CLOUD AWS HANDS ON

Connecting RDS to MySQL

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COHORT CODE: CSDAIA24DB002

Amazon Relational Database Service (RDS)

Amazon RDS (Relational Database Service) is a cloud-based database service provided by Amazon Web Services (AWS). It falls under the category of Platform as a Service (PaaS). It is easier to set up, operate, and scale a relational database in the cloud. It supports popular database engines such as MySQL, PostgreSQL, Oracle, SQL Server, and MariaDB, handling routine database tasks like provisioning, patching, backup, recovery, and scaling, allowing users to focus on application development rather than managing database infrastructure.

Some key features and benefits of AWS RDS include:

1. Managed Service: AWS handles routine database tasks such as provisioning, patching, backup, recovery, and scaling, reducing administrative overhead for users.

2. Multi-Engine Support: Amazon RDS supports various relational database engines including MySQL, PostgreSQL, Oracle, SQL Server, and MariaDB, allowing users to choose the one that best fits their application requirements.

3. Automated Backups and Point-in-Time Recovery: RDS automatically performs backups of your database and enables point-in-time recovery, providing data protection and easy restoration in case of accidental data loss or corruption.

4. High Availability and Fault Tolerance: RDS offers features such as Multi-AZ (Availability Zone) deployments and Read Replicas to enhance availability, fault tolerance, and performance of database instances.

5. Scalability: With Amazon RDS, users can easily scale their database instances vertically (by adjusting instance size) or horizontally (by adding Read Replicas) to accommodate changing workloads and performance requirements.

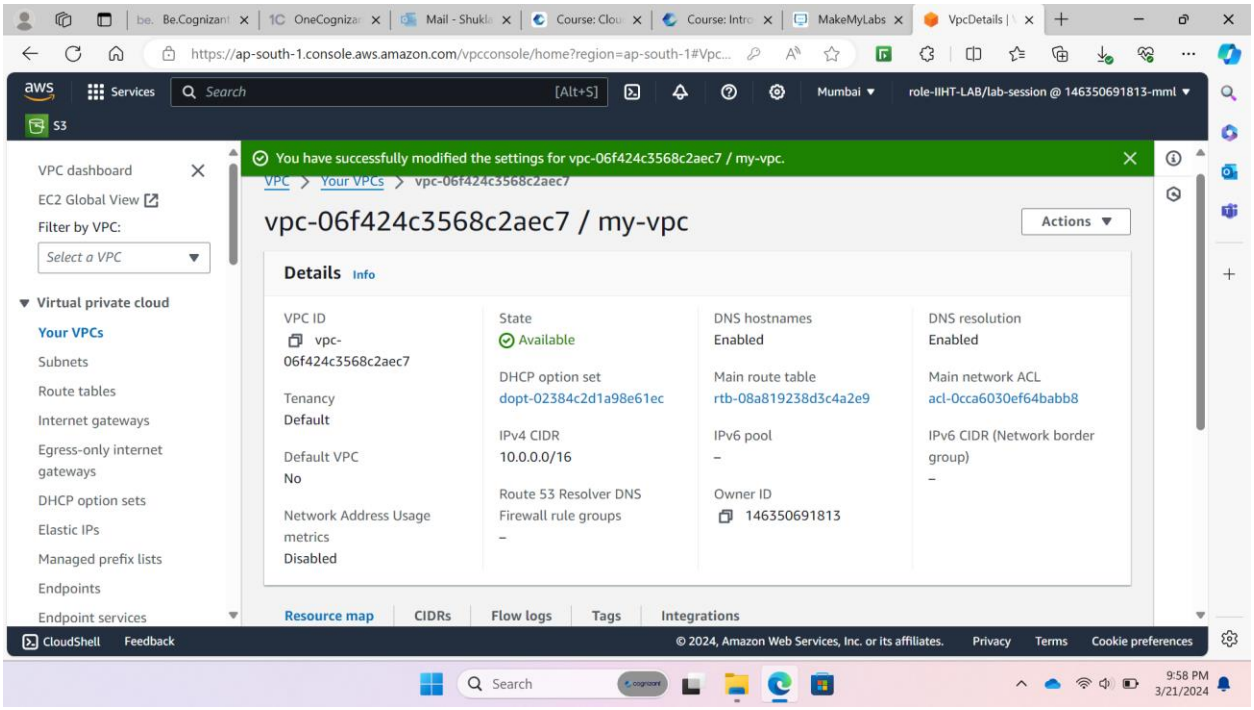
6. Security: RDS provides robust security features including network isolation, encryption at rest and in transit, authentication mechanisms, and integration with AWS Identity and Access Management (IAM) for access control.

7. Monitoring and Metrics: AWS CloudWatch integration allows users to monitor database performance metrics and set up alarms for automated notifications in case of performance issues or resource utilization breaches.

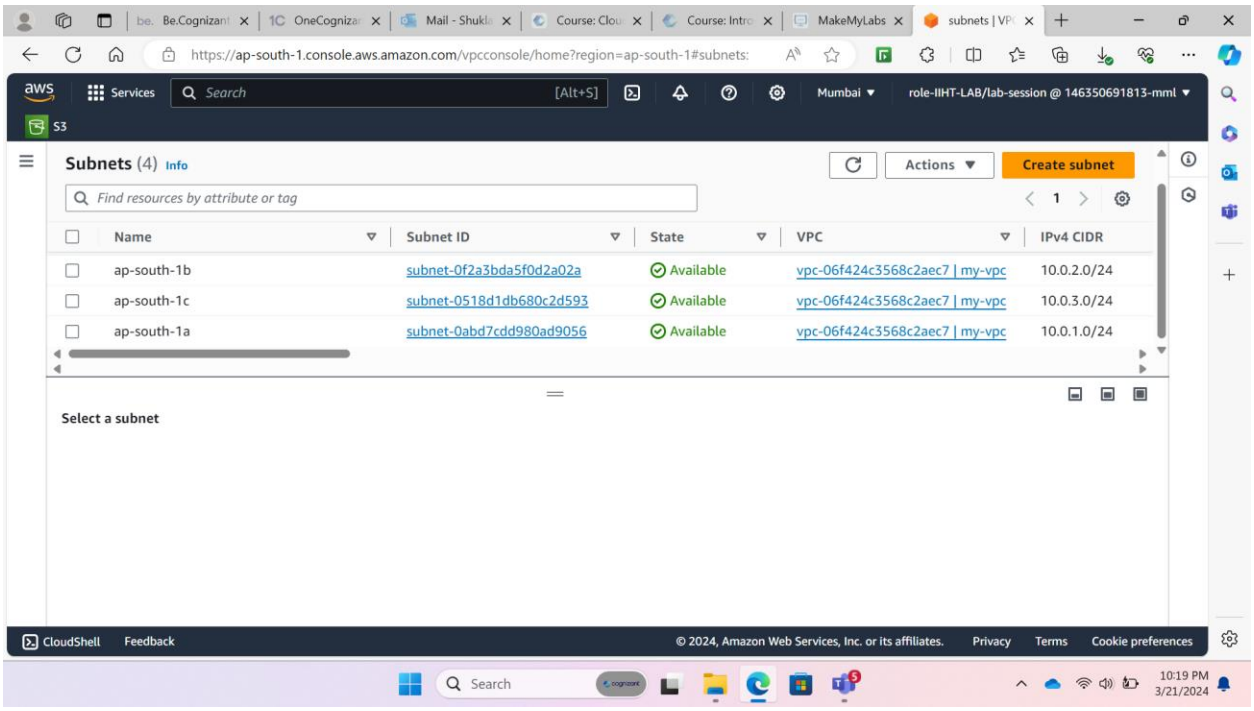
Overall, Amazon RDS simplifies the process of deploying and managing relational databases in the cloud, enabling developers to focus more on building applications and less on managing database infrastructure.

Steps for static website hosting using S3 bucket

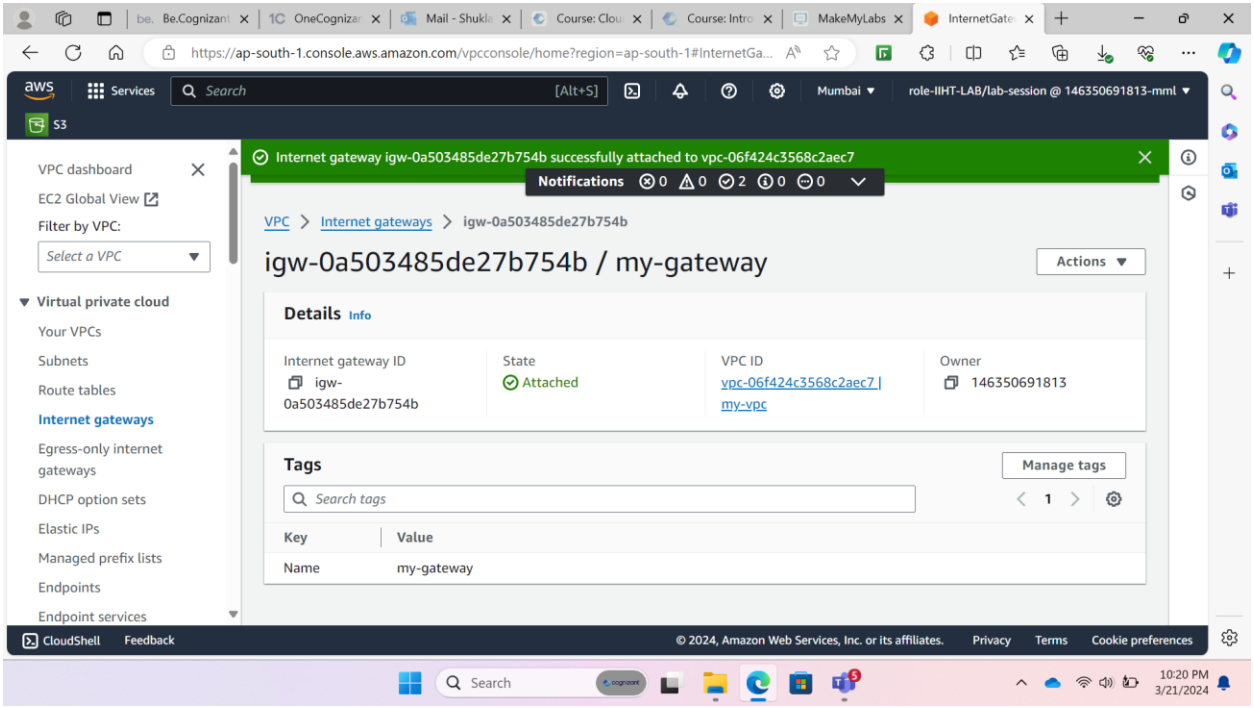
1. Creation of VPC.



