Cycle 08 AWS Homework

GUI (AWS Console) Steps:

1. Go to **S3** → Click **Create Bucket**.
2. Enter bucket name (e.g., `awschetanpractice1`), choose region, uncheck *Block all public access* if needed.
3. Upload a file → Select object → Make public (if static hosting).
4. Enable **Versioning** under bucket properties.
5. Set **Lifecycle Rule** for archival/deletion after specific days.

CLI Commands:

```
bash
CopyEdit
# List all buckets
aws s3 ls

# Create bucket
aws s3 mb s3://awschetanpractice1 --region ap-south-1

# Upload file
aws s3 cp file1.txt s3://awschetanpractice1/

# Download file
aws s3 cp s3://awschetanpractice1/file1.txt ./downloaded.txt

# Enable versioning
aws s3api put-bucket-versioning --bucket awschetanpractice1 --versioning-c
onfiguration Status=Enabled

# Sync local folder to S3
```

```
aws s3 sync ./local_folder s3://awschetanpractice1/
```

Boto3 (Python SDK) Example:

```
python
CopyEdit
import boto3

s3 = boto3.client('s3')

# Create bucket
s3.create_bucket(Bucket='awschetanpractice1', CreateBucketConfiguration=
{'LocationConstraint': 'ap-south-1'})

# Upload file
s3.upload_file('file1.txt', 'awschetanpractice1', 'file1.txt')

# Enable versioning
s3.put_bucket_versioning(
    Bucket='awschetanpractice1',
    VersioningConfiguration={'Status': 'Enabled'}
)
```

2. RDS Deployment & Connectivity

MariaDB & PostgreSQL Setup in AWS RDS:

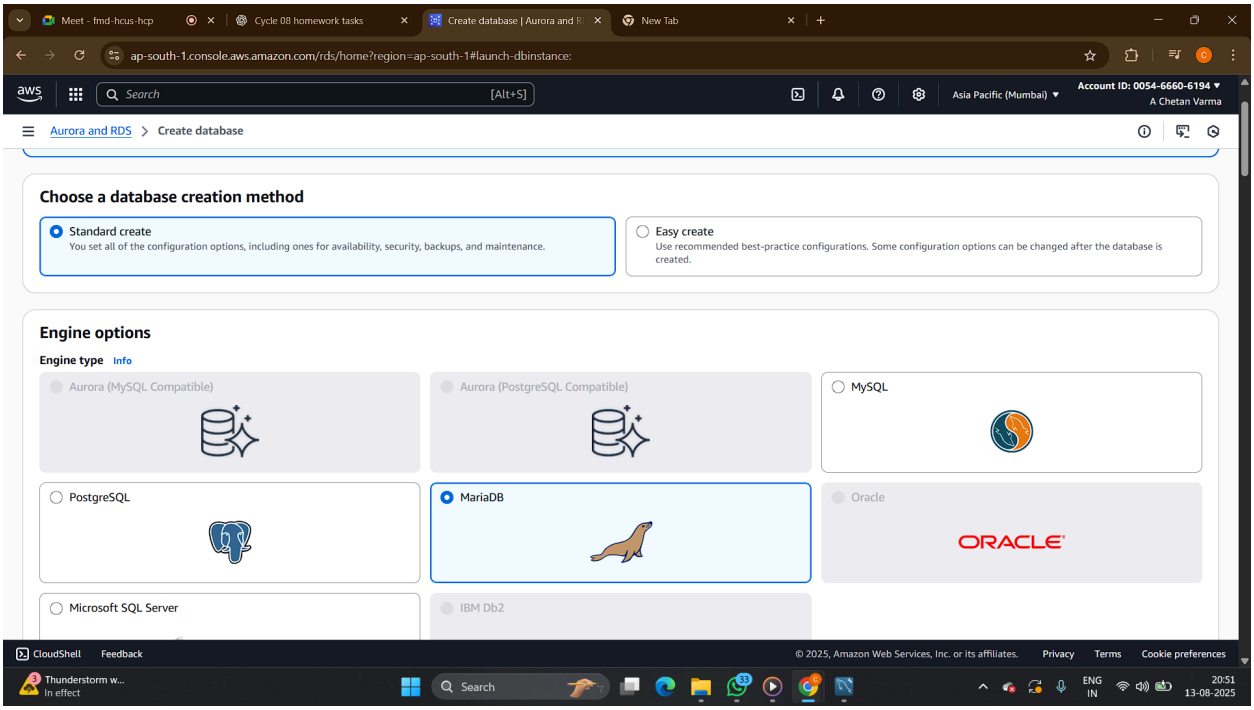
1. **Create MariaDB Instance:**
    - Engine: MariaDB
    - Version: Free Tier eligible
    - Public Access: Yes (for testing)

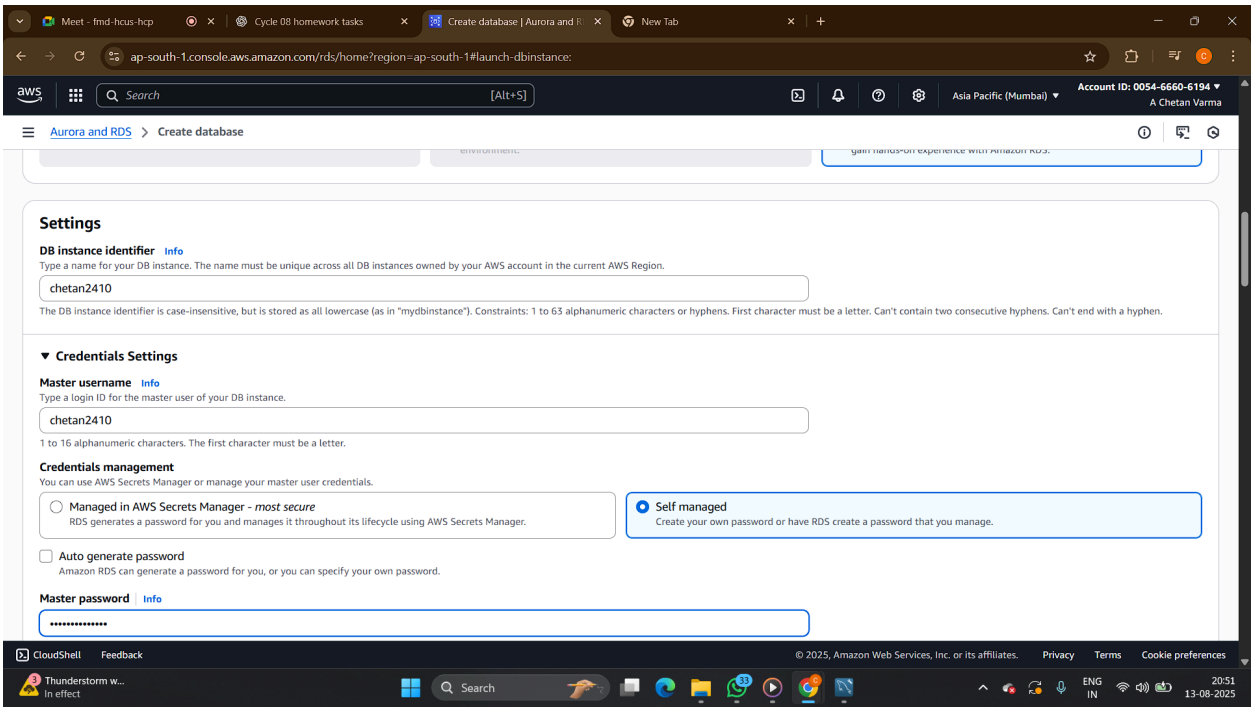
- Port: **3306**
- Security Group: Allow inbound TCP from your IP on port 3306.

2. **Create PostgreSQL Instance:**
   - Engine: PostgreSQL
   - Port: **5432**
   - Public Access: Yes
   - Security Group: Allow inbound TCP from your IP on port 5432.

Client Tool Connection:

- **MariaDB (MySQL Workbench):**
  - Hostname: `<RDS-endpoint>`
  - Port: 3306
  - Username: Master username from RDS
  - Password: Master password




