AWS RDS ---> Relational Databases

Database -> data will be stored permanently
Relational database means, data will be stored in the form of rows and columns (in the form of tables)
Example: ID, name, image,

Non-cloud database
1. Purchase database server license
2. Install DB server software
3. Security responsibility is on your head
4. Good support for Networking
5. Backup database

Major cloud providers ---> they are providing the database on cloud so no Security concerns, no Networking issues, no Backup issues

We are only going to buy the database services from the cloud providers

Database: It is a software, which is used to store data permanently
We have many database management softwares ---> Oracle, MySQL, Postgres, SQLServer

Every application will use database to store and manage data. Relational databases store data in table format (rows and columns)

Limitations to have on prem database:
Security concerns, Network issues, Backup issues, Administration issues

To overcome on prem database maintenance challenges, we can use Cloud database service

AWS RDS service provides cloud database facility
---> RDS stands for Relational Database Service in AWS cloud, which can be used to create and manage relational database
---> RDS is a fully managed service in AWS cloud and works based on pay-as you go model
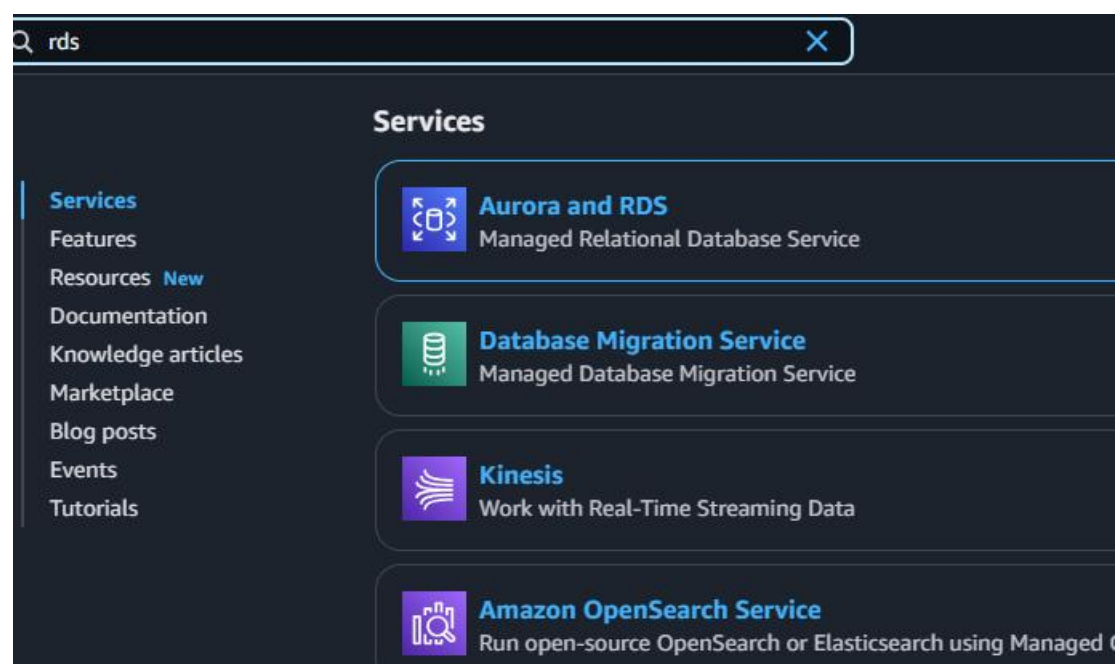
ⓘ Introducing Aurora I/O-Optimized
Aurora's I/O-Optimized ⬈ is a new cluster storage configuration that offers predictable pricing for all applications and improved p

Resources

You are using the following Amazon RDS resources in the Canada (Central) region (used/quota)

DB Instances (0/40)
    Allocated storage (0 TB/100 TB)
    Instances and storage include Neptune and DocumentDB. Increase DB instances limit ⬈
DB Clusters (0/40)
Reserved instances (0/40)
Snapshots (0)
    Manual
        DB Cluster (0/100)

Parameter groups (0)
    Default (0)
    Custom (0/100)
Option groups (0)
    Default (0)
    Custom (0/20)
Subnet groups (0/50)
Supported platforms ⬈ VPC
Default network vpc-0a752647f0a021f2e

Create database

Event subscriptions (0/20)

Create database

Amazon Relational Database Service (RDS) makes it easy to set up, operate, and scale a relational database in the cloud.

You can use a backup MySQL and MySQL da

Create database

Restore from S3

Note: your DB instances will launch in the **Canada (Central)** region

Service health

Standard create and MySQL, then free tier, rest default

☰ RDS ❯ Create database

Create database Info

Choose a database creation method

⦿ Standard create
You set all of the configuration options, including ones for availability, security, backups, and maintenance.