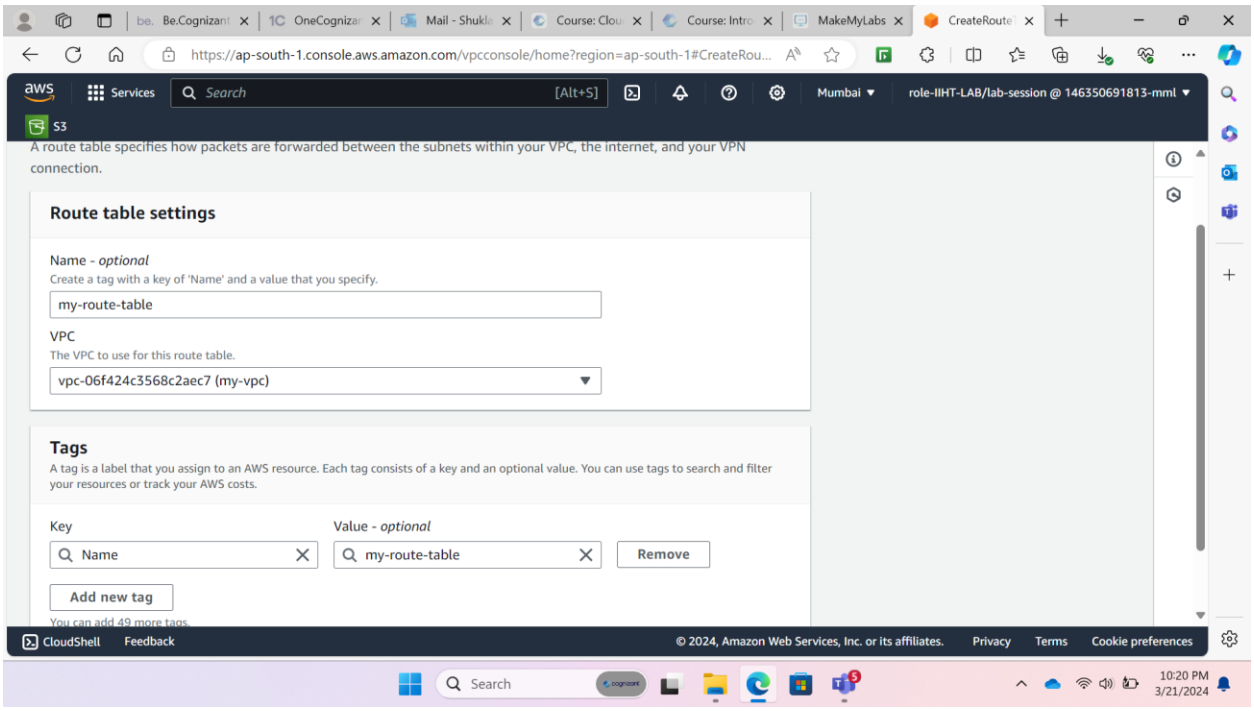
2. Creation of subnets



3. Creating Internet gateway for the VPC and attaching it to the created VPC



4. Creating route tables and adding a route to your created internet gateway


https://ap-south-1.console.aws.amazon.com/vpcconsole/home?region=ap-south-1#CreateRou...
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Mumbai
role-IIHT-LAB/lab-session @ 146350691813-mml
S3
A route table specifies how packets are forwarded between the subnets within your VPC, the internet, and your VPN connection.
Route table settings
Name - optional
Create a tag with a key of 'Name' and a value that you specify.
my-route-table
VPC
The VPC to use for this route table.
vpc-06f424c3568c2aec7 (my-vpc)
Tags
A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.
Key
Value - optional
Name
my-route-table
Remove
Add new tag
You can add 49 more tags.
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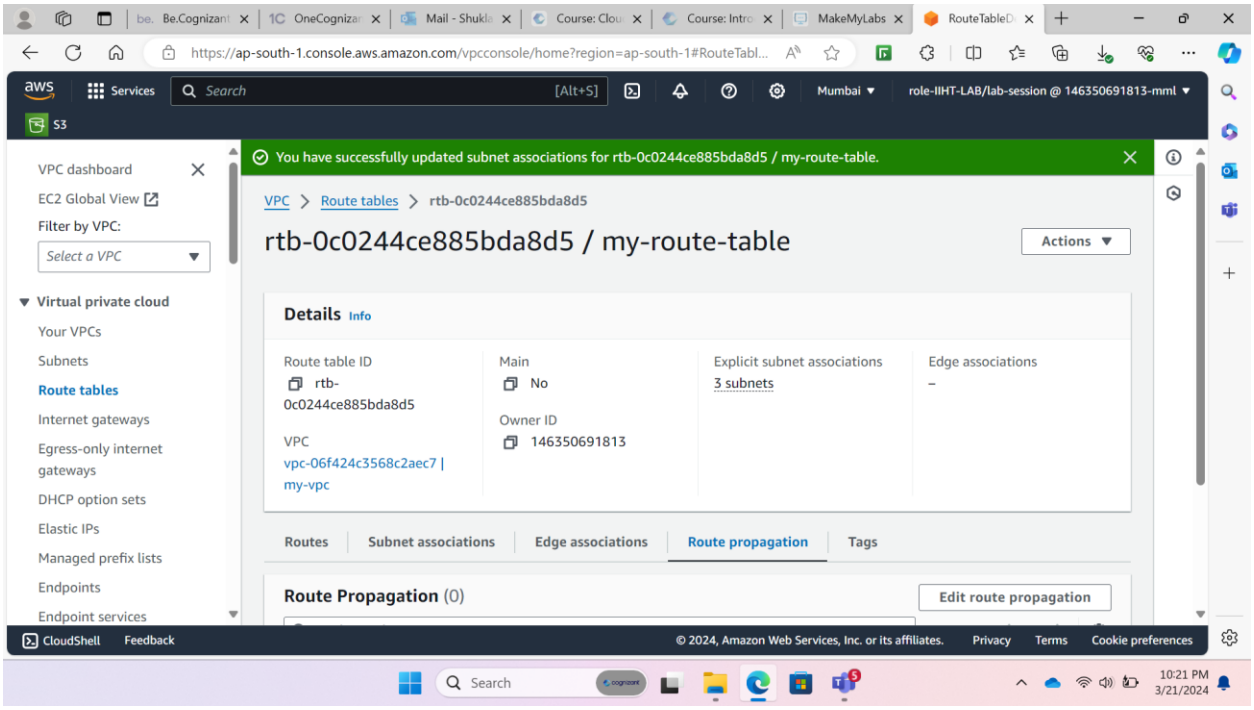
