

School of Computer Science, Engineering and Applications(SCSEA)

B.C.A. TY (SCSEA)

Subject: Advance Cloud Computing(ACC)

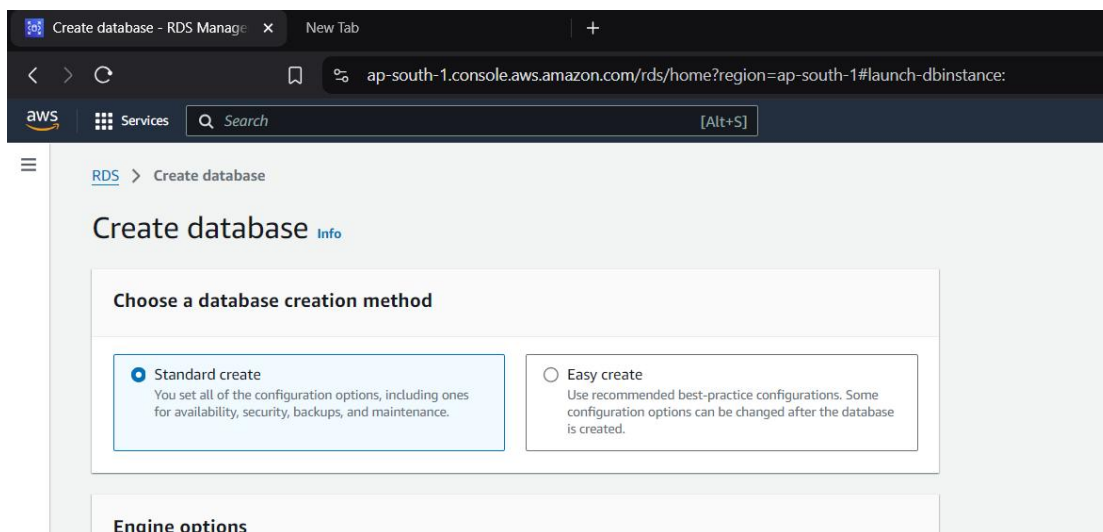
Name of the Student: Shrusht Krishna Shrivastav

PRN: 20220801024

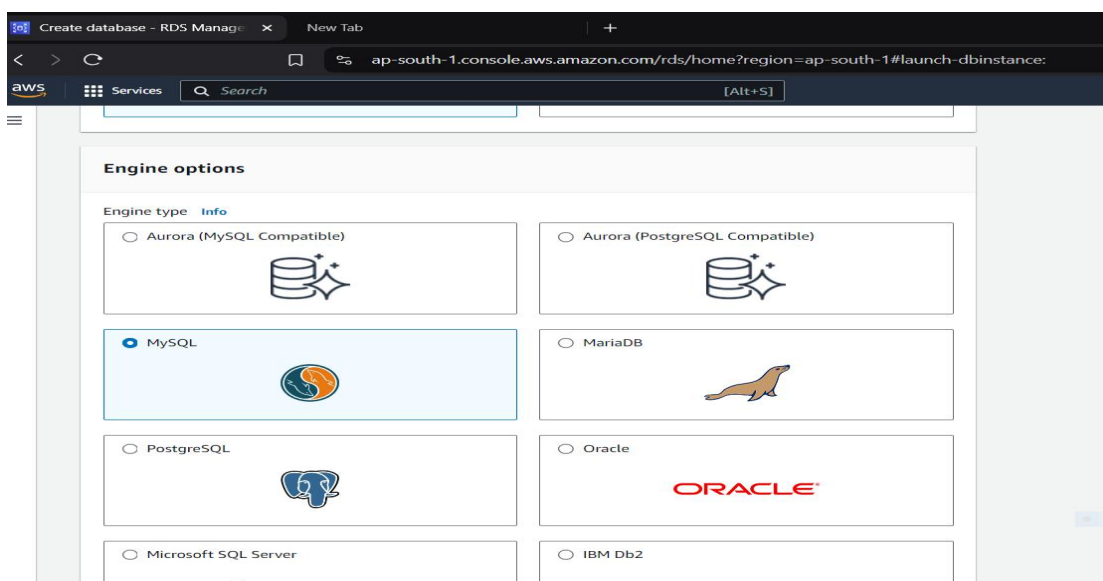
Title of Practicle : Encrypt an Unencrypted RDS DB Instance

STEP1: CREATE AN UNENCRYPTED DATABASE

Create a standard database



Select MYSQL as the engine



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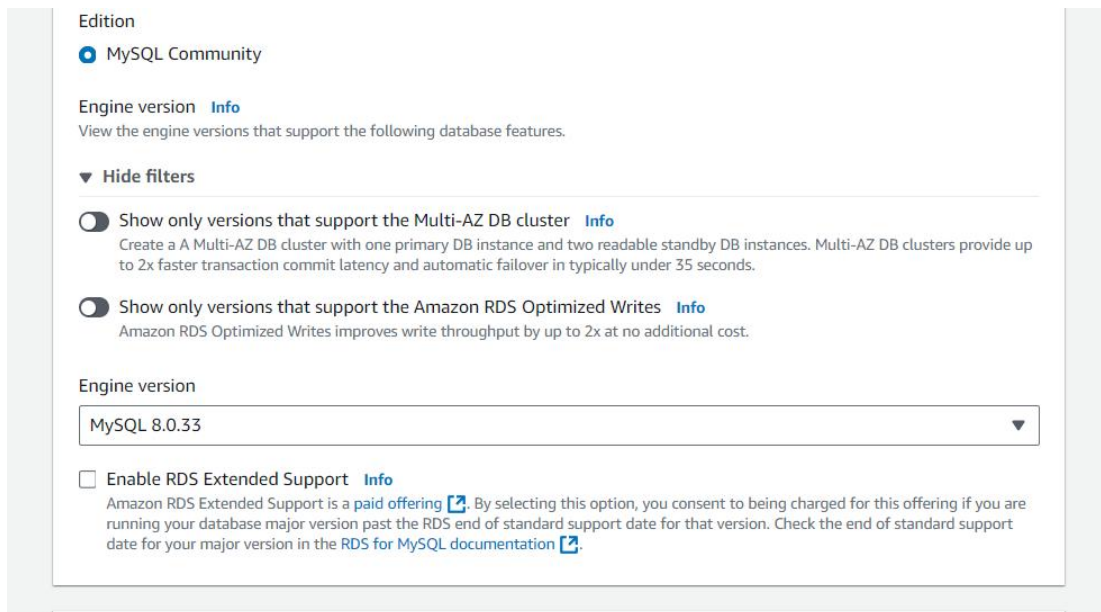
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Engine version: 8.0.33



Edition

☒ MySQL Community

Engine version [Info](#)
View the engine versions that support the following database features.

▼ Hide filters

☐ Show only versions that support the Multi-AZ DB cluster [Info](#)
Create a Multi-AZ DB cluster with one primary DB instance and two readable standby DB instances. Multi-AZ DB clusters provide up to 2x faster transaction commit latency and automatic failover in typically under 35 seconds.

