

**School of Computer Science, Engineering and Applications(SCSEA)**

**B.C.A. TY (CCSA)**

**Subject : Advanced Cloud Computing (P)**

**Name of the Student:     Prakhar Anil Sharma**

**PRN:    20220801121**

**Title of Practical :             Encrypt an Unencrypted RDS DB Instance**

Step-1] Sign in to AWS Management Console.

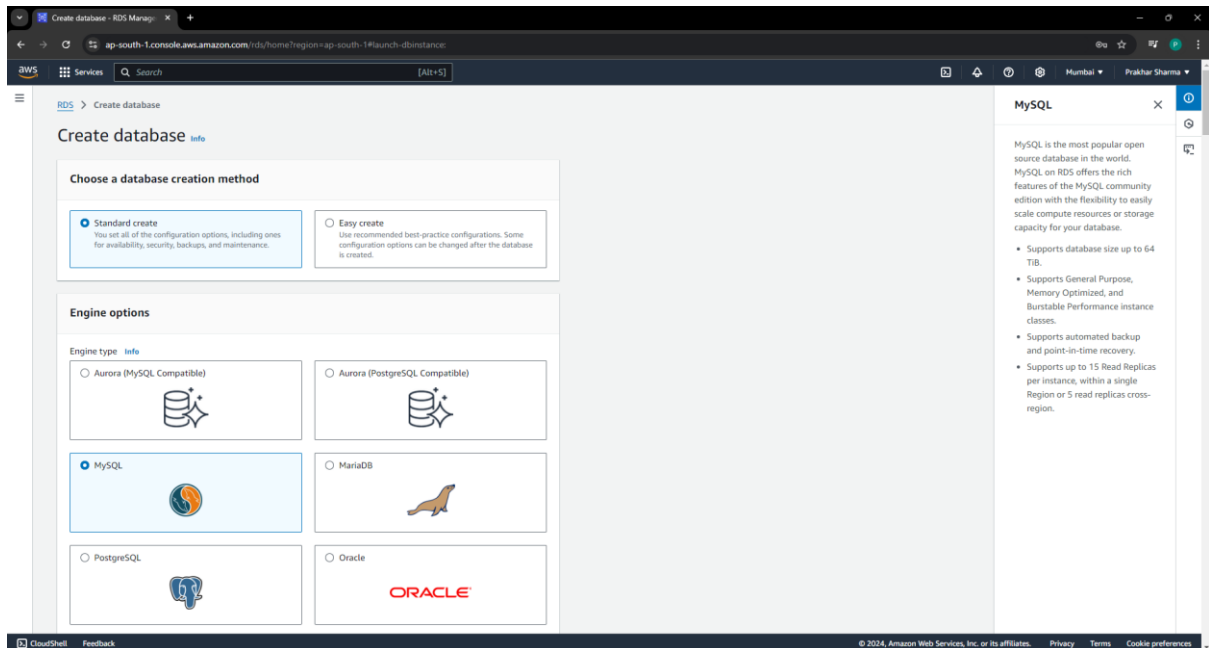
Step-2] Go to RDS.

Step-3] Click on create database.

Step-4] Choose a database creation method

- Standard create.

Step-5] Engine options , MySQL.



Step-6] Select engine version MySQL 8.0.32 .

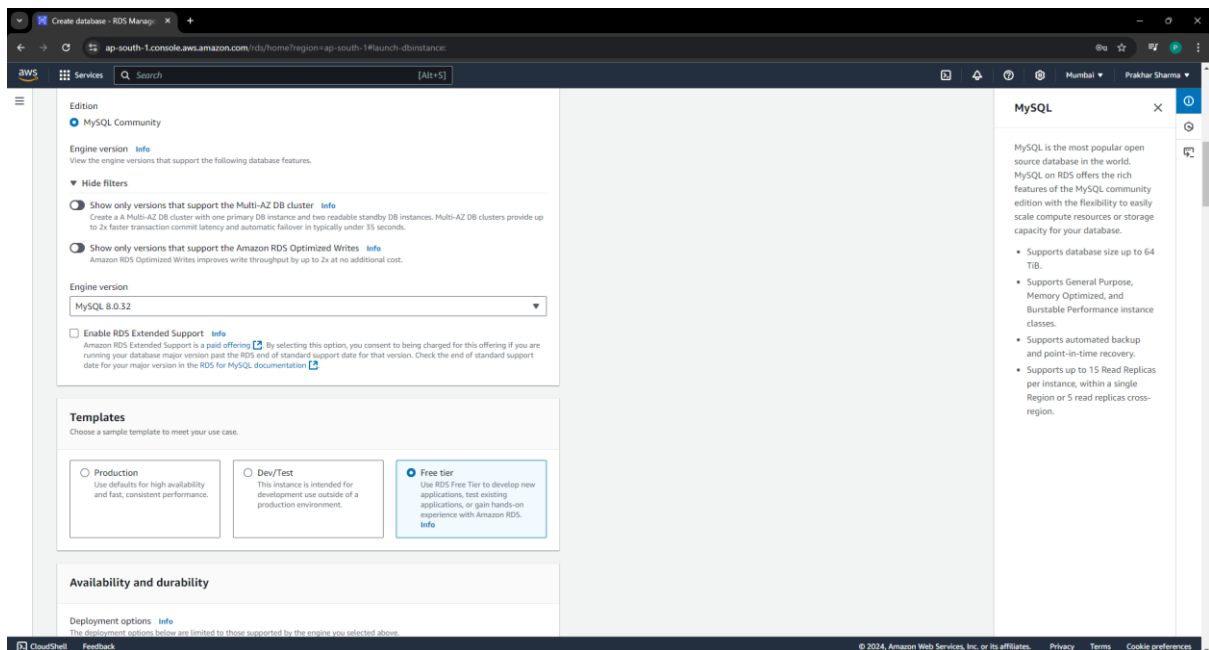
Step-7] Select Templates as Free Tier.

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Step-8] In Settings, Name your DB Instance Identifier.

Step-9] In Credential Settings, Name Master Username

Step-10] Select Credential management as Self Managed.

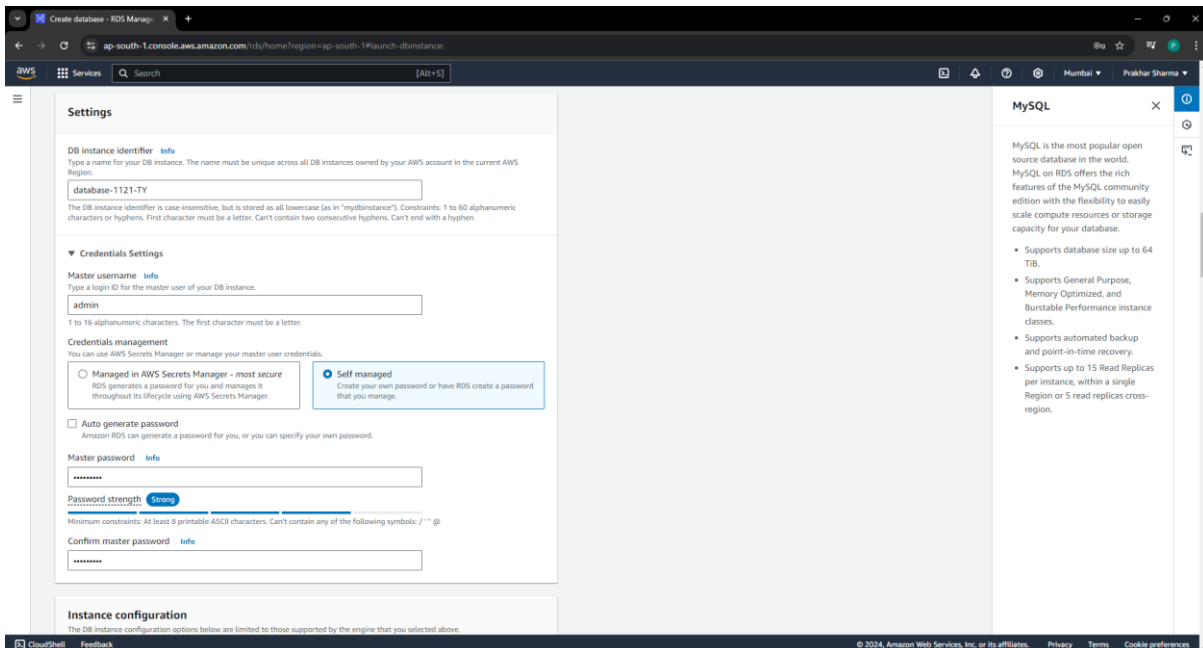
Step-11] Set Your Master Password.

