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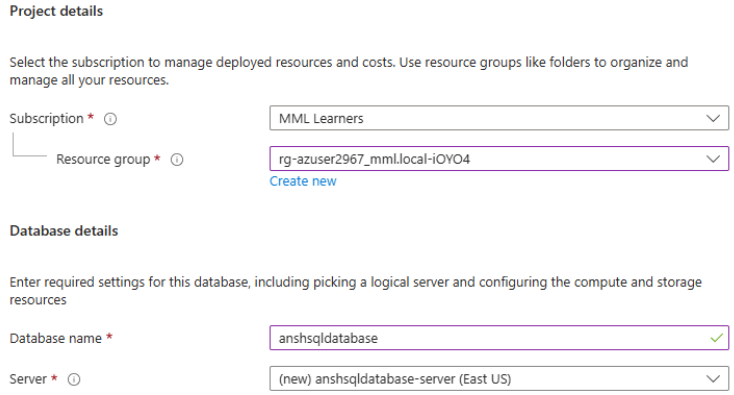
Azure Data

EXERCISE 2 - Introduction to Azure Databases

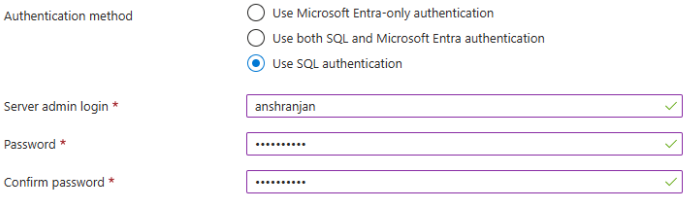
TASK 1: Deploy a sample database in Azure Cosmos DB and Azure SQL Database

- **SQL DATABASE**

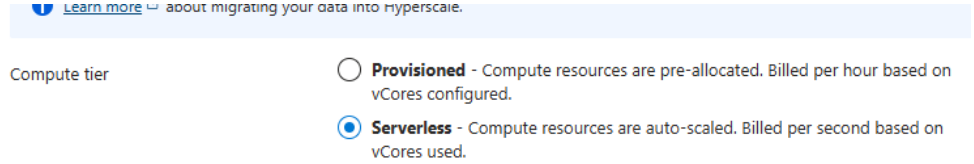
1. Go to SQL Databases > Create > Enter details > Create a new database server if you do not have existing option.



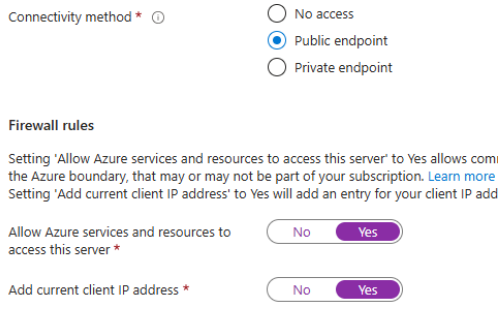
2. Under Network tab set Admin login and Password for your SQL database



