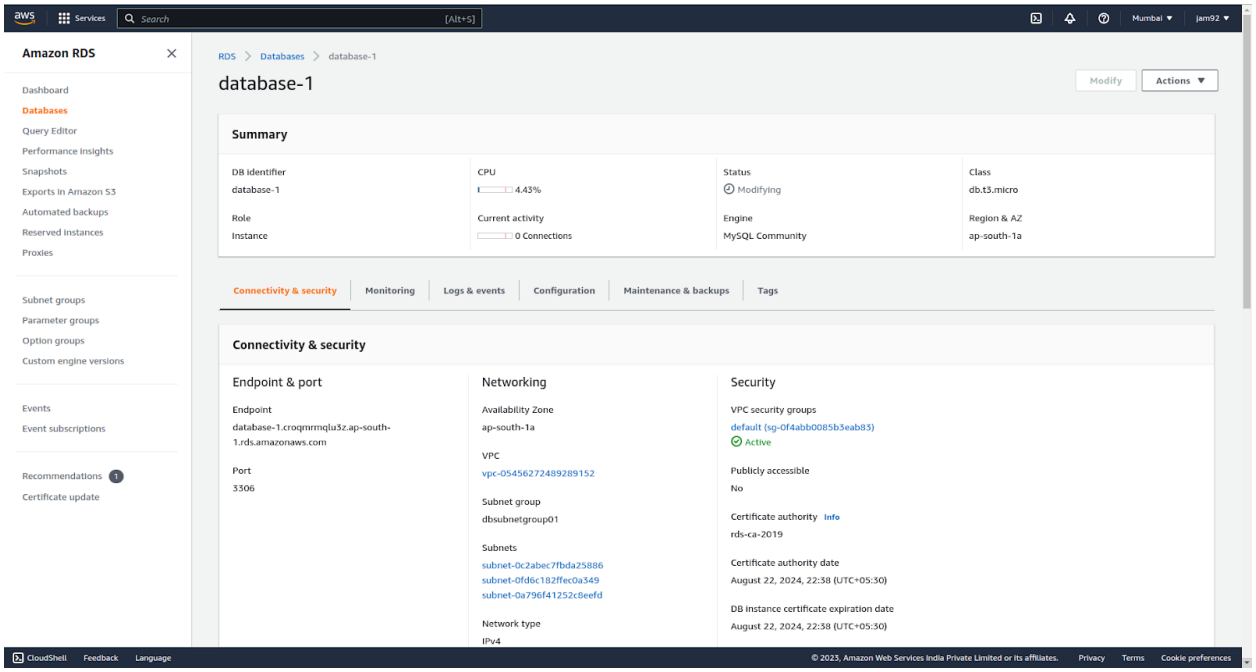
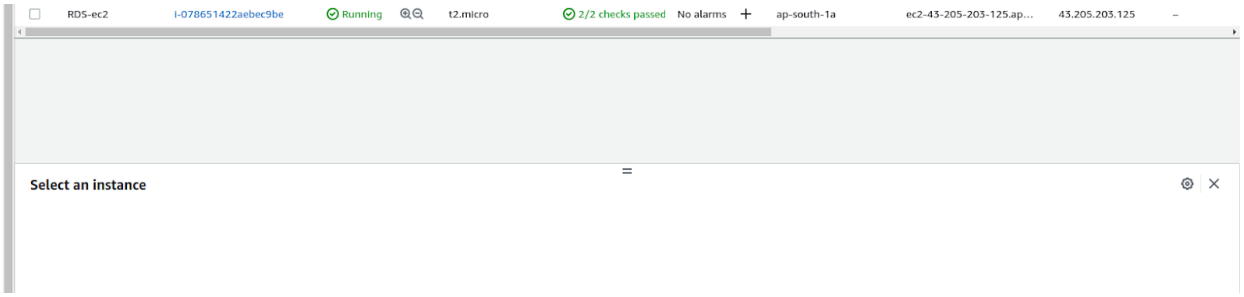


