THADOMAL SHAHANI TSEC ENGINEERING COLLEGE
Om Shal
TE C82
2103163

Experiment No : 8

Aim : To study and implement Database as a service on SQL database using AWS RDS

Theory :

- Explain the concept of Database as Service. List some Database as a service provider along with name of service.

⇒ Database as a service (DBaaS) is a cloud computing service model that provides users with access to managed database system.

- Instead of setting up and maintaining their own database infrastructure, users can leverage a cloud provider's resource to store, manage and access their data.
- Some well known DBaaS providers include :

1) Amazon Web Service (AWS).
⇒ Amazon RDS, Amazon Aura

2) Microsoft Azure
⇒ Azure SQL database, Cosmos DB

3) Google Cloud Platform
⇒ Cloud SQL, Firestore.

- List the SQL & NOSQL database supported by AWS.

⇒ AWS supports various SQL and NoSQL databases, including:

1) SQL database: MySQL, PostgreSQL, MariaDB, Oracle, SQL server, Aurora
2) NoSQL database: Amazon DynamoDB

- Difference between RDS and Aurora

⇒

Amazon RDS	Amazon Aurora
1) Amazon RDS is a managed relational database service that supports multiple database engines such as MySQL, PostgreSQL, MariaDB, Oracle and SQL server.	1) Amazon Aurora is a MySQL and PostgreSQL compatible relational database engine built for the cloud.
2) Aurora replicates data six ways across three availability zones by default, providing greater durability and redundancy	2) Aurora's storage system is shared across multiple instances, allowing for faster replication and failover compared to RDS, where each instance has its own storage.

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- Explain the following terms with aws with DBaas

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1) Storage types :

=> AWS offers various storage types for databases, including General Purpose SSD (GP2), Provisioned IOPS SSD (IO1), Magnetic (standard), and Amazon Aurora storage.

- These options differ in terms of performance, durability and cost.

2) Endpoint

=> In AWS DBaaS, an endpoint refers to the network address used to access a database instance.

- Endpoints are used by applications to connect to the database over the internet or within the AWS network.

3) Snapshot

=> A snapshot is a point-in-time copy of a database instance. It captures the entire state of a database at the moment the snapshot is taken.

- Snapshots are used for backup, recovery, and replication purpose.

4) Read Replicas

⇒ A read replica is a copy of a source database instance that allows read-only access to the data.

- Read replicas can be used to offered read operations from their primary database, improving performance and scalability.

5) Single AZ and Multi AZ instances

⇒ In AWS, a single Availability Zone instance run in a single data center within a specific AWS region.

- In contrast, a Multi Availability Zone instance replicates data synchronously across multiple availability zones within the same region providing high availability and fault tolerance in case of a failure in one AZ.

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