Meet - fmd-hcus-hcp
Cycle 08 homework tasks
Create database | Aurora and R
New Tab
ap-south-1.console.aws.amazon.com/rds/home?region=ap-south-1#launch-dbinstance:
Search [Alt+S]
Asia Pacific (Mumbai)
Account ID: 0054-6660-6194
A Chetan Varma
Aurora and RDS > Create database
Settings
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.
chetan2410
The DB instance identifier is case-insensitive, but is stored as all lowercase (as in "mydbinstance"). Constraints: 1 to 63 alphanumeric characters or hyphens. First character must be a letter. Can't contain two consecutive hyphens. Can't end with a hyphen.
Credentials Settings
Master username Info
Type a login ID for the master user of your DB instance.
chetan2410
1 to 16 alphanumeric characters. The first character must be a letter.
Credentials management
You can use AWS Secrets Manager or manage your master user credentials.
Managed in AWS Secrets Manager - most secure
RDS generates a password for you and manages it throughout its lifecycle using AWS Secrets Manager.
Self managed
Create your own password or have RDS create a password that you manage.
Auto generate password
Amazon RDS can generate a password for you, or you can specify your own password.
Master password Info
CloudShell
Feedback
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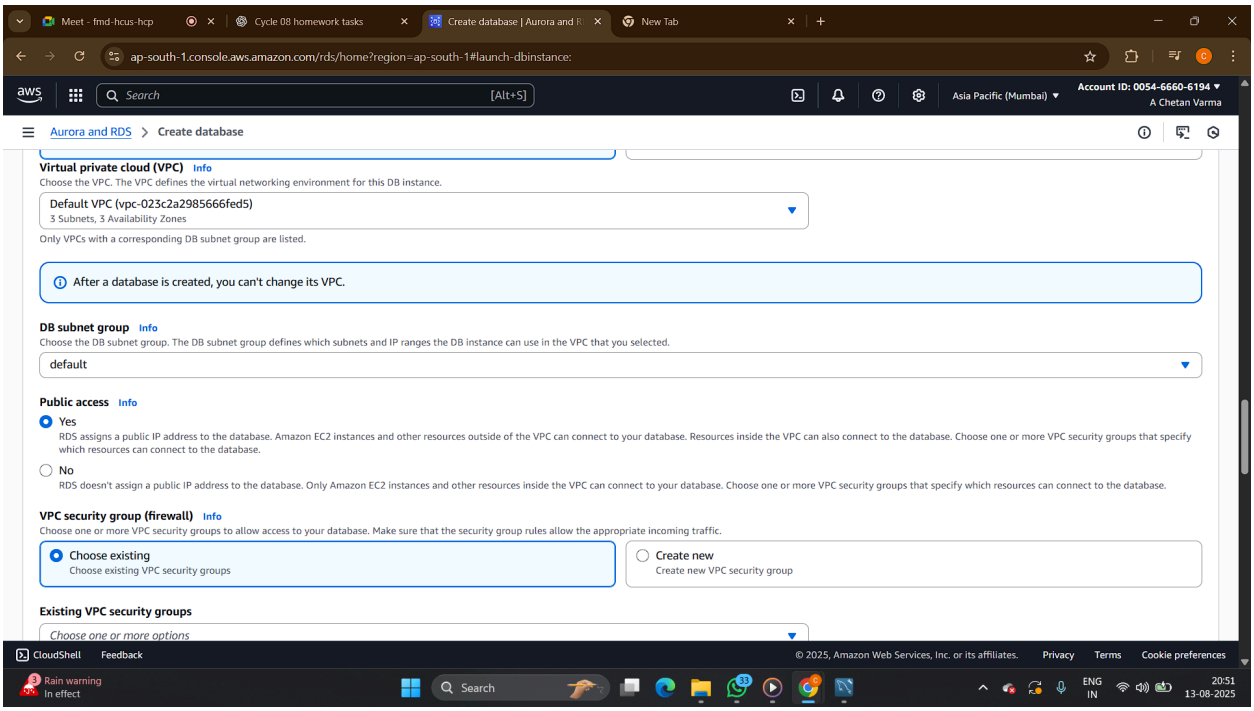
Privacy
Terms
Cookie preferences
Thunderstorm w...
In effect
Search
ENG
IN
20:51
13-08-2025