Now, I had created our db,





,now you need to create a EC@ instance

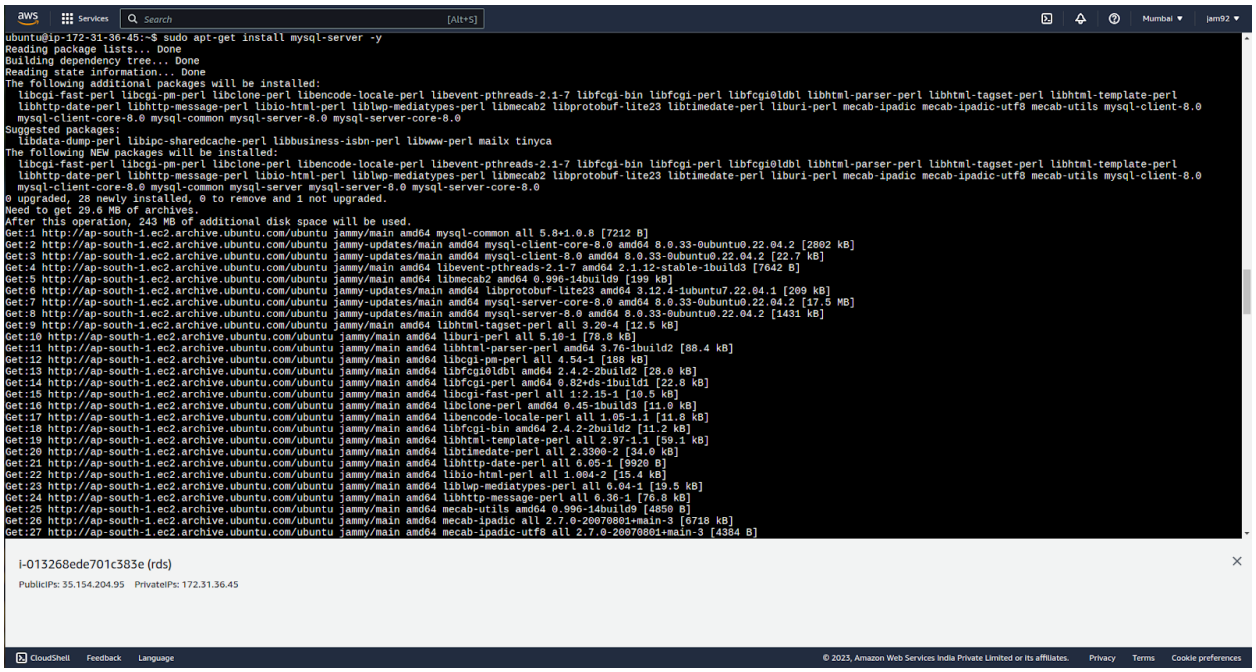


After connect EC2 instance you need to install the mysql on instance.

sudo apt update

sudo apt-get install mysql-server -y

mysql --version

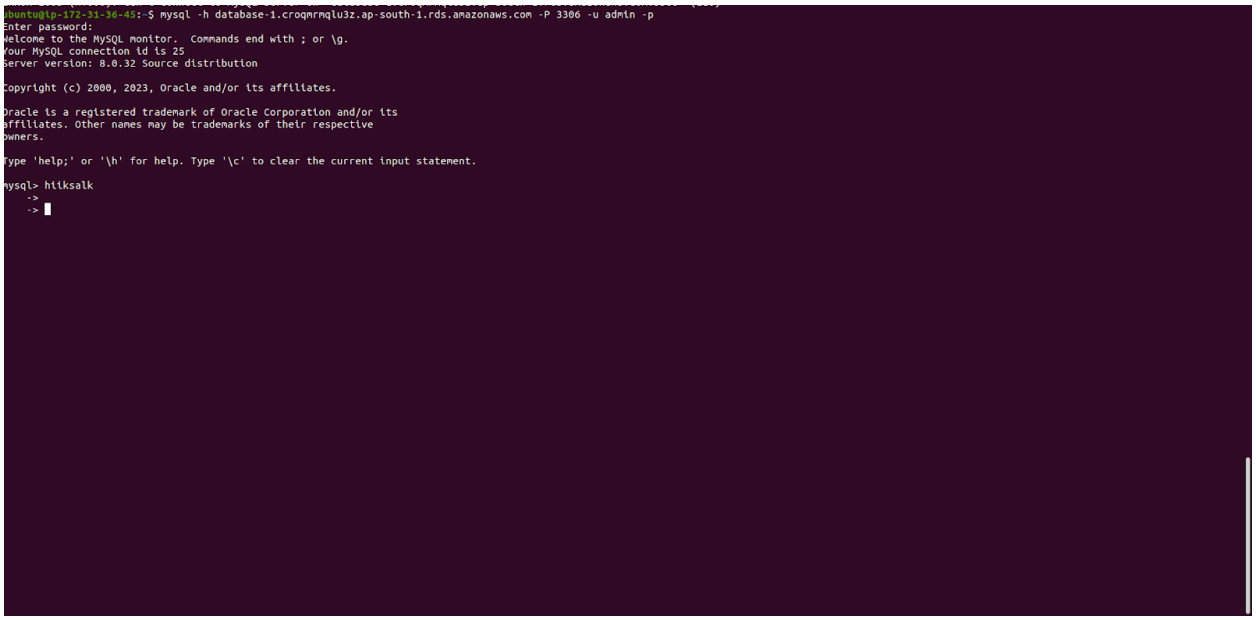


MySQL -h {endpoint} -P 3306 -u admin -p

mysql -h database-1.croqmrmqlu3z.ap-south-1.rds.amazonaws.com -P 3306 -u admin -p
If some times the output wont come, please check the connection of the EC2, connection in RDS > ACtions > setup EC2 connection

Then run the output

Now you can see the output in the below image,


ubuntu@ip-172-31-36-45:~$ mysql -h database-1.croqmrmqlu3z.ap-south-1.rds.amazonaws.com -P 3306 -u admin -p
Enter password:
Welcome to the MySQL monitor. Commands end with ; or \g.
Your MySQL connection id is 25
Server version: 8.0.32 Source distribution
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Oracle is a registered trademark of Oracle Corporation and/or its
affiliates. Other names may be trademarks of their respective
owners.
Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.
mysql> hiiksalk
    ->
    ->