

Lab 4 CST8912_011

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Submitted to:

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Lab-4

Title

- Configuring and Managing Azure SQL Database and Data Migration Using Azure Data Factory"

Introduction

- This workshop involves deploying Azure SQL Database to Canada Central while it demonstrates data transfer from the database to Azure Blob Storage through Azure Data Factory. The project requires configuration of database resources and implementation of firewall and networking policies while using Data Factory for data automation. Participating in this practical exercise enables students to gain hands-on experience with both cloud database administration and data transference that serves as important competencies for professionals who work with cloud systems.

Steps

- The first step for this lab consists of creating an Azure SQL Database in the Canada Central region within your cst8912-demo resource group. The first step creates a SQL authenticated server and implements the firewall permissions for Azure service connections while adding your IP after server setup. You should access the database through Query Editor to execute sample queries which will retrieve data from the SalesLT.Product table. Establish the Azure Storage Account while adding the container productdata8912 to receive the data. You need to make an Azure Data Factory instance through which launch Data Factory Studio. You should add a "Copy Data" task into Data Factory to move information from the Azure SQL Database into the Azure Blob Storage container. The setup process includes connecting to both SQL Database as the source and Blob Storage as the destination followed by selecting the SalesLT.Product table before specifying the container destination folder and file name. Execute the pipeline to move data until the CSV file displays in the Azure Blob Storage

container. The lab concludes with deleting all created resources which include the SQL Database and Storage Account and Data Factory instance.

The screenshot shows the 'Create SQL Database' page in the Microsoft Azure portal. The page is divided into two main sections: 'Project details' and 'Database details'.

Project details:

- Subscription:** Azure for Students
- Resource group:** (New) CST8912-demo

Database details:

- Database name:** db8912
- Server:** (new) db8912demo (Canada Central)
- Want to use SQL elastic pool?** No
- Workload environment:** Development

Cost Estimation:

ESTIMATED STORAGE COST / MONTH	5.26 USD
COMPUTE COST / VCORE SECOND ¹	0.000174 USD

NOTES:
¹ Serverless databases are billed in vCore seconds based on a combination of CPU and memory utilization. [Learn more about serverless billing.](#)

Buttons: Review + create, Next: Networking >

Canada central region and resource group cst8912-demo

Microsoft Azure

Home > SQL databases > Create SQL Database

Create SQL Database Server

Microsoft

Enter required settings for this server, including providing a name and location. This server will be created in the same subscription and resource group as your database.

Server name *

Location *

Authentication

! Azure Active Directory (Azure AD) is now Microsoft Entra ID. [Learn more](#)

Select your preferred authentication methods for accessing this server. Create a server admin login and password to access your server with SQL authentication, select only Microsoft Entra authentication [Learn more](#) or using an existing Microsoft Entra user, group, or application as Microsoft Entra admin [Learn more](#), or select both SQL and Microsoft Entra authentication.

Authentication method

- ☐ Use Microsoft Entra-only authentication
- ☐ Use both SQL and Microsoft Entra authentication
- ☒ Use SQL authentication

Server admin login *

Password *

OK

Server name, Admin name, password

Microsoft Azure

Home > SQL databases > Create SQL Database

Create SQL Database

Microsoft

Database name *

Server *

Want to use SQL elastic pool? ☐ Yes ☒ No

Workload environment

- ☒ Development
- ☐ Production

Compute + storage *

Backup storage redundancy

Choose how your PITR and LTR backups are replicated. Geo restore or ability to recover from regional outage is only available when geo-redundant storage is selected.

Backup storage redundancy ☐ Locally-redundant backup storage ☐ Zone-redundant backup storage ☐ Geo-redundant backup storage ☐ Geo-Zone-redundant backup storage (Preview)

Review + create **Next : Networking >**

Want to use SQL elastic pool?: No
 Workload environment: Development
 Compute + storage: Leave unchanged
 Backup storage redundancy: Locally-redundant backup storage

Microsoft Azure portal interface showing the Query editor (preview) for a SQL database named db8912 (db8912demo/db8912).

The interface includes a sidebar with navigation options: Overview, Activity log, Tags, Diagnose and solve problems, Query editor (preview), Mirror database in Fabric (preview), Settings, Data management, Integrations, Power Platform, Security, Auditing, Ledger, Data Discovery & Classification, Dynamic Data Masking, Microsoft Defender for Cloud, Identity, and Data Encryption.