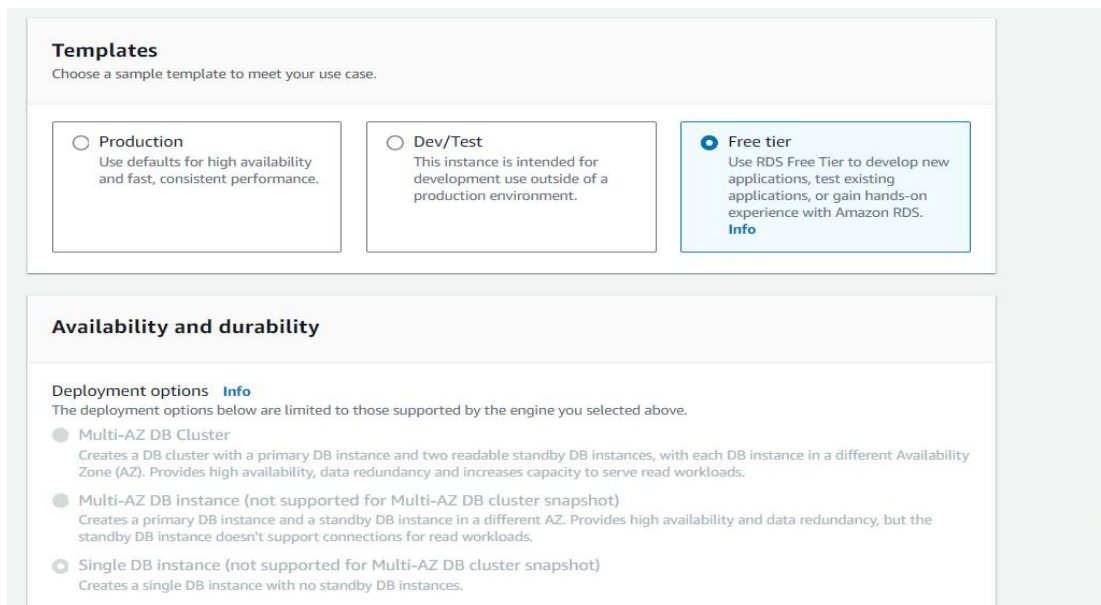
☐ Show only versions that support the Amazon RDS Optimized Writes [Info](#)
Amazon RDS Optimized Writes improves write throughput by up to 2x at no additional cost.

Engine version

MySQL 8.0.33 ▼

☐ Enable RDS Extended Support [Info](#)
Amazon RDS Extended Support is a [paid offering](#). By selecting this option, you consent to being charged for this offering if you are running your database major version past the RDS end of standard support date for that version. Check the end of standard support date for your major version in the [RDS for MySQL documentation](#).

select free-tier template



Templates
Choose a sample template to meet your use case.

☐ Production
Use defaults for high availability and fast, consistent performance.

☐ Dev/Test
This instance is intended for development use outside of a production environment.

☒ Free tier
Use RDS Free Tier to develop new applications, test existing applications, or gain hands-on experience with Amazon RDS. [Info](#)

Availability and durability

Deployment options [Info](#)
The deployment options below are limited to those supported by the engine you selected above.

☒ Multi-AZ DB Cluster
Creates a DB cluster with a primary DB instance and two readable standby DB instances, with each DB instance in a different Availability Zone (AZ). Provides high availability, data redundancy and increases capacity to serve read workloads.

☐ Multi-AZ DB instance (not supported for Multi-AZ DB cluster snapshot)
Creates a primary DB instance and a standby DB instance in a different AZ. Provides high availability and data redundancy, but the standby DB instance doesn't support connections for read workloads.

☐ Single DB instance (not supported for Multi-AZ DB cluster snapshot)
Creates a single DB instance with no standby DB instances.

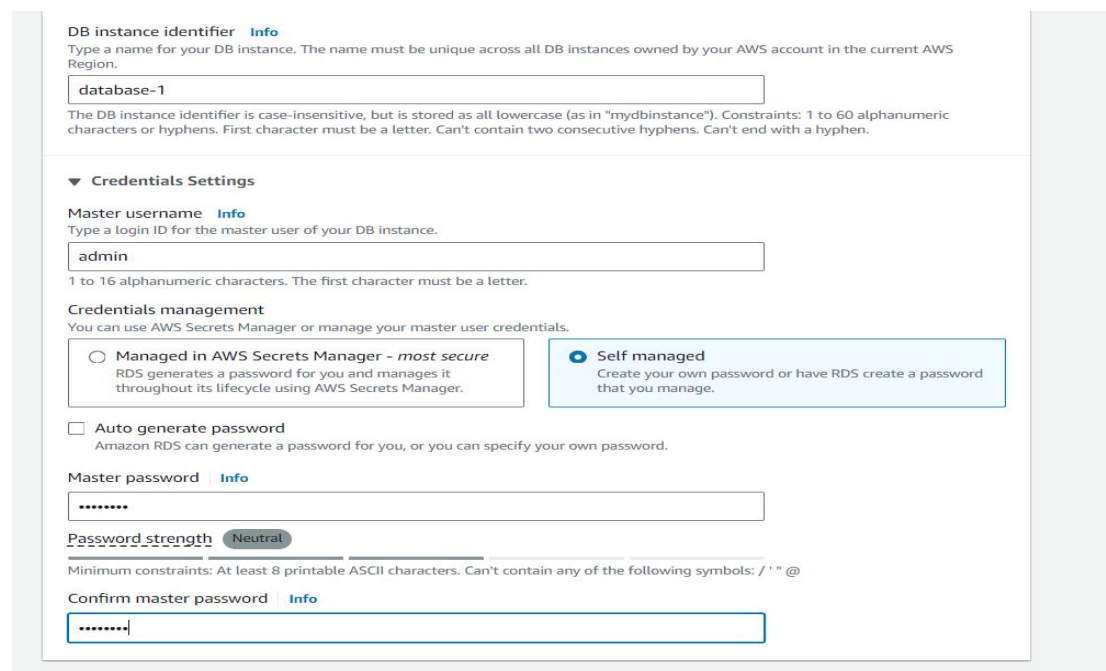
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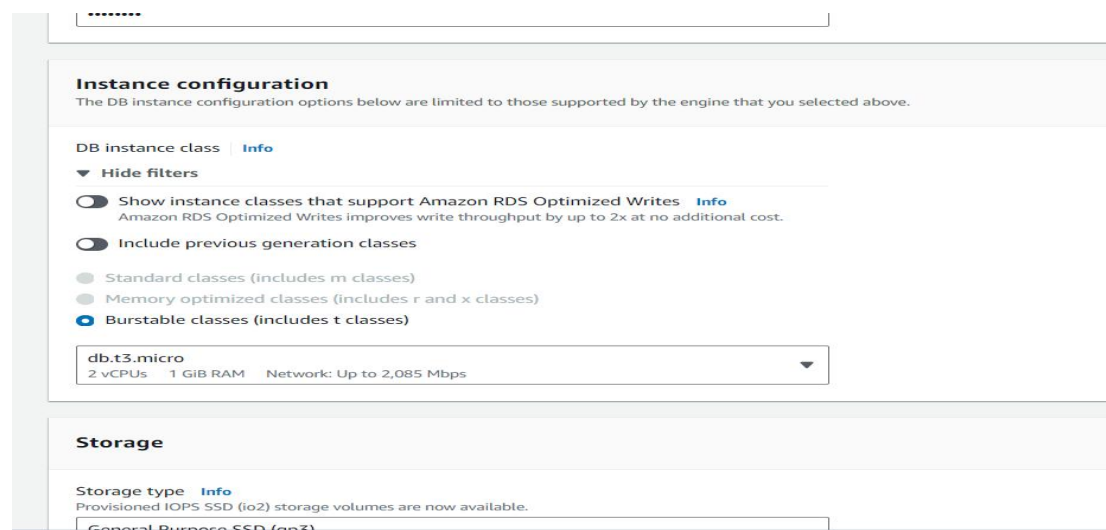
Give the user name and password

(username: admin , Password: rdsdemo1)



The screenshot shows the 'Create DB Instance' page in the AWS Management Console. The 'DB instance identifier' is set to 'database-1'. Under 'Credentials Settings', the 'Master username' is 'admin'. The 'Credentials management' section has 'Self managed' selected. The 'Master password' is masked with dots, and the 'Password strength' is 'Neutral'. The 'Confirm master password' field is also masked.

Instance class: db.t3.micro



The screenshot shows the 'Instance configuration' section of the AWS RDS console. The 'DB instance class' is set to 'db.t3.micro'. The 'Storage' section is partially visible, showing 'Storage type' as 'Provisioned IOPS SSD (io2)'.