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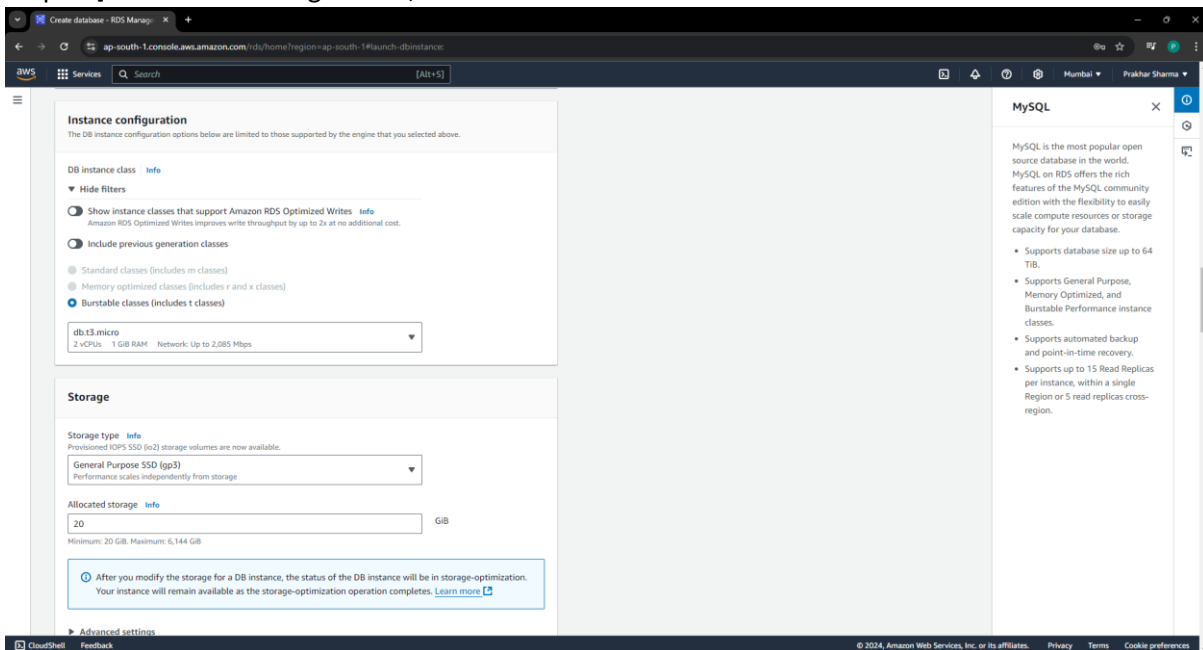
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**Step-12] In Instance configuration, Select db.t3.micro.**



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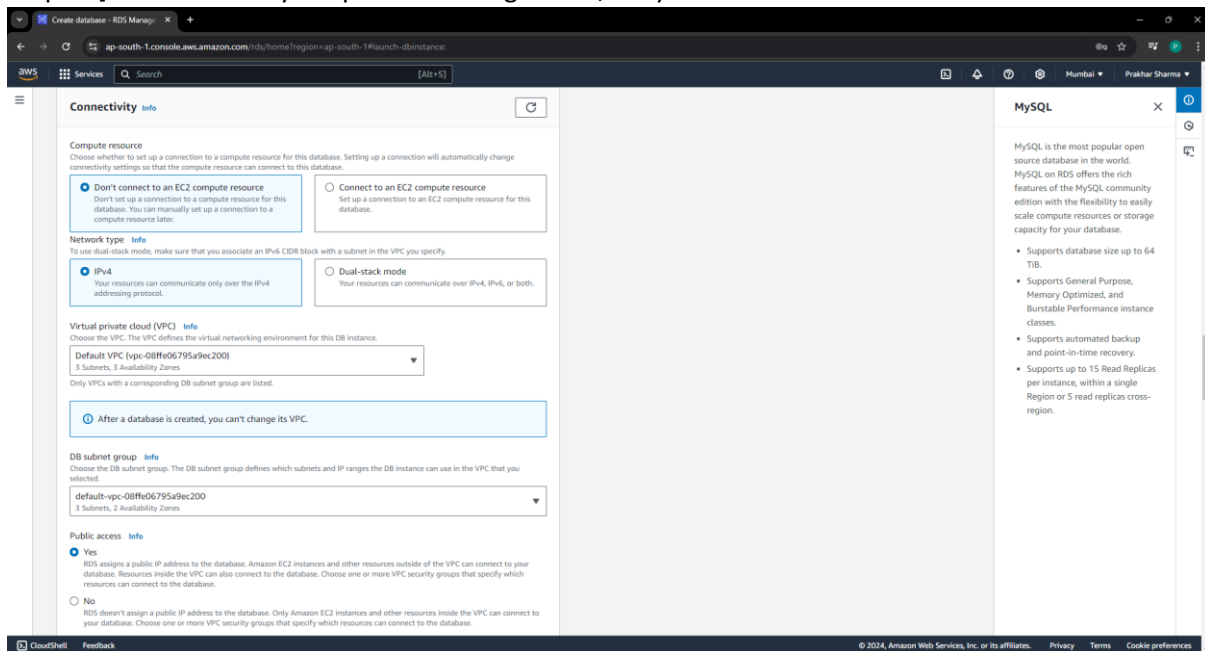
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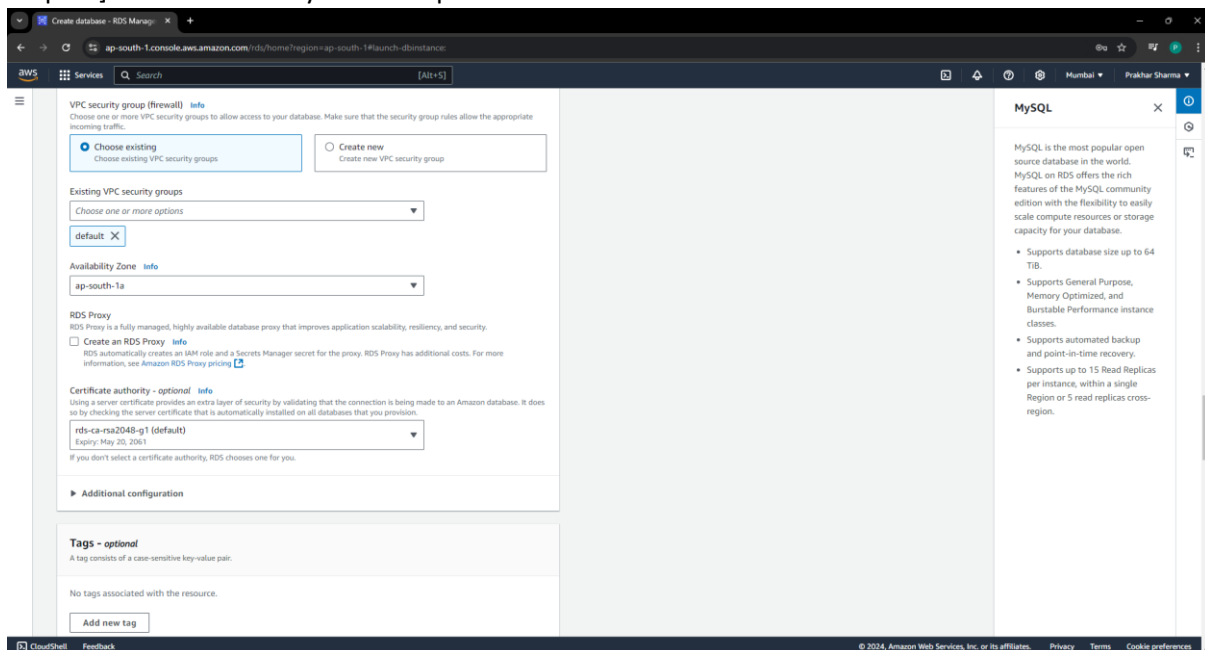
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**Step-13] In Connectivity keep other setting as it is, Only Select Public Access-Yes .**