The main area displays the Query editor (preview) with a query window and a results window.

Query 1

```
1 SELECT ProductID, Name, ListPrice, ProductCategoryID
2 FROM SalesLT.Product;
3
```

Results

ProductID	Name	ListPrice	ProductCategoryID
680	HL Road Frame - Black, 58	1431.5000	18
706	HL Road Frame - Red, 58	1431.5000	18
707	Sport-100 Helmet, Red	34.9900	35
708	Sport-100 Helmet, Black	34.9900	35
709	Mountain Bike Socks, M	9.5000	27
710	Mountain Bike Socks, L	9.5000	27

Query succeeded | 0s

Query 1

Microsoft Azure portal interface showing the Query editor (preview) for the db8912 (db8912demo/db8912) SQL database. The interface includes a sidebar with navigation options like Overview, Activity log, Tags, and Security. The main area displays the Query editor with a search bar and a list of tables, views, and stored procedures. The query results are shown in a table format.

ProductID	Name	ListPrice	ProductCategoryID
680	HL Road Frame - Black, 58	1431.5000	18
706	HL Road Frame - Red, 58	1431.5000	18
707	Sport-100 Helmet, Red	34.9900	35
708	Sport-100 Helmet, Black	34.9900	35
709	Mountain Bike Socks, M	9.5000	27
710	Mountain Bike Socks, L	9.5000	27
711	Sport-100 Helmet, Blue	34.9900	35
712	AWC Logo Cap	8.9900	23
713	Long-Sleeve Logo Jersey, S	49.9900	25
714	Long-Sleeve Logo Jersey, M	49.9900	25
715	Long-Sleeve Logo Jersey, L	49.9900	25
716	Long-Sleeve Logo Jersey, XL	49.9900	25

Query 1

Microsoft Azure portal interface showing the Query editor (preview) for the db8912 (db8912demo/db8912) SQL database. The interface includes a sidebar with navigation options like Overview, Activity log, Tags, and Security. The main area displays the Query editor with a search bar and a list of tables, views, and stored procedures. The query results are shown in a table format.

```
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;
```

ProductID	ProductName	Category	ListPrice
771	Mountain-100 Silver, 38	Mountain Bikes	3399.9900
772	Mountain-100 Silver, 42	Mountain Bikes	3399.9900
773	Mountain-100 Silver, 44	Mountain Bikes	3399.9900
774	Mountain-100 Silver, 48	Mountain Bikes	3399.9900
775	Mountain-100 Black, 38	Mountain Bikes	3374.9900
776	Mountain-100 Black, 42	Mountain Bikes	3374.9900

Query 2

storage8912demo - Microsoft Azure

portal.azure.com/#@AlgonquinLivecom.onmicrosoft.com/resource/subscriptions/fc12c2a4-1b36-460b-9a72-d18c25ffb97/resourcegroups/CST8912-demo/providers/Micr...

Microsoft Azure

Home > storage8912demo_1739132865317 | Overview >

storage8912demo

Storage account

Search

Upload Open in Explorer Delete Move Refresh Open in mobile CU / PS Feedback

Overview

- Activity log
- Tags
- Diagnose and solve problems
- Access Control (IAM)
- Data migration
- Events
- Storage browser
- Storage Mover
- Partner solutions
- Data storage
 - Containers
 - File shares
 - Queues
 - Tables
- Security + networking
 - Networking
 - Front Door and CDN
 - Access keys
 - Shared access signature

Essentials

Resource group (move) : CST8912-demo

Location : canadacentral

Subscription (move) : Azure for Students

Subscription ID : fc12c2a4-1b36-460b-9a72-d18c25ffb97

Disk state : Available

Tags (edit) : Add tags

Performance : Standard

Replication : Locally-redundant storage (LRS)

Account kind : StorageV2 (general purpose v2)

Provisioning state : Succeeded

Created : 2/9/2025, 3:27:52 PM

Properties Monitoring Capabilities (7) Recommendations (0) Tutorials Tools + SDKs