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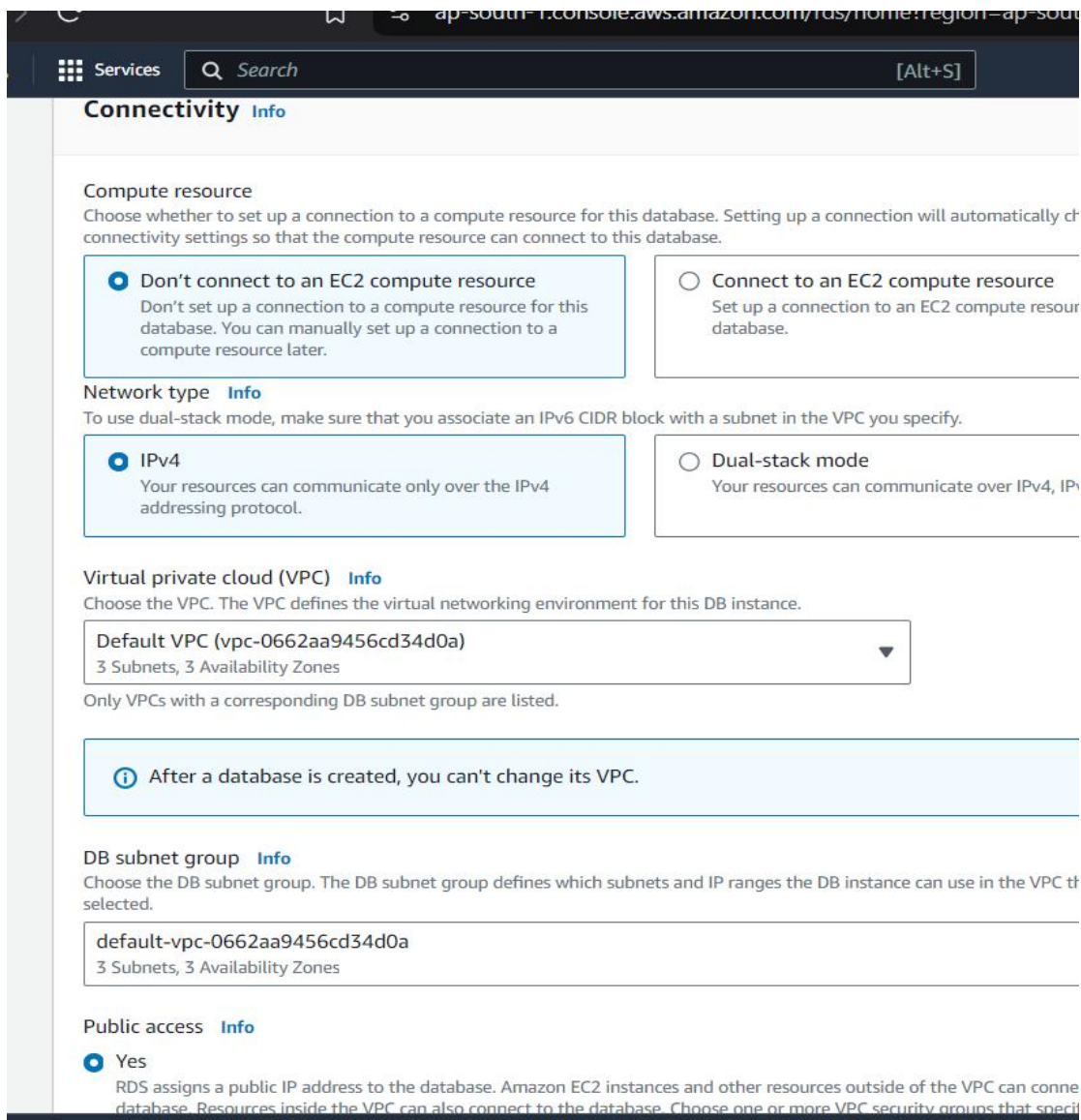
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Title of Practicle : Encrypt an Unencrypted RDS DB Instance

Ensure public access is 'yes' (enabled)



The screenshot shows the AWS Management Console for an Amazon RDS instance in the 'ap-south-1' region. The 'Connectivity' tab is selected, showing settings for the database instance. The 'Compute resource' section has two options: 'Don't connect to an EC2 compute resource' (selected) and 'Connect to an EC2 compute resource'. The 'Network type' section has two options: 'IPv4' (selected) and 'Dual-stack mode'. The 'Virtual private cloud (VPC)' section shows a dropdown menu with 'Default VPC (vpc-0662aa9456cd34d0a)' selected. A note states: 'After a database is created, you can't change its VPC.' The 'DB subnet group' section shows a dropdown menu with 'default-vpc-0662aa9456cd34d0a' selected. The 'Public access' section has two options: 'Yes' (selected) and 'No'.

Connectivity [Info](#)

Compute resource
Choose whether to set up a connection to a compute resource for this database. Setting up a connection will automatically configure 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.

Network type [Info](#)
To use dual-stack mode, make sure that you associate an IPv6 CIDR block with a subnet in the VPC you specify.

☒ **IPv4**
Your resources can communicate only over the IPv4 addressing protocol.

☐ **Dual-stack mode**
Your resources can communicate over IPv4, IPv6, or both.

Virtual private cloud (VPC) [Info](#)
Choose the VPC. The VPC defines the virtual networking environment for this DB instance.

Default VPC (vpc-0662aa9456cd34d0a)
3 Subnets, 3 Availability Zones

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 is selected.

default-vpc-0662aa9456cd34d0a
3 Subnets, 3 Availability Zones

Public access [Info](#)

☒ **Yes**
RDS assigns a public IP address to the database. Amazon EC2 instances and other resources outside of the VPC can connect to the database. Resources inside the VPC can also connect to the database. Choose one or more VPC security groups that specify inbound rules that allow connections to the database.

☐ **No**
The database is not publicly accessible. Only resources within the VPC can connect to the database. Choose one or more VPC security groups that specify inbound rules that allow connections to the database.



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Title of Practicle : Encrypt an Unencrypted RDS DB Instance

To create unenceypted database do changes in ‘additional configuration’

▼ **Additional configuration**
Database options, encryption turned off, backup turned on, backtrack turned off, maintenance, CloudWatch Logs, delete protection turned off.

Database options

Initial database name [Info](#)

Ensure encryption is not enabled so uncheck the box

Backup retention period [Info](#)
The number of days (1-35) for which automatic backups are kept.

1 ▼ day

Backup window [Info](#)
The daily time range (in UTC) during which RDS takes automated backups.

☐ Choose a window

☒ No preference

☒ Copy tags to snapshots

Backup replication [Info](#)

☐ Enable replication in another AWS Region
Enabling replication automatically creates backups of your DB instance in the selected Region, for disaster recovery, in addition to the current Region.