Meet - fmd-hcus-hcp
Cycle 08 homework tasks
Create database | Aurora and R
New Tab
ap-south-1.console.aws.amazon.com/rds/home?region=ap-south-1#launch-dbinstance:
Search [Alt+S]
Asia Pacific (Mumbai)
Account ID: 0054-6660-6194
A Chetan Varma
Aurora and RDS > Create database
Virtual private cloud (VPC) Info
Choose the VPC. The VPC defines the virtual networking environment for this DB instance.
Default VPC (vpc-023c2a2985666fed5)
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 you selected.
default
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 your database. Resources inside the VPC can also connect to the database. Choose one or more VPC security groups that specify which resources can connect to the database.
No
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. Choose one or more VPC security groups that specify which resources can connect to the database.
VPC security group (firewall) Info
Choose one or more VPC security groups to allow access to your database. Make sure that the security group rules allow the appropriate incoming traffic.
Choose existing
Choose existing VPC security groups
Create new
Create new VPC security group
Existing VPC security groups
Choose one or more options
CloudShell
Feedback
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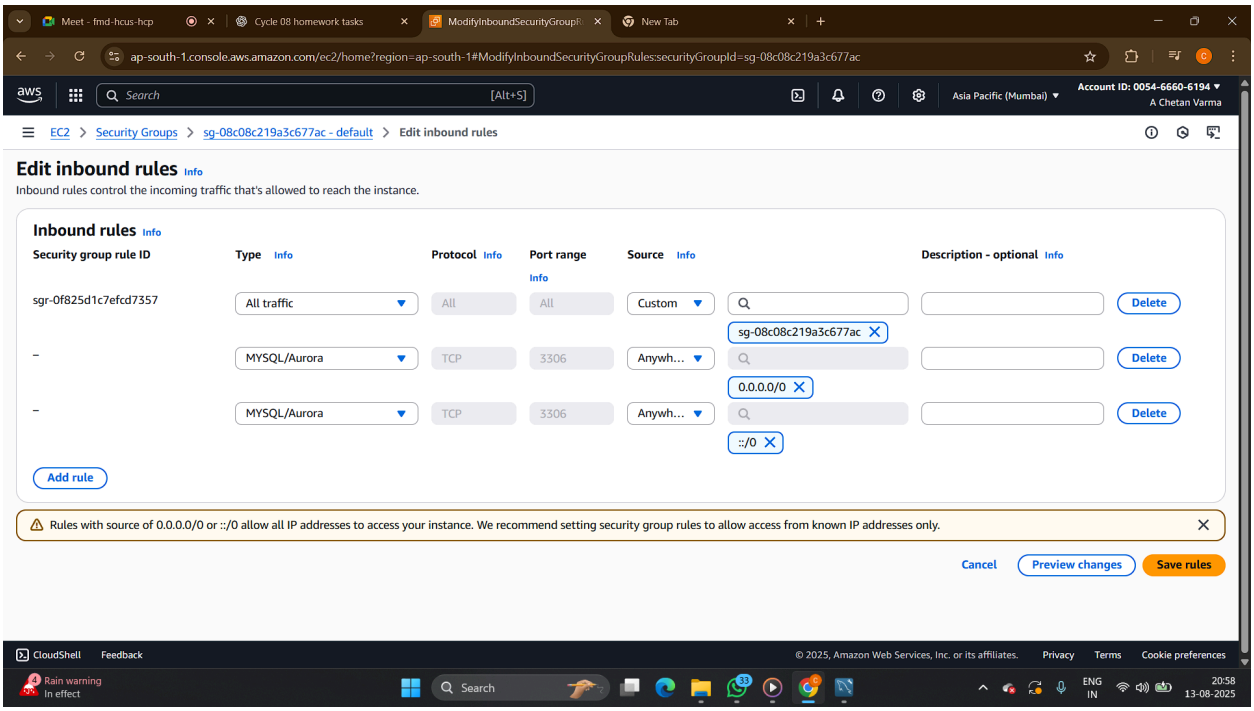
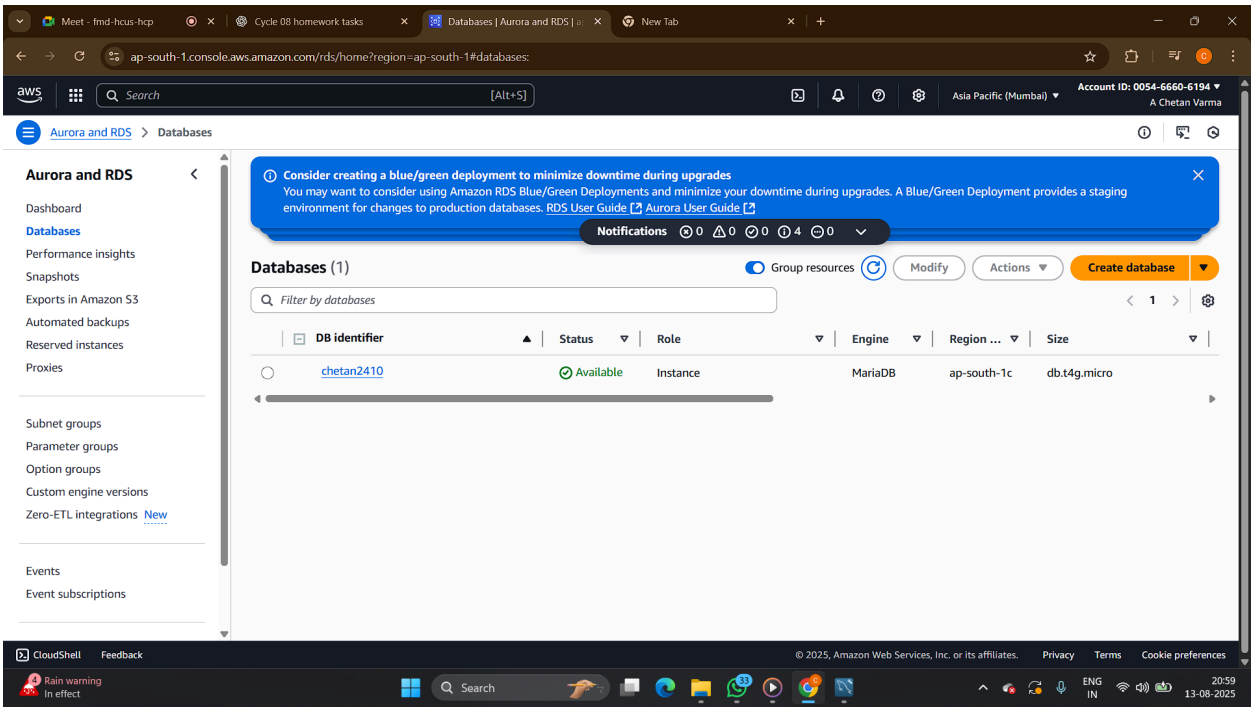
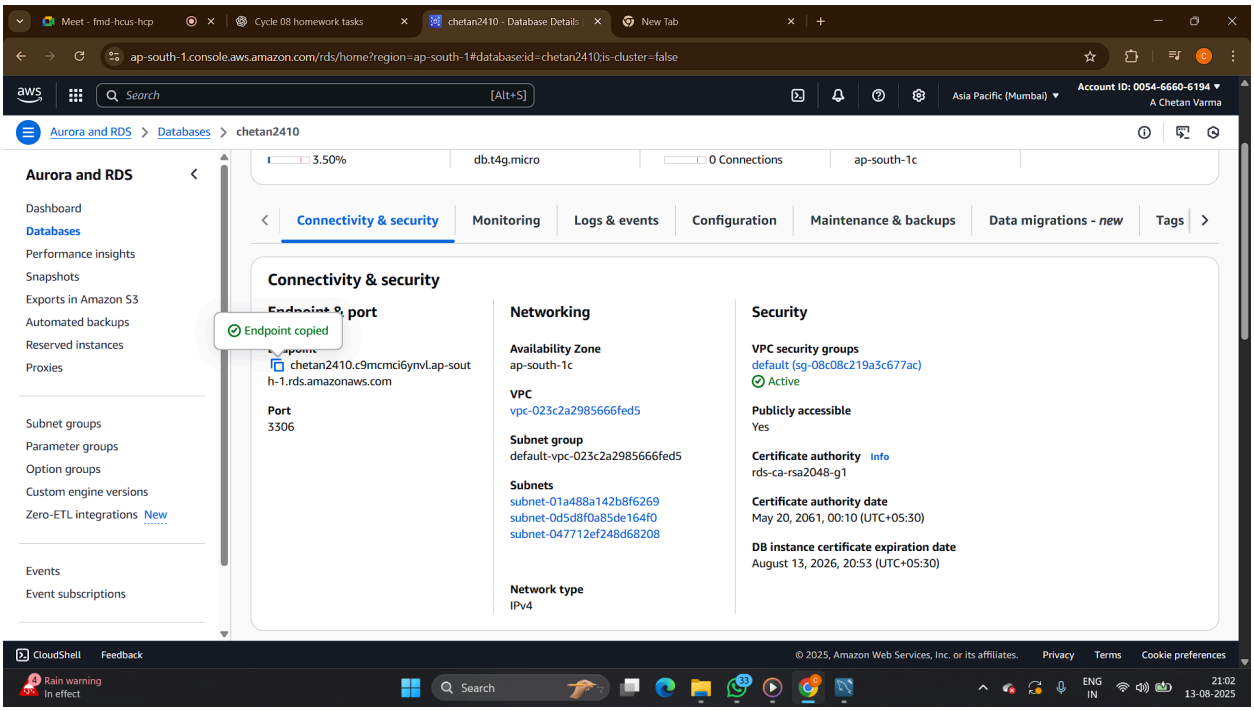
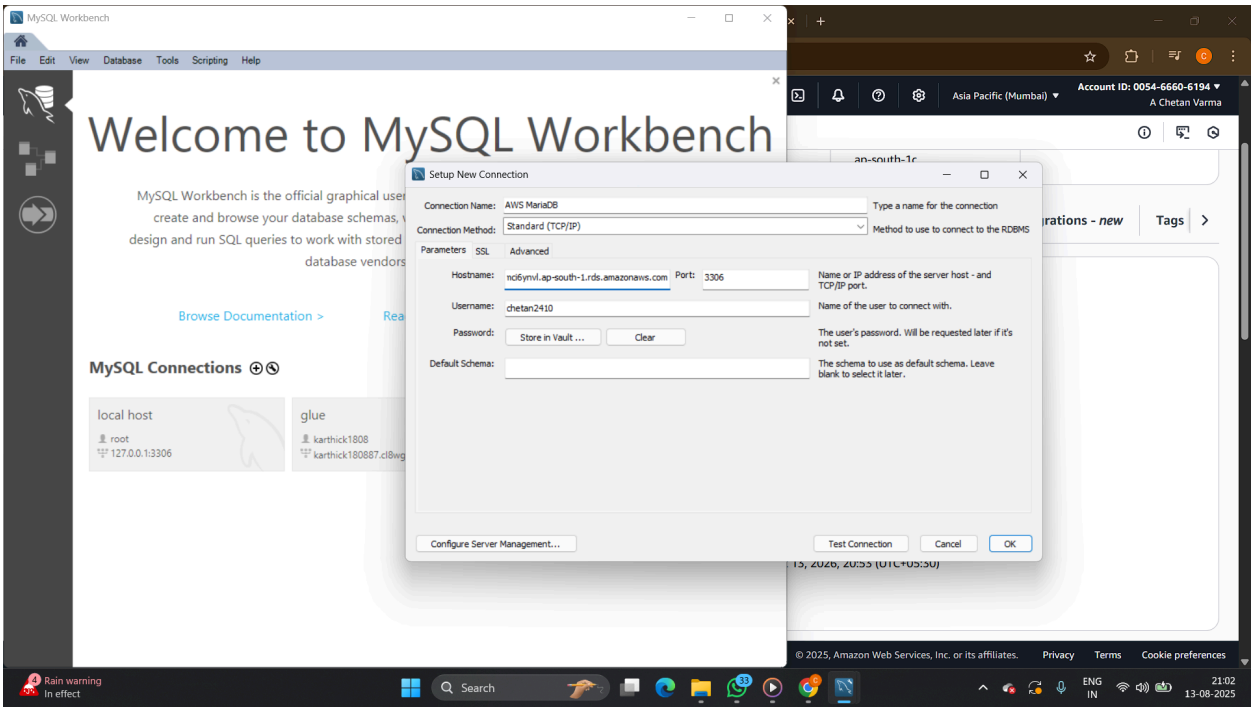
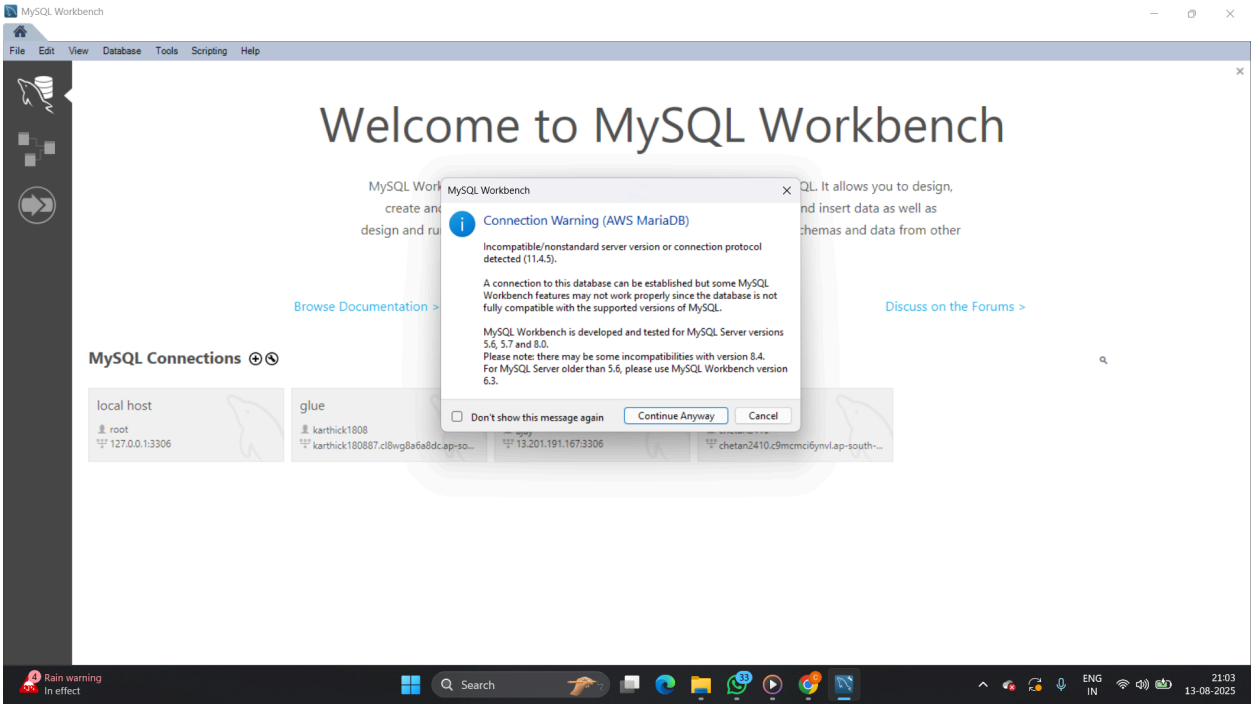
Privacy
Terms
Cookie preferences
Rain warning
In effect
Search
ENG
IN
20:51
13-08-2025

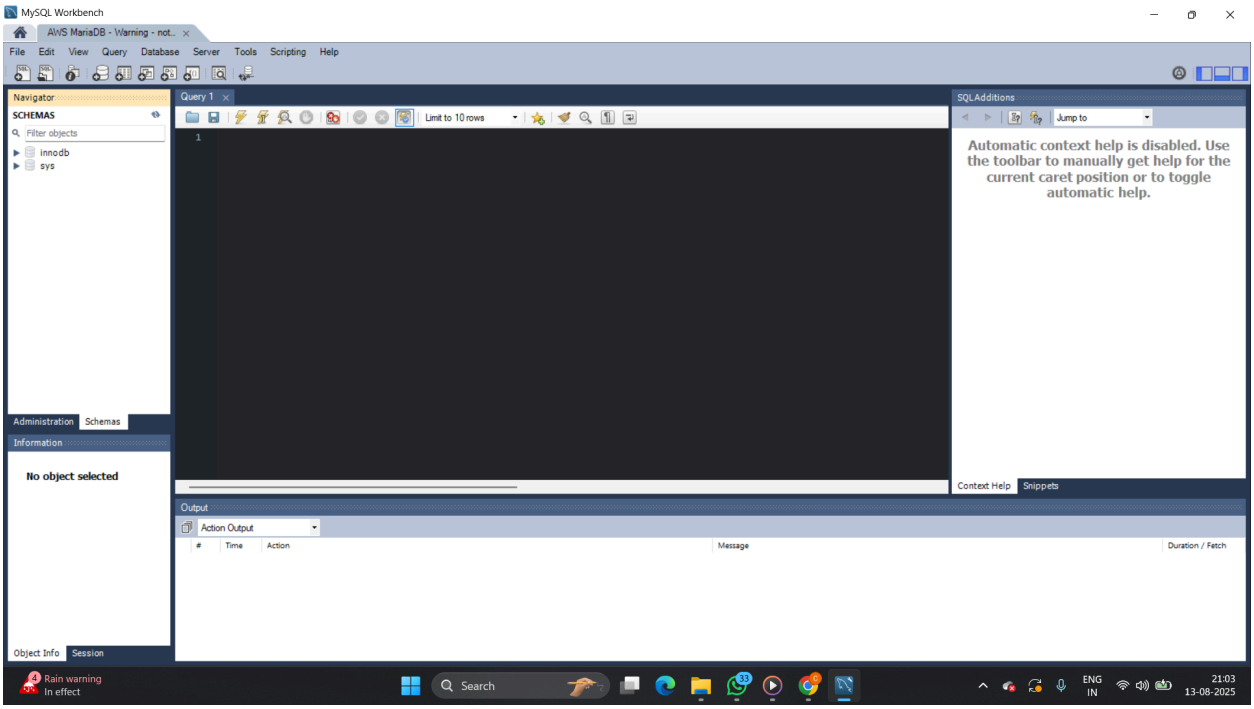

Edit inbound rules Info
Inbound rules control the incoming traffic that's allowed to reach the instance.
Inbound rules Info
Security group rule ID
Type Info
Protocol Info
Port range Info
Source Info
Description - optional Info
sgr-0f825d1c7efcd7357
All traffic
Custom
sg-08c08c219a3c677ac
MYSQL/Aurora
TCP
3306
Anywh...
0.0.0.0/0
MYSQL/Aurora
TCP
3306
Anywh...
::/0
Delete
Add rule
Rules with source of 0.0.0.0/0 or ::/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.
Cancel
Preview changes
Save rules