Blob service

- Hierarchical namespace : Disabled
- Default access tier : Hot
- Blob anonymous access : Disabled
- Blob soft delete : Enabled (7 days)
- Container soft delete : Enabled (7 days)
- Versioning : Disabled
- Change feed : Disabled
- NFS v3 : Disabled
- Allow cross-tenant replication : Disabled
- Storage tasks assignments : None

Security

- Require secure transfer for REST API operations : Enabled
- Storage account key access : Enabled
- Minimum TLS version : Version 1.2
- Infrastructure encryption : Disabled

Networking

- Allow access from : All networks
- Private endpoint connections : 0
- Network routing : Microsoft network routing
- Access for trusted Microsoft services : Yes
- Endpoint type : Standard

File service

Creating Storage Account

productdata8912 - Microsoft Azure

portal.azure.com/#view/Microsoft_Azure_Storage/ContainerMenuBlade/~/_overview/storageAccountId/%2Fsubscriptions%2Ffc12c2a4-1b36-460b-9a72-d18c25ffb97%2F...

Microsoft Azure

Home > storage8912demo_1739132865317 | Overview > storage8912demo | Containers >

productdata8912

Container

Search

Upload Change access level Refresh Delete Change tier Acquire lease Break lease View snapshots Create snapshot Give feedback

Overview

- Diagnose and solve problems
- Access Control (IAM)
- Settings
 - Shared access tokens
 - Access policy
 - Properties
 - Metadata

Authentication method: Access key (Switch to Microsoft Entra user account)

Location: productdata8912

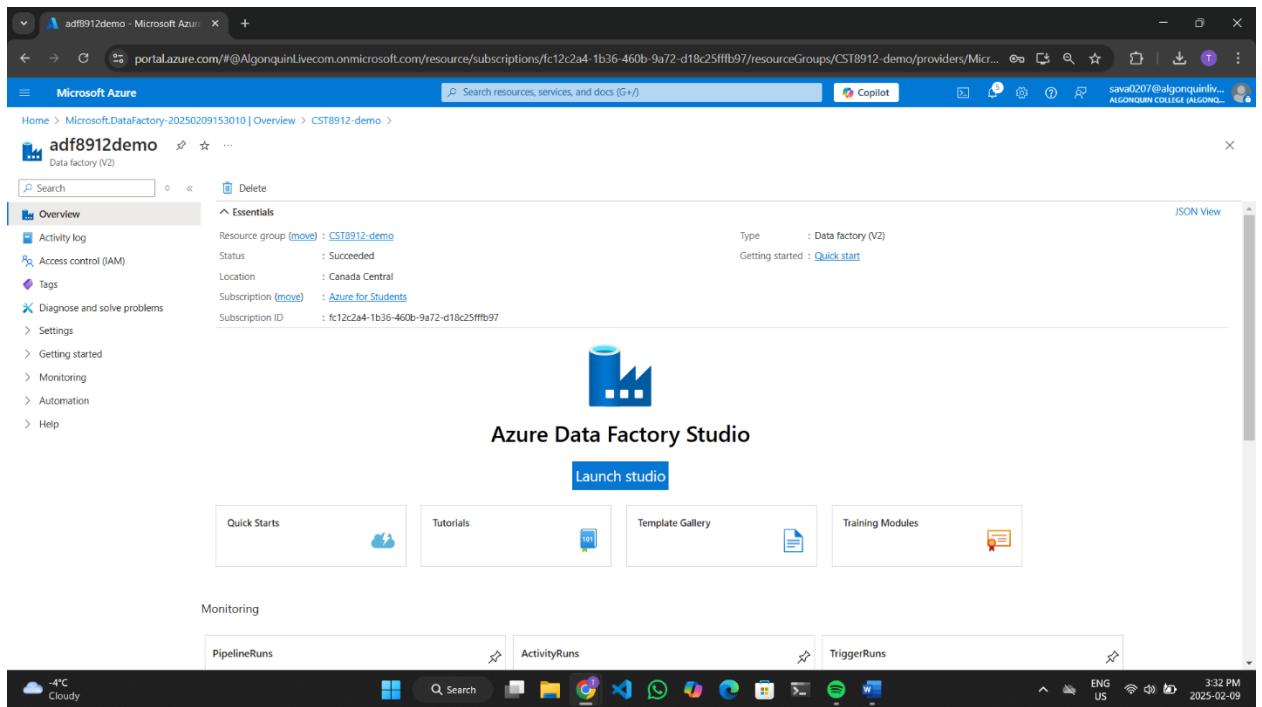
Search blobs by prefix (case-sensitive)