The screenshot shows the 'Create database' page in the AWS Management Console, specifically the 'Connectivity' tab. The 'Public access' section is expanded, and the 'Yes' radio button is selected. The 'Network type' is set to 'IPv4', and the 'Virtual private cloud (VPC)' is set to 'Default VPC (vpc-08ffe06795a9ec200)'. The 'DB subnet group' is set to 'default-vpc-08ffe06795a9ec200'. The 'MySQL' sidebar on the right provides information about the database engine.

**Step-14] Select Availability Zone as ap-south-1a.**



The screenshot shows the 'Create database' page in the AWS Management Console, specifically the 'VPC security group (firewall)' tab. The 'Availability Zone' is set to 'ap-south-1a'. The 'VPC security group' is set to 'default'. The 'RDS Proxy' section is expanded, and the 'Create an RDS Proxy' checkbox is checked. The 'Certificate authority - optional' section is expanded, and the 'rds-ca-rs2048-g1 (default)' is selected. The 'Tags - optional' section is expanded, and the 'Add new tag' button is visible.

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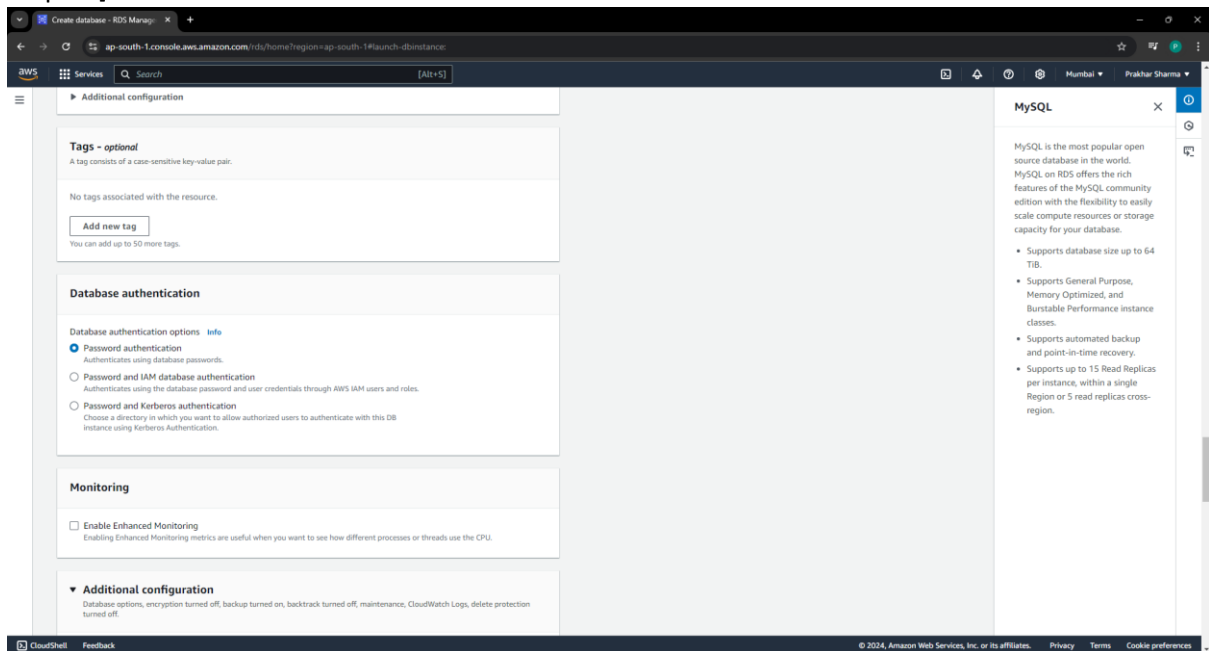
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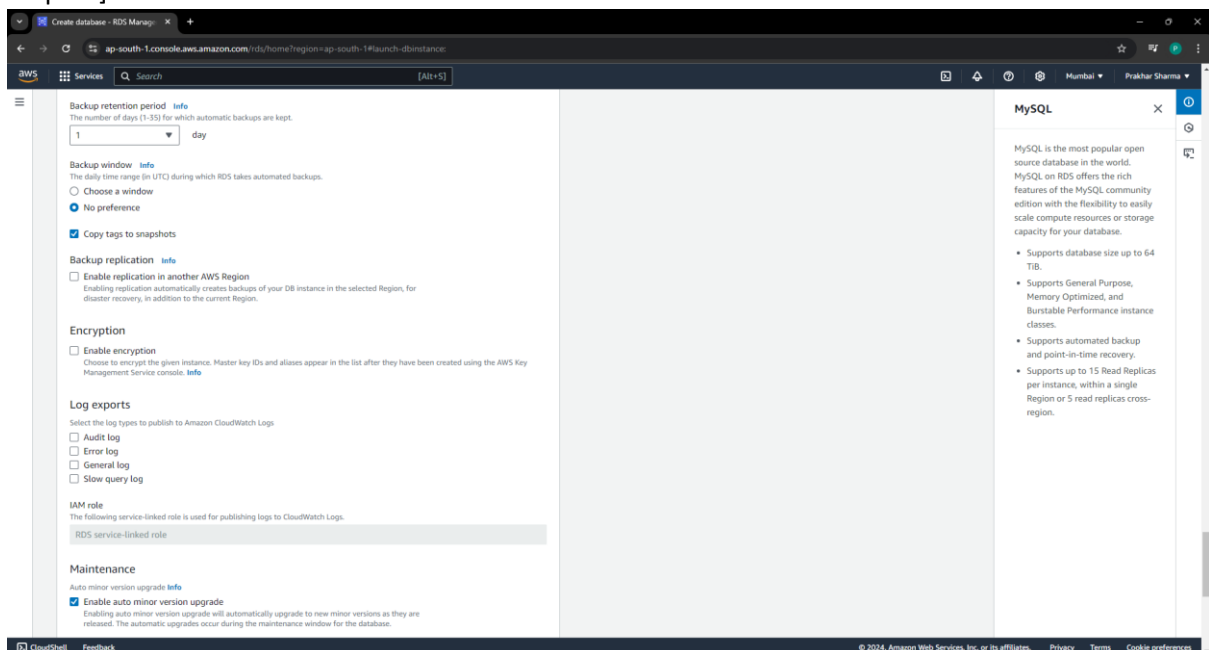
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Step-15]Select Database authentication as Password authentication.



