

Data Analytics in Azure

Project Overview:

In this project, I completed the Azure Skillable Labs, gaining hands-on experience in data analytics within the Azure ecosystem. Through a series of labs, I explored the capabilities of Azure for working with both relational and non-relational data, as well as its tools and features for conducting advanced data analytics. This project enhanced my skills in managing and analysing data in the cloud, particularly within Azure's powerful data analytics environment.

Project Breakdown:

1. Lab 1: Explore Relational Data in Azure

In this lab, I learned how to work with relational data within Azure. This involved connecting to and managing databases, querying relational data, and leveraging Azure's capabilities for storing and analysing structured data. I gained an understanding of how to use Azure SQL Database to manage relational data efficiently and scale for large datasets.

2. Lab 2: Explore Non-Relational Data in Azure

This lab focused on working with non-relational (NoSQL) data in Azure. I explored how to store, retrieve, and manage unstructured or semi-structured data using Azure services like Azure Cosmos DB. I gained hands-on experience with different types of NoSQL databases, including document, key-value, and graph databases, and learned how to query and analyse this type of data in Azure.

3. Lab 3: Explore Data Analytics in Azure

In this final lab, I explored various data analytics tools and services offered by Azure. This included working with Azure Synapse Analytics and Azure Databricks to process and analyse large volumes of data. I learned how to leverage Azure's advanced analytics tools to perform data transformation, create machine learning models, and generate insights from large datasets.

Skills Developed:

Throughout the completion of the Azure Skillable Labs, I developed key skills in cloud-based data management and analytics:

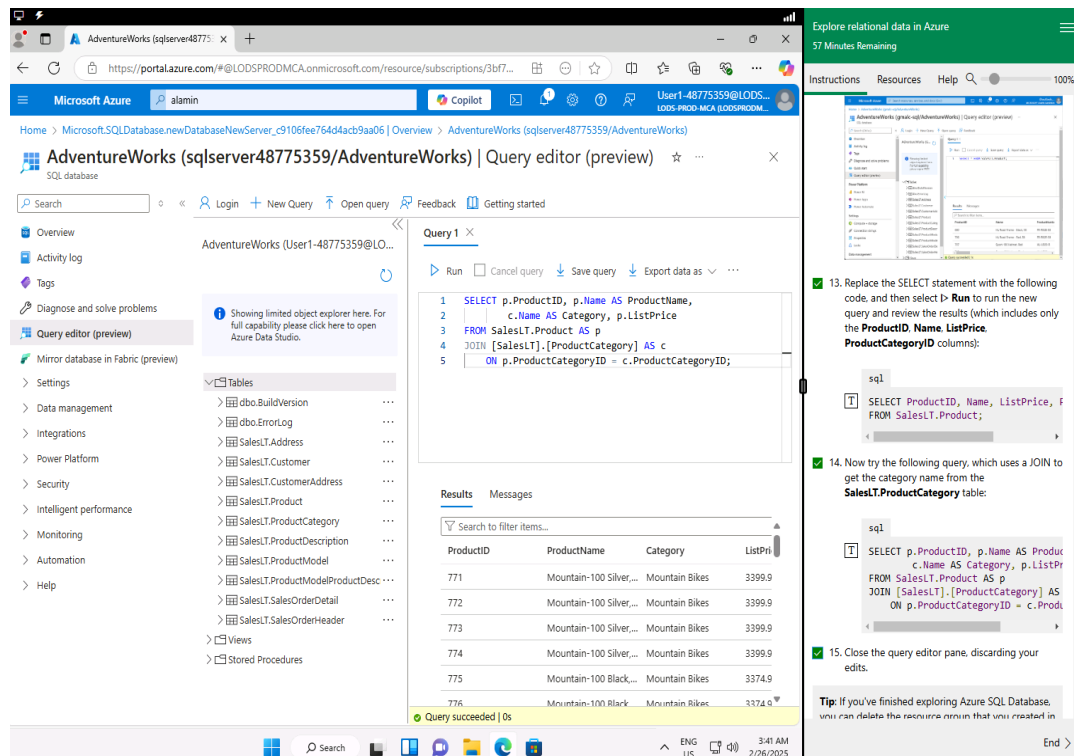
- **Working with Relational Data:** I became proficient in managing structured data within Azure, including how to use Azure SQL Database for querying and managing relational datasets.
- **Handling Non-Relational Data:** I gained experience in handling unstructured data, learning how to use Azure Cosmos DB and other NoSQL databases to work with flexible data models.