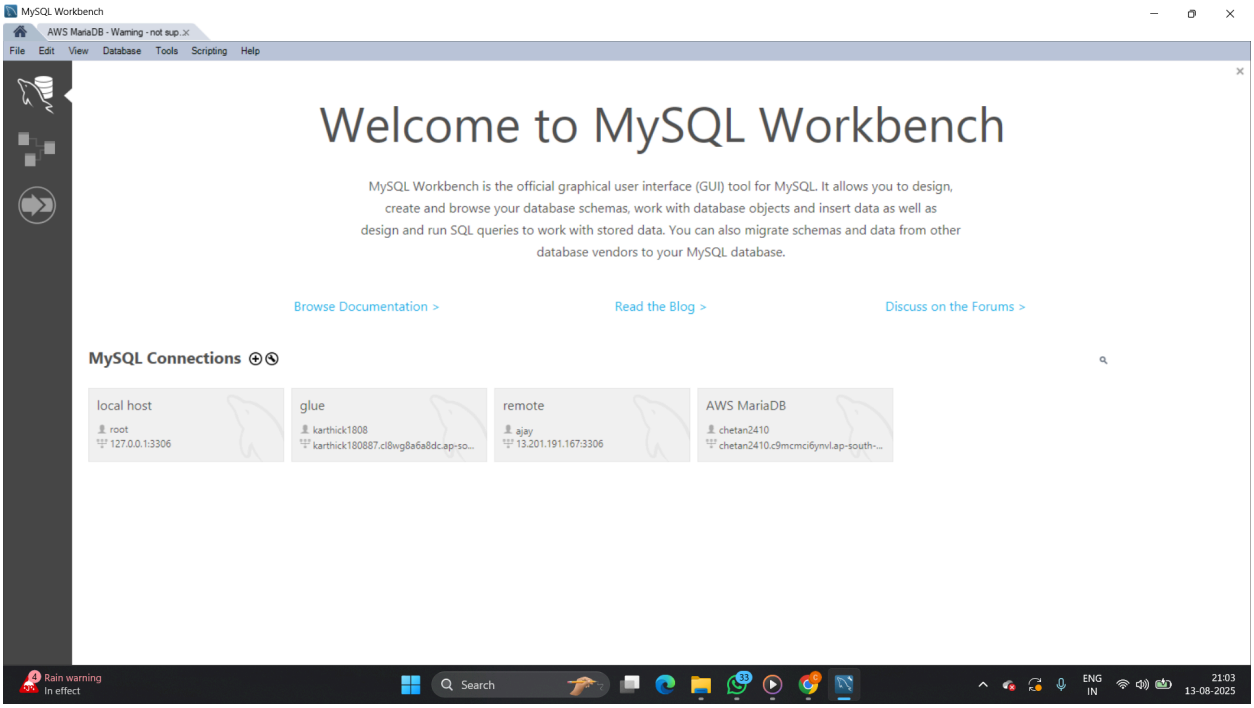

Aurora and RDS
Dashboard
Databases
Performance insights
Snapshots
Exports in Amazon S3
Automated backups
Reserved instances
Proxies
Subnet groups
Parameter groups
Option groups
Custom engine versions
Zero-ETL integrations New
Events
Event subscriptions
Consider creating a blue/green deployment to minimize downtime during upgrades
Databases (1)
Group resources
Modify
Actions
Create database
Filter by databases
DB identifier
Status
Role
Engine
Region ...
Size
chetan2410
Available
Instance
MariaDB
ap-south-1c
db.t4g.micro


Aurora and RDS
Databases
chetan2410
Connectivity & security
Monitoring
Logs & events
Configuration
Maintenance & backups
Data migrations - new
Tags
Endpoint copied
chetan2410.c9mcmci6ynvl.ap-south-1.rds.amazonaws.com
Port
3306
Networking
Availability Zone
ap-south-1c
VPC
vpc-023c2a2985666fed5
Subnet group
default-vpc-023c2a2985666fed5
Subnets
subnet-01a488a142b8f6269
subnet-0d5d8f0a85de164f0
subnet-047712ef248d68208
Network type
IPv4
Security
VPC security groups
default (sg-08c08c219a3c677ac)
Active
Publicly accessible
Yes
Certificate authority
rds-ca-rsa2048-g1
Certificate authority date
May 20, 2061, 00:10 (UTC+05:30)
DB instance certificate expiration date
August 13, 2026, 20:53 (UTC+05:30)

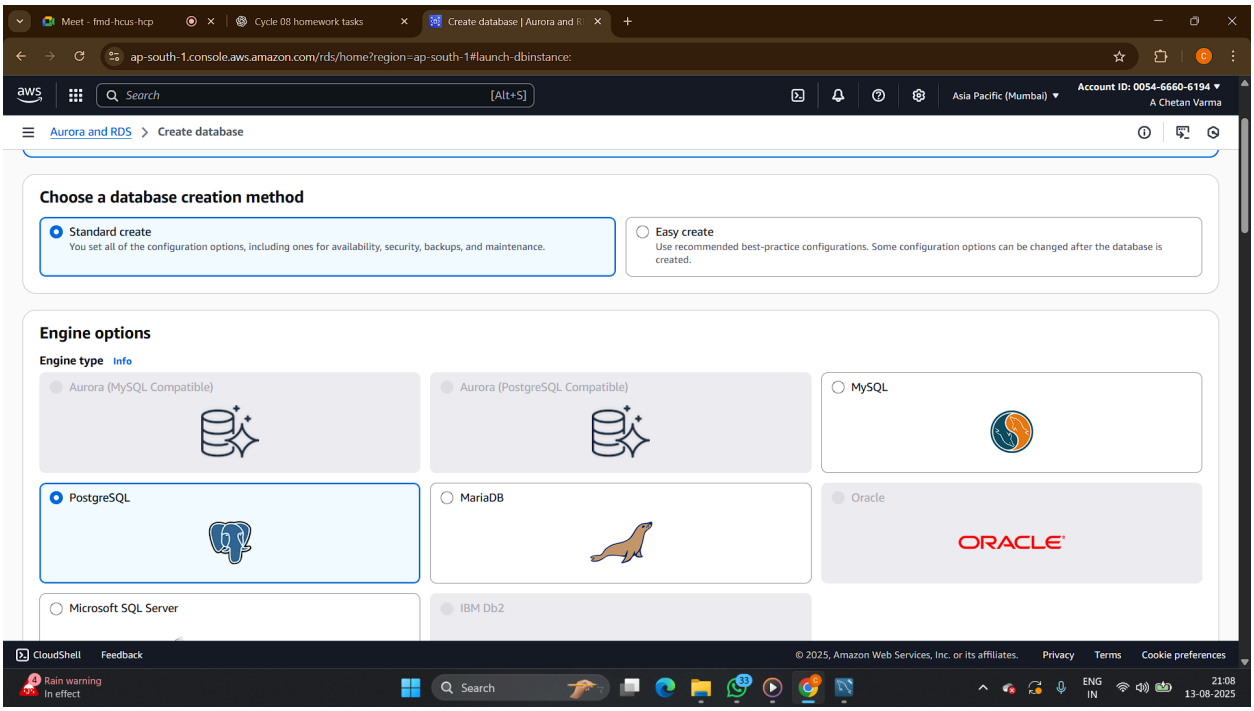

Welcome to MySQL Workbench
Setup New Connection
Connection Name: AWS MariaDB
Connection Method: Standard (TCP/IP)
Hostname: nci6ynvl.ap-south-1.rds.amazonaws.com
Port: 3306
Username: chetan2410
Password: Store in Vault ...
Clear
Default Schema:
Configure Server Management...
Test Connection
Cancel
OK
MySQL Connections
local host
glue


MySQL Workbench
File Edit View Database Tools Scripting Help
Welcome to MySQL Workbench
MySQL Connections
local host
root
127.0.0.1:3306
glue
karthick1808
MySQL Workbench
Connection Warning (AWS MariaDB)
Incompatible/nonstandard server version or connection protocol detected (11.4.5).
A connection to this database can be established but some MySQL Workbench features may not work properly since the database is not fully compatible with the supported versions of MySQL.
MySQL Workbench is developed and tested for MySQL Server versions 5.6, 5.7 and 8.0.
Please note: there may be some incompatibilities with version 8.4.
For MySQL Server older than 5.6, please use MySQL Workbench version 6.3.
Don't show this message again
Continue Anyway
Cancel
Rain warning
In effect
Search
ENG
IN
21:03
13-08-2025