Show deleted blobs

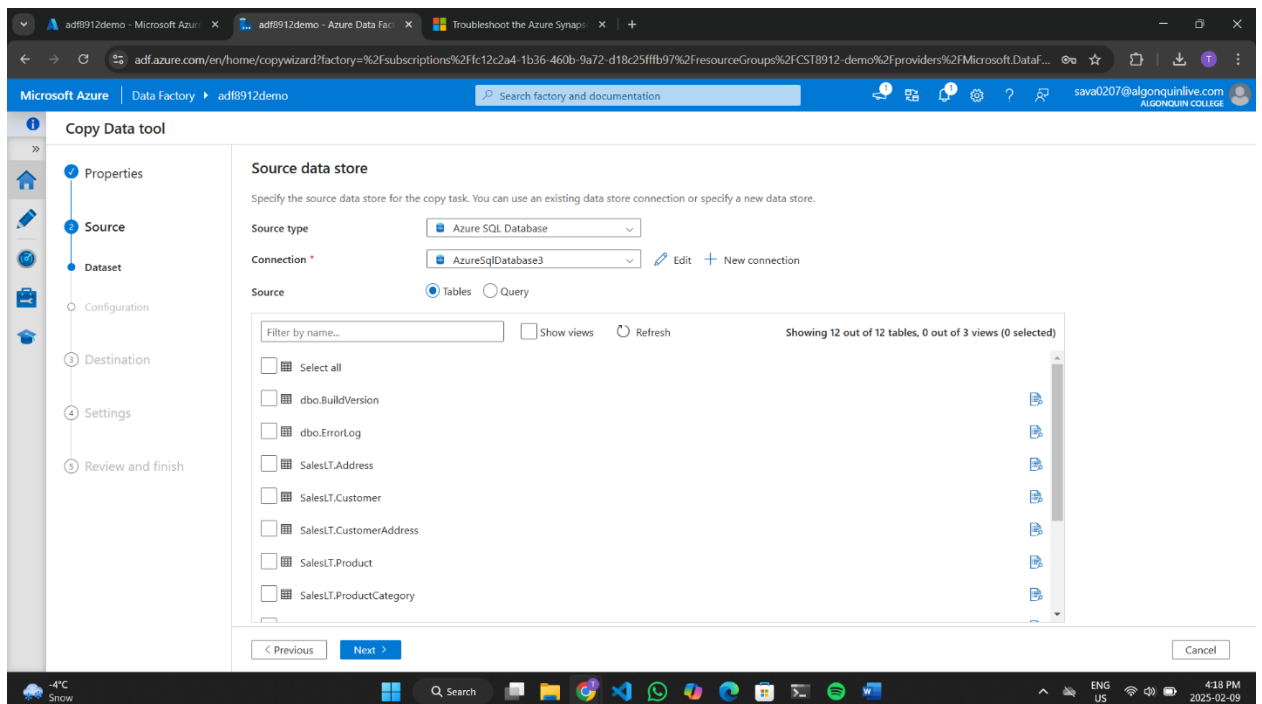
Add filter

Name	Modified	Access tier	Archive status	Blob type	Size	Lease state
No results						

Created Container



Created Data factory



creating connection to azure sql database from data factory

Copy Data tool

Destination data store

Specify the destination data store for the copy task. You can use an existing data store connection or specify a new data store.