Engine options

Engine type Info

◯ Aurora (MySQL Compatible)

⦿ MySQL

◯ MariaDB

Free tier
Use RDS Free Tier to develop new applications, test existing applications, or gain hands-on experience with Amazon RDS. **Info**

...eployment option you choose. Learn more in the Amazon RDS service level agreement (SLA) ↗.

...in a separate

Single-AZ DB instance deployment (1 instance)
Creates a single DB instance without standby instances. This setup provides:
- 99.5% uptime
- No data redundancy

...t)

Write/read endpoint

AZ 1   ✏ 📖

Primary instance

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.

General Purpose SSD (gp2)
Baseline performance determined by volume size

Allocated storage   Info

20

Allocated storage value must be 20 GiB to 6,144 GiB

▶ **Additional storage configuration**

Connectivity   Info

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

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.

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

Default VPC (vpc-0a752647f0a021f2e)
3 Subnets, 3 Availability Zones

Public access: Yes, we can also connect to MySQL DB from desktop workbench

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 selecte

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 dat
  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 y

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 inc

⦿ Choose existing
   Choose existing VPC security groups

Existing VPC security groups

Choose one or more options

default ✕

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
   RDS automatically creates an IAM role and a Secrets Manager secret for the proxy. RDS Proxy has additional costs. For more informatio

Certificate authority - _optional_ Info

We add MySQL/Aurora to the inbound rules

Inbound rules Info

Type Info		Protocol Info	Port range Info	Source Info	
SSH	▼	TCP	22	Anywh... ▼	🔍
					0.0.0.0/0 ✕
HTTP	▼	TCP	80	Anywh... ▼	🔍
					0.0.0.0/0 ✕
HTTPS	▼	TCP	443	Anywh... ▼	🔍
					0.0.0.0/0 ✕
MYSQL/Aurora	▼	TCP	3306	Custom ▼	🔍

Add rule

Inbound rules Info

Type Info	Protocol Info	Port range Info	Source Info	
SSH ▼	TCP	22	Anywh... ▼	🔍
				0.0.0.0/0 ✕
HTTP ▼	TCP	80	Anywh... ▼	🔍
				0.0.0.0/0 ✕
HTTPS ▼	TCP	443	Anywh... ▼	🔍
				0.0.0.0/0 ✕
MYSQL/Aurora ▼	TCP	3306	Anywh... ▼	🔍
				0.0.0.0/0 ✕
All TCP ▼	TCP	0 - 65535	Anywh... ▼	🔍
				0.0.0.0/0 ✕

Add Security group

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 ▼

DBSecurityGroup ✕

Availability Zone Info

No preference ▼

RDS Proxy
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☐ Create an RDS Proxy Info
RDS automatically creates an IAM role and a Secrets Manager secret for the proxy. RDS Proxy has additional costs. For more information, see Amazon RDS Proxy pricing 🔗.

Certificate authority - *optional* 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 autom

rds-ca-rsa2048-g1 (default)
Expiry: May 21, 2061 ▼

If you don't select a certificate authority, RDS chooses one for you.

▶ **Additional configuration**

Add Initial database name no other changes

Database options

Initial database name Info

courses_db

If you do not specify a database name, Amazon RDS does not create a database.

DB parameter group Info

default.mysql8.0

Option group Info

default:mysql-8-0

Backup

☑ **Enable automated backups**
Creates a point-in-time snapshot of your database

⚠ Please note that automated backups are currently supported for InnoDB storage engine

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

Create Database

Maintenance

Auto minor version upgrade **Info**
☑ Enable auto minor version upgrade
Enabling auto minor version upgrade will automatically upgrade to new minor versions as they are released. The automatic upgrades occur during the maintenance window for the database.

Maintenance window **Info**
Select the period you want pending modifications or maintenance applied to the database by Amazon RDS.
○ Choose a window
● No preference

Deletion protection

☐ Enable deletion protection
Protects the database from being deleted accidentally. While this option is enabled, you can't delete the database.

Estimated monthly costs

The Amazon RDS Free Tier is available to you for 12 months. Each calendar month, the free tier will allow you to use the Amazon RDS resources listed below for free:

- 750 hrs of Amazon RDS in a Single-AZ db.t2.micro, db.t3.micro or db.t4g.micro Instance.
- 20 GB of General Purpose Storage (SSD).
- 20 GB for automated backup storage and any user-initiated DB Snapshots.

Learn more about AWS Free Tier. [↗]

When your free usage expires or if your application use exceeds the free usage tiers, you simply pay standard, pay-as-you-go service rates as described in the Amazon RDS Pricing page. [↗]

ⓘ You are responsible for ensuring that you have all of the necessary rights for any third-party products or services that you use with AWS services.