https://ap-south-1.console.aws.amazon.com/vpcconsole/home?region=ap-south-1#RouteTabl...
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S3
You have successfully updated subnet associations for rtb-0c0244ce885bda8d5 / my-route-table.
VPC dashboard
EC2 Global View
Filter by VPC:
Select a VPC
Virtual private cloud
Your VPCs
Subnets
Route tables
Internet gateways
Egress-only internet gateways
DHCP option sets
Elastic IPs
Managed prefix lists
Endpoints
Endpoint services
VPC > Route tables > rtb-0c0244ce885bda8d5
rtb-0c0244ce885bda8d5 / my-route-table
Actions
Details Info
Route table ID
rtb-0c0244ce885bda8d5
Main
No
Explicit subnet associations
3 subnets
Edge associations
-
VPC
vpc-06f424c3568c2aec7 | my-vpc
Owner ID
146350691813
Routes
Subnet associations
Edge associations
Route propagation
Tags
Route Propagation (0)
Edit route propagation
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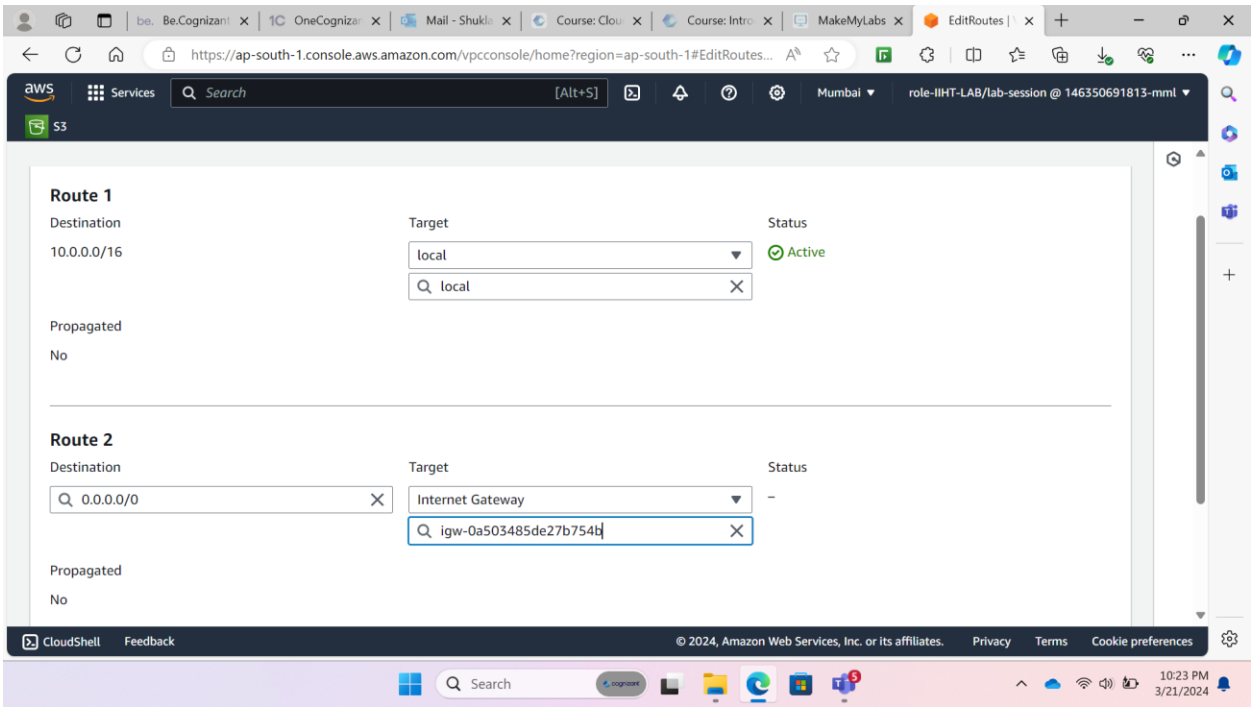
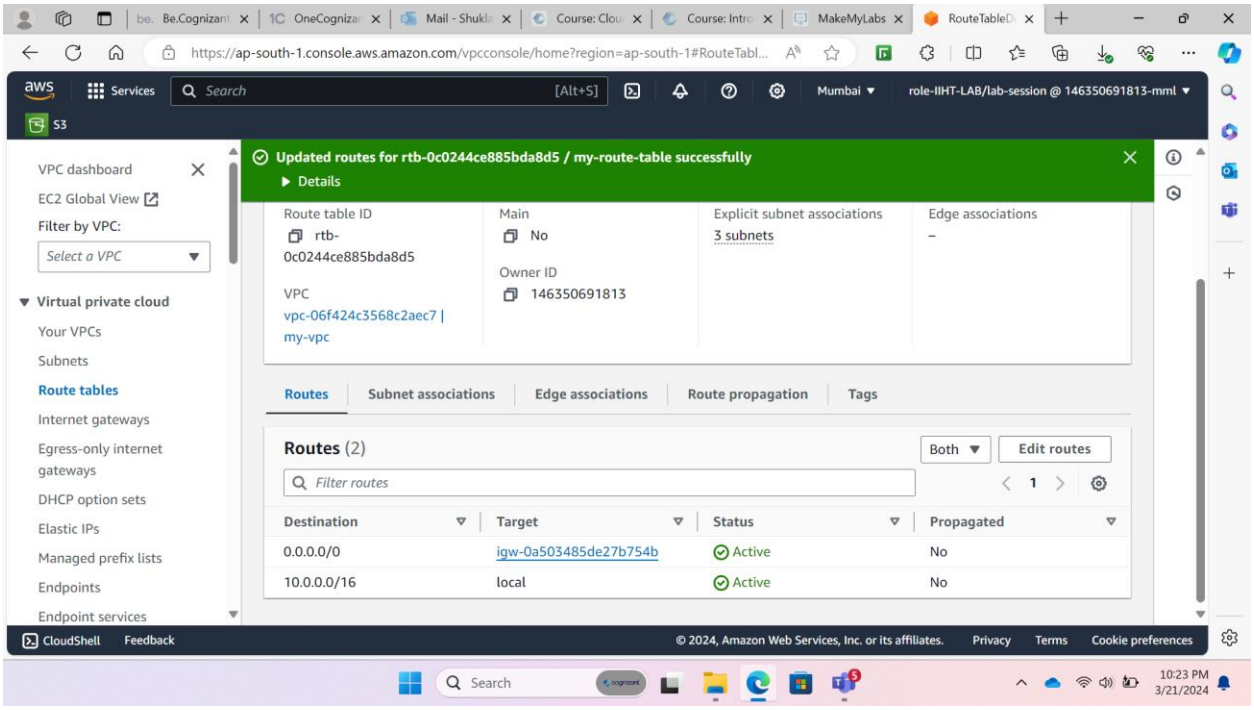
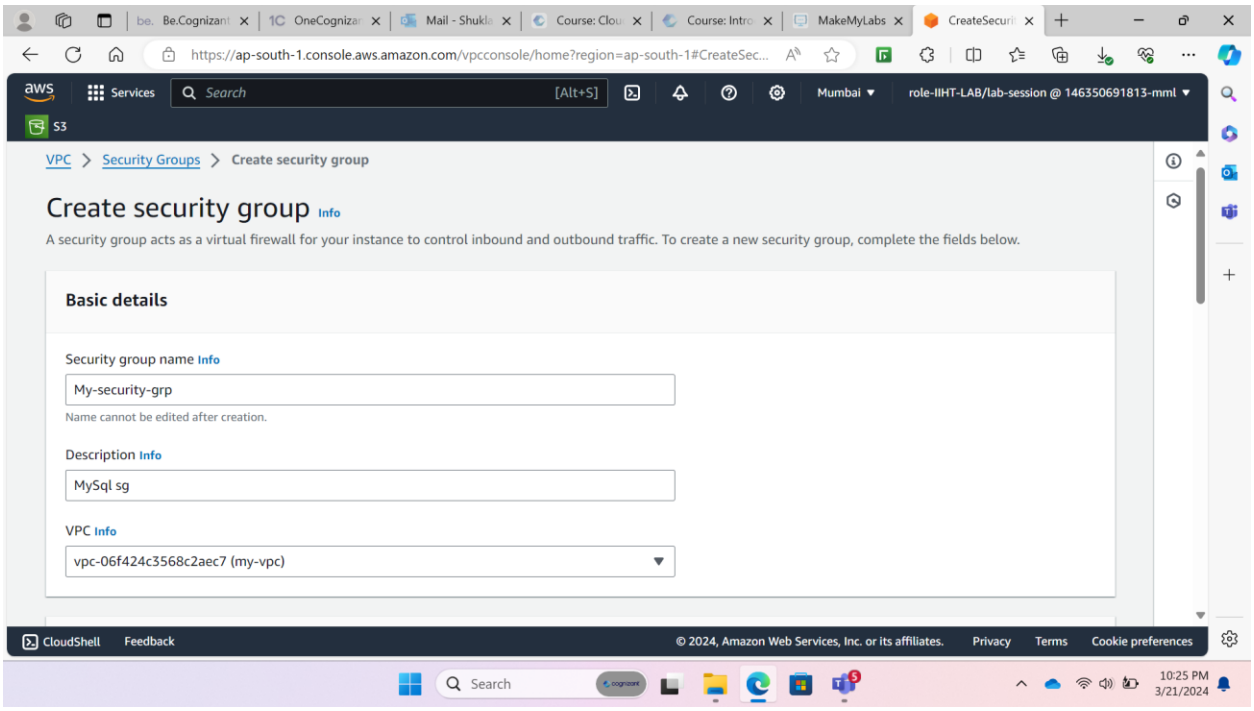