Destination type: Azure Blob Storage

Connection: AzureBlobStorage [Edit](#) [+ New connection](#)

Folder path: productdata8912/ [Browse](#)

File name: File name is defined by source table name

Advanced settings

File name suffix: .txt

Max concurrent connections: 1

Block size (MB): 1

Metadata

[< Previous](#) [Next >](#) [Cancel](#)

Configuration

Copy Data tool

File format settings

File format: DelimitedText

Column delimiter: Comma (,) [Edit](#)

Row delimiter: Default (\r\n, or \n) [Edit](#)

☒ **Add header to file**

Advanced

Compression type: No compression

Max rows per file: 1

File name prefix

[< Previous](#) [Next >](#) [Cancel](#)

Setting

adfb912demo - Microsoft Azure | Data Factory | adfb912demo

Copy Data tool

Properties
Source
Destination
Settings
Review and finish
Review
Deployment

Azure SQL Database → Azure Blob Storage

Deployment complete

Deployment step	Status
Validating copy runtime environment	✓ Succeeded
> Creating datasets	✓ Succeeded
> Creating pipelines	✓ Succeeded
> Running pipelines	✓ Succeeded

Datasets and pipelines have been created. You can now monitor and edit the copy pipelines or click finish to close Copy Data Tool.

Finish Edit pipeline Monitor

Snow coming 4:52 p.m.

Review and Creating

productdata8912 - Microsoft Azure | Containers

productdata8912

Overview
Diagnose and solve problems
Access Control (IAM)
Settings
Shared access tokens
Access policy
Properties
Metadata

Authentication method: Access key (Switch to Microsoft Entra user account)
Location: productdata8912

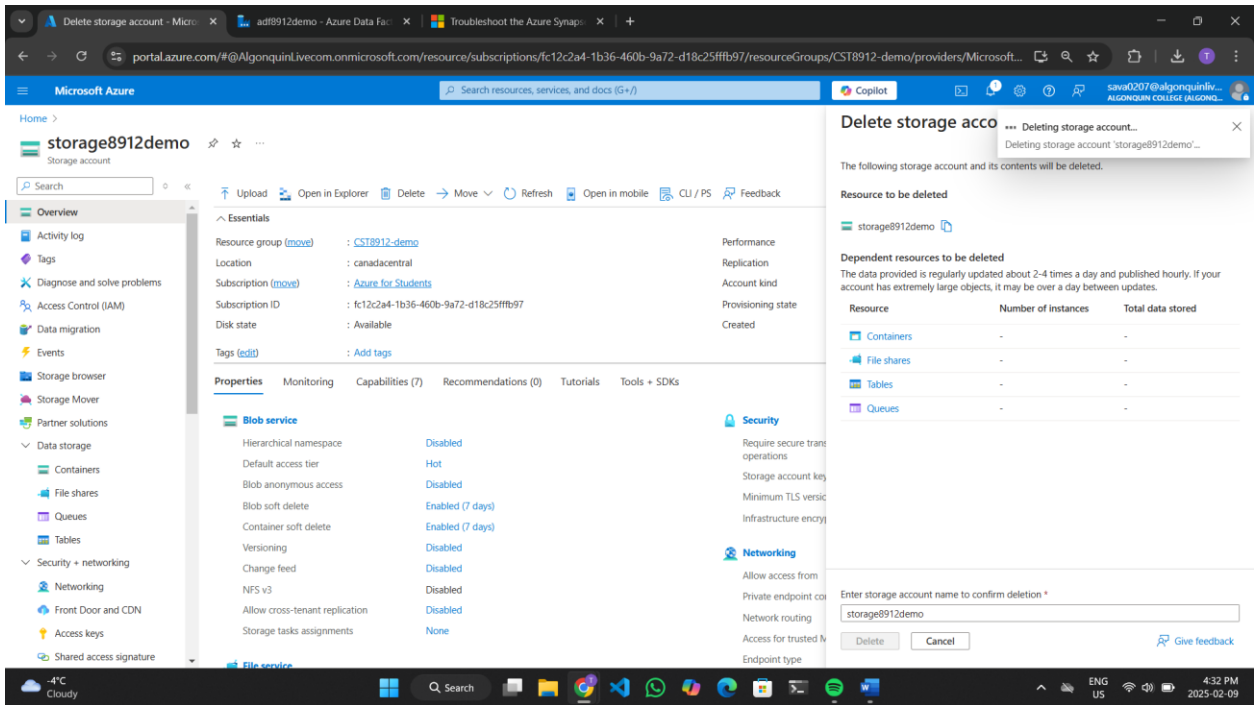
Search blobs by prefix (case-sensitive) Show deleted blobs

