

**Designing and Implementing Cloud-Native Applications Using Microsoft Azure Cosmos DB (DP-420)**

**Course Number:** MOC-DP-420  
**Duration:** 4 days

**Overview**

This official Microsoft DP-420 course, Designing and Implementing Cloud-Native Applications Using Microsoft Azure Cosmos DB, teaches developers how to create applications using the SQL API and SDK for Azure Cosmos DB. Attendees learn how to write efficient queries, create indexing policies, manage and provision resources, and perform common operations with the SDK. This course prepares students for the [DP-420 exam](https://docs.microsoft.com/en-us/learn/certifications/exams/DP-420) for which every attendee receives a voucher.

**Prerequisites**

All students must have:

* Attended [Microsoft course AZ-900, Microsoft Azure Fundamentals](file:////training/microsoft-azure-fundamentals), or have equivalent experience.
* Experience writing in an Azure-supported language (C#, JavaScript, Python, or Java) at the intermediate level
* The ability to write code to connect and perform operations on a SQL or NoSQL database product, such as SQL Server, Oracle, MongoDB, Cassandra, or similar

**Materials**

All Microsoft Azure training students receive Microsoft official courseware.

For all Microsoft Official Courses taught in their entirety that have a corresponding certification exam, an exam voucher is included for each participant.

**Software Needed on Each Student PC**

Attendees will not need to install any software on their computer for this class. The class will be conducted in a remote environment that Accelebrate will provide; students will only need a local computer with a web browser and a stable Internet connection. Any recent version of Microsoft Edge, Mozilla Firefox, or Google Chrome will be fine.

**Objectives**

* Create and configure Azure Cosmos DB SQL API account, database, and container
* Use the .NET SDK to manage resources and perform operations
* Perform queries of varying complexity
* Design a data modeling and partitioning strategy
* Optimize queries and indexes based on characteristics of an application
* Use the Azure Resource Manager to manage accounts and resources with CLI or JSON and Bicep templates

**Outline**

* Get started with Azure Cosmos DB SQL API
  + Introduction to Azure Cosmos DB SQL API
  + Try Azure Cosmos DB SQL API
* Plan and implement Azure Cosmos DB SQL API
  + Plan Resource Requirements
  + Configure Azure Cosmos DB SQL API database and containers
  + Moving data into and out of Azure Cosmos DB SQL API
* Connect to Azure Cosmos DB SQL API with the SDK
  + Use the Azure Cosmos DB SQL API SDK
  + Configure the Azure Cosmos DB SQL API SDK
* Access and Manage Data with the Azure Cosmos DB SQL API SDKs
  + Implement Azure Cosmos DB SQL API point operations
  + Perform cross-document transactional operations with the Azure Cosmos DB SQL API
  + Process bulk data in Azure Cosmos DB SQL API
* Execute Queries in Azure Cosmos DB SQL API
  + Query the Azure Cosmos DB SQL API
  + Author complex queries with the Azure Cosmos DB SQL API
* Define and Implement an Indexing Strategy for Azure Cosmos DB SQL API
  + Define indexes in Azure Cosmos DB SQL API
  + Customize indexes in Azure Cosmos DB SQL API
* Integrate Azure Cosmos DB SQL API with Azure Services
  + Consume an Azure Cosmos DB SQL API change feed using the SDK
  + Handle events with Azure Functions and Azure Cosmos DB SQL API change feed
  + Search Azure Cosmos DB SQL API data with Azure Cognitive Search
* Implement a Data Modeling and Partitioning Strategy for Azure Cosmos DB SQL API
  + Model and partition your data in Azure Cosmos DB
  + Optimize databases by using advanced modeling patterns for Azure Cosmos DB
* Design and Implement a Replication Strategy for Azure Cosmos DB SQL API
  + Configure replication and manage failovers in Azure Cosmos DB
  + Use consistency models in Azure Cosmos DB SQL API
  + Configure multi-region write in Azure Cosmos DB SQL API
* Optimize Query Performance in Azure Cosmos DB SQL API
  + Choosing indexes in Azure Cosmos DB SQL API
  + Optimize queries in Azure Cosmos DB SQL API
  + Implement integrated cache
* Administrating and Monitoring Tasks for an Azure Cosmos DB SQL API Solution
  + Measure performance in Azure Cosmos DB SQL API
  + Monitor responses and events in Azure Cosmos DB SQL API
  + Implementing backup and restore for Azure Cosmos DB SQL API
  + Implement security in Azure Cosmos DB SQL API
* Manage an Azure Cosmos DB SQL API Solution using DevOps Practices
  + Write scripts for Azure Cosmos DB SQL API
  + Create resource template for Azure Cosmos DB SQL API
* Create Server-Side Programming Constructs in Azure Cosmos DB SQL API
  + Build multi-item transactions with the Azure Cosmos DB SQL API
  + Expand query and transaction functionality in Azure Cosmos DB SQL API
* Conclusion