Encryption

☐ Enable encryption
Choose to encrypt the given instance. Master key IDs and aliases appear in the list after they have been created using the AWS Key Management Service console. [Info](#)

Log exports

Finally create the database (unencrypted one.)

ro, db.t3.micro or db.t4g.micro Instance.

er-initiated DB Snapshots.

use exceeds the free usage tiers, you simply pay standard, pay-as-

[AWS Pricing page.](#)

all of the necessary rights for any third-party products or services

Cancel Create database

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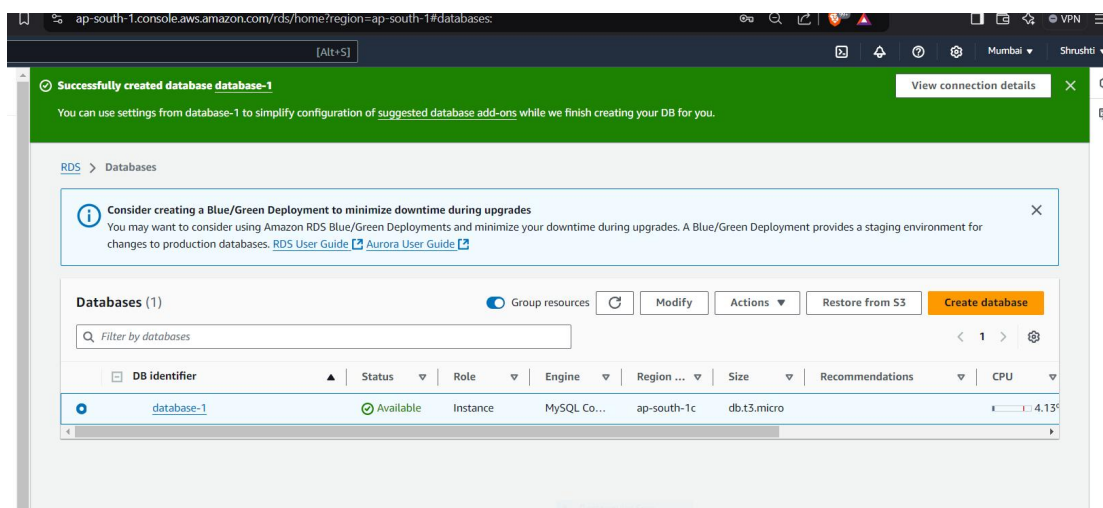
PRN: 20220801024

Title of Practicle : Encrypt an Unencrypted RDS DB Instance

Ensure encryption is 'not-enabled' in configuration after creation

Summary			
DB identifier database-1	Status Creating	Role Instance	Engine MySQL Community
CPU -	Class db.t3.micro	Current activity	Region & AZ ap-south-1c
Connectivity & security Monitoring Logs & events Configuration Zero-ETL integrations Maintenance & backup			
Instance			
Configuration	Instance class	Storage	
DB instance ID database-1	Instance class db.t3.micro	Encryption Not enabled	

Wait until the database is created and active



The screenshot shows the AWS RDS console interface. At the top, a green banner states "Successfully created database database-1". Below this, a notification box suggests creating a Blue/Green Deployment. The main section, titled "Databases (1)", contains a table with the following data:

DB identifier	Status	Role	Engine	Region	Size	Recommendations	CPU
database-1	Available	Instance	MySQL Co...	ap-south-1c	db.t3.micro		4.13%

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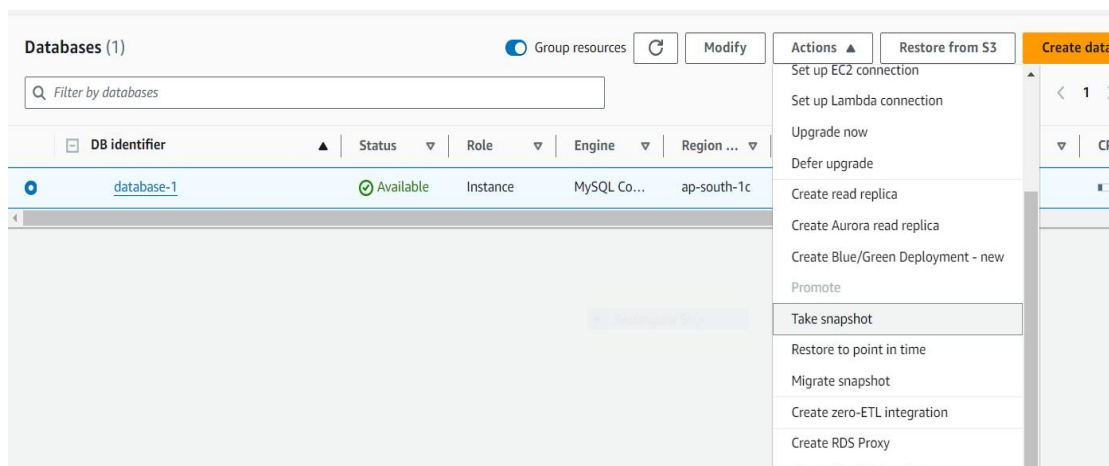
Name of the Student: Shrusht Krishna Shrivastav

PRN: 20220801024

Title of Practicle : Encrypt an Unencrypted RDS DB Instance

STEP2: CREATE A SNAPSHOT OF UNENCRYPTED DATABASE

(snapshot of unencrypted database is always unencrypted)

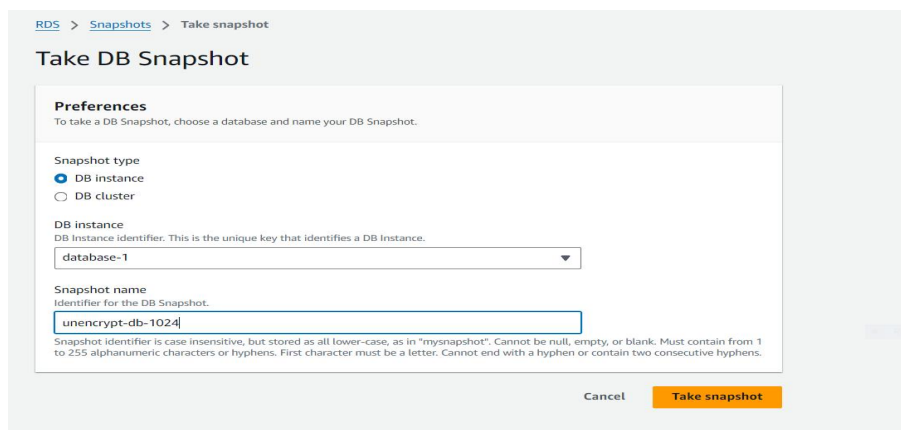


A)Steps to create snapshot of this database(unencrypted database)--

Type:DB instance

Select the database created (unencrypted)

Name this snapshot(this is snapshot of unencrypted databse so it will be unencrypted onlyu)