5. Creating security group for allowing MySQL traffic


https://ap-south-1.console.aws.amazon.com/vpcconsole/home?region=ap-south-1#CreateSec...
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VPC > Security Groups > Create security group
Create security group Info
A security group acts as a virtual firewall for your instance to control inbound and outbound traffic. To create a new security group, complete the fields below.
Basic details
Security group name Info
My-security-grp
Name cannot be edited after creation.
Description Info
MySql sg
VPC Info
vpc-06f424c3568c2aec7 (my-vpc)
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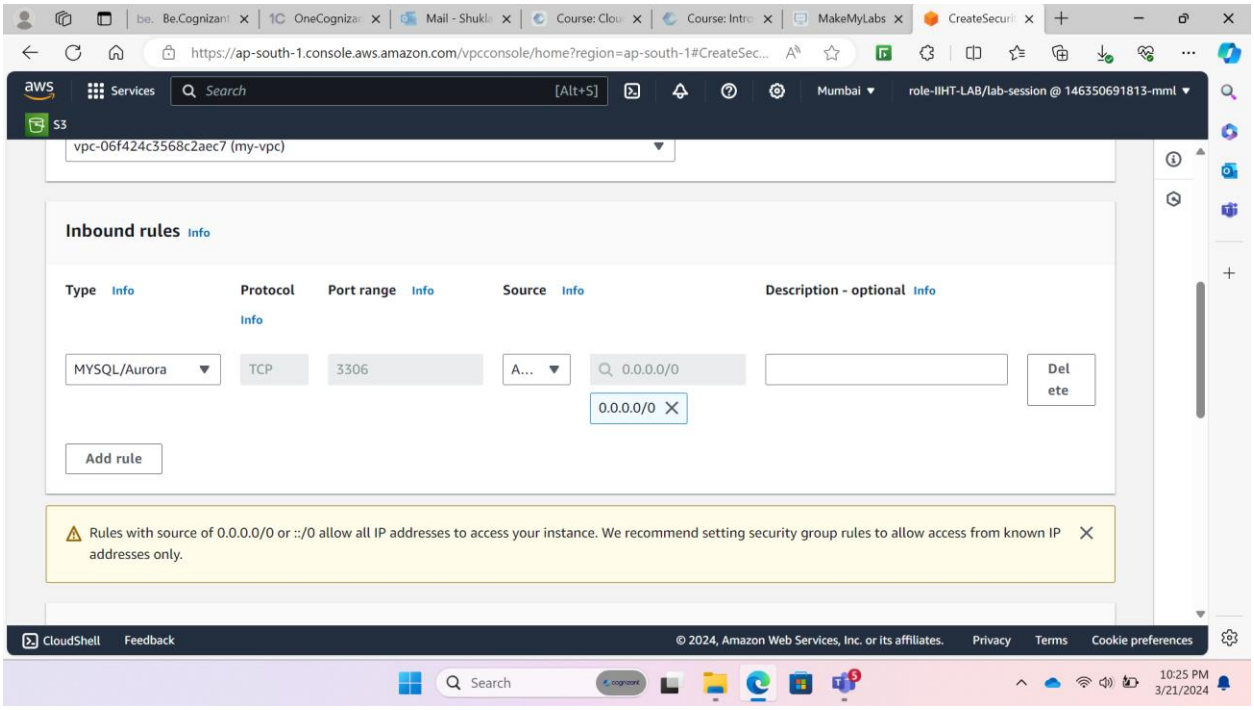
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vpc-06f424c3568c2aec7 (my-vpc)
Inbound rules Info
Type Info
Protocol Info
Port range Info
Source Info
Description - optional Info
MYSQL/Aurora
TCP
3306
A...
0.0.0.0/0
0.0.0.0/0
Delete
Add rule
Rules with source of 0.0.0.0/0 or ::/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.
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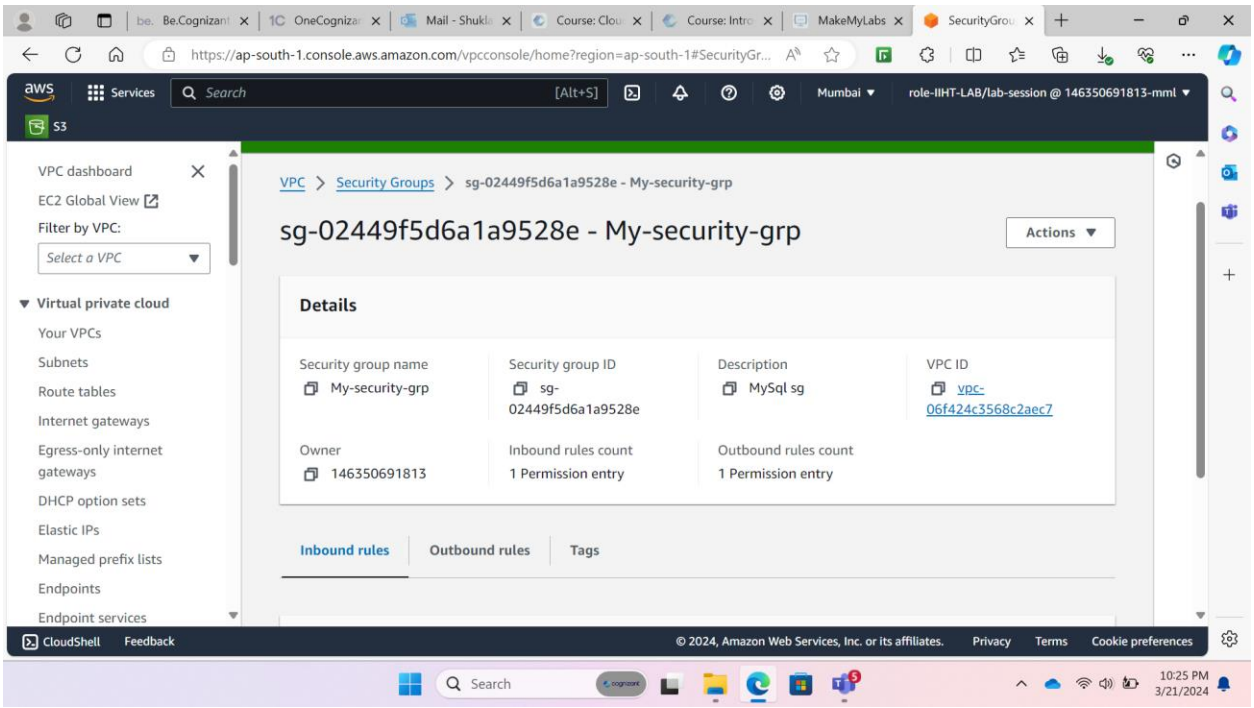
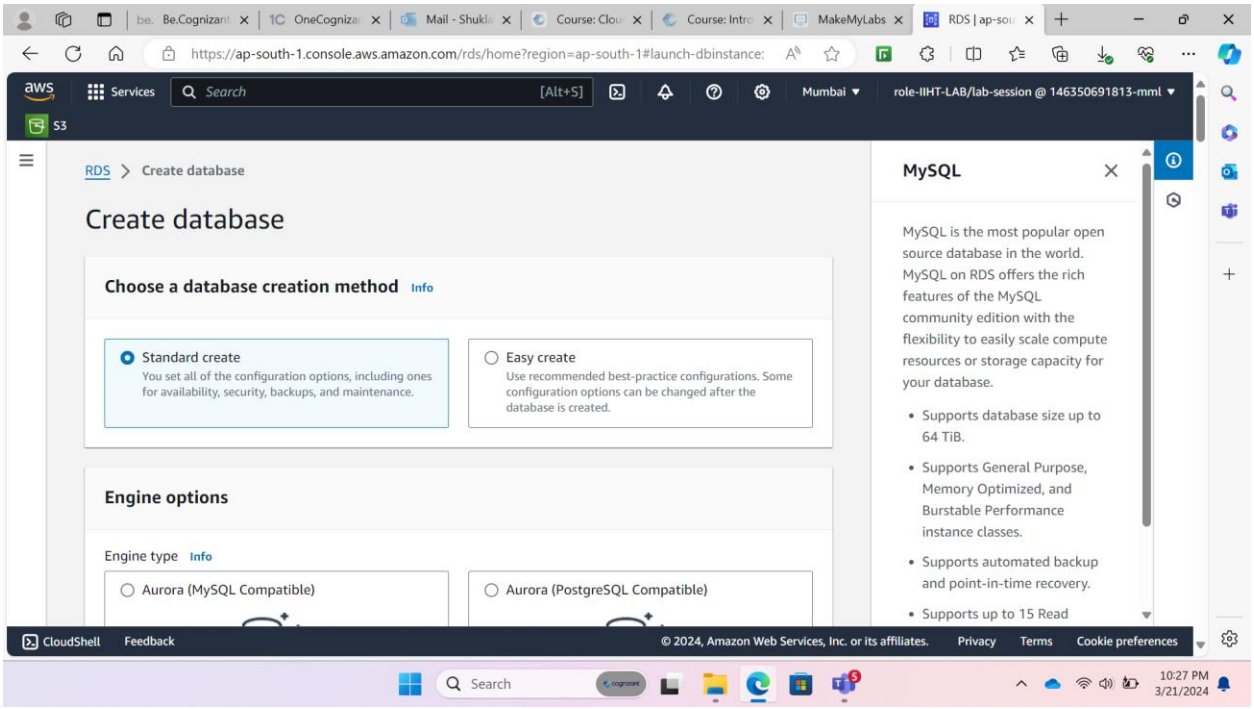
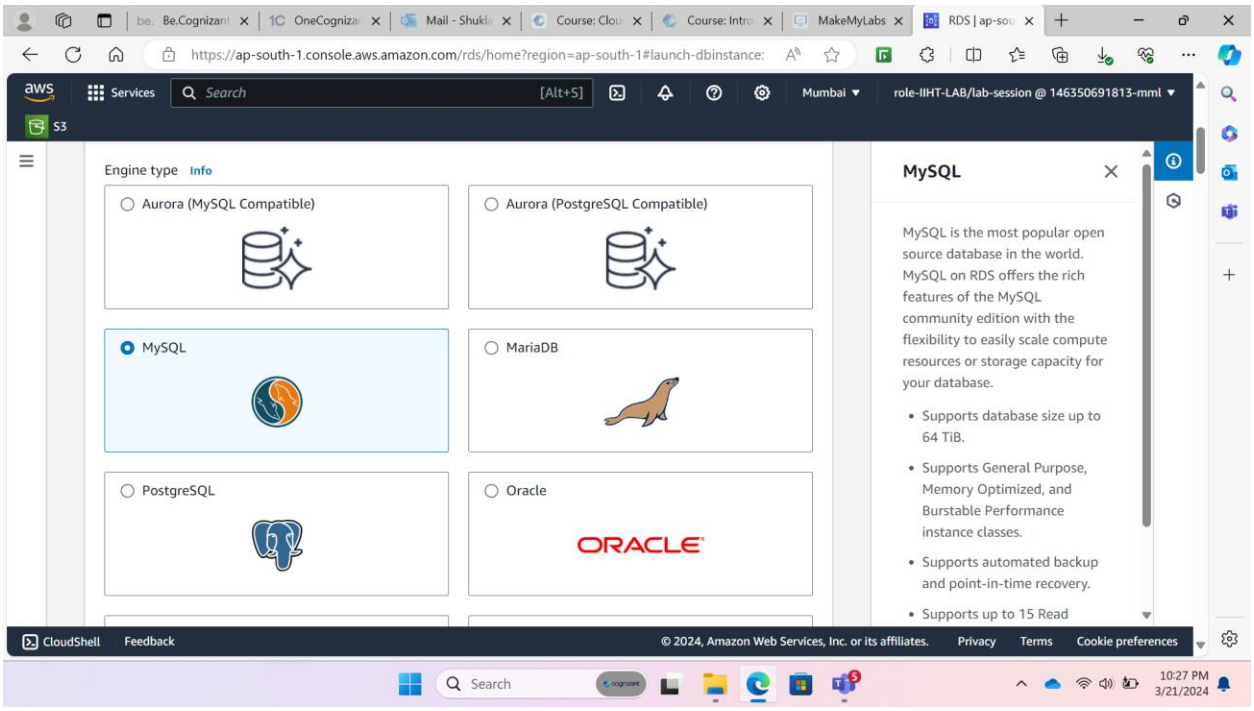


