20777 - Implementing Microsoft Azure Cosmos DB Solutions

Course Content

Course Description:

This three-day instructor-led course is aimed at database professionals who are looking to implement a Cosmos DB solution.

At Course Completion:

After competing this course, student will be able to:
- Describe the purpose and architecture of Azure Cosmos DB.
- Describe how to design documents and collections to meet business requirements, and how to use the SQL API to build applications that use these documents.
- Describe how to create user-defined functions, stored procedures, and triggers.
- Describe how to tune a database, and how to monitor performance.
- Describe how to create efficient Graph database models using Cosmos DB.
- Describe how to use Azure Search, HDInsight, Azure Databricks, and Power BI with Cosmos DB to query and analyze big data.
- Describe how to use Cosmos DB as a source and sink for streaming data.

Prerequisites:

In addition to their professional experience, students who attend this training should already have the following technical knowledge:
- The fundamental concepts of partitioning, replication, and resource governance for building and configuring scalable applications that are agnostic of a Cosmos DB API.
- A basic working knowledge of the Cosmos DB SQL API.

Target Student:

The primary audience for this course is database developers and architects (IT professionals, developers, and information workers) who plan to implement big data solutions on Azure using Cosmos DB.

Topics:

Module 1: Introduction to Azure Cosmos DB
- Review of NoSQL database structures
- Migrating data and applications to Cosmos DB
- Managing data in Cosmos DB

20777 - Implementing Microsoft Azure Cosmos DB Solutions

Course ID #: 1401-815-16-W

Hours: 21

Lab : Creating and using a SQL API database in Cosmos DB

- Creating and configuring a Cosmos DB database
- Migrating data from a Mongo DB database to Cosmos DB
- Using the SQL API to access data
- Protecting data in a Cosmos DB database

Module 2: Designing and Implementing SQL API Database Applications

- Document models in Cosmos DB
- Querying data in a SQL API database
- Querying and maintaining data programmatically

Lab : Designing and implementing SQL API database applications

- Design the document structure & partitioning strategy for the product catalog for the retail system
- Importing product catalog data
- Querying product catalog information
- Maintaining stock levels in the product catalog

Module 3: Implementing Server Side Operations

- Server-side programming with Cosmos DB
- Creating and using stored procedures
- Using triggers to maintain data integrity

Lab : Writing user-defined functions, stored procedures and triggers

- Design and implement the document and collection structure
- Implement the shopping cart functionality in the online retail system.
- Extend the online retail system to create orders from the items in a shopping cart.
- Extend the online retail system further to enable customers to view orders and backorders.

Module 4: Optimizing and monitoring performance

- Optimizing database performance
- Monitoring the performance of a database

Lab : Tuning a database and monitoring performance

- Gathering execution statistics
- Examining how the different consistency models can impact throughput and latency
- Investigate the effects of triggers on performance
- Monitoring performance and tuning the partition key

Module 5: Designing and Implementing a Graph Database

- Graph database models in Cosmos DB
- Designing Graph database models for efficient operation

Lab : Designing and implementing a Graph database

- Implementing a recommendations engine for customers
- Recording product purchase information
- Query a Graph database to obtain analytics

Module 6: Querying and Analyzing Big Data with Cosmos DB

- Integrating Cosmos DB with Azure search to optimize queries
- Analyzing data in a Cosmos DB database using Apache Spark
- Visualizing data in a Cosmos DB database

Lab : Querying and Analyzing Big Data with Cosmos DB

- Extending product search capabilities
- Performing end-of-month processing
- Visualizing sales data
- Exploring sales data

Module 7: Implementing Stream Processing with Cosmos DB

- Working with the Cosmos DB change feed
- Integrating Cosmos DB into streaming solutions

Lab : Using Cosmos DB with stream processing

- Handling orders
- Maintaining stock analytic data
- Displaying rolling revenue for a given time period