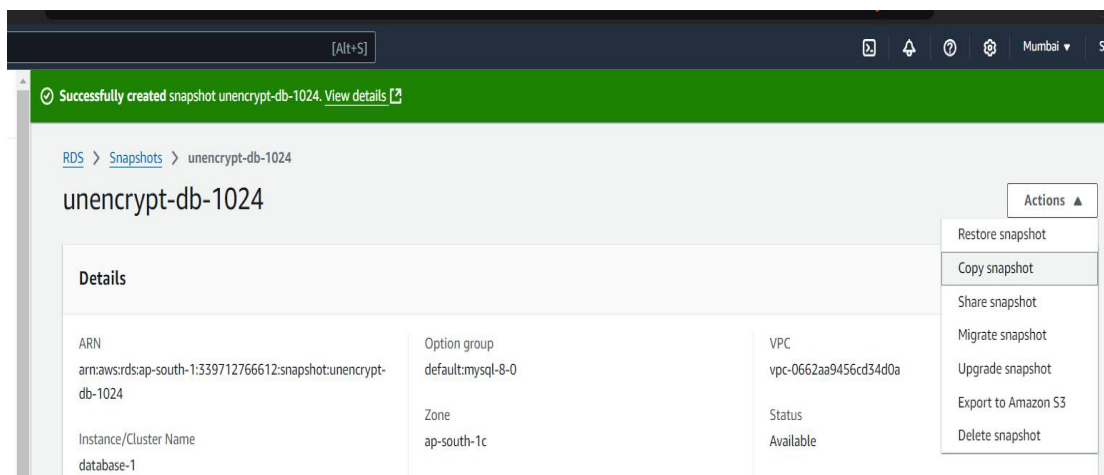


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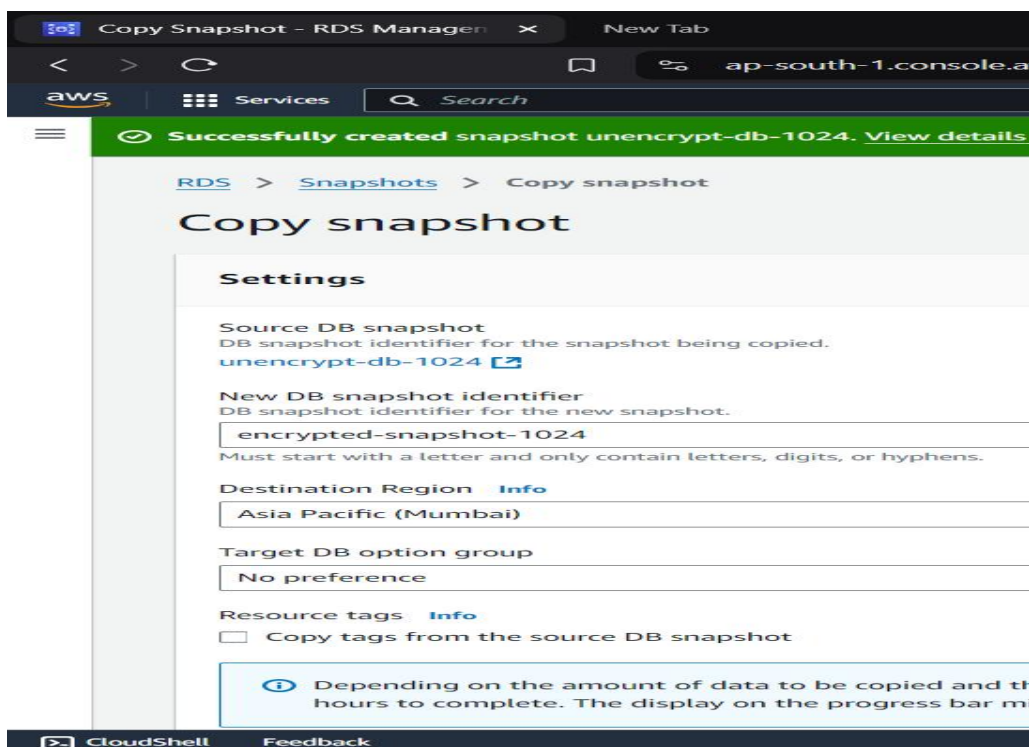
Name of the Student: Shrusht Krishna Shrivastav **PRN:** 20220801024

Title of Practicle : Encrypt an Unencrypted RDS DB Instance

B)create a copy of that snapshot to do changes--Make a copy of this snapshot (to make changes and encrypt it.)



Name this encrypted snapshot: encrypted-snapshot-1024 ,Select region: mumbai

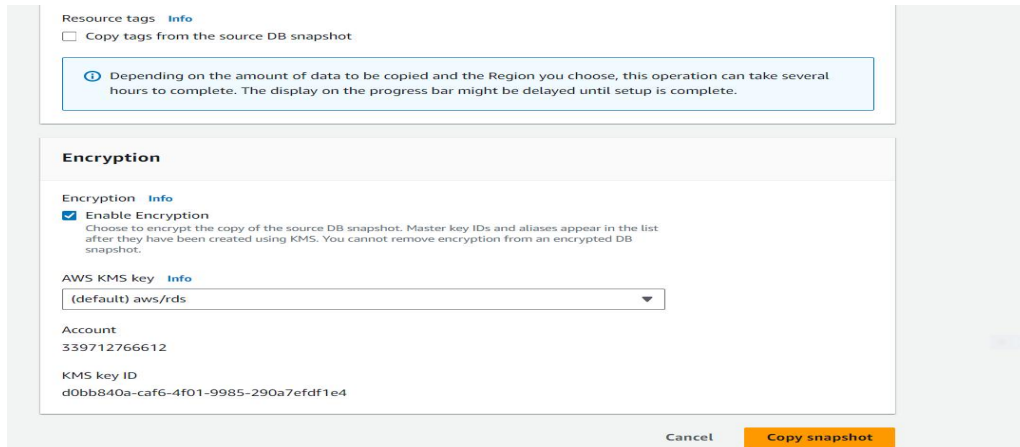


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Enable 'ENCRYPTION' in this to create an encrypted snapshot (so we can create an encrypted database from it)



Resource tags [Info](#)

☐ Copy tags from the source DB snapshot

Encryption

☒ **Enable Encryption**
Choose to encrypt the copy of the source DB snapshot. Master key IDs and aliases appear in the list after they have been created using KMS. You cannot remove encryption from an encrypted DB snapshot.

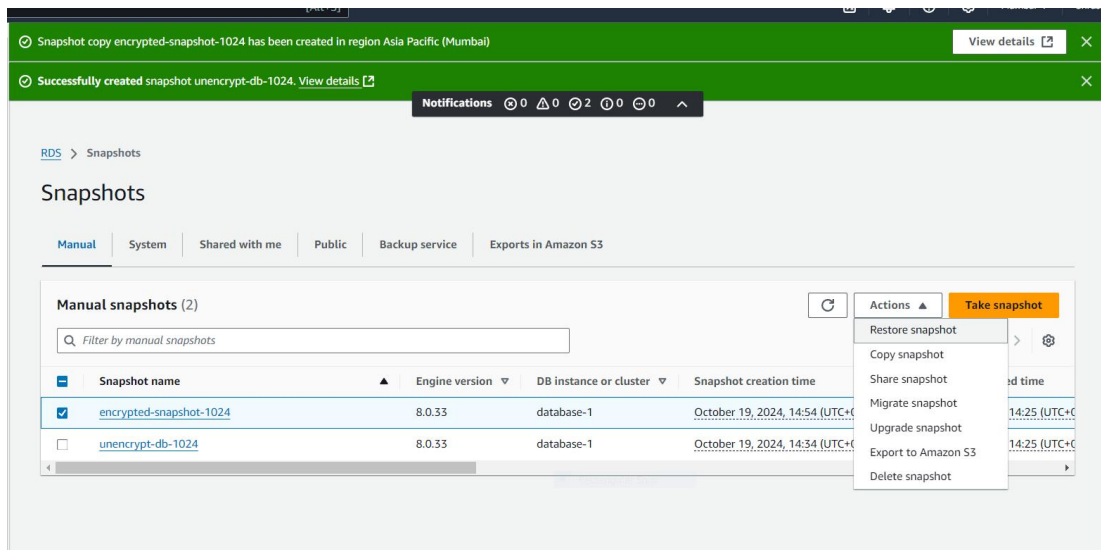
AWS KMS key [Info](#)
(default) aws/rds

Account
33971276612

KMS key ID
d0bb840a-caf6-4f01-9985-290a7efdf1e4

[Cancel](#) [Copy snapshot](#)

Once the copy is created (this is encrypted snapshot I.e snapshot with encryption enabled), restore the snapshot to create database



Notifications

RDS > Snapshots

Snapshots

Manual System Shared with me Public Backup service Exports in Amazon S3

Manual snapshots (2)

Filter by manual snapshots

	Snapshot name	Engine version	DB instance or cluster	Snapshot creation time
<input checked="" type="checkbox"/>	encrypted-snapshot-1024	8.0.33	database-1	October 19, 2024, 14:54 (UTC+05:30)
<input type="checkbox"/>	unencrypt-db-1024	8.0.33	database-1	October 19, 2024, 14:34 (UTC+05:30)

Actions [Take snapshot](#)

- Restore snapshot
- Copy snapshot
- Share snapshot
- Migrate snapshot
- Upgrade snapshot
- Export to Amazon S3
- Delete snapshot