6. Creating a RDS database




https://ap-south-1.console.aws.amazon.com/rds/home?region=ap-south-1#launch-dbinstance:
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Engine type Info
Aurora (MySQL Compatible)
Aurora (PostgreSQL Compatible)
MySQL
MariaDB
PostgreSQL
Oracle
ORACLE
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
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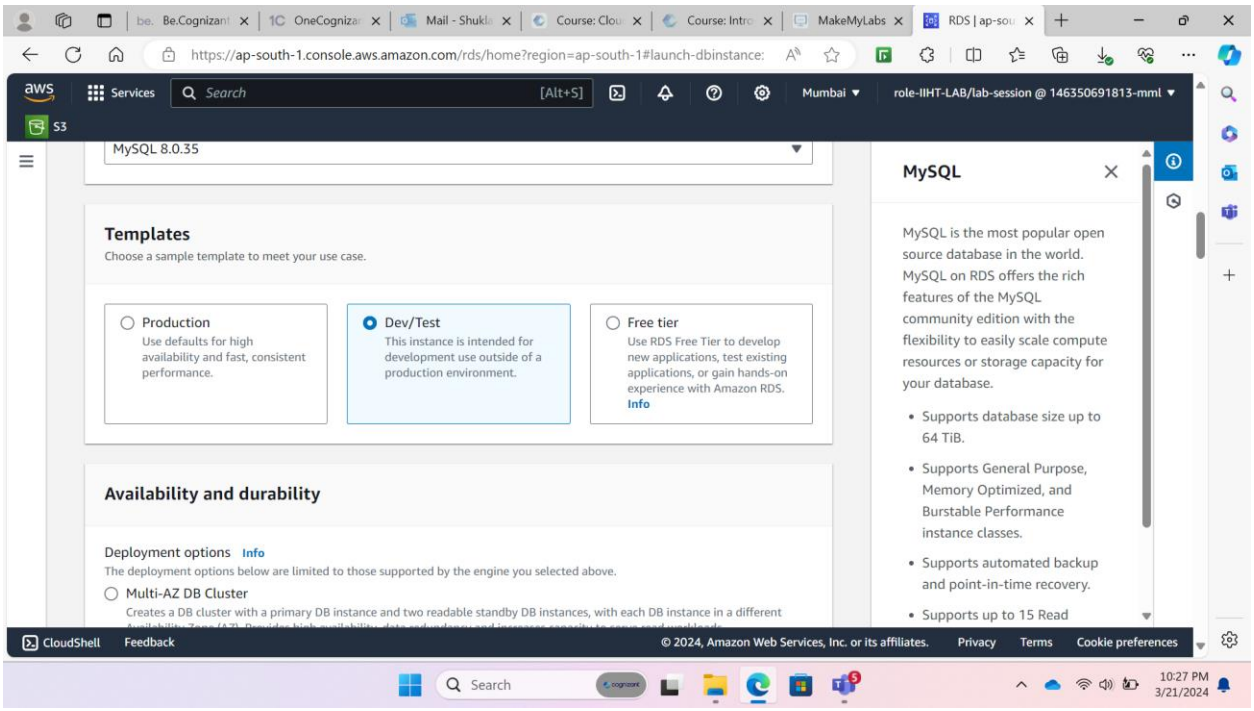
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S3
MySQL 8.0.35
Templates
Choose a sample template to meet your use case.
Production
Use defaults for high availability and fast, consistent performance.
Dev/Test
This instance is intended for development use outside of a production environment.
Free 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
MySQL
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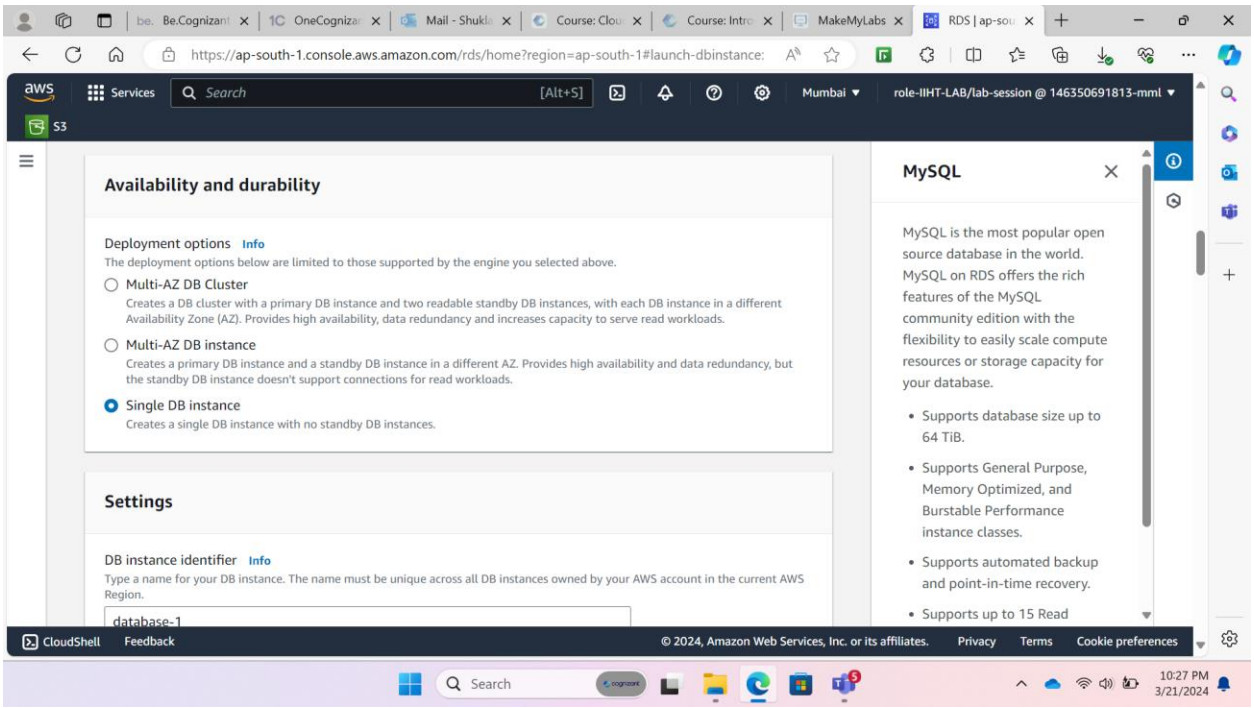
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Mumbai
role-IIHT-LAB/lab-session @ 146350691813-mml
S3
Availability and durability
Deployment options Info
The deployment options below are limited to those supported by the engine you selected above.
Multi-AZ DB Cluster
Creates a DB cluster with a 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
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
Creates a single DB instance with no standby DB instances.
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.
database-1
MySQL
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Supports up to 15 Read
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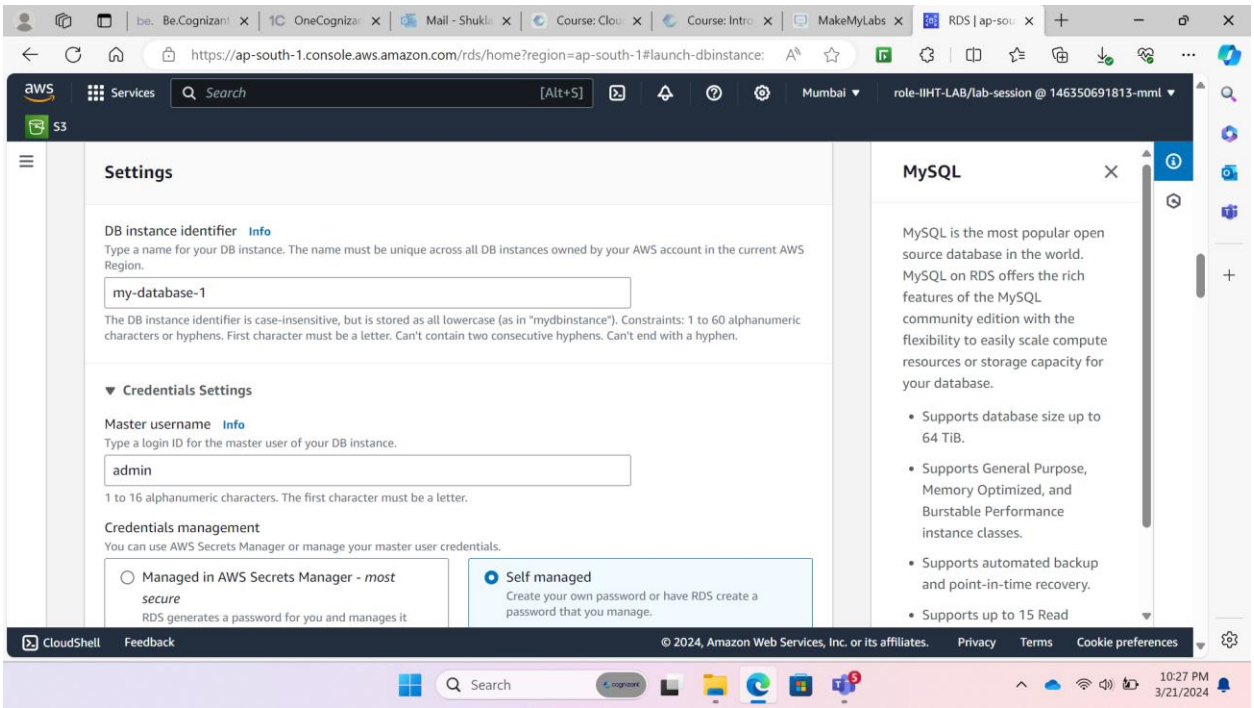
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Services
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Mumbai
role-IIHT-LAB/lab-session @ 146350691813-mml
S3
Settings
DB instance identifier Info