MySQL Workbench
AWS MariaDB - Warning - not...
File Edit View Query Database Server Tools Scripting Help
Navigator
SCHEMAS
Filter objects
innodb
sys
Administration
Schemas
Information
No object selected
Object Info
Session
Query 1
Limit to 10 rows
SQLAdditions
Jump to
Automatic context help is disabled. Use the toolbar to manually get help for the current caret position or to toggle automatic help.
Context Help
Snippets
Output
Action Output
Time
Action
Message
Duration / Fetch
Rain warning
In effect
Search
ENG
IN
21:03
13-08-2025



- **PostgreSQL (PGAdmin 4):**
  - Host: `<RDS-endpoint>`
  - Port: 5432
  - Username: Master username
  - Password: Master password


Meet - fmd-hcus-hcp
Cycle 08 homework tasks
Create database | Aurora and R
ap-south-1.console.aws.amazon.com/rds/home?region=ap-south-1#launch-dbinstance:
Search
[Alt+S]
Asia Pacific (Mumbai)
Account ID: 0054-6660-6194
A Chetan Varma
Aurora and RDS > Create database
Choose a database creation method
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
Aurora (MySQL Compatible)
Aurora (PostgreSQL Compatible)
MySQL
PostgreSQL
MariaDB
Oracle
ORACLE
Microsoft SQL Server
IBM Db2
CloudShell
Feedback
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Cookie preferences
Rain warning
In effect
Search
ENG
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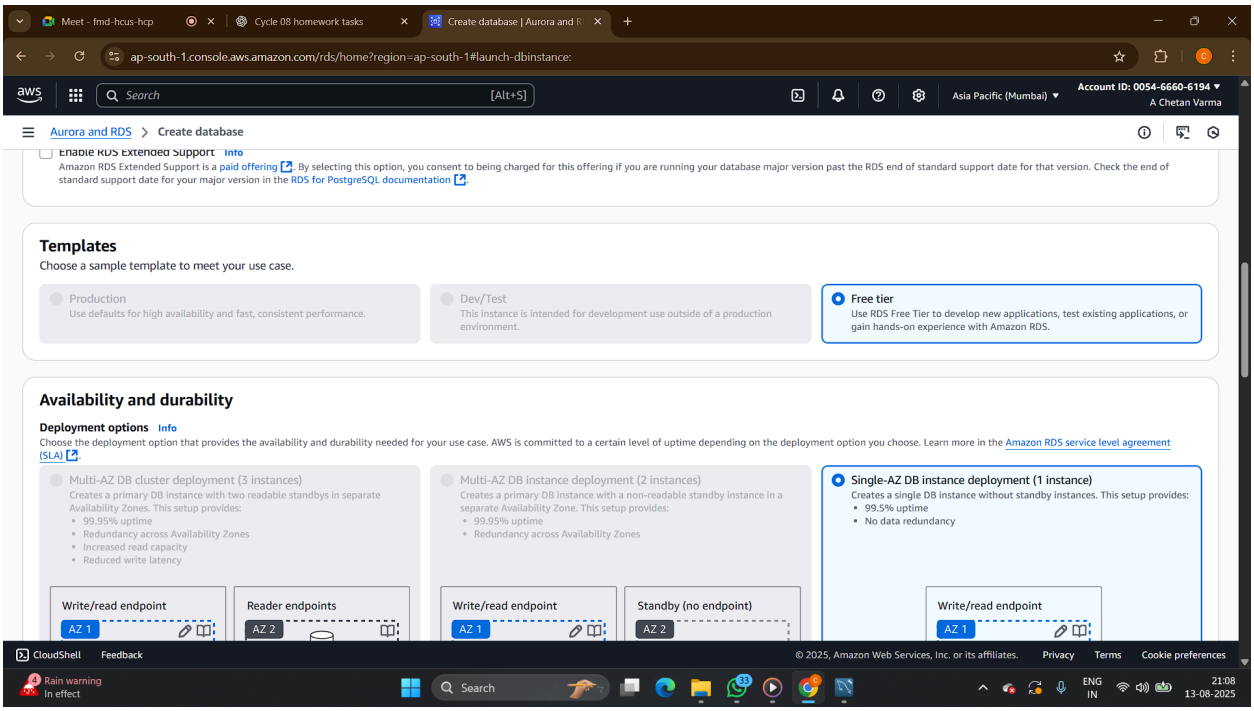
21:08
13-08-2025


Meet - fmd-hcus-hcp
Cycle 08 homework tasks
Create database | Aurora and R
ap-south-1.console.aws.amazon.com/rds/home?region=ap-south-1#launch-dbinstance:
Search
[Alt+S]
Asia Pacific (Mumbai)
Account ID: 0054-6660-6194
A Chetan Varma
Aurora and RDS > Create database
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 PostgreSQL documentation.
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.
Availability and durability
Deployment options Info
Choose the deployment option that provides the availability and durability needed for your use case. AWS is committed to a certain level of uptime depending on the deployment option you choose. Learn more in the Amazon RDS service level agreement (SLA).
Multi-AZ DB cluster deployment (3 instances)
Creates a primary DB instance with two readable standbys in separate Availability Zones. This setup provides:
99.95% uptime
Redundancy across Availability Zones
Increased read capacity
Reduced write latency
Write/read endpoint
AZ 1
Reader endpoints
AZ 2
Multi-AZ DB instance deployment (2 instances)
Creates a primary DB instance with a non-readable standby instance in a separate Availability Zone. This setup provides:
99.95% uptime
Redundancy across Availability Zones
Write/read endpoint
AZ 1
Standby (no endpoint)
AZ 2
Single-AZ DB instance deployment (1 instance)
Creates a single DB instance without standby instances. This setup provides:
99.5% uptime
No data redundancy
Write/read endpoint
AZ 1
CloudShell
Feedback
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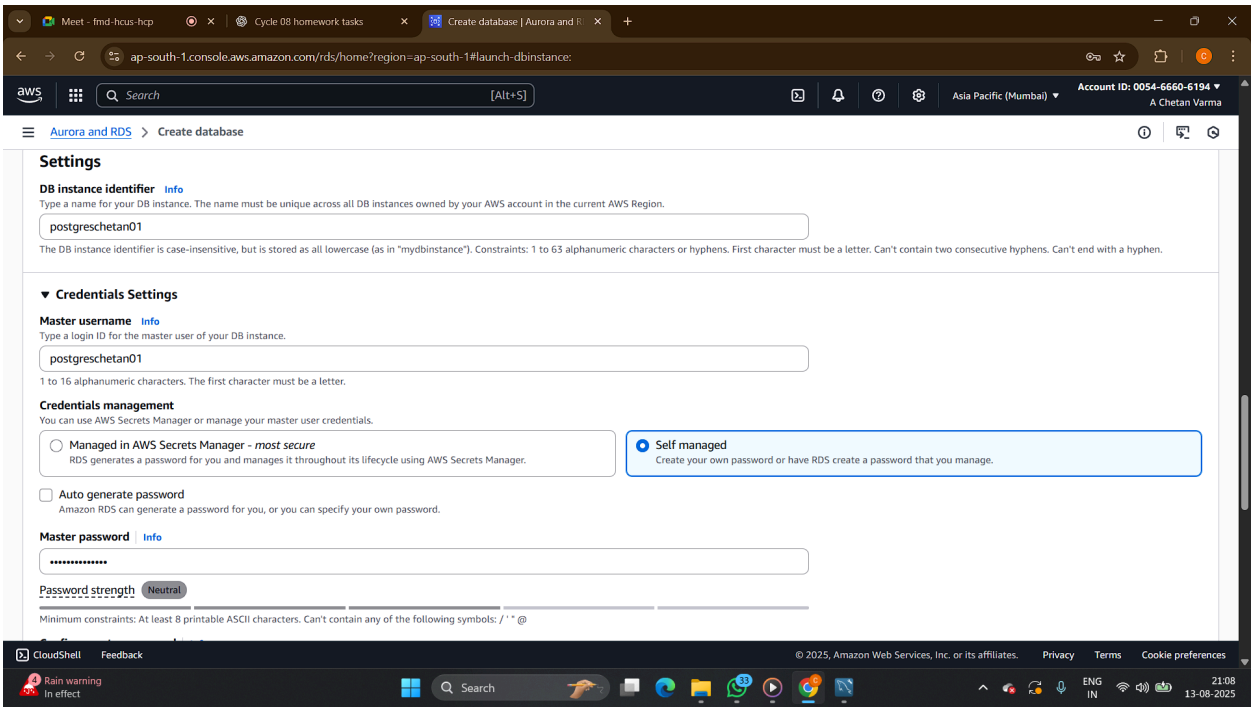
Privacy
Terms
Cookie preferences
Rain warning
In effect
Search
ENG
IN
21:08
13-08-2025