3. Picking serverless computer for cheaper computation

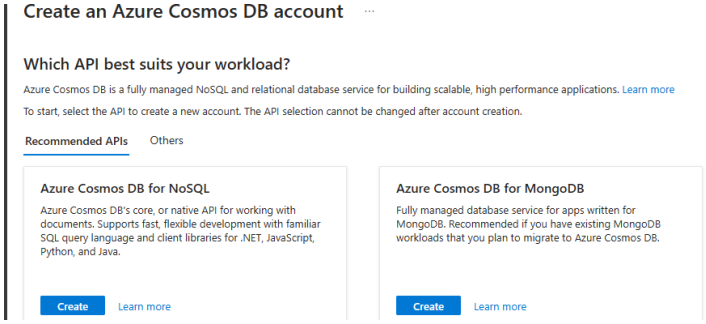


4. Under Network settings, allow connection to database

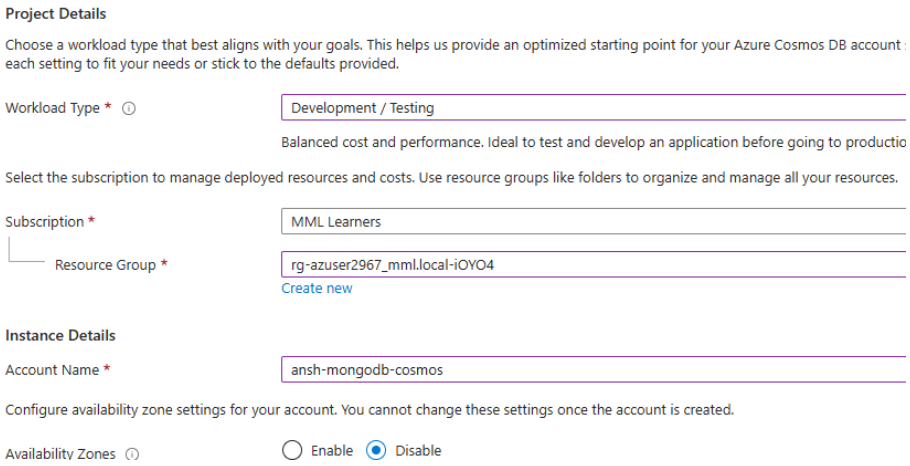


- **COSMOS DB MONGO DB**

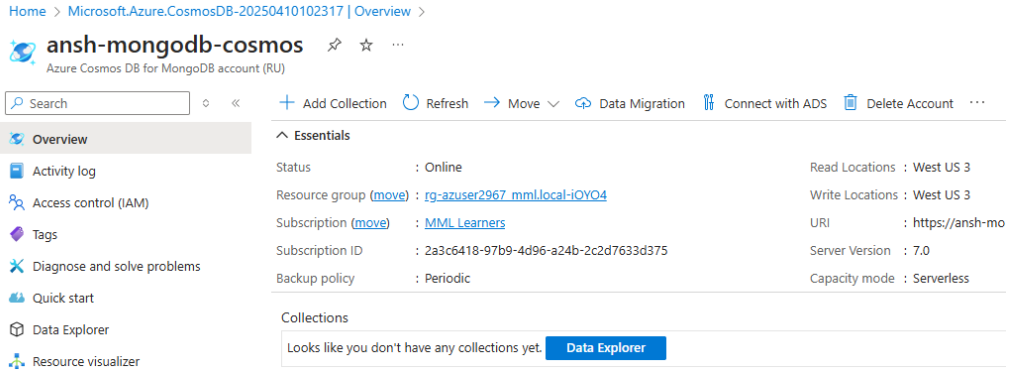
1. Open Cosmos DB > Create > Cozmos DB for MongoDB



2. Request Unit database account > Enter details > Review and Create



3. Your Azure Cosmos DB API for Mongo DB will be created and running



TASK 2: Document key features and use cases for each

Azure Synapse Analytics

Key Features:

- Unified platform for big data and data warehousing.
- Massively Parallel Processing (MPP) for large datasets.
- Integrated pipelines for ETL/ELT with Azure Data Factory.
- Synapse Studio for data exploration and analytics.
- Scalable, secure, and supports machine learning.

Use Cases:

- Data warehousing and big data analytics.
- Business intelligence with Power BI integration.

- Advanced analytics and IoT data processing.

Azure SQL Database

Key Features:

- Fully managed relational database service.
- High availability, scalability, and automated maintenance.
- Elastic pools for resource sharing.
- Advanced security and geo-replication.
- Seamless integration with other Azure services.

Use Cases:

- Transactional workloads (OLTP).
- Backend for web/mobile apps and e-commerce systems.
- ERP/CRM databases and lightweight analytics.

Comparison of Use Cases

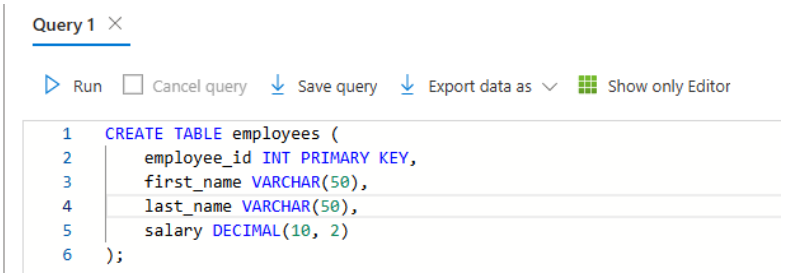
Feature/Use Case	Azure Synapse Analytics	Azure SQL Database
Primary Focus	Analytical workloads (OLAP)	Transactional workloads (OLTP)
Data Volume	Petabytes of data	Gigabytes to terabytes of data
Scalability	Massively parallel processing	Elastic scaling for transactional data
Integration	Big data tools, Power BI, Data Lake	Web apps, mobile apps, and business apps
Machine Learning	Advanced analytics and AI workloads	Limited to lightweight analytics
Use Case Examples	Data warehousing, predictive analytics	E-commerce systems, ERP/CRM databases