Add filter

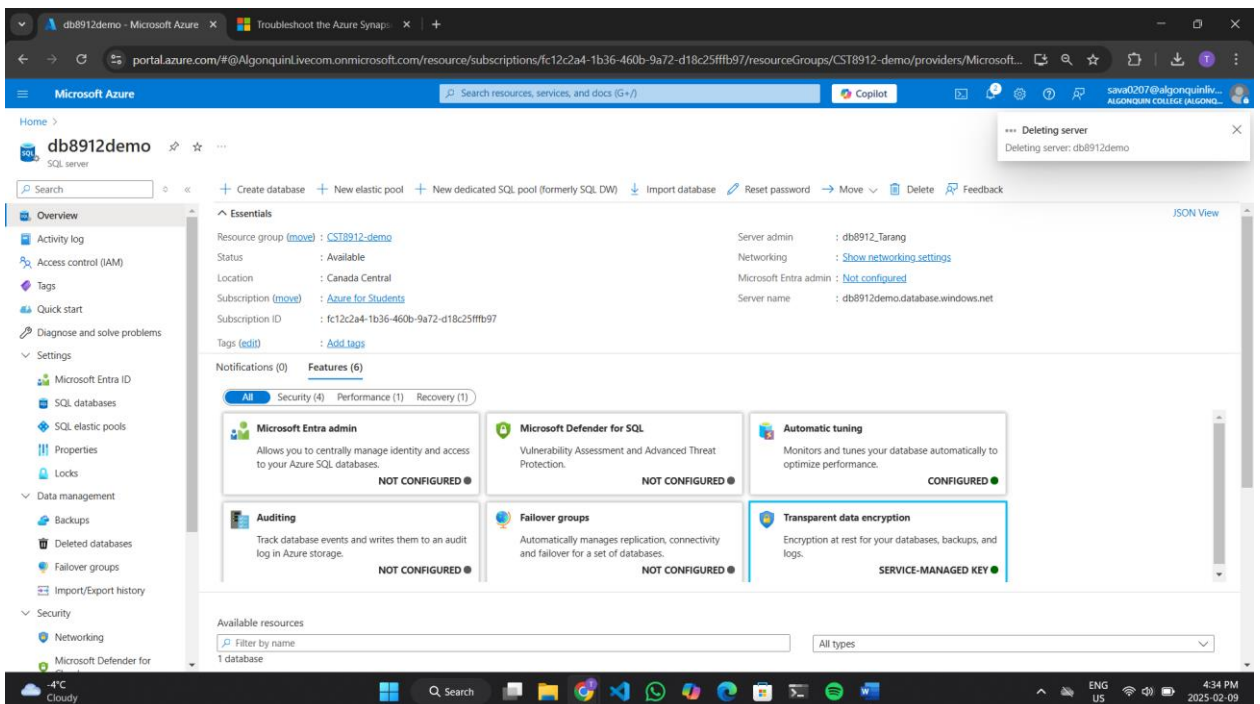
Name	Modified	Access tier	Archive status	Blob type	Size	Lease state
<input type="checkbox"/> dbo.BuildVersion.csv	09/02/2025, 16:29:01	Hot (Inferred)		Block blob	139 B	Available
<input type="checkbox"/> dbo.ErrorLog.csv	09/02/2025, 16:29:01	Hot (Inferred)		Block blob	106 B	Available
<input type="checkbox"/> SalesLT.Address.csv	09/02/2025, 16:29:01	Hot (Inferred)		Block blob	61.26 KiB	Available
<input type="checkbox"/> SalesLT.Customer.csv	09/02/2025, 16:29:02	Hot (Inferred)		Block blob	212.88 KiB	Available
<input type="checkbox"/> SalesLT.CustomerAddress.csv	09/02/2025, 16:29:04	Hot (Inferred)		Block blob	36.77 KiB	Available
<input type="checkbox"/> SalesLT.Product.csv	09/02/2025, 16:29:02	Hot (Inferred)		Block blob	1.3 MiB	Available
<input type="checkbox"/> SalesLT.ProductCategory.csv	09/02/2025, 16:29:02	Hot (Inferred)		Block blob	3.37 KiB	Available
<input type="checkbox"/> SalesLT.ProductDescription.csv	09/02/2025, 16:29:01	Hot (Inferred)		Block blob	144.77 KiB	Available
<input type="checkbox"/> SalesLT.ProductModel.csv	09/02/2025, 16:28:59	Hot (Inferred)		Block blob	25.02 KiB	Available
<input type="checkbox"/> SalesLT.ProductModelProductDescription.csv	09/02/2025, 16:29:00	Hot (Inferred)		Block blob	61.84 KiB	Available
<input type="checkbox"/> SalesLT.SalesOrderDetail.csv	09/02/2025, 16:29:02	Hot (Inferred)		Block blob	59.24 KiB	Available
<input type="checkbox"/> SalesLT.SalesOrderHeader.csv	09/02/2025, 16:29:01	Hot (Inferred)		Block blob	9.11 KiB	Available

