Planning and Designing Databases on AWS

AWS Classroom Training

Course description

You will learn about the process of planning and designing both relational and nonrelational databases. You will learn the design considerations for hosting databases on Amazon Elastic Compute Cloud (Amazon EC2). You will learn about our relational database services including Amazon Relational Database Service (Amazon RDS), Amazon Aurora, and Amazon Redshift. You will also learn about our nonrelational database services including Amazon DocumentDB, Amazon DynamoDB, Amazon ElastiCache, Amazon Neptune, and Amazon QLDB. By the end of this course, you will be familiar with the planning and design requirements of all 8 of these AWS databases services, their pros and cons, and how to know which AWS databases service is right for your workloads.

- Course level: Intermediate
- Duration: 3 days

Activities

This course includes presentations, demonstrations, group exercises, and hands-on labs.

Course objectives

In this course, you will:

- Apply database concepts, database management, and data modeling techniques
- Evaluate hosting databases on Amazon EC2 instances
- Evaluate relational database services (Amazon RDS, Amazon Aurora, and Amazon Redshift) and their features
- Evaluate nonrelational database services (Amazon DocumentDB, Amazon DynamoDB, Amazon ElastiCache, Amazon Neptune, and Amazon QLDB) and their features
- Examine how the design criteria apply to each service
- Apply management principles based on the unique features of each service

Intended audience

This course is intended for:

- Data Engineers who are new to designing cloud databases or nonrelational databases
- Solutions Architects who are designing services or architectures that are integrated with databases
- Developers that are building cloud database-enabled applications

Prerequisites

We recommend that attendees of this course have:

- Familiarity with AWS Database Services, equivalent to AWS Database Offerings digital training

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- Understanding of database design concepts, and/or data modeling for relational or nonrelational databases
- Familiarity with cloud computing concepts
- Familiarity with general networking and encryption concepts
- Understanding of the three V's of data (volume, velocity, and variety)
- Familiarity with basic data analytics concepts, equivalent to Data Analytics Fundamentals digital training
- Understanding of general architecting best practices and the AWS Well-Architected Framework, equivalent to Architecting on AWS classroom training

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Course outline

Day 1

Module 0: Planning and Designing Databases on AWS

Module 1: Database Concepts and General Guidelines

- Databases in the cloud
- Database design principles
- Transactional compliance

Module 2: Database Planning and Design

- Workload requirements
- Design considerations

Module 3: Databases on Amazon EC2

- Amazon EC2 for hosting databases

Module 4: Purpose-Built Databases

- The journey to AWS
- Data modeling basics

Module 5: Databases on Amazon RDS

- Amazon RDS databases
- Amazon RDS distinguishing features
- Amazon RDS Design considerations
- Lab 1: Working with Amazon RDS databases

Module 6: Databases in Amazon Aurora

- Amazon Aurora databases
- Aurora distinguishing features
- Aurora design considerations

Day 2

Module 6: Databases in Amazon Aurora (continued)

- Lab 2: Working with Amazon Aurora databases

Module 7: Databases in Amazon DocumentDB (with MongoDB compatibility)

- Amazon DocumentDB
- Amazon DocumentDB design considerations
- Lab 3: Working with Amazon DocumentDB databases

Module 8: Amazon DynamoDB Tables

- Amazon DynamoDB
- DynamoDB data modeling

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- DynamoDB distinguishing features
- DynamoDB design considerations
- Lab 4: Working with Amazon DynamoDB Tables

Day Three

Module 9: Databases in Amazon Neptune

- Amazon Neptune
- Neptune design considerations

Module 10: Databases in Amazon Quantum Ledger Database (Amazon QLDB)

- Amazon Quantum Ledger Database (Amazon QLDB)
- Amazon QLDB Design Considerations

Module 11: Databases in Amazon ElastiCache

- Amazon ElastiCache
- ElastiCache for Memcached
- ElastiCache for Redis

Module 12: Data Warehousing in Amazon Redshift

- Amazon Redshift
- Amazon Redshift distinguishing features
- Amazon Redshift data modeling
- Amazon Redshift design considerations
- Lab 5: Working with Amazon Redshift Clusters

Module 13: Course Review