TASK 3: Perform basic CRUD operations

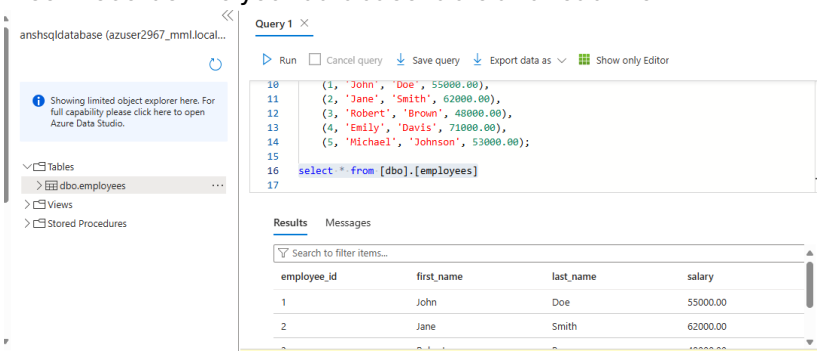
- **SQL DATABASE**

1. Go to your DB > Query Editor > Login with admin ID and password

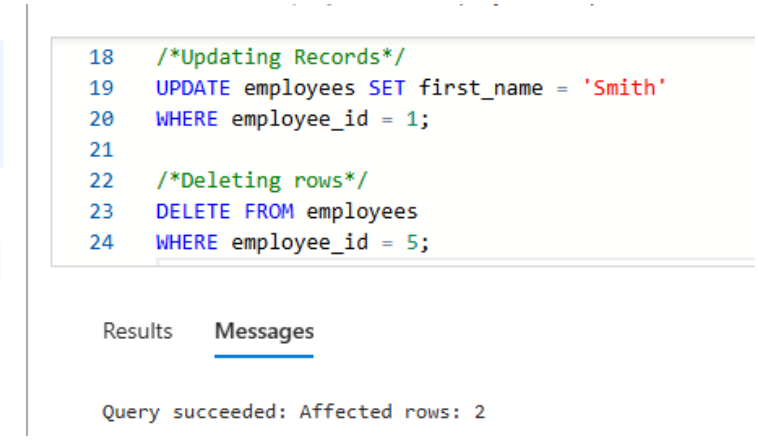
2. You will be presented with query page. Write a query to create a table in your database



3. Insert records into your database table and read them

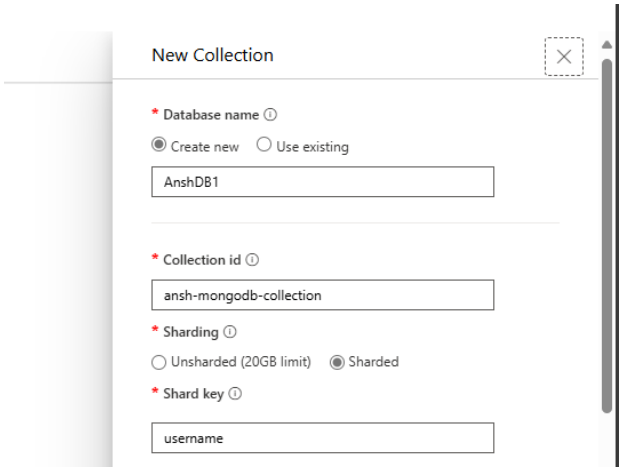


4. Updating and Deleting records

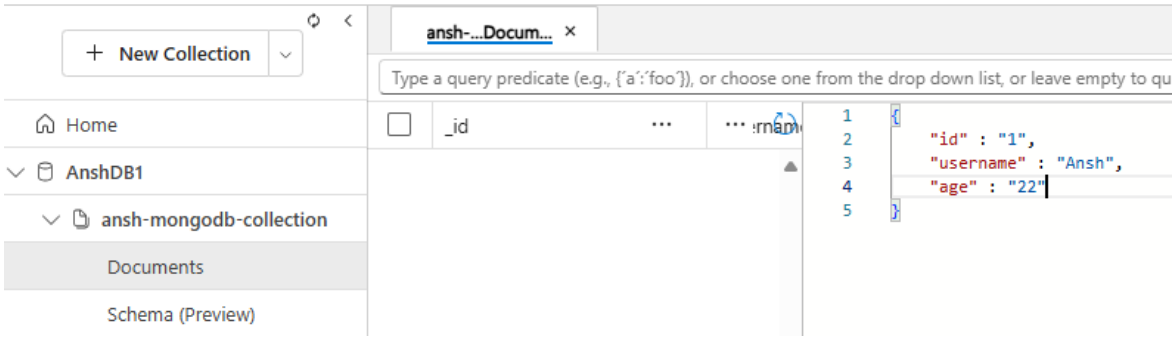


- **COSMOS DB MONGO DB**

1. Go to Data Explorer > Create Database > New Collection > Select Database or create new, give collection id, shard key



2. Once your collection is created > click New Document and enter data in document > Save



3. You can add more documents now that your mongo db is up and running