Step-16] In Additional Configuration, uncheck the the enable encryption.

Step-17]Click create database.



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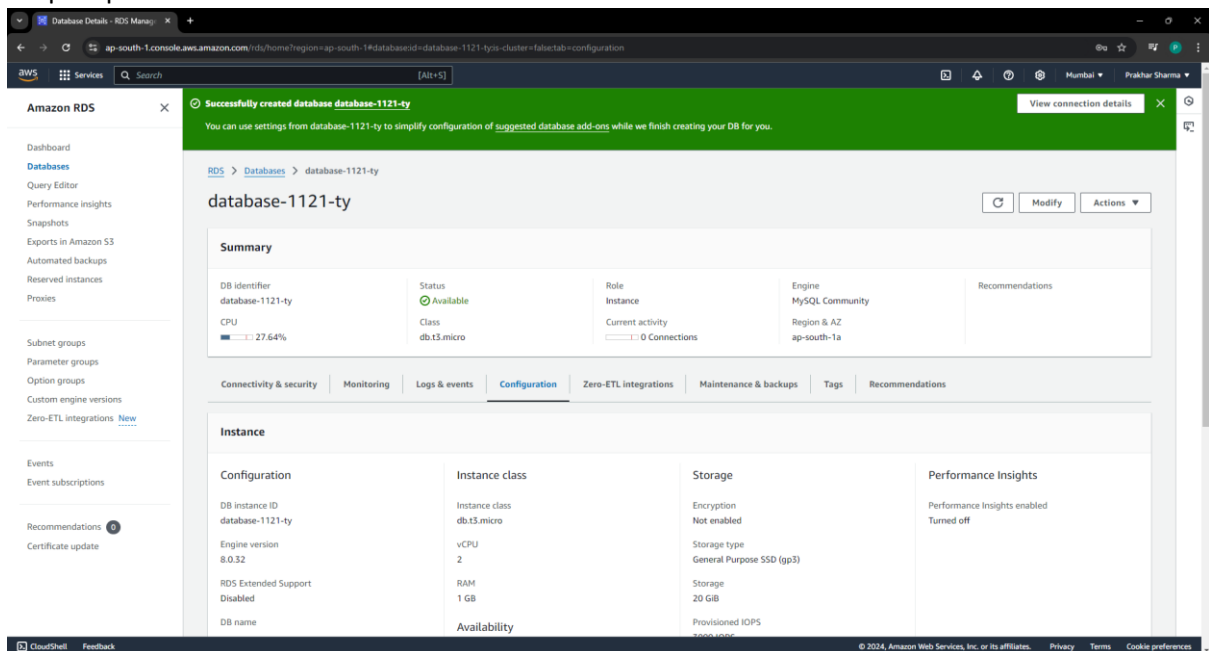
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You can check in the created database configuration tab the encryption is not enabled.  
Now, To make it encrypted we have to make its unencrypted snapshot and restore it as encrypted snapshot



**Step-18] Go to Actions, Select and click on Take Snapshot option.**

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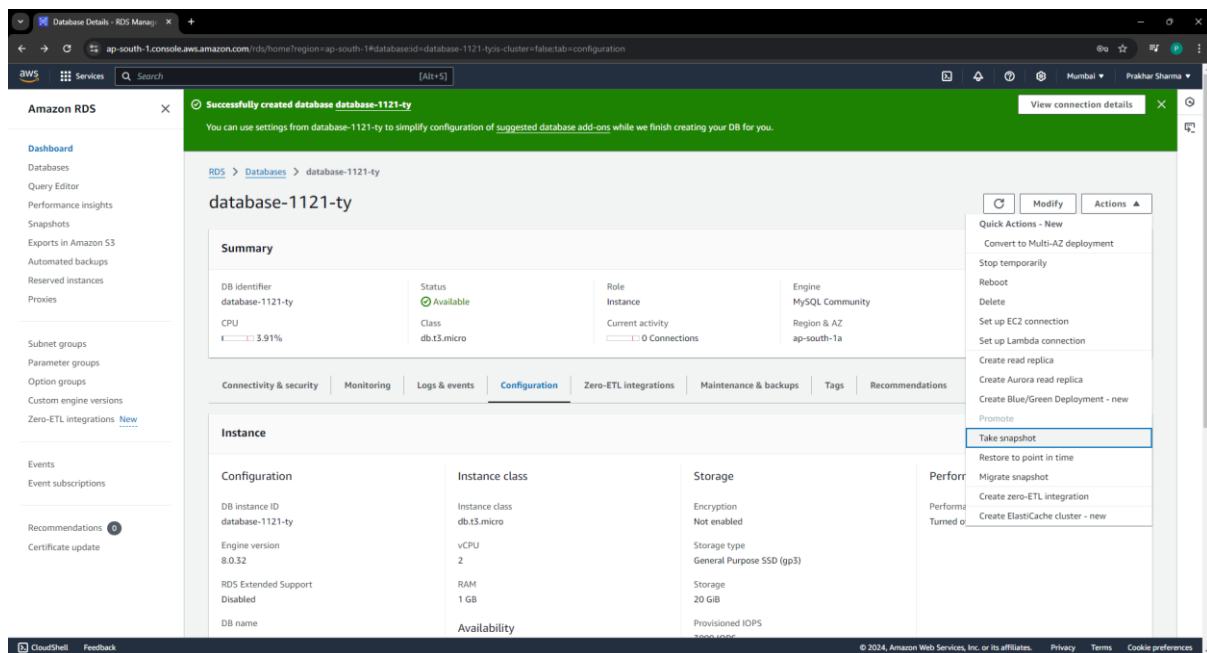
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Step-19]Select Snapshot type as DB instance

Step-20]In DB instance , select the database you just created from the dropdown option.

Step-21]Name the snapshot as Unencrypted snapshopt-PRN No.

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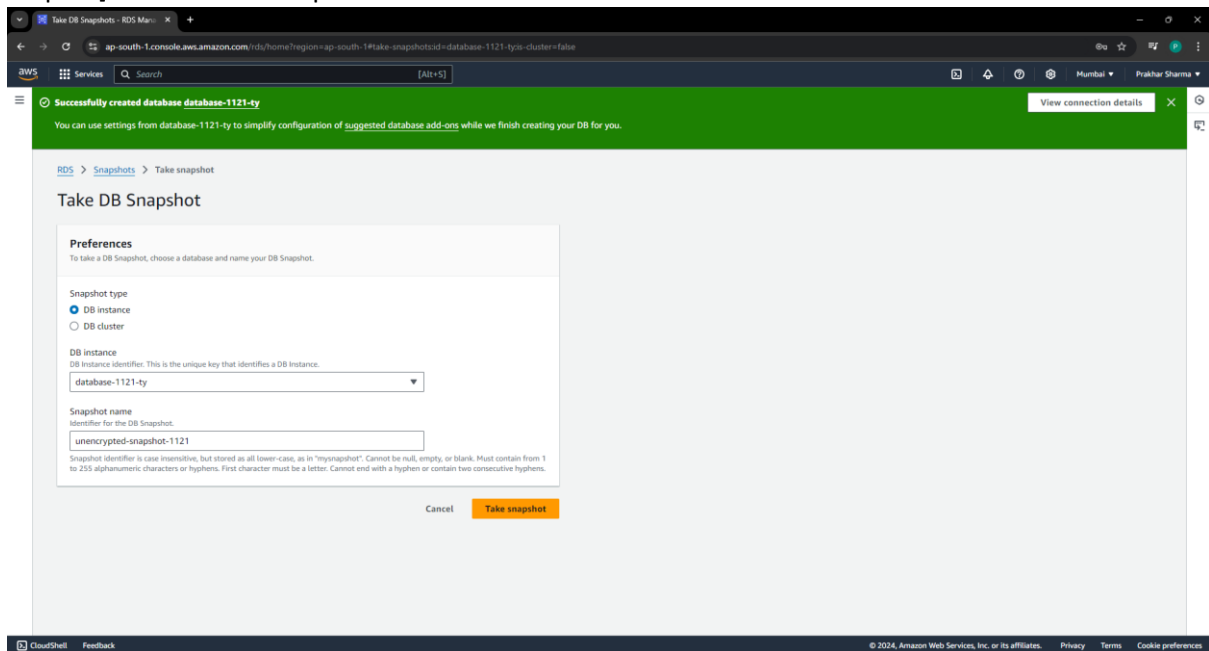
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Step-22] Click on take snapshot.