Meet - fmd-hcus-hcp
Cycle 08 homework tasks
Create database | Aurora and R
ap-south-1.console.aws.amazon.com/rds/home?region=ap-south-1#launch-dbinstance:
Search
[Alt+S]
Asia Pacific (Mumbai)
Account ID: 0054-6660-6194
A Chetan Varma
Aurora and RDS > Create database
Settings
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.
postgreschetan01
The DB instance identifier is case-insensitive, but is stored as all lowercase (as in "mydbinstance"). Constraints: 1 to 63 alphanumeric characters or hyphens. First character must be a letter. Can't contain two consecutive hyphens. Can't end with a hyphen.
Credentials Settings
Master username Info
Type a login ID for the master user of your DB instance.
postgreschetan01
1 to 16 alphanumeric characters. The first character must be a letter.
Credentials management
You can use AWS Secrets Manager or manage your master user credentials.
Managed in AWS Secrets Manager - most secure
RDS generates a password for you and manages it throughout its lifecycle using AWS Secrets Manager.
Self managed
Create your own password or have RDS create a password that you manage.
Auto generate password
Amazon RDS can generate a password for you, or you can specify your own password.
Master password Info
Password strength
Neutral
Minimum constraints: At least 8 printable ASCII characters. Can't contain any of the following symbols: / ' " @
CloudShell
Feedback
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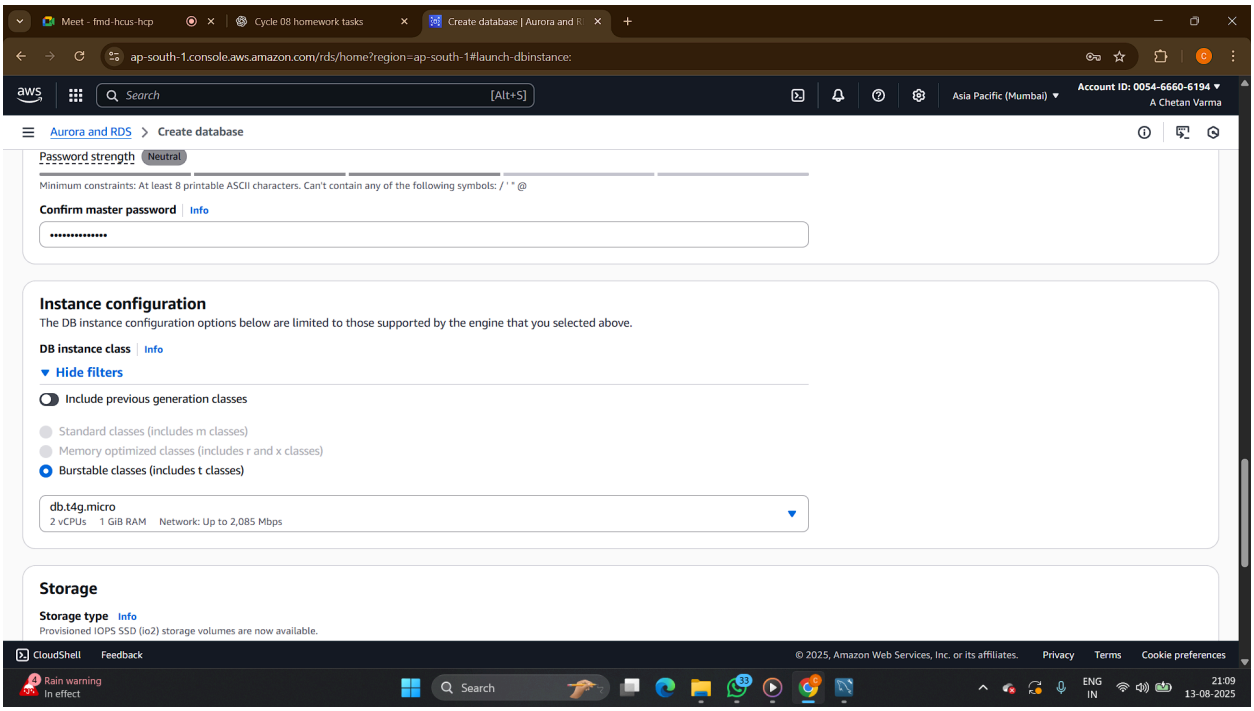
Privacy
Terms
Cookie preferences
Rain warning
In effect
Search
ENG
IN
21:08
13-08-2025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Search
[Alt+S]
Asia Pacific (Mumbai)
Account ID: 0054-6660-6194
A Chetan Varma
Aurora and RDS > Create database
Password strength
Neutral
Minimum constraints: At least 8 printable ASCII characters. Can't contain any of the following symbols: / ' " @
Confirm master password Info
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)
db.t4g.micro
2 vCPUs 1 GiB RAM Network: Up to 2,085 Mbps
Storage
Storage type Info
Provisioned IOPS SSD (io2) storage volumes are now available.
CloudShell
Feedback
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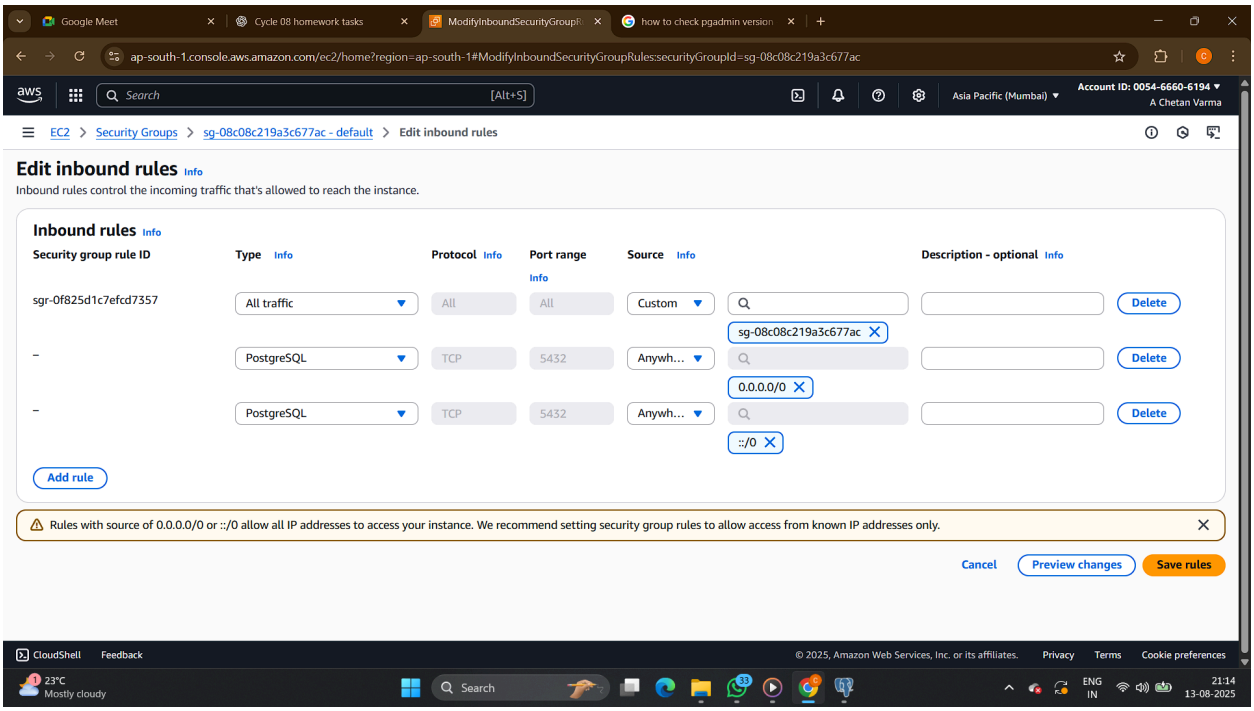
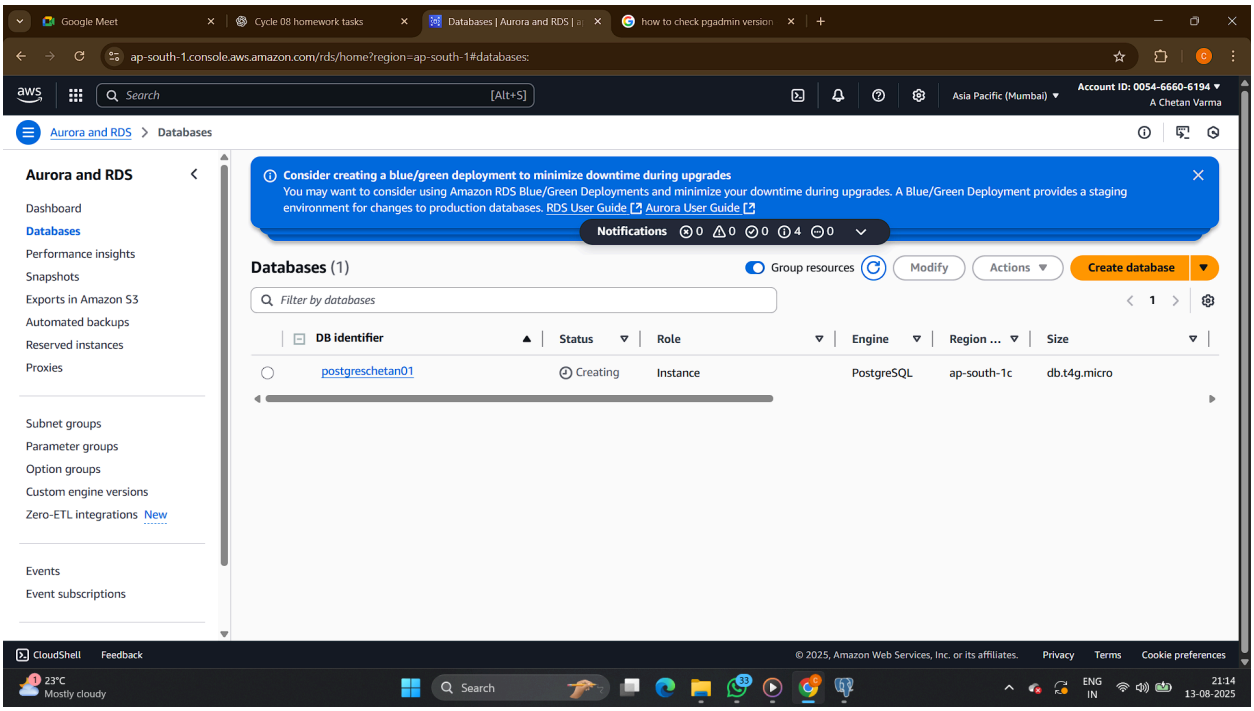
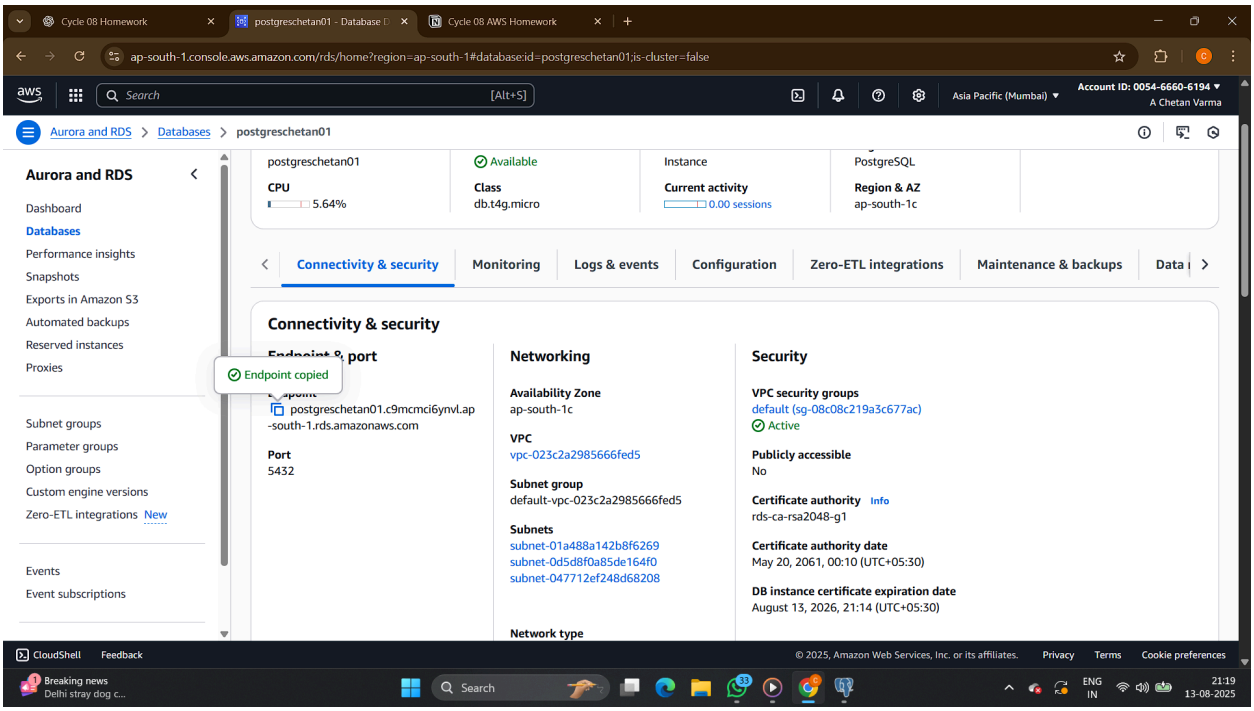
Privacy
Terms
Cookie preferences
Rain warning
In effect
Search
ENG
IN
21:09
13-08-2025


