Building Data Analytics Solutions Using Amazon Redshift

Course ID #: 7000-719-ZZ-Z

Hours: 7

Course Content

Course Description:

In this course, you will build a data analytics solution using Amazon Redshift, a cloud data warehouse service. The course focuses on the data collection, ingestion, cataloging, storage, and processing components of the analytics pipeline. You will learn to integrate Amazon Redshift with a data lake to support both analytics and machine learning workloads. You will also learn to apply security, performance, and cost management best practices to the operation of Amazon Redshift.

Course Objectives:

In this course, you will learn to:

- Compare the features and benefits of data warehouses, data lakes, and modern data architectures
- Design and implement a data warehouse analytics solution
- Identify and apply appropriate techniques, including compression, to optimize data storage
- Select and deploy appropriate options to ingest, transform, and store data
- Choose the appropriate instance and node types, clusters, auto scaling, and network topology for a particular business use case
- Understand how data storage and processing affect the analysis and visualization mechanisms needed to gain actionable business insights
- Secure data at rest and in transit
- Monitor analytics workloads to identify and remediate problems
- Apply cost management best practices

Prerequisites:

- AWS Technical Essentials OR Architecting on AWS
- Building Data Lakes on AWS
- Students with a minimum of one-year experience managing data warehouses

Target Audience:

- Data warehouse engineers
- Data platform engineers
- Architects
- Operators who build and manage data analytics pipelines

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Topics:

Lesson 1: Overview of Data Analytics and the Data Pipeline
- Data analytics use cases
- Using the data pipeline for analytics

Lesson 2: Using Amazon Redshift in the Data Analytics Pipeline
- Why Amazon Redshift for data warehousing?
- Overview of Amazon Redshift

Lesson 3: Introduction to Amazon Redshift
- Amazon Redshift architecture

Interactive Demo 1: Touring the Amazon Redshift console
- Amazon Redshift features

Lab: Load and query data in an Amazon Redshift cluster

Lesson 4: Ingestion and Storage
- Ingestion

Interactive Demo 2: Connecting your Amazon Redshift cluster using a Jupyter notebook with Data API
- Data distribution and storage

Interactive Demo 3: Analyzing semi-structured data using the SUPER data type
- Querying data in Amazon Redshift

Lab: Data analytics using Amazon Redshift Spectrum

Lesson 5: Processing and Optimizing Data
- Data transformation
- Advanced querying

Lab: Data transformation and querying in Amazon Redshift
- Resource management

Interactive Demo 4: Applying mixed workload management on Amazon Redshift
- Automation and optimization

Interactive demo 5: Amazon Redshift cluster resizing from the dc2.large to ra3.xlplus cluster

Lesson 6: Security and Monitoring of Amazon Redshift Clusters
- Securing the Amazon Redshift cluster
- Monitoring and troubleshooting Amazon Redshift clusters

Lesson 7: Designing Data Warehouse Analytics Solutions
- Data warehouse use case review

Activity: Designing a data warehouse analytics workflow

Lesson 8: Developing Modern Data Architectures on AWS
- Modern data architectures

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