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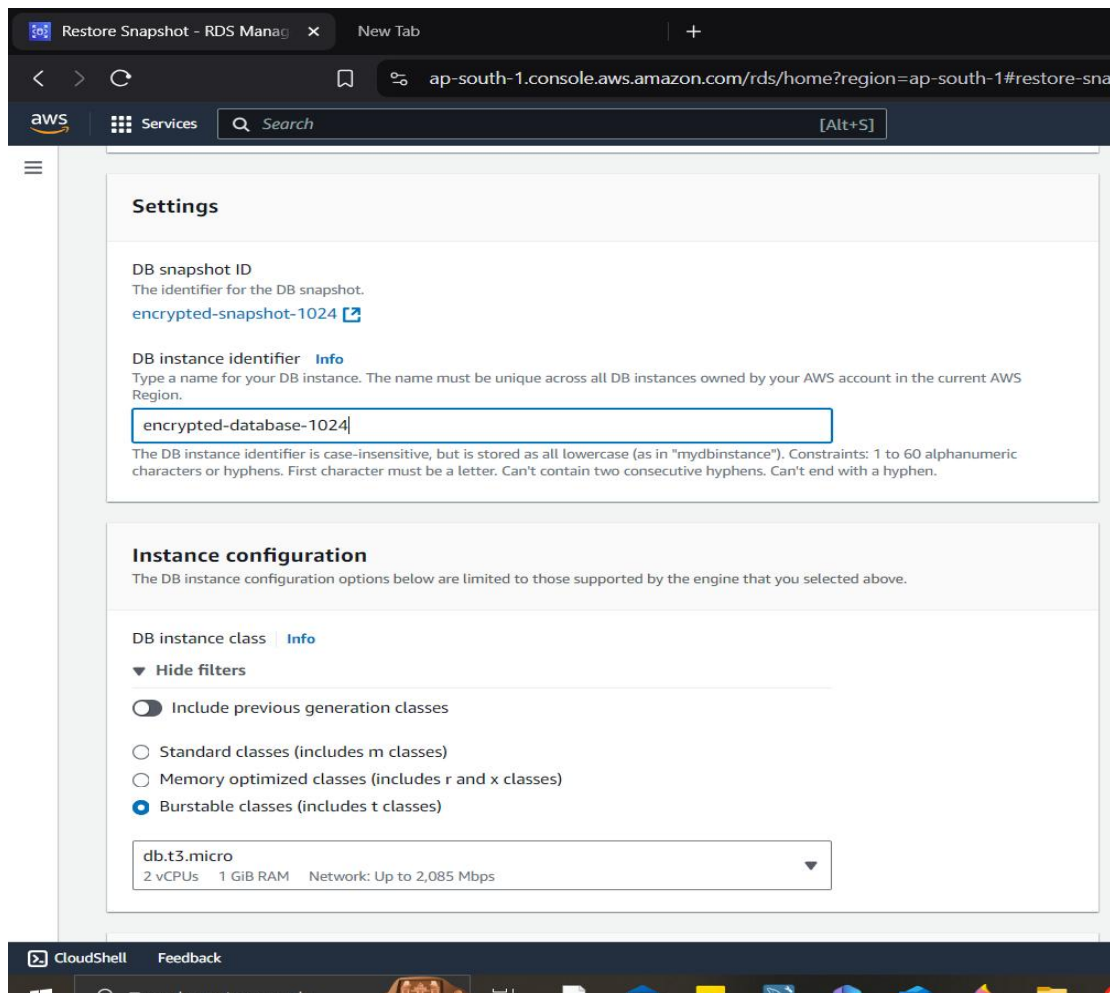
PRN: 20220801024

Title of Practicle : Encrypt an Unencrypted RDS DB Instance

C)restore encrypted snapshot(create database with enabled encryption and same configuration as unencrypted one.)

NAME the new database instance: encrypted-database-1024

Instance configuration: burstable classes



Restore Snapshot - RDS Manag x New Tab

ap-south-1.console.aws.amazon.com/rds/home?region=ap-south-1#restore-sna

aws Services Search [Alt+S]

Settings

DB snapshot ID
The identifier for the DB snapshot.
[encrypted-snapshot-1024](#)

DB instance identifier [Info](#)
Type a name for your DB instance. The name must be unique across all DB instances owned by your AWS account in the current AWS Region.

The DB instance identifier is case-insensitive, but is stored as all lowercase (as in "mydbinstance"). Constraints: 1 to 60 alphanumeric characters or hyphens. First character must be a letter. Can't contain two consecutive hyphens. Can't end with a hyphen.

Instance configuration

The DB instance configuration options below are limited to those supported by the engine that you selected above.

DB instance class [Info](#)

▼ Hide filters

☒ Include previous generation classes

☐ Standard classes (includes m classes)

☐ Memory optimized classes (includes r and x classes)

☒ Burstable classes (includes t classes)

2 vCPUs 1 GiB RAM Network: Up to 2,085 Mbps

CloudShell Feedback

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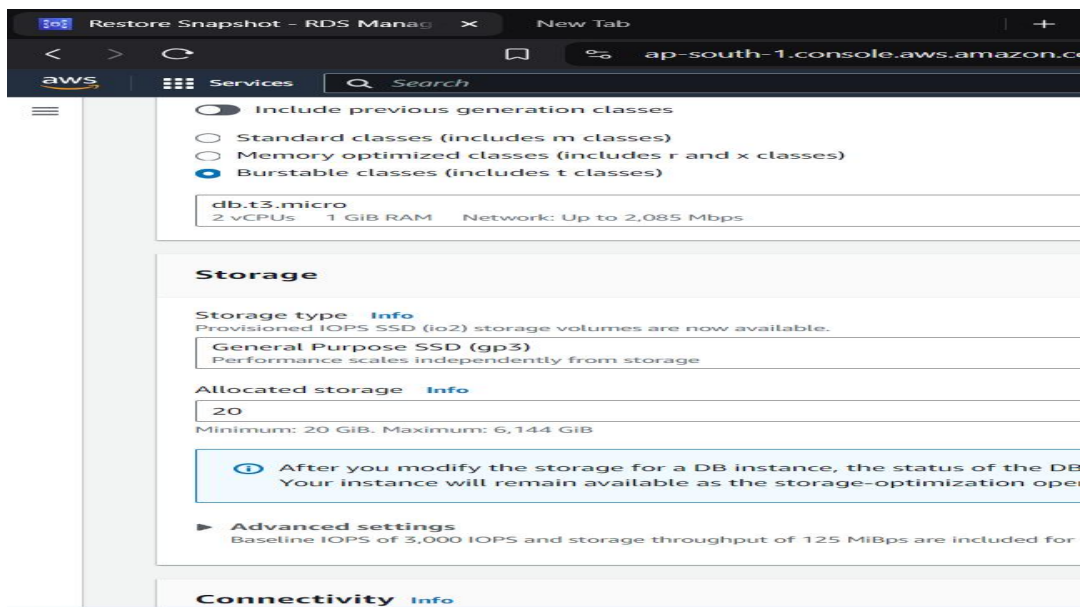
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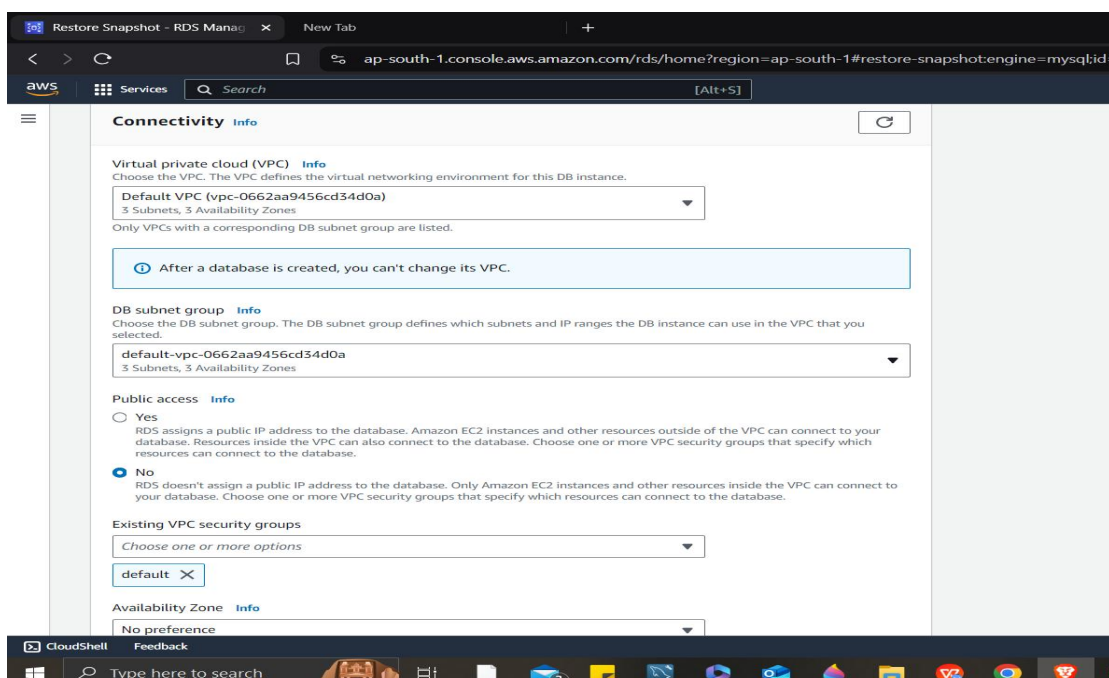
Title of Practicle : Encrypt an Unencrypted RDS DB Instance