Type a name for your DB instance. The name must be unique across all DB instances owned by your AWS account in the current AWS Region.
my-database-1
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.
Credentials Settings
Master username Info
Type a login ID for the master user of your DB instance.
admin
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
Self managed
Create your own password or have RDS create a password that you manage.
MySQL
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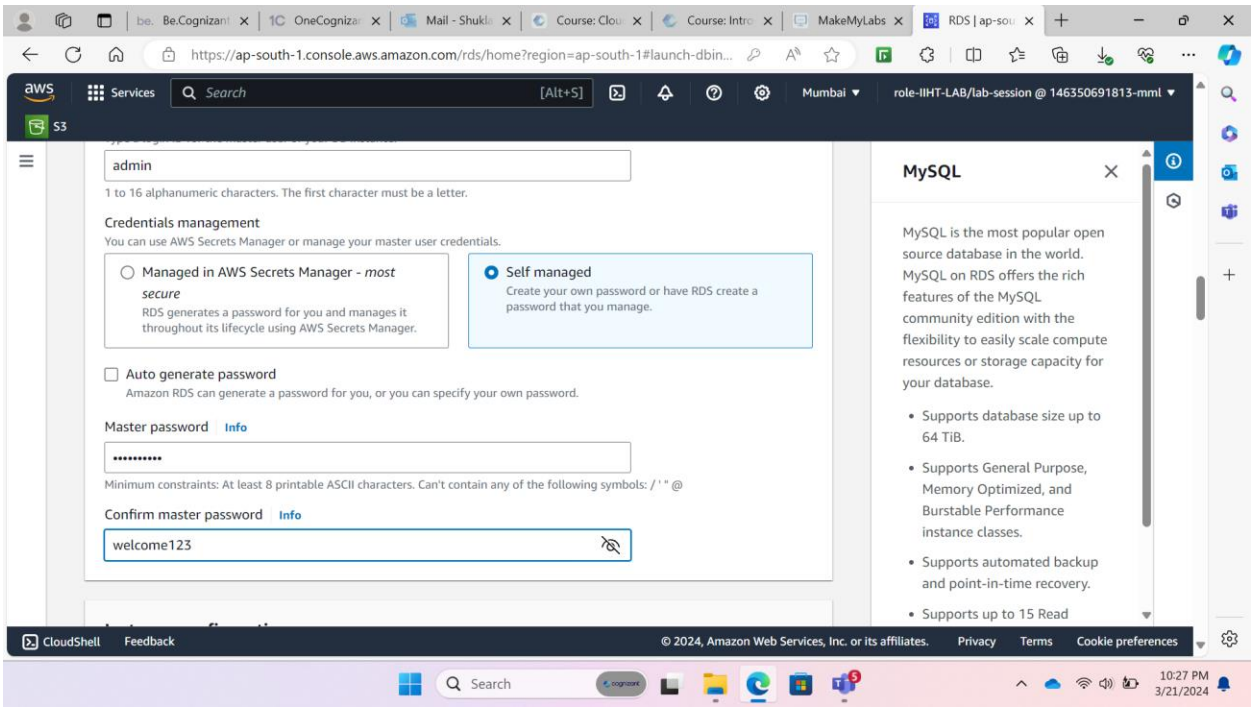
admin
1 to 16 alphanumeric characters. The first character must be a letter.
Credentials management
You can use AWS Secrets Manager or manage your master user credentials.
Managed in AWS Secrets Manager - most secure
RDS generates a password for you and manages it throughout its lifecycle using AWS Secrets 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
Minimum constraints: At least 8 printable ASCII characters. Can't contain any of the following symbols: / ' " @
Confirm master password Info
welcome123
MySQL
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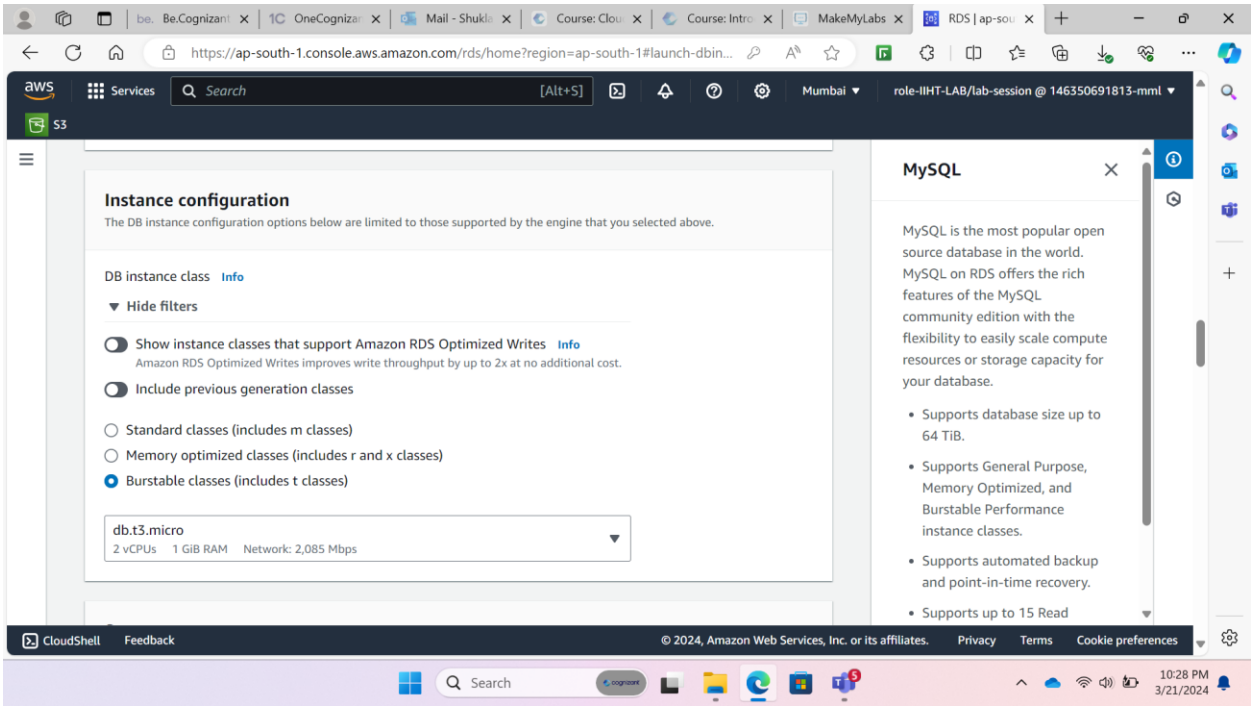
Instance configuration
The DB instance configuration options below are limited to those supported by the engine that you selected above.
DB instance class Info
Hide filters
Show instance classes that support Amazon RDS Optimized Writes Info
Amazon RDS Optimized Writes improves write throughput by up to 2x at no additional cost.
Include previous generation classes
Standard classes (includes m classes)
Memory optimized classes (includes r and x classes)
Burstable classes (includes t classes)
db.t3.micro
2 vCPUs 1 GiB RAM Network: 2,085 Mbps
MySQL
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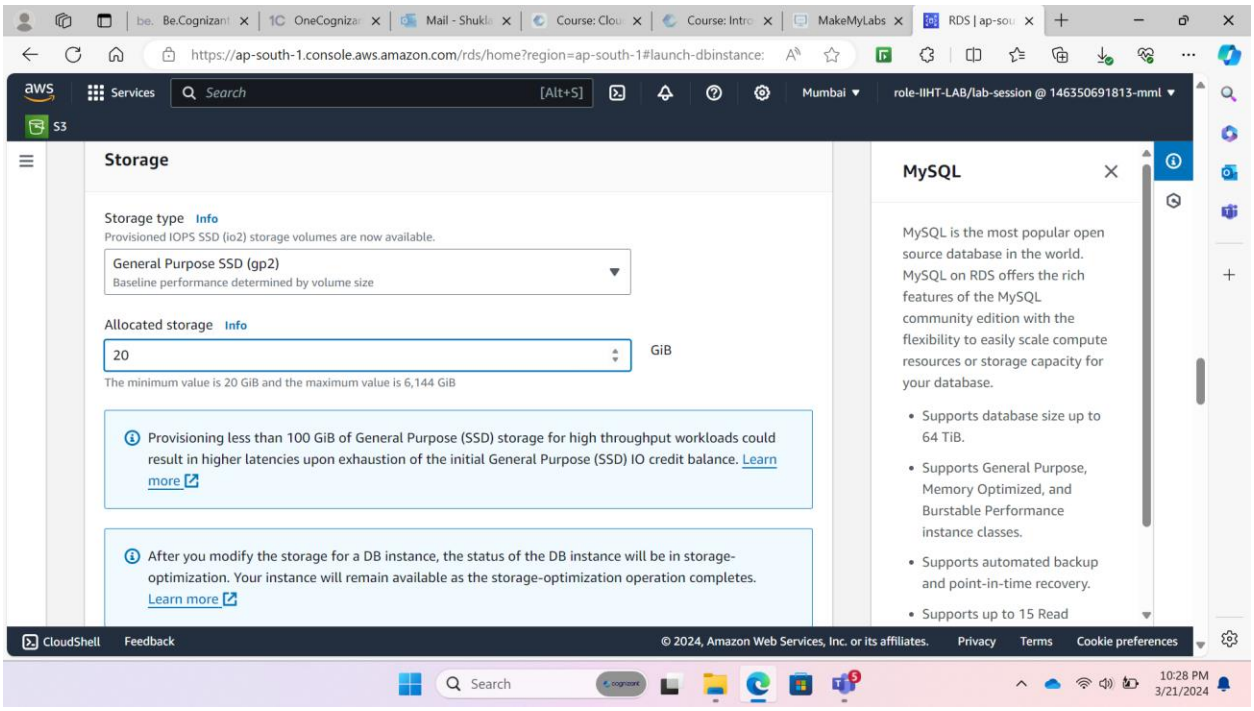
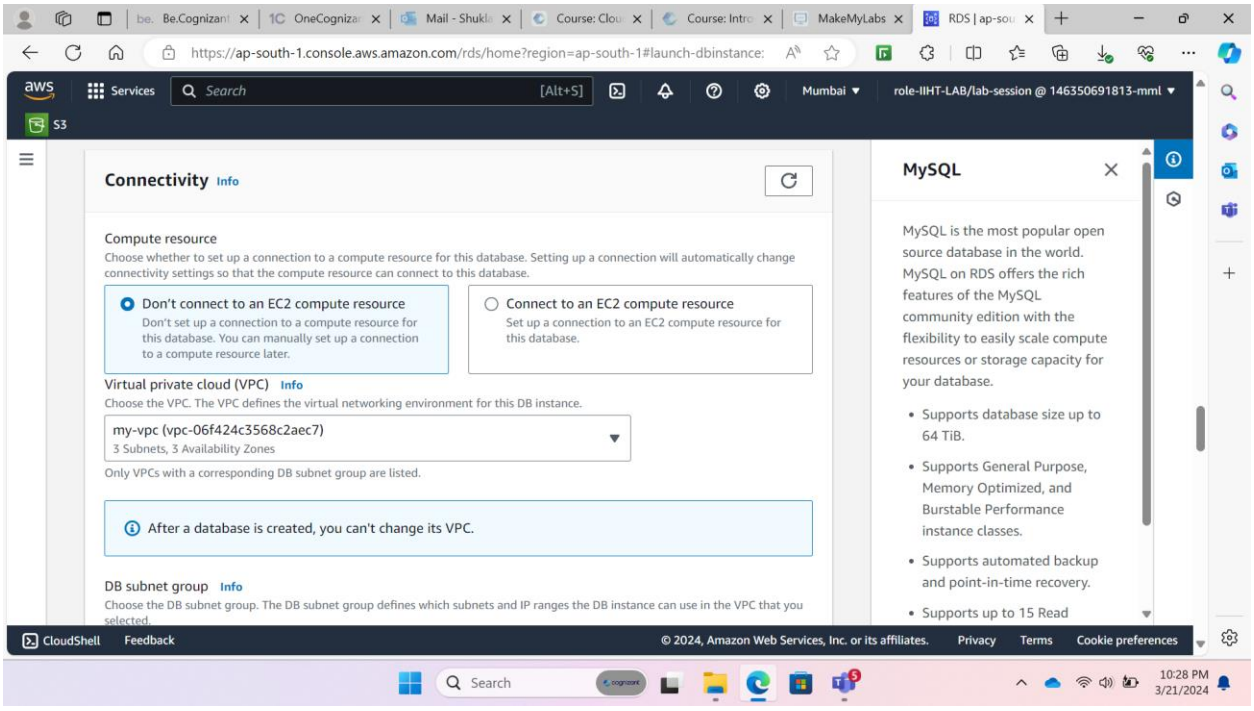
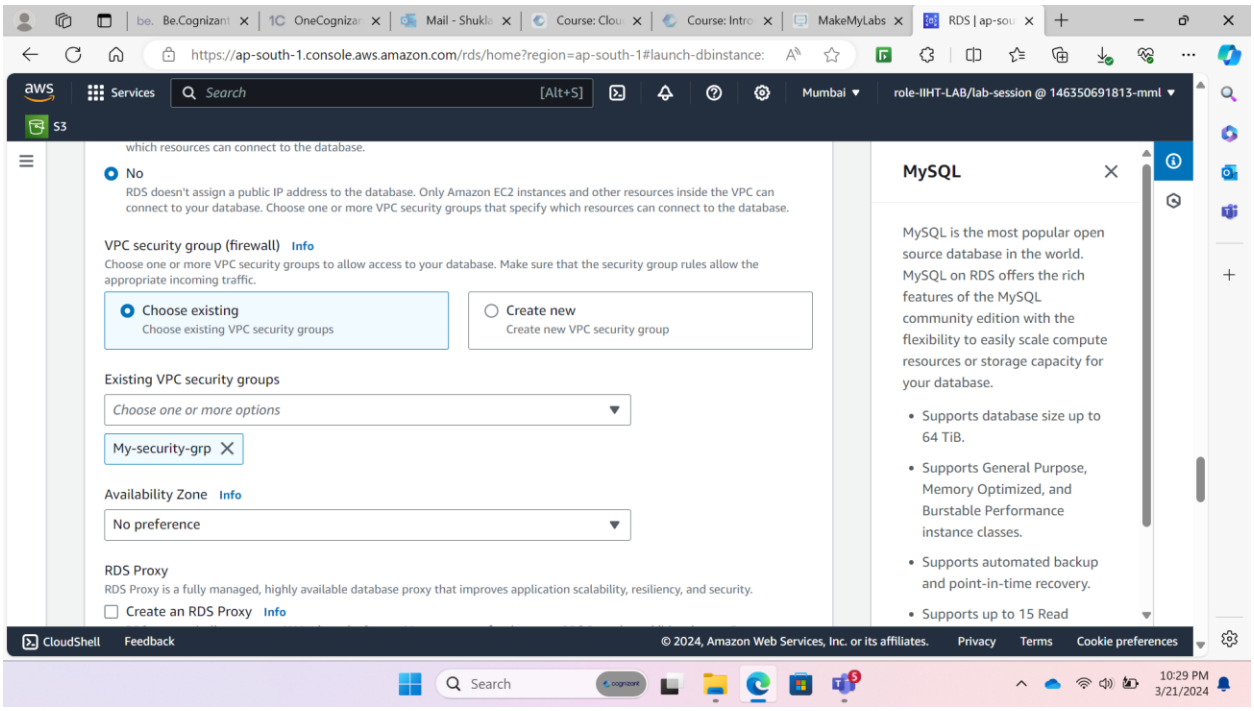


