

Cosmos DB



e-Learning Course

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COURSE MODULES

Module 1: Introduction to Cosmos DB

- What is Cosmos DB?
- Benefits of using Cosmos DB
- Key features & architecture
- Use cases & industries

Module 2: Getting Started with Cosmos DB

- Setting up an Azure account
- Creating a Cosmos DB account
- Understanding APIs:
 - SQL API
 - MongoDB API
 - Cassandra API
 - Gremlin API (Graph DB)
 - Table API
- Choosing the right API for your application

Module 3: Data Modeling in Cosmos DB

- Understanding partitioning & containers
- Best practices for data modeling
- Indexing in Cosmos DB
- Designing efficient queries

Module 4: Querying Cosmos DB

- Writing SQL queries for Cosmos DB
- Using the SQL API Query Language
- Query optimization & indexing
- Cross-partition queries

Module 5: Performance Tuning & Scaling

- Request Units (RUs) & pricing
- Scaling strategies: Manual vs. Auto
- Multi-region replication & global distribution
- Consistency models (Strong, Bounded Staleness, etc.)

Module 6: Developing Applications with Cosmos DB

- Cosmos DB SDKs: .NET, Java, Python, Node.js
- CRUD operations using SDKs
- Working with stored procedures, triggers & UDFs
- Integration with Azure Functions & Logic Apps

Module 7: Security & Compliance

- Role-Based Access Control (RBAC)
- Network security & firewall configurations
- Encryption & compliance standards
- Auditing & monitoring



Cosmos DB



Module 8: Backup, Restore & Monitoring

- Backup policies in Cosmos DB
- Point-in-time restore
- Monitoring with Azure Monitor & Application Insights
- Logging & troubleshooting

Module 9: Advanced Topics

- Change Feed & real-time data processing
- Event-driven architecture with Azure Event Hubs
- Hybrid transactional/analytical processing (HTAP)
- Machine learning with Cosmos DB