NO CHANGES IN STORAGE



The screenshot shows the 'Restore Snapshot' page in the AWS RDS console. The 'Storage' section is highlighted. It shows the instance class as 'db.t3.micro' with 2 vCPUs and 1 GiB RAM. The storage type is 'Provisioned IOPS SSD (io2)' with 'General Purpose SSD (gp3)' selected. The allocated storage is 20 GiB. A warning message states: 'After you modify the storage for a DB instance, the status of the DB instance will remain available as the storage-optimization operation completes.' The 'Advanced settings' section shows baseline IOPS of 3,000 and storage throughput of 125 MiBps.

In connectivity ensure public access is 'no'



The screenshot shows the 'Connectivity' section of the 'Restore Snapshot' page. It shows the 'Virtual private cloud (VPC)' as 'Default VPC (vpc-0662aa9456cd34d0a)'. The 'DB subnet group' is 'default-vpc-0662aa9456cd34d0a'. The 'Public access' section has 'No' selected, with a warning: 'RDS doesn't assign a public IP address to the database. Only Amazon EC2 instances and other resources inside the VPC can connect to your database.' The 'Existing VPC security groups' section shows 'default' selected. The 'Availability Zone' is 'No preference'.

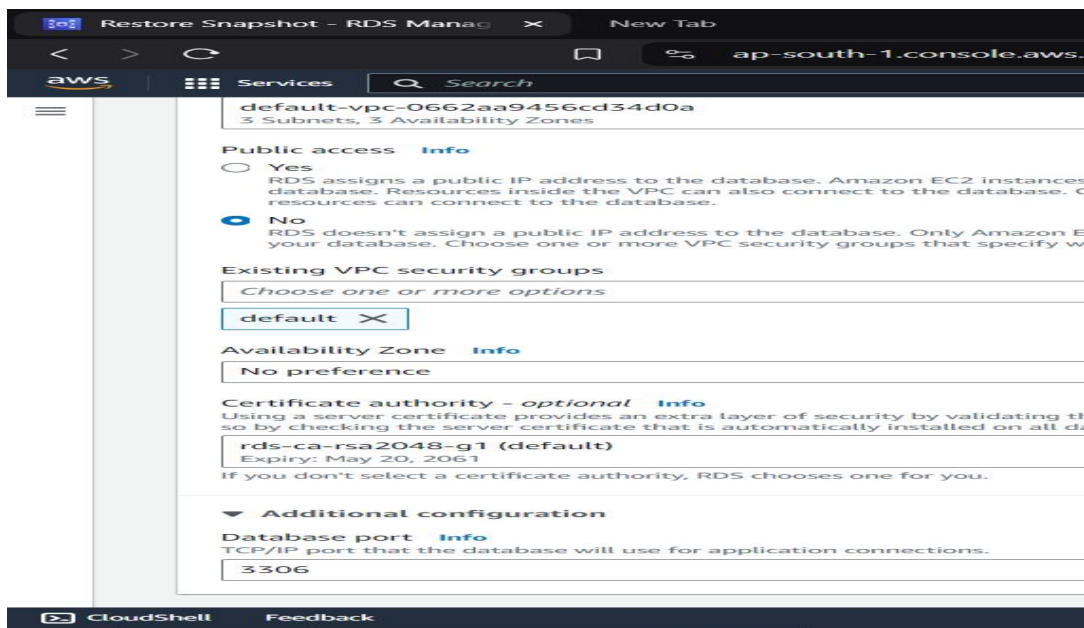
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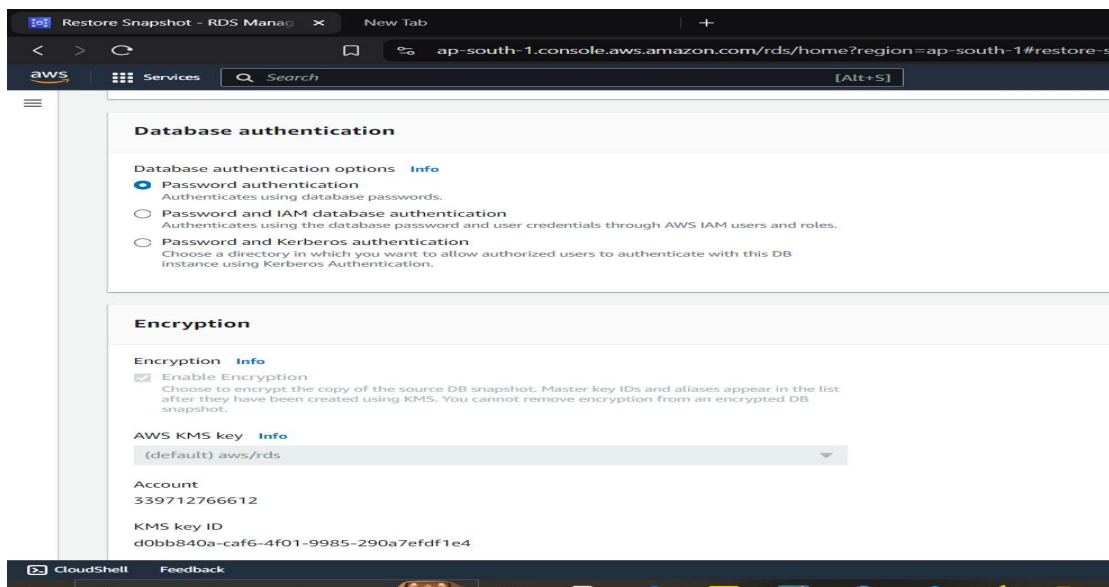
AZ: no preferences

Database port: 3306



The screenshot shows the 'Restore Snapshot' page in the AWS RDS console for the region 'ap-south-1'. The page is for a 'default-vpc-0662aa9456cd34d0a' with 3 subnets and 3 availability zones. Under 'Public access', the 'No' option is selected, indicating that RDS will not assign a public IP address. Under 'Existing VPC security groups', the 'default' group is selected. The 'Availability Zone' is set to 'No preference'. The 'Certificate authority' is set to 'rds-ca-rsa2048-g1 (default)' with an expiry date of May 20, 2061. Under 'Additional configuration', the 'Database port' is set to '3306'.

No changes



The screenshot shows the 'Database authentication' and 'Encryption' sections of the AWS RDS console. Under 'Database authentication options', the 'Password authentication' option is selected. Under 'Encryption', the 'Enable Encryption' checkbox is checked. The 'AWS KMS key' is set to '(default) aws/rds'. The 'Account' is '339712766612' and the 'KMS key ID' is 'd0bb840a-caf6-4f01-9985-290a7efdf1e4'.