You can see the snapshot as created successfully.

Now to make its encrypted snapshot to restore the encrypted db instance we have to copy this





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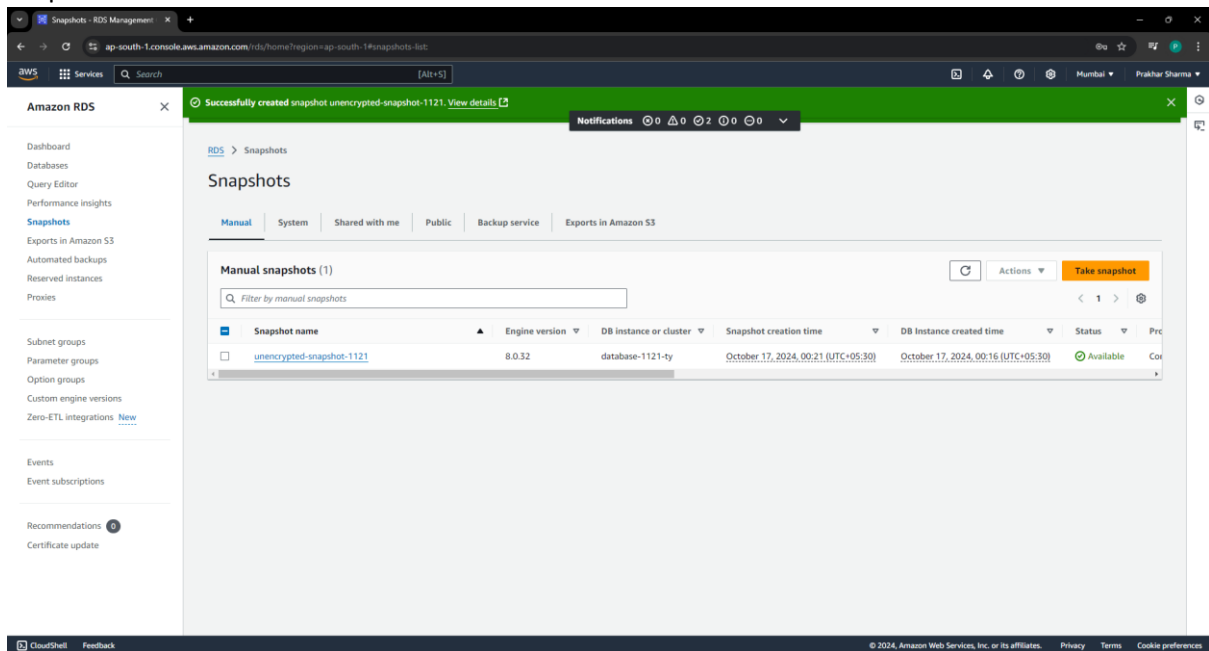
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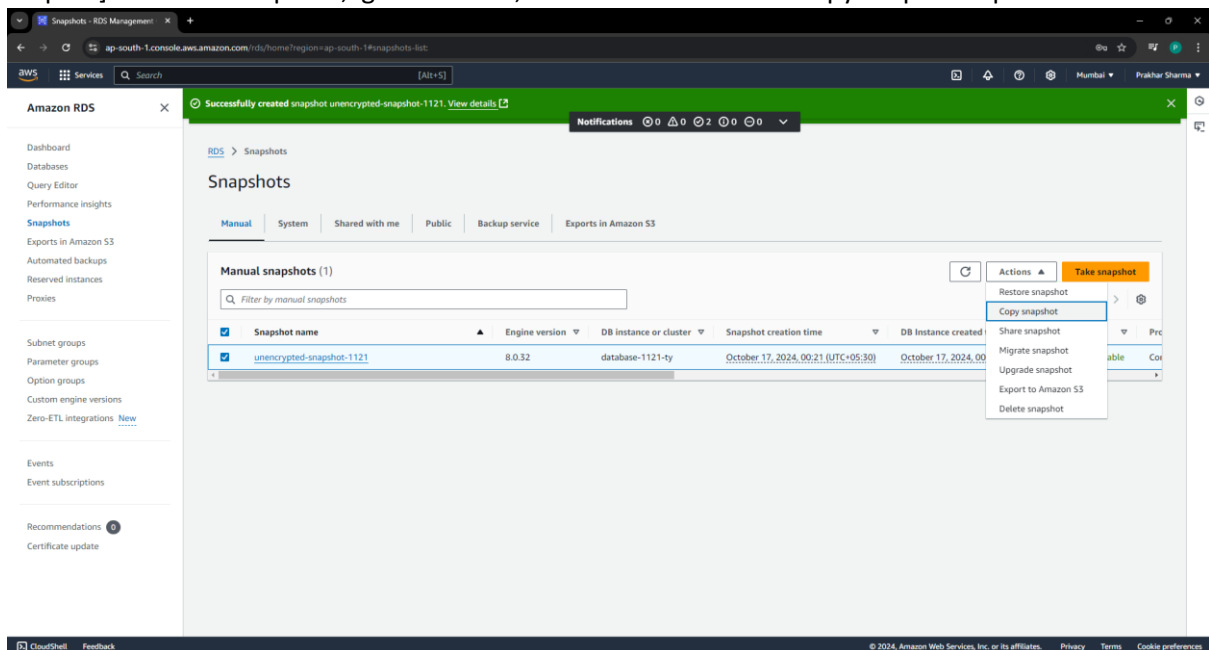
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snapshot.



Step-23]Select the snapshot, go to actions, select and click on the copy snapshot option.



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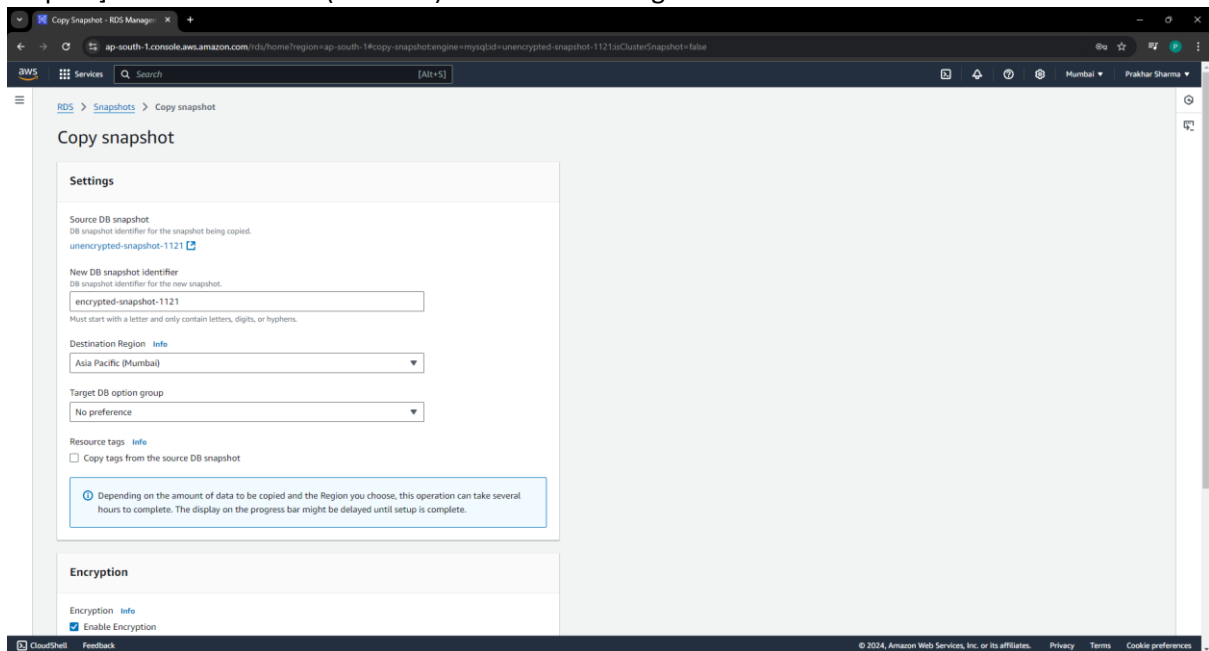
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Step-24]Name the Snapshot as Encrypted Snapshot-PRN No.