- **Utilising Azure Analytics Tools:** I learned how to apply Azure's powerful analytics services such as Azure Synapse Analytics and Azure Databricks to process, analyse, and generate insights from large-scale data.
- **Cloud-Based Data Solutions:** I enhanced my understanding of the Azure cloud platform's data services and how they integrate to provide scalable, efficient, and secure solutions for data analytics.

Conclusion:

Completing the Azure Skillable Labs has significantly enhanced my skills in data analytics in the cloud, particularly within the Azure environment. I now have a solid understanding of working with both relational and non-relational data, and I am equipped with the knowledge to leverage Azure's advanced data analytics tools for large-scale data processing and analysis. This experience has prepared me to effectively manage and analyse data in cloud-based environments, providing valuable insights for decision-making.

Lab (1) 'Explore relational data in Azure'



The screenshot displays the Azure portal interface for the AdventureWorks database. The main window shows the 'Query editor (preview)' with a SQL query and its results. The query is as follows:

```
1 SELECT p.ProductID, p.Name AS ProductName,
2       c.Name AS Category, p.ListPrice
3 FROM SalesLT.Product AS p
4 JOIN [SalesLT].[ProductCategory] AS c
5      ON p.ProductCategoryID = c.ProductCategoryID;
```

The results table shows the following data:

ProductID	ProductName	Category	ListPrice
771	Mountain-100 Silver,...	Mountain Bikes	3399.9
772	Mountain-100 Silver,...	Mountain Bikes	3399.9
773	Mountain-100 Silver,...	Mountain Bikes	3399.9
774	Mountain-100 Silver,...	Mountain Bikes	3399.9
775	Mountain-100 Black,...	Mountain Bikes	3374.9
776	Mountain-100 Black,...	Mountain Bikes	3374.9

The sidebar on the right contains instructions for Lab (1):

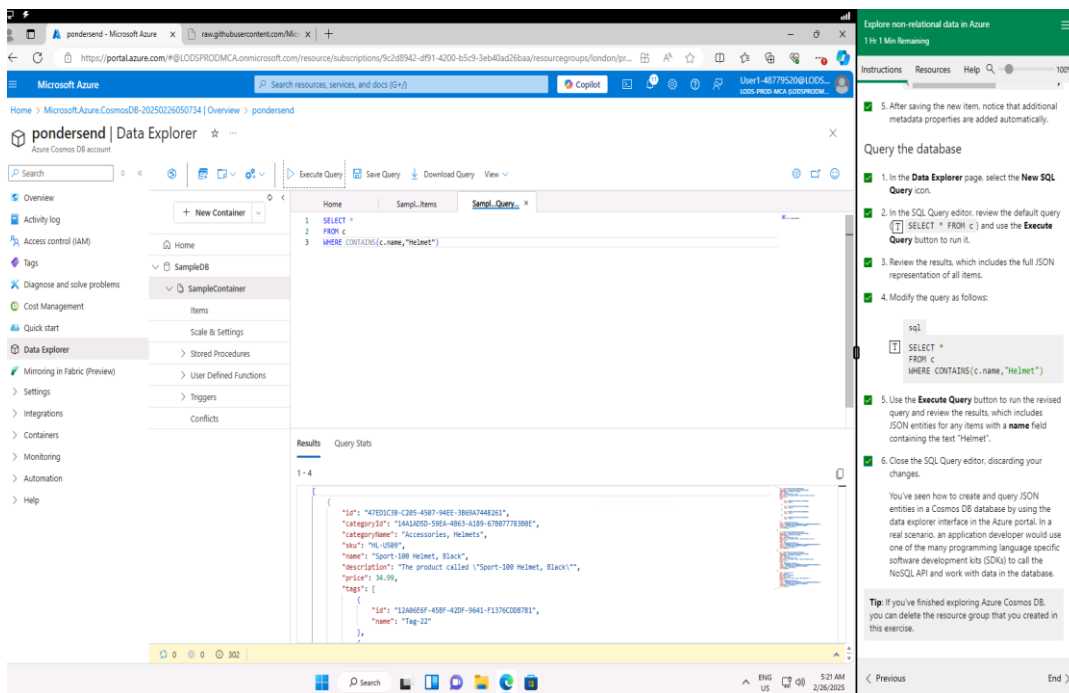
13. Replace the SELECT statement with the following code, and then select **Run** to run the new query and review the results (which includes only the **ProductID**, **Name**, **ListPrice**, and **ProductCategoryID** columns):


```
sql
SELECT ProductID, Name, ListPrice, ProductCategoryID
FROM SalesLT.Product;
```
14. Now try the following query, which uses a JOIN to get the category name from the **SalesLT.ProductCategory** table:


```
sql
SELECT p.ProductID, p.Name AS ProductName,
       c.Name AS Category, p.ListPrice
FROM SalesLT.Product AS p
JOIN [SalesLT].[ProductCategory] AS c
    ON p.ProductCategoryID = c.ProductCategoryID;
```
15. Close the query editor pane, discarding your edits.