7. Attaching RDS database to the created VPC and adding the security group to allow MySQL traffic




https://ap-south-1.console.aws.amazon.com/rds/home?region=ap-south-1#launch-dbinstance:
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role-IIHT-LAB/lab-session @ 146350691813-mml
S3
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
My-security-grp
Availability Zone Info
No preference
RDS Proxy
RDS Proxy is a fully managed, highly available database proxy that improves application scalability, resiliency, and security.
Create an RDS Proxy Info
MySQL
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Supports up to 15 Read
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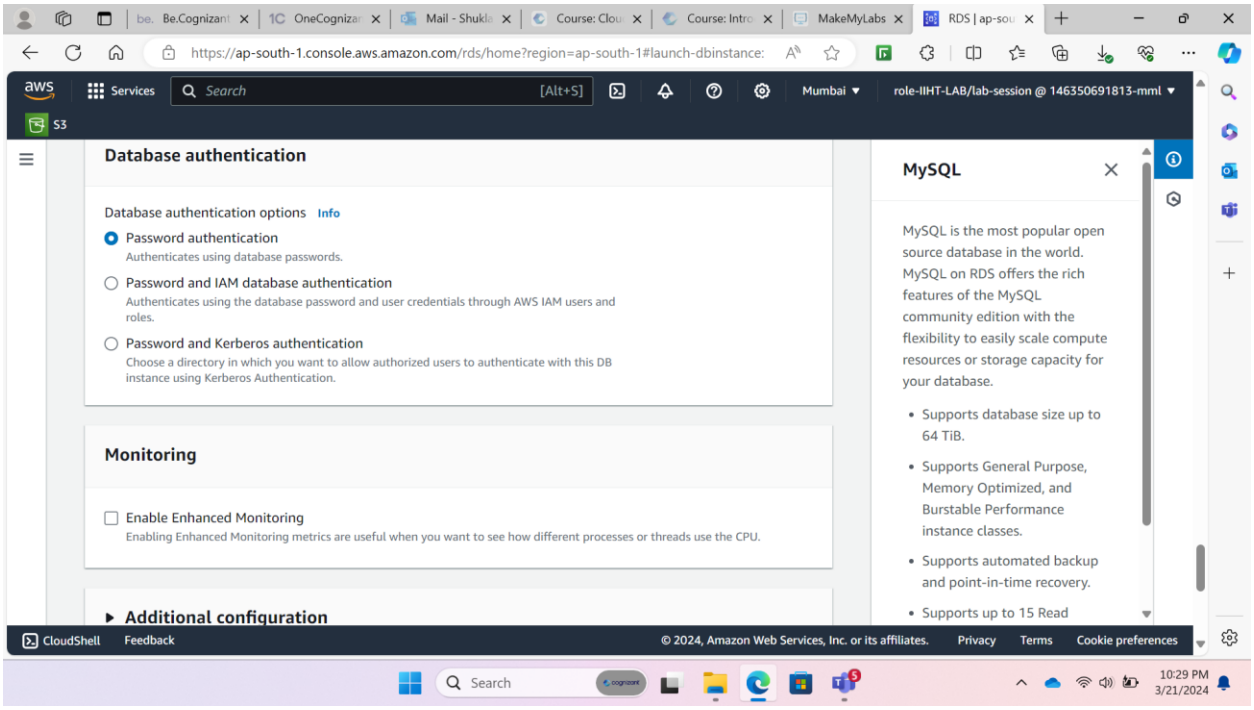
https://ap-south-1.console.aws.amazon.com/rds/home?region=ap-south-1#launch-dbinstance:
Services
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S3
Database authentication
Database authentication options Info
Password authentication
Authenticates using database passwords.
Password and IAM database authentication
Authenticates using the database password and user credentials through AWS IAM users and roles.
Password and Kerberos authentication
Choose a directory in which you want to allow authorized users to authenticate with this DB instance using Kerberos Authentication.
Monitoring
Enable Enhanced Monitoring
Enabling Enhanced Monitoring metrics are useful when you want to see how different processes or threads use the CPU.
Additional configuration
MySQL
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Supports automated backup and point-in-time recovery.
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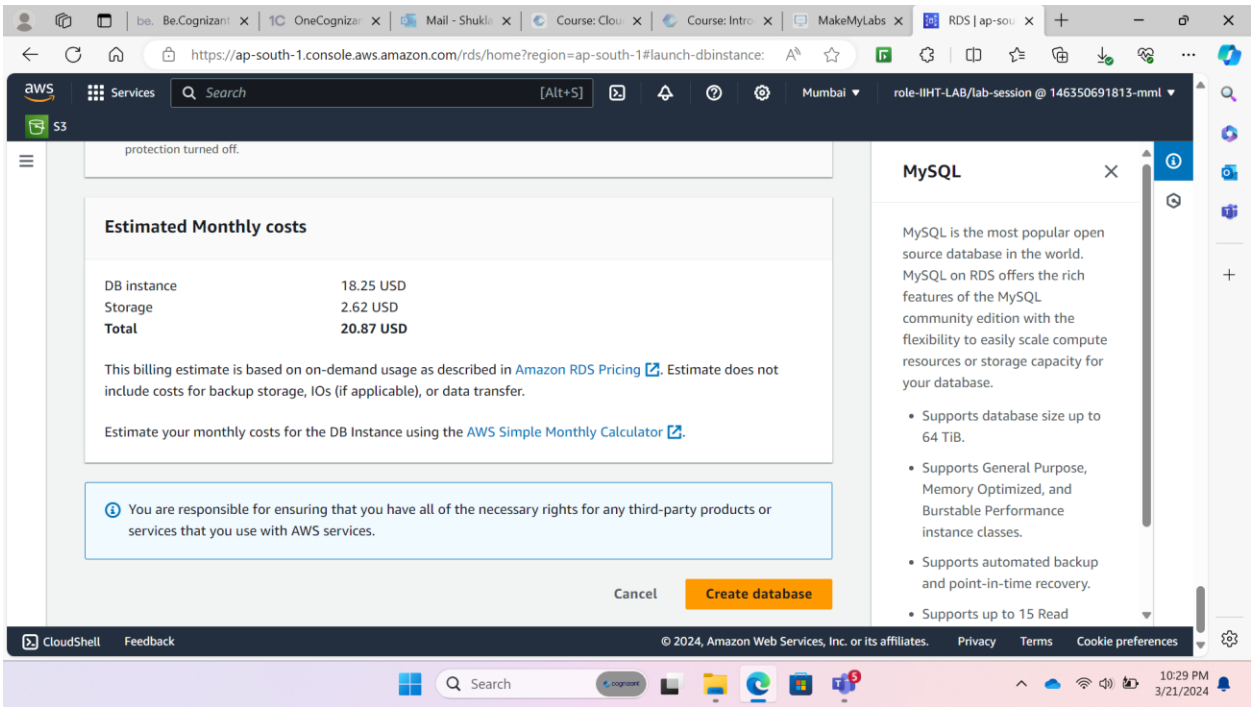
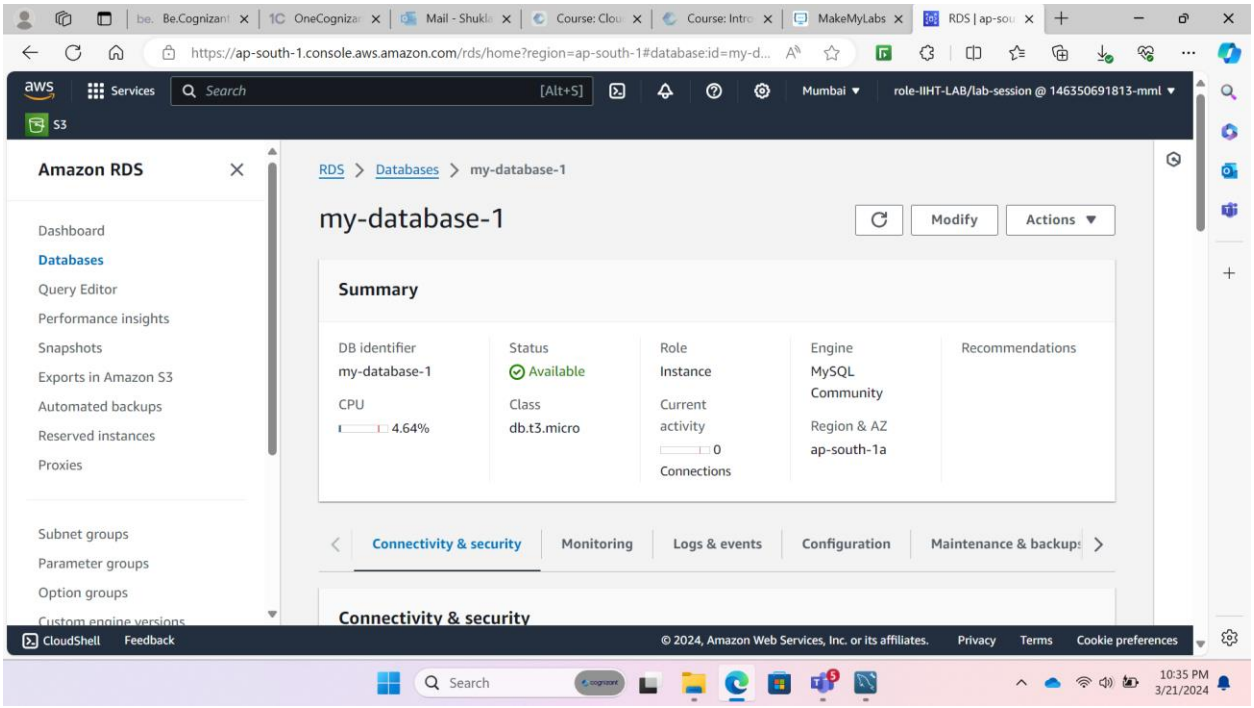
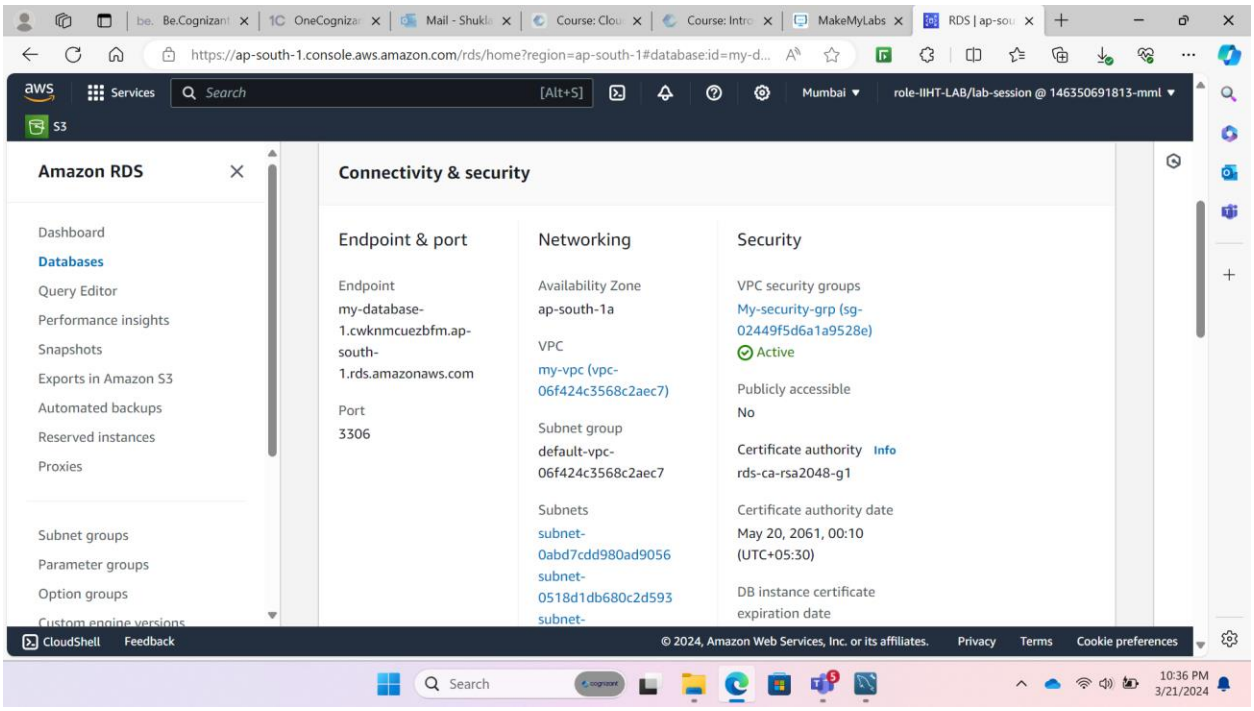
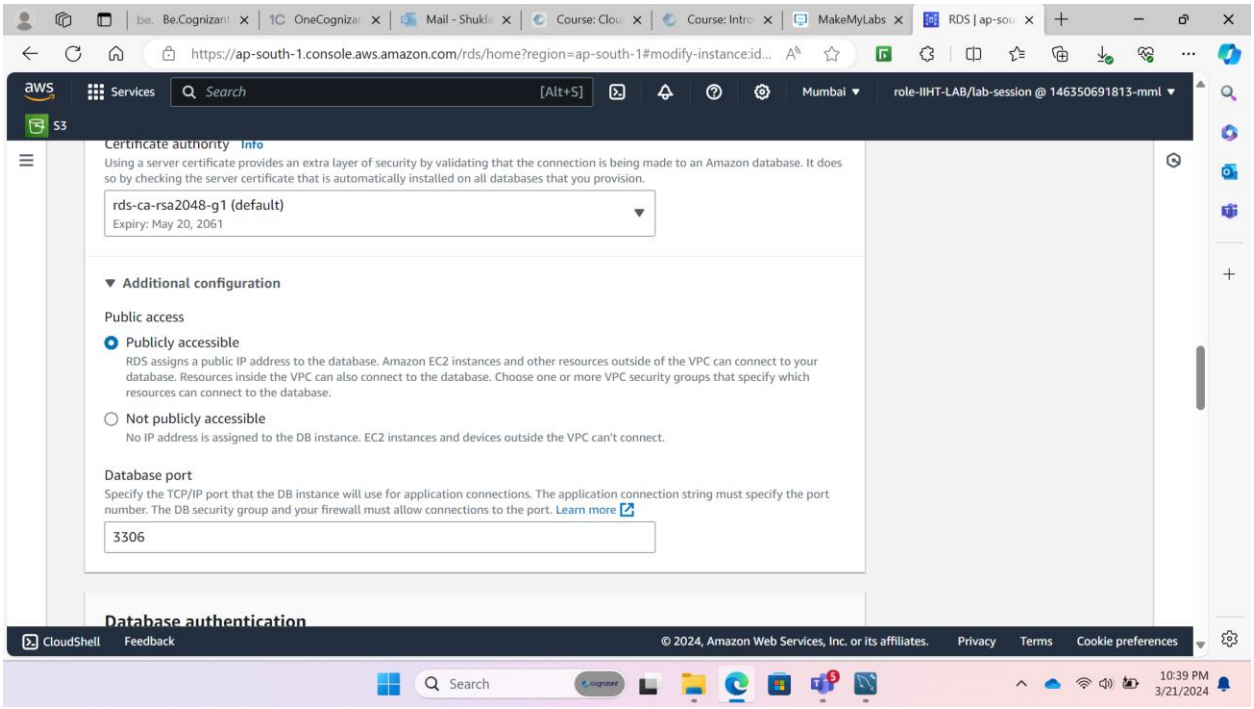