Step-25]Select Asia Pacific (Mumbai) as Destination region.



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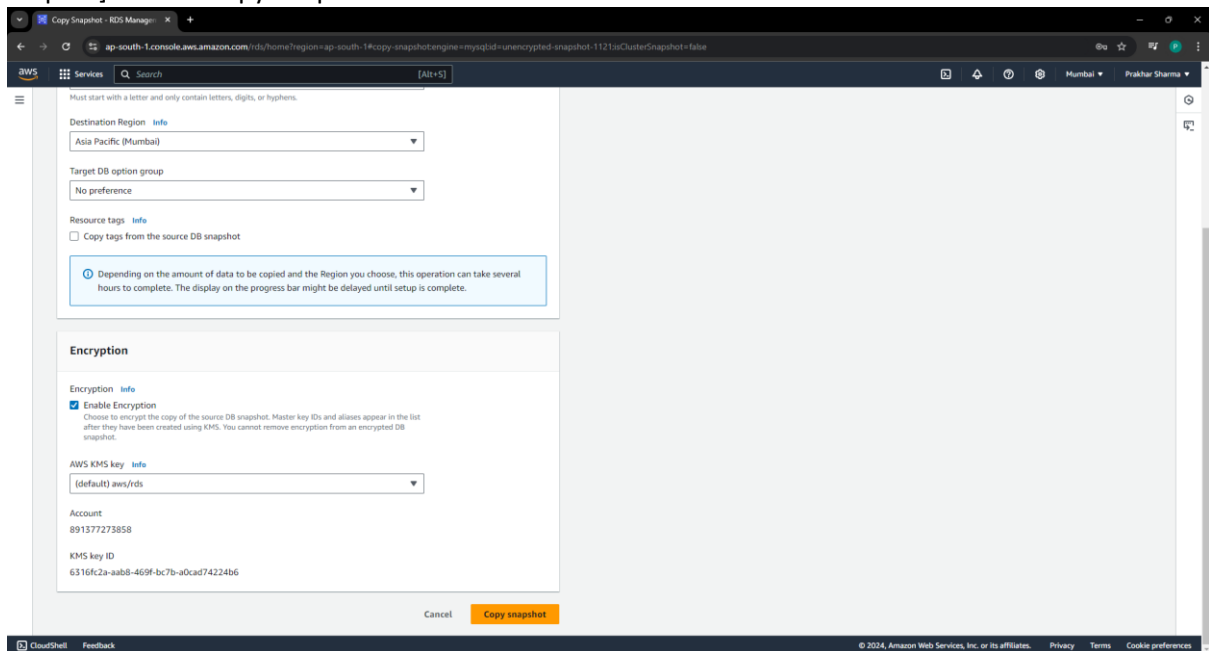
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Step-26]In Encryption , Select the Enable Encryption Checkbox.

Step-27]Click on Copy Snapshot.



Must start with a letter and only contain letters, digits, or hyphens.

Destination Region [Info](#)  
Asia Pacific (Mumbai) ▼

Target DB option group  
No preference ▼

Resource tags [Info](#)  
☐ Copy tags from the source DB snapshot

ⓘ Depending on the amount of data to be copied and the Region you choose, this operation can take several hours to complete. The display on the progress bar might be delayed until setup is complete.

**Encryption**

Encryption [Info](#)  
☒ **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  
891377273858

KMS key ID  
6316fc2a-aab8-469f-bc7b-a0cad74224b6

Cancel **Copy snapshot**

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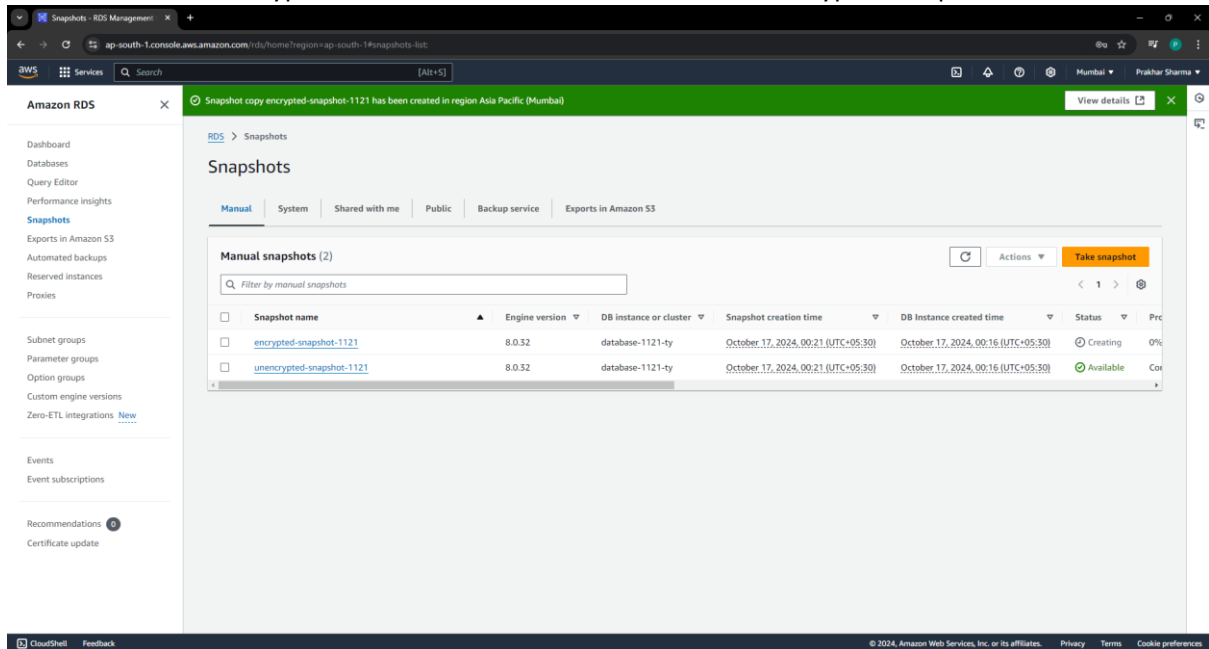
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You can see now the encrypted snapshot is created successfully.

Now to make the encrypted db instance we have to restore the encrypted snapshot .



