# Microsoft Azure Data Fundamentals

Course code: MOC DP-900

This course is intended for anyone who wants to get familiar with the fundamental concepts of working with data and to understand how data is stored, processed, and analyzed in the Microsoft Azure cloud environment. The course gives you a comprehensive overview of key data concepts, of relational and non-relational data services in Azure, and of the capabilities of modern data analytics. At the same time, you will try out the individual areas in hands-on exercises so that you gain a clear understanding of how the specific services work and what they are suited for. Step by step, you will get familiar with the basic data types and the ways they are stored, with the principles of relational databases and the SQL language, with the non-relational Azure Storage and the Azure Cosmos DB database, and finally with the tools for both large-scale and real-time analytics and data visualization in Power BI and Microsoft Fabric. The course is also a suitable preparation for the Microsoft DP-900: Microsoft Azure Data Fundamentals certification exam.

## What You Will Learn

- You will get familiar with the fundamental concepts of working with data and the differences between structured, semi-structured, and unstructured data
- You will understand the difference between transactional (OLTP) and analytical data processing
- You will gain an overview of the data professional roles and the data services available in Microsoft Azure
- You will learn the principles of relational data, normalization, and working with the SQL language
- You will get to know the Azure SQL relational database services as well as the options for running open-source databases
- You will get familiar with the non-relational Azure Storage and the Azure Cosmos DB database
- You will understand the principles of both large-scale and real-time data analytics and try out data visualization in Power BI
- You will prepare to take the Microsoft DP-900 certification exam

## Who This Course Is Intended For

- Beginners and anyone interested in data who want to gain a basic overview of working with data in the cloud.
- Business and IT professionals who need to understand data concepts and Microsoft Azure services in order to collaborate on data projects.
- Anyone who wants to prepare for the DP-900 certification or build a foundation for follow-up role-based courses focused on data engineering, data analysis, or database administration.

## Prerequisites

- A basic knowledge of the Microsoft Azure environment at the level of the MOC AZ-900 course is recommended.

## Course Outline

### 1 Fundamentals of Data Storage and Processing

- You will discover what data is and how we distinguish between structured, semi-structured, and unstructured data
- You will understand the different ways data can be stored – in files of various formats as well as in relational and non-relational databases
- You will get familiar with the difference between transactional (OLTP) and analytical data processing and with the principles of ACID transactions
- You will find out which data professional roles (database administrator, data engineer, data analyst) are involved in working with data and what tasks they perform
- You will get an overview of the data services in Microsoft Azure that these roles use

### 2 Fundamentals of Relational Data in Microsoft Azure

- You will get familiar with the principles of relational data – storage in tables made up of rows and columns and the rules of normalization
- You will discover how to work with data using the SQL language (DDL, DCL, and DML statements) and what database objects such as views, stored procedures, and indexes are used for

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- You will get to know the Azure SQL family of services (SQL Server on a virtual machine, Azure SQL Managed Instance, and Azure SQL Database) and their appropriate deployment
- You will find out what options Azure offers for running the open-source databases MySQL, MariaDB, and PostgreSQL
- You will try out creating and configuring an Azure SQL Database and querying its data

3 Fundamentals of Non-Relational Data in Microsoft Azure

- You will get familiar with the capabilities of Azure Storage – Blob storage, Azure Data Lake Storage Gen2, Azure Files, and Azure Table Storage
- You will understand which scenarios each storage type is suited for and what their key features are
- You will discover what Azure Cosmos DB is as a globally scalable non-relational database and which storage APIs it supports – NoSQL, MongoDB, PostgreSQL, Table, Cassandra, and Gremlin
- You will find out how Cosmos DB enables data replication across regions and multi-region writes closer to users
- You will try out creating and using an Azure Storage account as well as an Azure Cosmos DB instance

4 Fundamentals of Data Analytics

- You will get familiar with the building blocks of large-scale analytical solutions – from data extraction, loading, and processing through analytical data stores to data models and visualization
- You will understand the differences between the Data Warehouse and Data Lakehouse architectures and the role of the Azure Databricks and Microsoft Fabric platforms
- You will discover how batch and stream data processing differ and how real-time data analysis works in Microsoft Fabric
- You will learn the fundamental principles of data visualization and report creation in Power BI, including data model design (dimensions, facts, measures, and hierarchies)
- You will try out processing and analyzing data in the Microsoft Fabric environment and creating a report in Power BI

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