8. Note the endpoint of your created RDS database

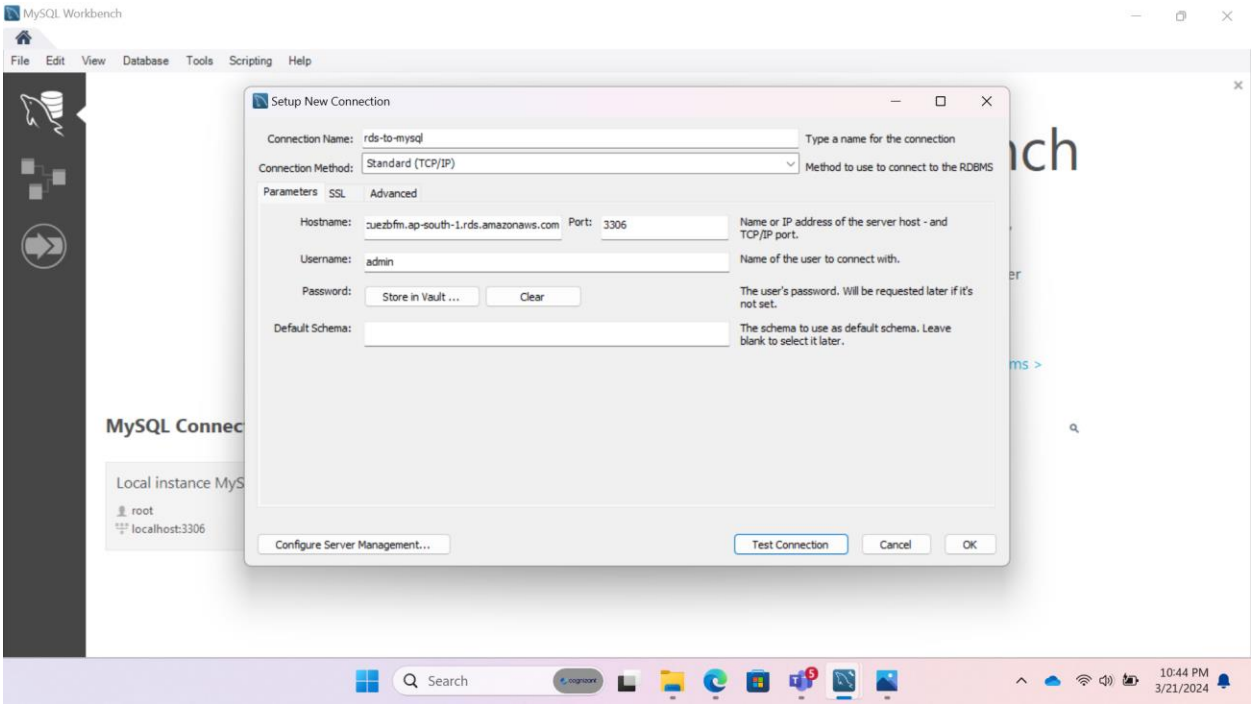


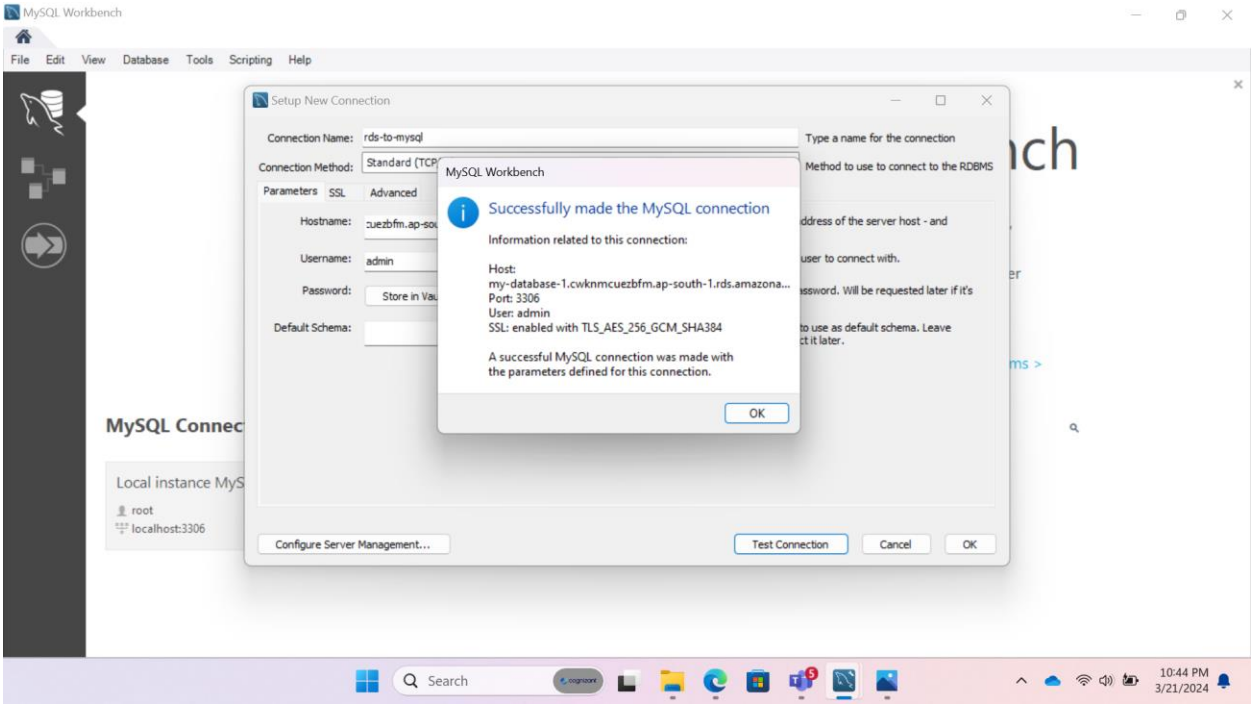
9. Make the created RDS database publicly accessible



10. Open MySQL workbench and create a new connection

MySQL workbench->Set-up new connection->Paste the endpoint of the created RDS database in hostname->Enter username and password->Test Connection





The Amazon RDS has successfully been connected to the MySQL workbench.