Tip: If you've finished exploring Azure SQL Database, you can delete the resources from that you created in this lab.

Lab (2) 'Explore non-relational data in Azure'



Explore non-relational data in Azure

1. In the **Data Explorer** page, select the **New SQL Query** icon.

2. In the SQL Query editor, review the default query (`SELECT * FROM c`) and use the **Execute Query** button to run it.

3. Review the results, which includes the full JSON representation of all items.

4. Modify the query as follows:

```
sql
SELECT *
FROM c
WHERE CONTAINS(c.name, "Helmet")
```

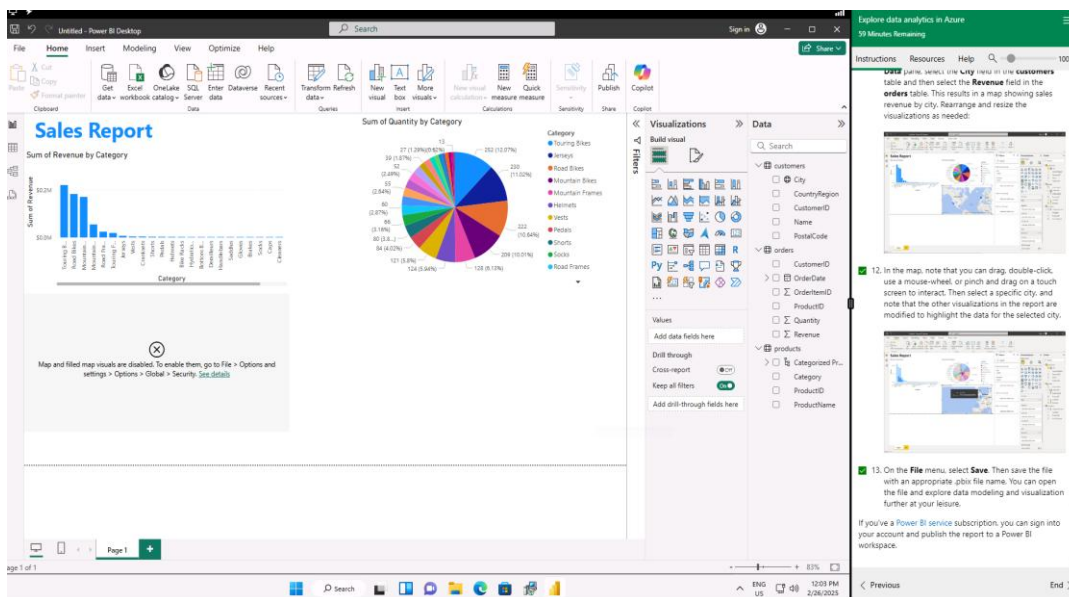
5. Use the **Execute Query** button to run the revised query and review the results, which includes JSON entities for any items with a **name** field containing the text "Helmet".

6. Close the SQL Query editor, discarding your changes.

You've seen how to create and query JSON entities in a Cosmos DB database by using the data explorer interface in the Azure portal. In a real scenario, an application developer would use one of the many programming language specific software development kits (SDKs) to call the NoSQL API and work with data in the database.

Tip: If you've finished exploring Azure Cosmos DB, you can delete the resource group that you created in this exercise.

Lab (3) 'Explore data analytics in Azure'



Explore data analytics in Azure

12. In the map, note that you can drag, double-click, use a mouse-wheel, or pinch and drag on a touch screen to interact. Then select a specific city, and note that the other visualizations in the report are modified to highlight the data for the selected city.

13. On the **File** menu, select **Save**. Then save the file with an appropriate .pbix file name. You can open the file and explore data modeling and visualization further at your leisure.

If you've a Power BI service subscription, you can sign into your account and publish the report to a Power BI workspace.