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*RQF Level 5*

**Objective:**

The objective of this lab is to guide participants through the process of deploying and managing a relational database using Amazon RDS. Participants will explore managed database services, optimize performance parameters, and configure automated backups and **snapshots** to ensure data durability.

**Prerequisites:**

* SysOps Advancement Track

**Lab Steps:**

**Step 1: Introduction to Amazon RDS**

- Briefly discuss the advantages of using Amazon RDS as a managed relational database service.

- Highlight supported database engines, such as MySQL, PostgreSQL, Oracle, SQL Server, etc.

**Step 2: Launching an RDS Instance**

- In the AWS Management Console, navigate to Amazon RDS.

- Launch a new RDS instance:

- Choose a database engine and version.

- Configure instance specifications (instance class, storage, etc.).

- Set up database authentication and additional settings.

**Step 3: Connecting to the RDS Instance**

- Obtain connection details for the newly created RDS instance.

- Connect to the RDS instance using a database client (e.g., MySQL Workbench, phpmyadmin).

**Step 4: Optimizing RDS Performance**

- Explore RDS parameter groups.

- Adjust key parameters to optimize performance for specific workloads.

- Monitor RDS performance metrics in the AWS Management Console.

**Step 5: Implementing Automated Backups**

- Configure automated backups for the RDS instance.

- Set the retention period for backups.

- Discuss the importance of automated backups for data recovery.

**Step 6: Creating Manual Snapshots**

- Create manual snapshots of the RDS instance for point-in-time recovery.

- Discuss use cases for manual snapshots, such as before significant changes or updates.

**Step 7: Exploring RDS Security Features**

- Implement security best practices for RDS instances.

- Explore options such as Virtual Private Cloud (VPC) integration, IAM database authentication, and encryption.

**Step 8: Cleanup**

- Guide learners through proper cleanup procedures to avoid unnecessary costs.

- Delete the RDS instance and associated resources created during the lab.

*Conclusion:*

*By completing this lab, participants have gained hands-on experience in deploying and managing a relational database using Amazon RDS. They have learned to optimize performance parameters, configure automated backups, and create manual snapshots for data recovery. This lab provides a foundation for working with managed database services on AWS and understanding best practices for database management.*