Cancel   **Create database**

Practical RDS tasks:
Create MySQL DB server using RDS
Standard create
MySQL option
Version of MySQL default
Templates (Free tier)
Setting --> Enter DB instance identifier, Set Master user name - admin, self-managed, enter password

Storage - default
Connectivity - default options
Public access - Yes
Security group (Add MySQL in security group)
Note: Enable MySQL :: 3306 port number in Security group InBound rules
Additional configuration ---> Database options (enter initial database name)
Backup ----> based on your need we can edit
Click Create database
Note: After practice, delete RDS instance to avoid billing

Databases (1)

Q Filter by databases

	DB identifier ▲	Status ▽	Role	▽	Engine ▽
○	mydatabase	⊘ Available	Instance		MySQL Co...

Click connection details

Connection details to your database mydatabase ✕

This is the only time you can view this password. Copy and save the password for your reference. If you lose the password, you must modify your database to change it. You can use a SQL client application or utility to connect to your database.

Learn about connecting to your database ↗

Master username
admin

Master password
▢ **************

Endpoint
▢ mydatabase.cpsouquic52z.ca-central-1.rds.amazonaws.com

(Close)

Go to MySQL workbench ---> click + button

Click Test Connection
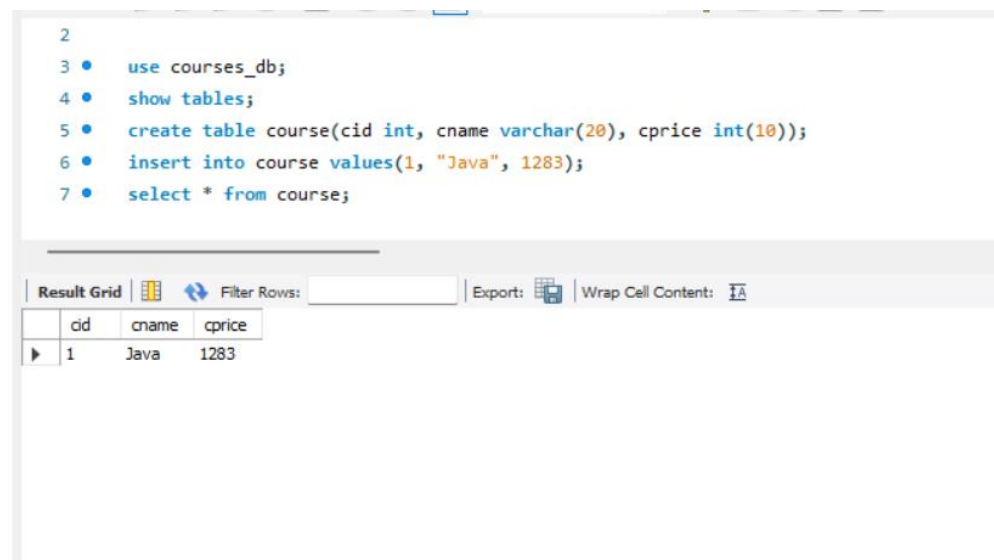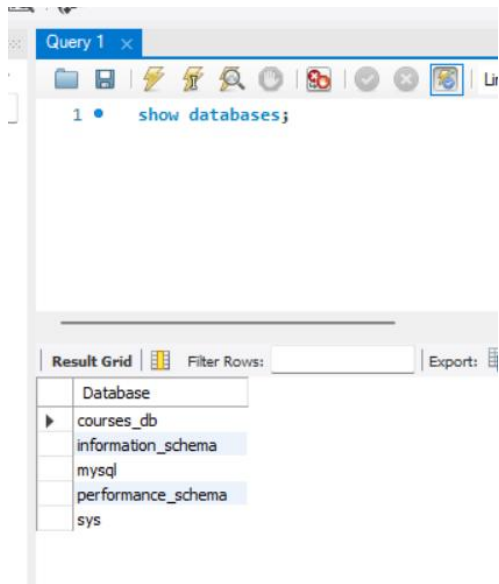
Whenever we create RDS database, the backup will be created in the S3 bucket
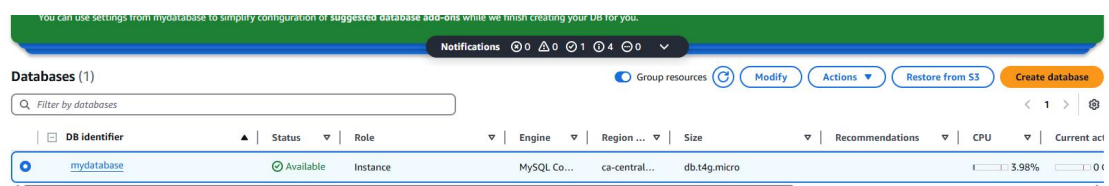
that's why it shows "Restore from S3". Automatically backup is created in S3. Snapshot means backup of database