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AWS RDS
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1) What is Database

2) Why we need database

3) On-Prem Database & Challenges

4) What is RDS & Why

5) RDS Setup

6) Connecting with RDS DB Server using MySQL Workbench

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What is Database ?
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Database : It is a software which is used to store the data permanently.

                software application ----------------------------> Database

=> Every s/w application will use database to store the data permanently.

=> Software applications will use SQL to communicate with databases.

=> Using SQL we can perform CRUD operations in the database.

                        C -> Create
                        R -> Retrieve
                        U -> Update
                        D -> Delete


=> We have several databases in the market

                        - Oracle
                        - MySQL
                        - SQLServer
                        - PostGres SQL

=> The above databases are called as Relational Databases.

=> Relational databases will store the data using tables.

=> Table represents data using Rows and columns.


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Database Setup
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=> We can setup database in 2 ways

                1) On-Prem Database

                2) Cloud Database


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Challenges with On-Prem Database
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1) Purchase DB server license

2) Install DB Server s/w

3) Security

4) Network

5) Availability

6) Scalability

7) Backup & Restore

8) Adminstration (DBA)

=> To overcome above challenges it is highly recommended to use Cloud Databases.

=> If we use cloud database then cloud provider will manage database server for us.

=> AWS RDS service providing cloud databases.

=> RDS stands for relational database service in AWS cloud.

=> RDS is used to create & manage relational databases.

=> RDS is a fully managed service in AWS cloud.

=> RDS works based on "pay as you go" model.

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RDS Lab Task
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Step-1 : Create MySQL DB Server using RDS

Step-2 : Enable "MySQL :: 3306" port number in Security Group Inbound Rules

Step-3 : Test MySQL DB Connection using "MySQL Workbench software (client s/w)"

Step-4 : Execute some SQL queries for practice (optional)

Step-5 : Delete RDS instance to avoid billing.

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MySQL DB Creation Steps
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Creation method : Standard Create

Engine Type : MySQL

Templates: Free Tier

public access : Yes

Credentials : Self Managed

Additional Configuarations : Initial DB name : ashokitdb

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Database Details
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DB Endpoint : database-1.czmq680mayav.ap-south-2.rds.amazonaws.com
DB username : admin
DB password : Admin123
DB port : 3306

Note : Using above details we can check database connectivity.

=> Once connectivity is successful then we will share database details with development team.

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SQL Queries For Practice
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=> Execute below sql queries using workbench

```
show databases;
use ashokitdb;
show tables;

## table creation query
create table emp(
        eid int(10),
        ename varchar(100),
        esal int(10)
);

## retrieve records query
select * from emp;

## insert query
insert into emp values(1, 'john', 1000);
insert into emp values(2, 'smith', 2000);

## retrieve records query
select * from emp;
```

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Spring Boot with RDS Integration : https://www.youtube.com/watch?v=GSu1g9jvFhY

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