The screenshot shows the AWS RDS Snapshots console. A green notification banner at the top states: "Snapshot copy encrypted-snapshot-1121 has been created in region Asia Pacific (Mumbai)". The console displays a table of manual snapshots:

Snapshot name	Engine version	DB instance or cluster	Snapshot creation time	DB Instance created time	Status	Progress
<a href="#">encrypted-snapshot-1121</a>	8.0.32	database-1121-ty	October 17, 2024, 00:21 (UTC+05:30)	October 17, 2024, 00:16 (UTC+05:30)	Creating	0%
<a href="#">unencrypted-snapshot-1121</a>	8.0.32	database-1121-ty	October 17, 2024, 00:21 (UTC+05:30)	October 17, 2024, 00:16 (UTC+05:30)	Available	Completed

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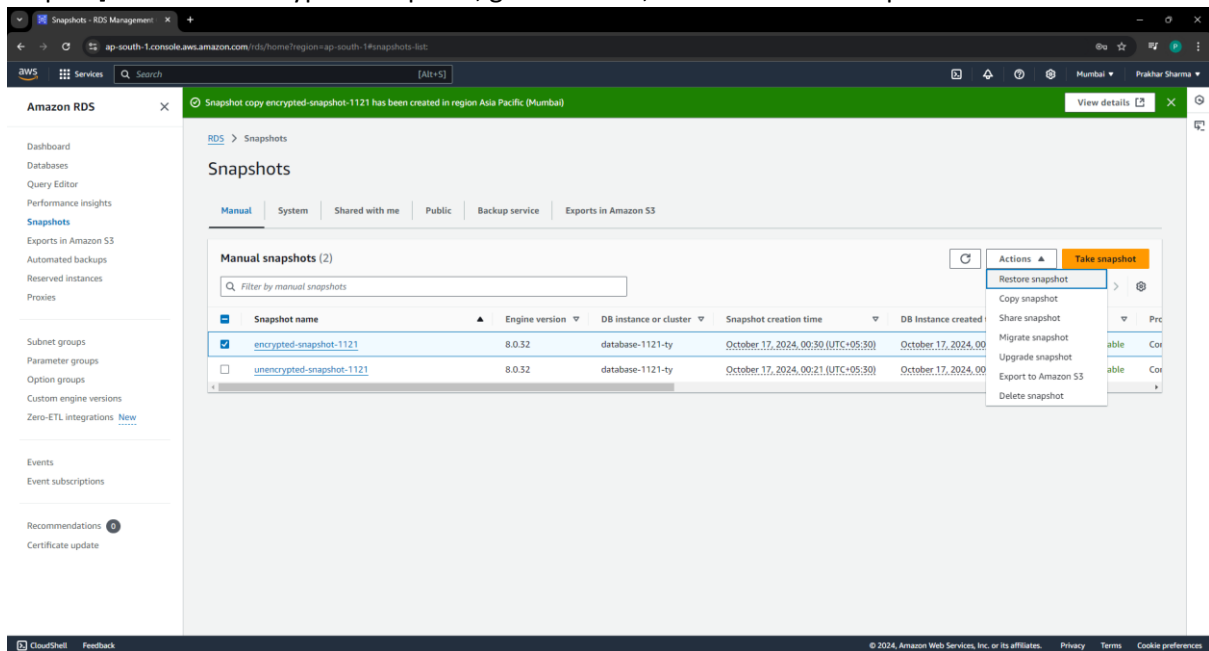
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Step-28] Select the encrypted snapshot, go to actions, click on restore snapshot.



The screenshot shows the Amazon RDS Snapshots console. A table lists two manual snapshots: 'encrypted-snapshot-1121' and 'unencrypted-snapshot-1121'. The first snapshot is selected, and the 'Actions' menu is open, showing options like 'Restore snapshot', 'Copy snapshot', 'Share snapshot', 'Migrate snapshot', 'Upgrade snapshot', 'Export to Amazon S3', and 'Delete snapshot'.

Snapshot name	Engine version	DB instance or cluster	Snapshot creation time	DB instance created
<input checked="" type="checkbox"/> encrypted-snapshot-1121	8.0.32	database-1121-ty	October 17, 2024, 00:30 (UTC+05:30)	October 17, 2024, 00:30 (UTC+05:30)
<input type="checkbox"/> unencrypted-snapshot-1121	8.0.32	database-1121-ty	October 17, 2024, 00:31 (UTC+05:30)	October 17, 2024, 00:31 (UTC+05:30)

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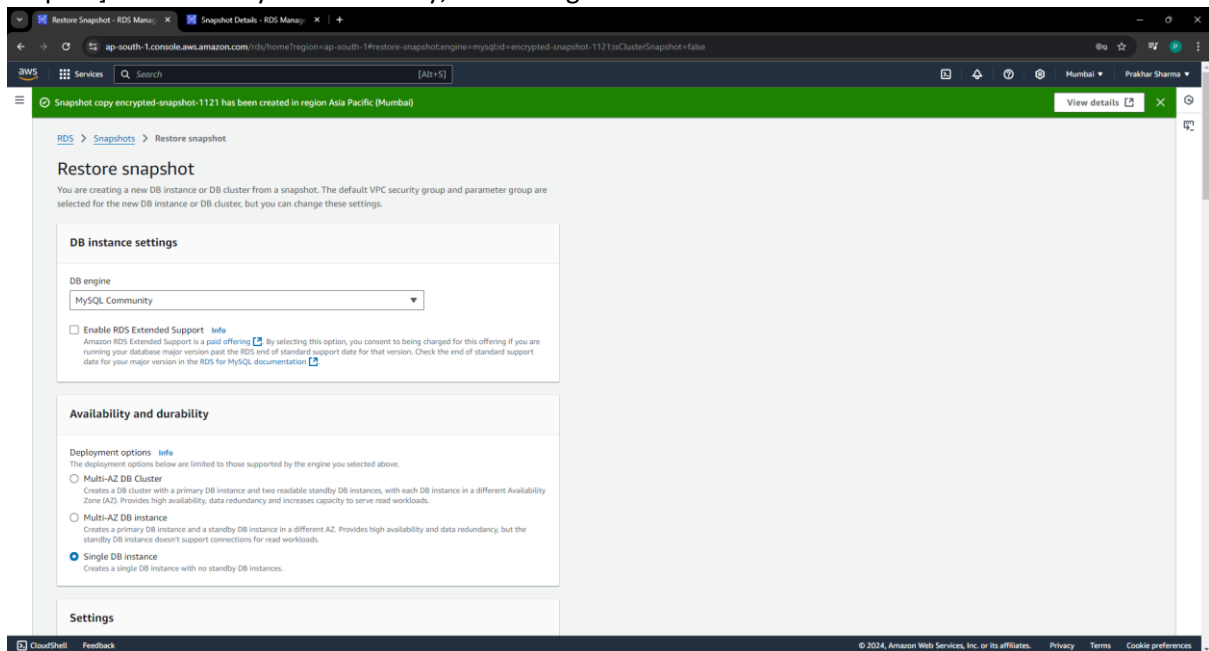
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Step-29]Select DB engine as MySQL Community from dropdown.

Step-30]In Availability and durability, select Single DB instance.



Step-31]Name the db instance identifier.

Step-32]In Instance configuration,

-select Burstable classes.