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RESTORE DB INSTANCE

KMS key ID
d0bb840a-caf6-4f01-9985-290a7efdf1e4

Tags - optional
A tag consists of a case-sensitive key-value pair.

No tags associated with the resource.

[Add new tag](#)
You can add up to 50 more tags.

► Additional configuration
Database options, backup turned on, backtrack turned off, CloudWatch Logs, maintenance, delete protection turned off

[Cancel](#) [Restore DB instance](#)

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 (2) [Group resources](#) [Modify](#) [Actions](#) [Restore from S3](#) [Create database](#)

DB identifier	Status	Role	Engine	Region ...	Size	Recommendations	CPU
database-1	Available	Instance	MySQL Co...	ap-south-1c	db.t3.micro		3
encrypted-database-1024	Available	Instance	MySQL Co...	ap-south-1c	db.t3.micro		-

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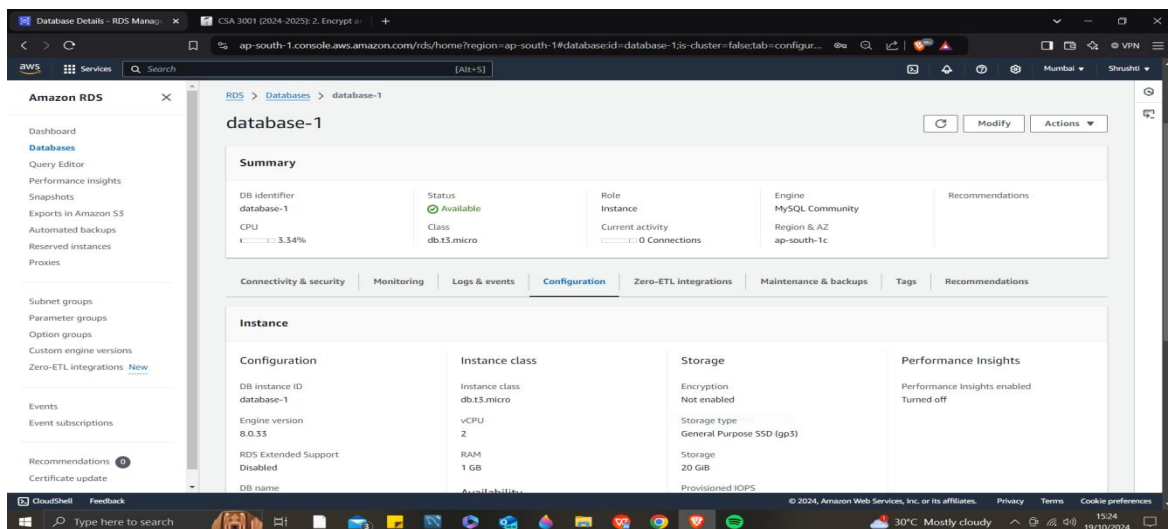
Name of the Student: Shrusht Krishna Shrivastav

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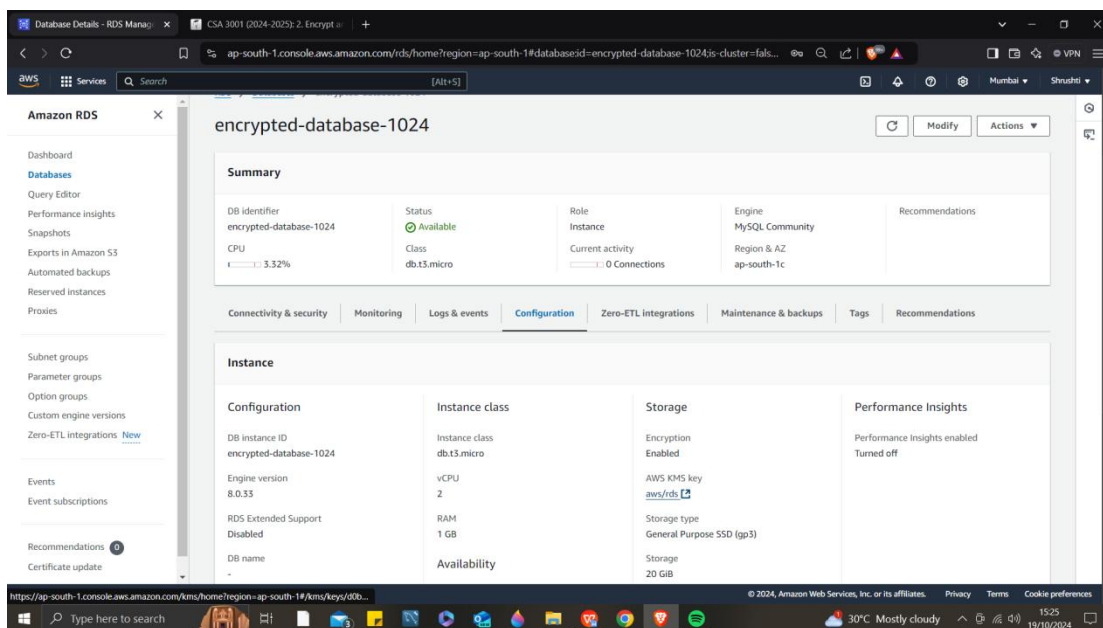
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STEP3: CHECK BOTH THE DATABASES:

Unencrypted database



Encrypted database



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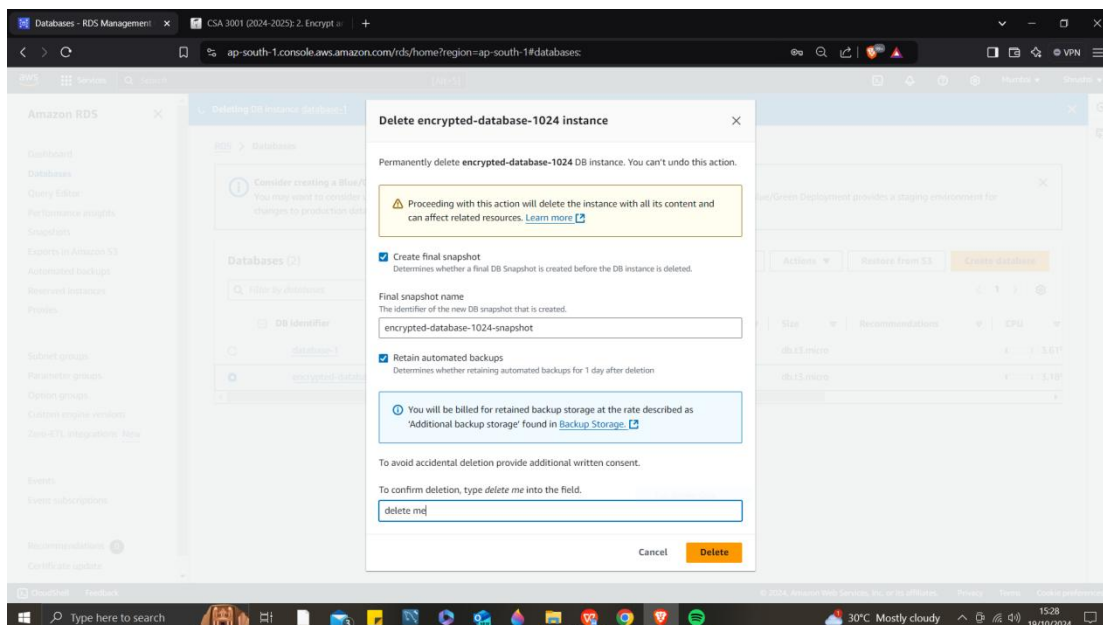
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STEP4: deletion

Delete both the databases



Ensure to uncheck both the previous box of snapshot and backup or else manually delete them to avoid cost

Done.