Edit inbound rules Info
Inbound rules control the incoming traffic that's allowed to reach the instance.
Inbound rules Info
Security group rule ID
Type Info
Protocol Info
Port range Info
Source Info
Description - optional Info
sgr-0f825d1c7efcd7357
All traffic
Custom
sg-08c08c219a3c677ac
PostgreSQL
TCP
5432
Anywh...
0.0.0.0/0
PostgreSQL
TCP
5432
Anywh...
::/0
Delete
Add rule
Rules with source of 0.0.0.0/0 or ::/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.
Cancel
Preview changes
Save rules


Aurora and RDS
Dashboard
Databases
Performance insights
Snapshots
Exports in Amazon S3
Automated backups
Reserved instances
Proxies
Subnet groups
Parameter groups
Option groups
Custom engine versions
Zero-ETL integrations New
Events
Event subscriptions
Consider creating a blue/green deployment to minimize downtime during upgrades
Databases (1)
Group resources
Modify
Actions
Create database
Filter by databases
DB identifier
Status
Role
Engine
Region ...
Size
postgreschetan01
Creating
Instance
PostgreSQL
ap-south-1c
db.t4g.micro


Cycle 08 Homework
postgreschetan01 - Database D
Cycle 08 AWS Homework
ap-south-1.console.aws.amazon.com/rds/home?region=ap-south-1#database:id=postgreschetan01;is-cluster=false
Search [Alt+S]
Asia Pacific (Mumbai)
Account ID: 0054-6660-6194
A Chetan Varma
Aurora and RDS > Databases > postgreschetan01
Aurora and RDS
Dashboard
Databases
Performance insights
Snapshots
Exports in Amazon S3
Automated backups
Reserved instances
Proxies
Subnet groups
Parameter groups
Option groups
Custom engine versions
Zero-ETL integrations New
Events
Event subscriptions
postgreschetan01
Available
Instance
PostgreSQL
CPU
5.64%
Class
db.t4g.micro
Current activity
0.00 sessions
Region & AZ
ap-south-1c
Connectivity & security
Monitoring
Logs & events
Configuration
Zero-ETL integrations
Maintenance & backups
Data
Connectivity & security
Endpoint & port
Endpoint copied
postgreschetan01.c9mcmci6ynvl.ap-south-1.rds.amazonaws.com
Port
5432
Networking
Availability Zone
ap-south-1c
VPC
vpc-023c2a2985666fed5
Subnet group
default-vpc-023c2a2985666fed5
Subnets
subnet-01a488a142b8f6269
subnet-0d5d8f0a85de164f0
subnet-047712ef248d68208
Network type
Security
VPC security groups
default (sg-08c08c219a3c677ac)
Active
Publicly accessible
No
Certificate authority Info
rds-ca-rsa2048-g1
Certificate authority date
May 20, 2061, 00:10 (UTC+05:30)
DB instance certificate expiration date
August 13, 2026, 21:14 (UTC+05:30)
CloudShell
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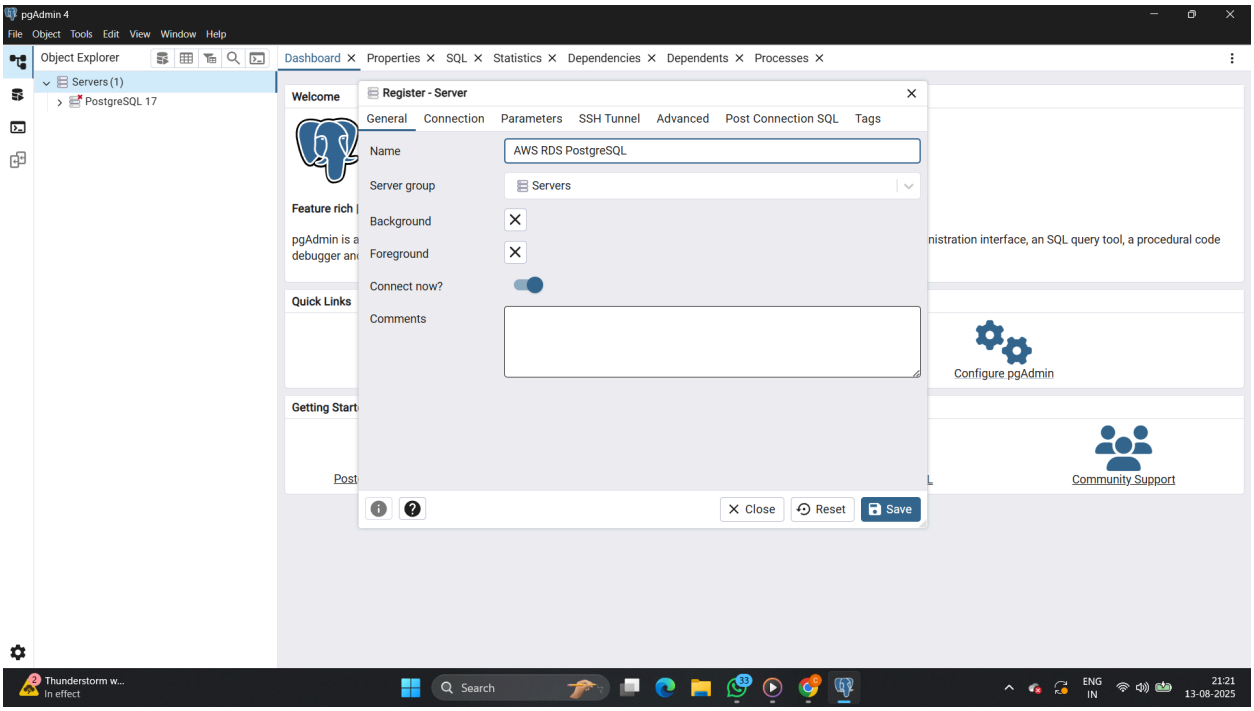
pgAdmin 4
File Object Tools Edit View Window Help
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Servers (1)
PostgreSQL 17
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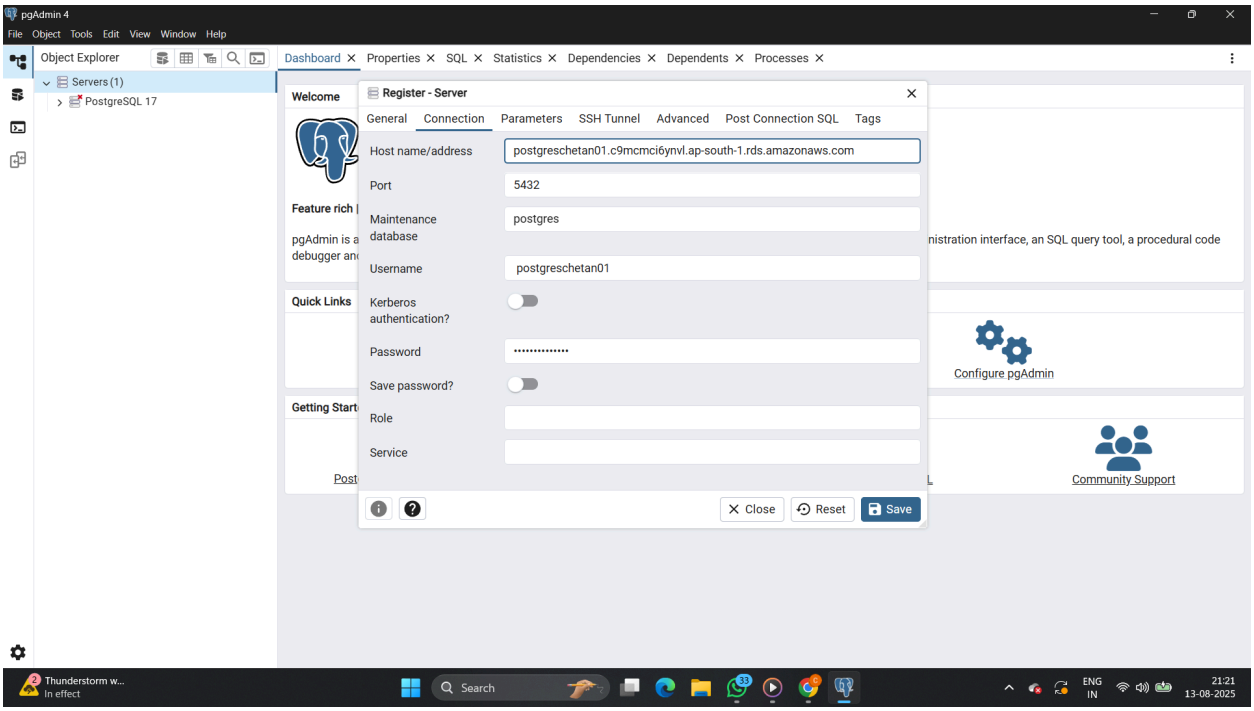
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Servers (1)
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Tags
Host name/address
postgreschetan01.c9mcmci6ynvl.ap-south-1.rds.amazonaws.com
Port
5432
Maintenance database
postgres
Username
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Kerberos authentication?
Password
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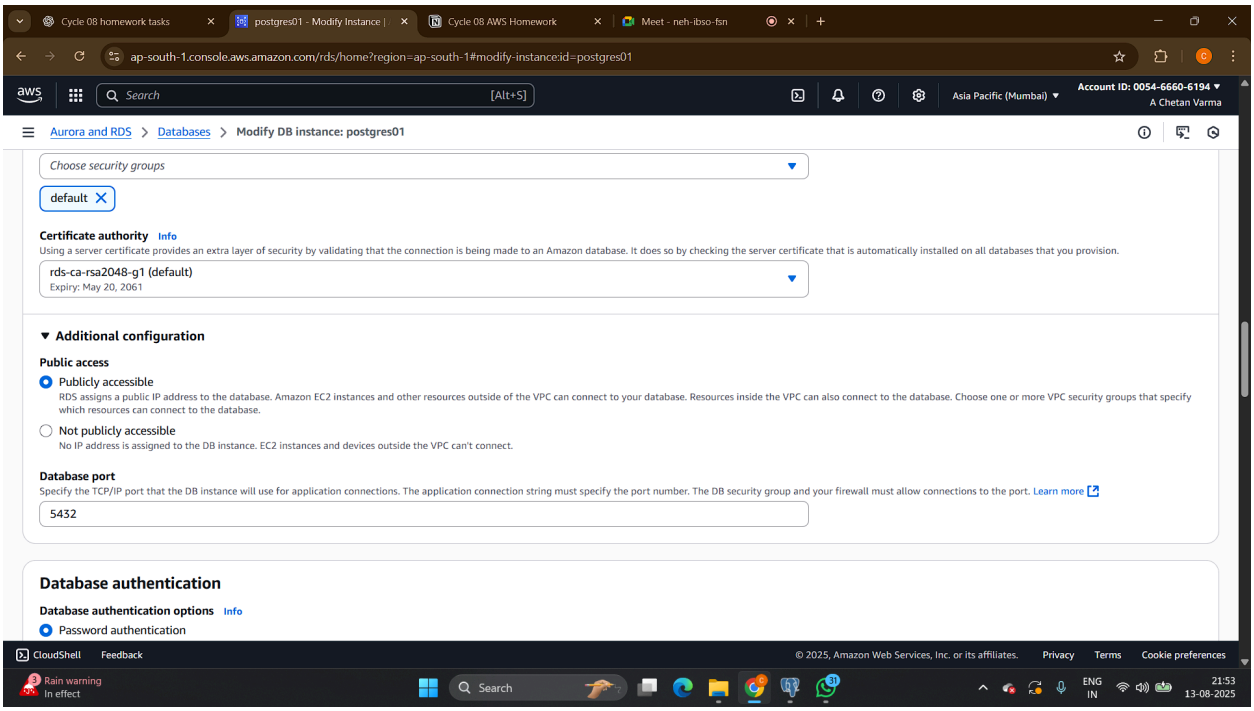
Cycle 08 homework tasks
postgres01 - Modify Instance
Cycle 08 AWS Homework
Meet - neh-ibso-fsn
ap-south-1.console.aws.amazon.com/rds/home?region=ap-south-1#modify-instance:id=postgres01
Search
[Alt+S]
Asia Pacific (Mumbai)
Account ID: 0054-6660-6194
A Chetan Varma
Aurora and RDS > Databases > Modify DB instance: postgres01
Choose security groups
default
Certificate authority Info
Using a server certificate provides an extra layer of security by validating that the connection is being made to an Amazon database. It does so by checking the server certificate that is automatically installed on all databases that you provision.
rds-ca-rsa2048-g1 (default)
Expiry: May 20, 2061
Additional configuration
Public access
Publicly accessible
RDS assigns a public IP address to the database. Amazon EC2 instances and other resources outside of the VPC can connect to your database. Resources inside the VPC can also connect to the database. Choose one or more VPC security groups that specify which resources can connect to the database.
Not publicly accessible
No IP address is assigned to the DB instance. EC2 instances and devices outside the VPC can't connect.
Database port
Specify the TCP/IP port that the DB instance will use for application connections. The application connection string must specify the port number. The DB security group and your firewall must allow connections to the port. Learn more
5432
Database authentication
Database authentication options Info
Password authentication
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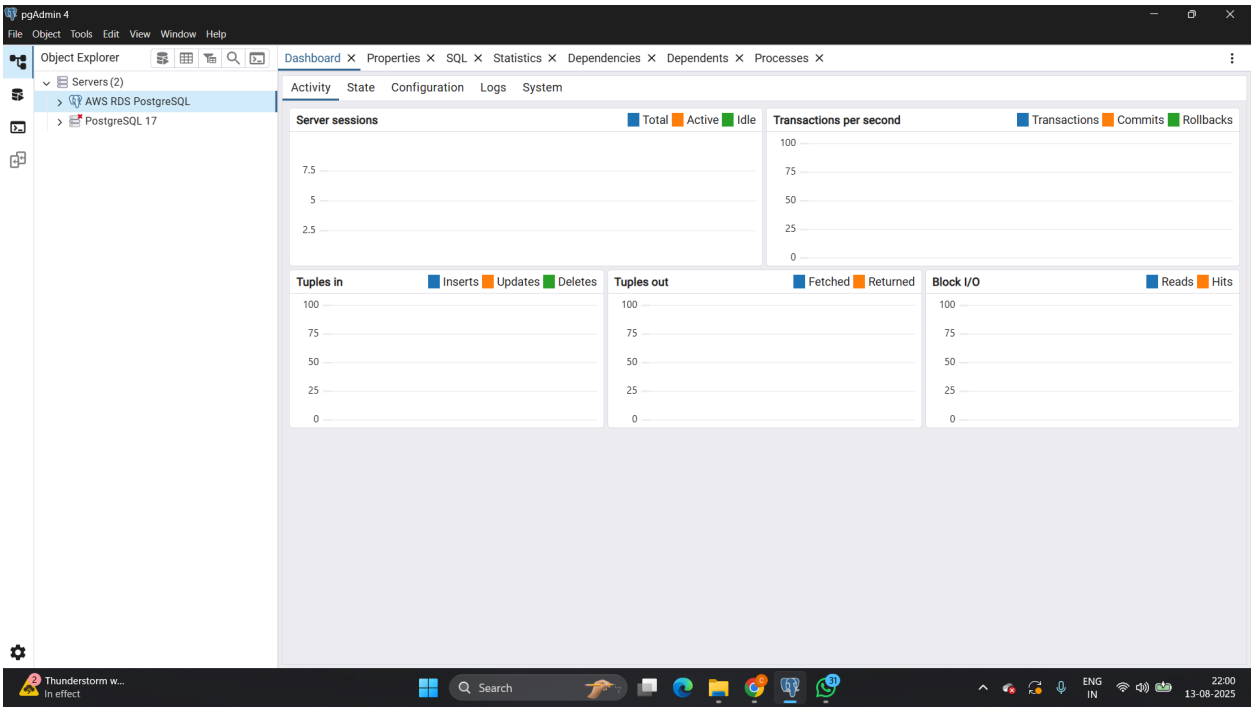

3. Database Best Practices

- **Security Groups:**
  - Limit access to **your IP only** (`x.x.x.x/32`).
  - Avoid `0.0.0.0/0` unless absolutely required for temporary testing.
- **IAM:** Use IAM authentication for RDS where possible.
- **Backups:** Enable automated backups.

4. DynamoDB Preparation

SQL vs NoSQL:

- **SQL:** Structured schema, relational tables, joins, strong consistency.
- **NoSQL:** Flexible schema, key-value or document store, highly scalable.

DynamoDB Use Cases:

1. Real-time game score tracking.
2. Shopping cart management in e-commerce.

3. IoT device telemetry data.

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5. RDS Advanced Configurations

- **Read Replica:**
  - Go to RDS → Select instance → Actions → Create Read Replica.
  - Use for distributing read traffic.
- **Multi-AZ Deployment:**
  - When creating or modifying an instance, enable *Multi-AZ*.
  - AWS will automatically failover to standby in another AZ if needed.

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6. Automation & Scripting (Boto3)

```
python
CopyEdit
import boto3

rds = boto3.client('rds', region_name='ap-south-1')

# Create MySQL RDS instance
rds.create_db_instance(
    DBName='testdb',
    DBInstanceIdentifier='mydbinstance',
    AllocatedStorage=20,
    DBInstanceClass='db.t3.micro',
    Engine='mysql',
    MasterUsername='admin',
    MasterUserPassword='YourPassword123',
    PubliclyAccessible=True
)

# Take manual snapshot
rds.create_db_snapshot(
```

```
    DBSnapshotIdentifier='mydbsnapshot',
    DBInstanceIdentifier='mydbinstance'
)
```