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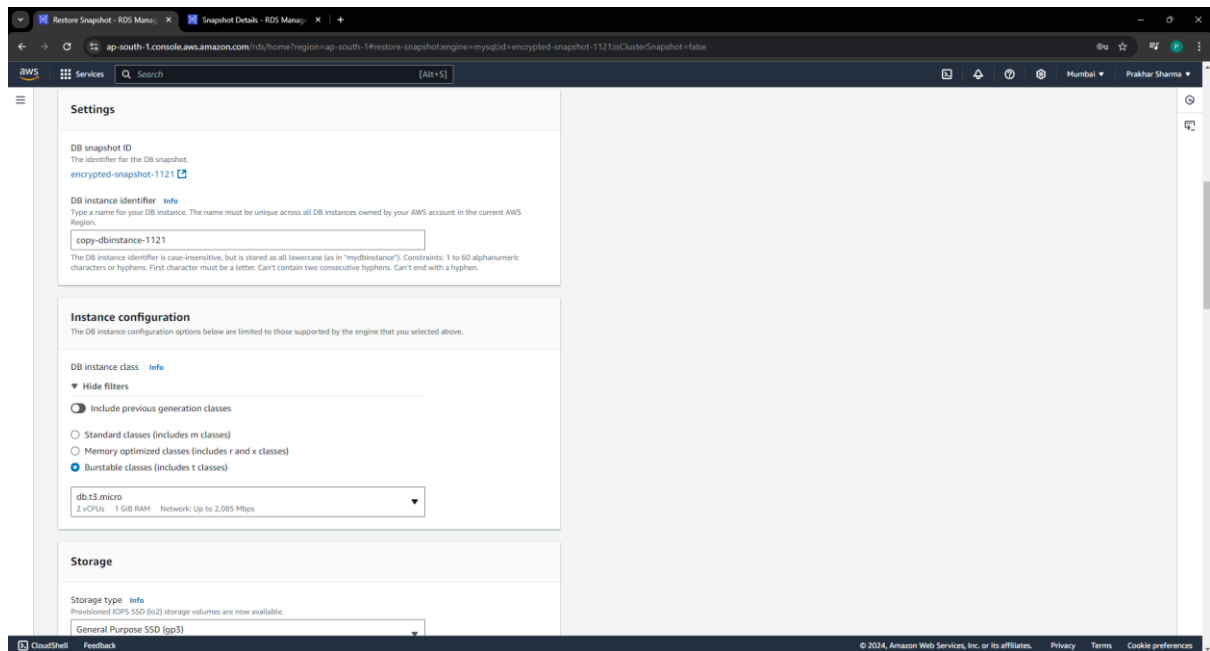
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-select db.t3.micro.



The screenshot shows the AWS Management Console interface for the 'Restore Snapshot' page. The page is titled 'Settings' and displays the following information:

- DB snapshot ID:** encrypted-snapshot-1121
- DB instance identifier:** copy-dbinstance-1121
- Instance configuration:**
  - DB instance class:** db.t3.micro
- Storage:**
  - Storage type:** General Purpose SSD (gp3)

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**Step-33]In Connectivity ,Select Public Access as No.**

The screenshot displays the AWS RDS console's 'Connectivity' configuration page. The 'Virtual private cloud (VPC)' is set to 'Default VPC (vpc-08ffe06795a9ec200)'. The 'DB subnet group' is 'default-vpc-08ffe06795a9ec200'. Under 'Public access', the 'No' option is selected, indicating that the database will not have a public IP address. The 'Existing VPC security groups' dropdown shows 'default'. The 'Availability Zone' is set to 'No preference'. The 'Certificate authority - optional' dropdown shows 'rds-ca-rsa2048-g1 (default)'. The 'Database authentication' section has 'Password authentication' selected. The 'Encryption' section has 'Enable Encryption' checked.

Keep other setting as it is.

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Step-34]Click on restore db instance.

The screenshot shows the Amazon RDS console interface. At the top, a green notification bar states "Snapshot restored successfully" and "Restoring encrypted-snapshot-1121 to copy-dbinstance-1121 was successful." Below this, a blue banner suggests creating a Blue/Green Deployment. The main section, titled "Databases (2)", contains a table of database instances. The table has columns for DB identifier, Status, Role, Engine, Region & AZ, Size, Recommendations, CPU, and Current. Two instances are listed: "copy-dbinstance-1121" and "database-1121-ty", both with a status of "Available".

DB identifier	Status	Role	Engine	Region & AZ	Size	Recommendations	CPU	Current
copy-dbinstance-1121	Available	Instance	MySQL Com...	ap-south-1b	db.t3.micro	-	-	-
database-1121-ty	Available	Instance	MySQL Com...	ap-south-1a	db.t3.micro	-	3.44%	-

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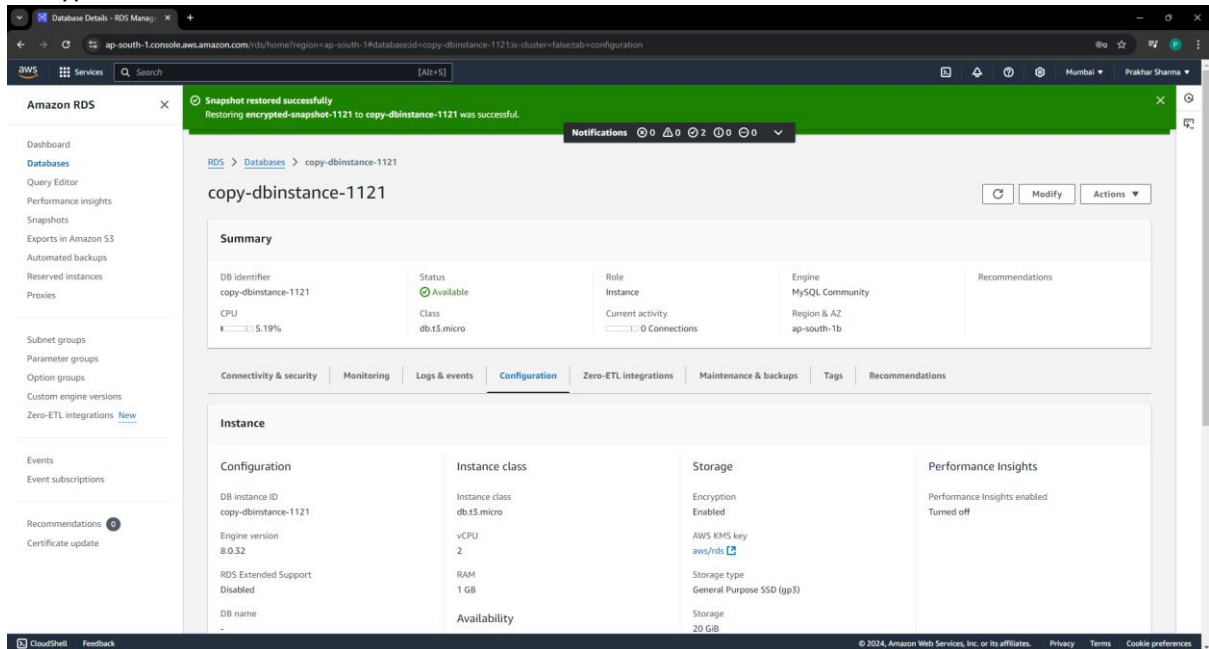
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After successfully restored ,you can check in the configuration of copy db instance that the encryption is enabled.



The screenshot displays the AWS RDS console interface. At the top, a green notification banner states: "Snapshot restored successfully. Restoring encrypted-snapshot-1121 to copy-dbinstance-1121 was successful." Below this, the console shows the details for the RDS instance "copy-dbinstance-1121". The "Summary" section indicates the instance is "Available". The "Configuration" tab is active, showing the following details:

Configuration	Instance class	Storage	Performance Insights
DB instance ID: copy-dbinstance-1121	Instance class: db.t3.micro	Encryption: Enabled	Performance Insights enabled: Turned off
Engine version: 8.0.32	vCPU: 2	AWS KMS key: aws/rds	
RDS Extended Support: Disabled	RAM: 1 GB	Storage type: General Purpose SSD (gp3)	
DB name: -	Availability: -	Storage: 20 GiB	