SEV - BAR Live - H2

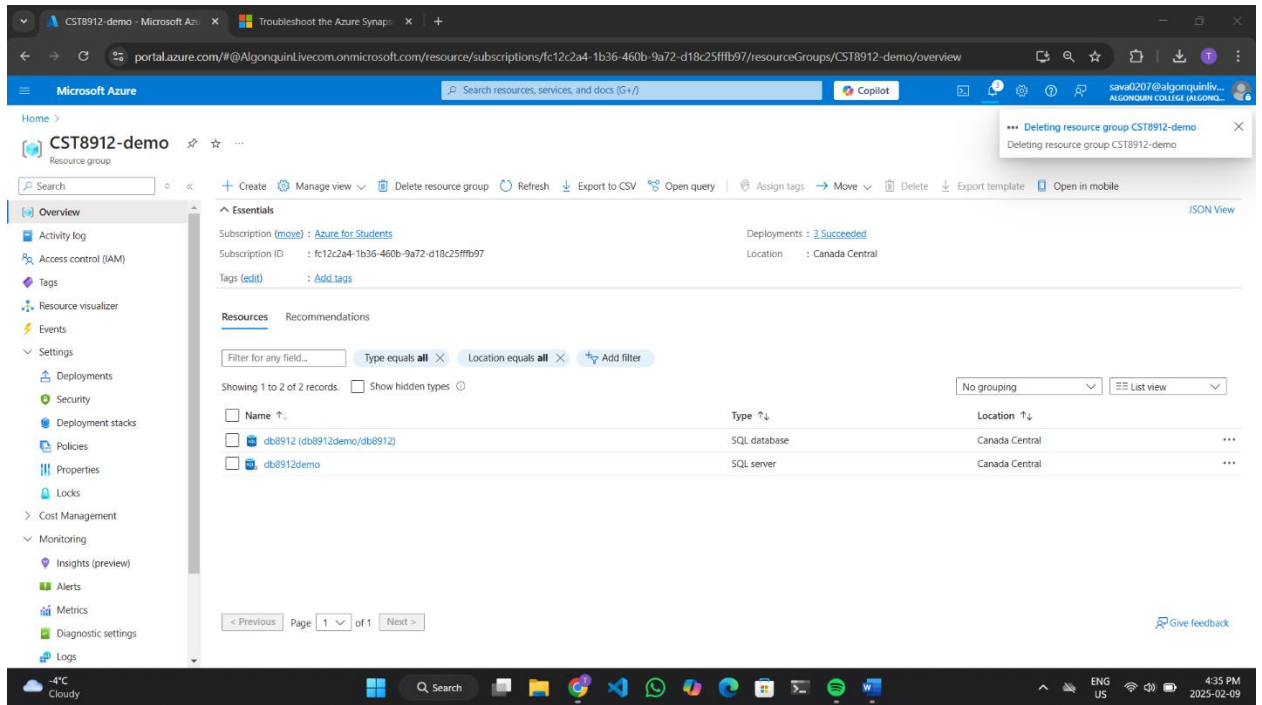
storage account container to see the product csv file copied from the database to storage account



Deleting Storage Account



Deleting SQL server



Deleting resource group

References

- YouTube videos for reference for Azure:
https://www.youtube.com/watch?v=p7X8IH_XMtI
<https://www.youtube.com/watch?v=v54UCzJJAYY>
<https://www.youtube.com/watch?v=HeKDc-ndIYc>
- YouTube videos for reference for AWS:
<https://www.youtube.com/watch?v=v3jH1YxJqaY>
<https://www.youtube.com/watch?v=elvbUU8VH30>