



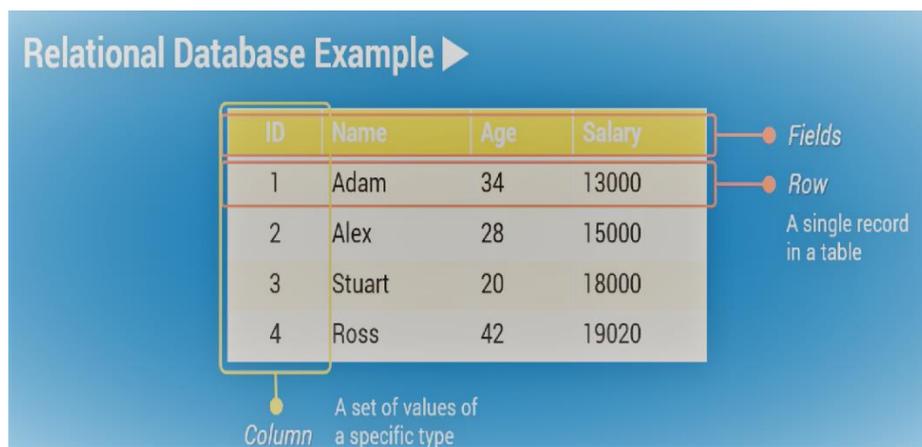
**amazon**  
RDS

## ❖ RELATIONAL DATABASE SERVICE:

- Amazon Relational Database Service (Amazon RDS) is a web service that makes it easier to set up, operate, and scale a relational database in the cloud.
- It provides cost-efficient and resizable capacity while automating time-consuming administration tasks such as hardware provisioning, database setup, patching and backups.
- It Does not allow access to the underlying operating system (Fully Managed)
- You can enable multi-AZ deployments for backup and high available solutions.
- RDS automatically patches the database software and backs up your database, storing the backups for a user-defined retention period and enabling point-in-time recovery.
- RDS DB Instances can be provisioned with either General Purpose (SSD), Provisioned IOPS (SSD) or standard (magnetic) storage. Amazon RDS Provisioned IOPS is a storage option designed to deliver fast, predictable, and consistent I/O performance, and is optimized for I/O-intensive, transactional (OLTP) database workloads.
- Relational databases are databases that organize stored data into tables.

### RDS EXAMPLE:

- Databases--> Tables--> Records--> Fields.
- SQL Interface: Structured Query Language
- Extended functionality: stored procedures, triggers



## **RDS BENEFITS:**

- Easy to administer
- Highly scalable
- Available and durable
- Fast
- Secure
- Inexpensive

## **RDS FEATURES:**

- Automatic installation
- Automated backup/recovery
- Automatic upgrades/patches
- Automated log management
- In-place scaling

## **➤ RDS DATABASE ENGINES:**

- Amazon RDS supports Amazon Aurora, MySQL, MariaDB, Oracle, SQL Server, IBM DB2 and PostgreSQL database engines.
  - **MYSQL** : Open source
  - **MARIADB** : Opensource
  - **POSTGRESQL** : Opensource
  - **SQLSERVER** : Commercial
  - **ORACLE** : Commercial
  - **AURORA** : MySQL and PostgreSQL compatible
  - **IBM DB2** : Community Edition

## **➤ DATABASE INSTANCE (DB INSTANCE):**

- A DB instance is an isolated database environment running in the cloud.
- It is the basic building block of Amazon RDS.
- A DB instance can contain multiple user-created databases, and can be accessed using the same client tools and applications you might use to access a standalone database instance.
- You can think of a DB instance as a database environment in the cloud with the compute and storage resources you specify.

➤ **RDS FREE TIER:**

- AWS has an amazing free tier usage for most of its services, so that the customer can first use the service and then do the needful.
- 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.

➤ **RDS BACKUPS:**

- Amazon RDS provides two different methods for backing up and restoring your DB instance(s).
- Amazon RDS DB snapshots and automated backups are stored in S3.
- There are two types of backups.
  - Automated backups
  - Database snapshots (DB Snapshots).

**AUTOMATED BACKUPS:**

- Allow point-in-time recovery of your db instance within retention period 1 to 35 days.
- Full daily snapshot and log storage.

**DATABASE SNAPSHOTS:**

- Database snapshots are user-initiated backups of your instance stored in Amazon S3 that are kept until you explicitly delete them.
- You can create a new instance from a database snapshot whenever you desire. Although database snapshots serve operationally as full backups, you are billed only for incremental storage use.

**NOTE:** When you perform a restore operation to a point in time or from a DB Snapshot, a new DB Instance is created with a new endpoint (the old DB Instance can be deleted if so desired).

This is done to enable you to create multiple DB Instances from a specific DB Snapshot or point in time.

### ➤ **READ REPLICAS:**

- It Increases performance by providing additional read-only copies of database.
- AWS automatically performs asynchronous replication.
- You can create, and multiple read replicas for a primary database.
- You can monitor replication log using CloudWatch.
- Supports MySQL, MariaDB, PostgreSQL.
- Up to 5 read replica instances.
- Read replicas can reside in other regions.

### ➤ **MULTI-AZ DEPLOYMENTS:**

- AWS provisions primary and secondary instance.
- Primary in selected AZ (if chosen).
- Secondary in AWS-selected AZ.
- Failure of primary instance triggers redirection to secondary instance.
- Secondary instance maintains primary connection string.
- Supports all databases other than Aurora.
- Multi-AZ supports read replicas, but not vice versa.



- For the RDS for MySQL, MariaDB, PostgreSQL, and Oracle database engines, when you elect to convert your Amazon RDS instance from Single-AZ to Multi-AZ, the following happens:
  - A snapshot of your primary instance is taken
  - A new standby instance is created in a different Availability Zone, from the snapshot
  - Synchronous replication is configured between primary and standby instances.