**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 AWS cloud.

The basic building block of Amazon RDS it is the DB Instance. DB Instance is an isolated environment in the AWS cloud. DB Instance is an isolated environment in the cloud. DB Instances storage comes in these types: **Magnetic, General Purpose (SSD), and Provisioned IOPS (PIOPS)**.

You can run a DB Instance in a VPC. You can run a DB Instance in several Availability zones. **RDS is a SQL database**

**Security**

a security group controls the access to a DB. It does so by allowing access to IP address ranges or Amazon EC2 instances that you specify.

To track the performance and health of a DB Instance, you can use **CloudWatch service**. There are several ways to interact with Amazon RDS: **AWS Managemen**t, **Command Line Interface.**

**Working with Read Replicas**

Amazon RDS uses **MariaDB, MYSQL, Oracle, PostgreSQL, and Microsoft SQL s**erver DB engines built-in replication functionality to create a special type of DB instance called a **read replica** from a source DB Instance. The source DB Instance becomes the primary instances DB instance. Update made to the primary DB instances are asynchronously copied to the read replica.

When you create a read replica, you first specify an existing DB instance as the source. The amazon RDS takes a snapshot of the source instance and creates a read-only instance from the snapshot.

**Amazon RDS Backup and Restore**

by default . Amazon RDS creates and saves automated backups of your DB Instance securely in Amazon S3 for a user-specified retention period. In addition, you can create snapshot which are user-initiated backups of your instance that are kept until you explicitly delete them. You can create a new instance from a database Snapshot whenever you desire.

**Amazon DynamoDB**

**Amazon DynamoDB is a fully managed NoSQL database** service that provides fast and predictable performance with seamless scalability. With DynamoDB you can create database tables that can store and retrieve any amount if data and serve any level of request traffic. You can scale up or scale downs your tables throughput capacity without downtime or performance degradation.

DynamoDB provides on-demand backup capacity. It allows you to create full backups of your tables for long –term retention and archival for regulatory compliance needs.

DynamoDB allows to delete expired items from tables automatically to help you reduce storage usage and the cost of storing data that is no longer relevant.

**Core components of Amazon DynamoDB**

the core components in DynamoDB are tables, items, and attributes.

* **Table:** is a collection of database
* **item:** is a collection of attributes that uniquely identifiable among all off the other items.
* **Attributes:** is a fundamental data element that does not need to broken down any further each item is composed of one or more attributes.

**Primary key**

DynamoDB supports two different kinds of keys:

* **Partition key** A simple key composed of one attribute know as the partition key.
* **Partition key and short key** referred to as **a composite primary key** is composed of two attributes.

**Secondary Indexes**

you can create one or more secondary indexes on a table. **A secondary Index** lets you query the data in the table using an alternate key in addition to queries against the primary key. DynamoDB supports two kinds of indexes.

* Global Secondary index An index with a partition key and sort key that can be different from those on the table.
* Local Secondary index An index that has the same partition key as the table, but a different sort key.

**DynamoDB streams**

DynamoDB streams is an optional feature that capture data modification event in DynamoDB tables. The data about these events appear in the stream in near-real time, and in the order that the events occurred.