NAME : AKULA SHARATH CHANDRA
BATCH: DATA ENGINEERING
DATE :21-02-2024

AZURE CODING CHALLENGE

1)Exploratory data analysis (EDA) in Databricks &Visualizing data in Databricks.
2)Explain Overview of 3 level namespace and creating Unity Catalog objects.
3)Execute & explain Azure datafactory and its copy activity.

ANSWERS:

1)Exploratory data analysis (EDA) in Databricks &Visualizing data in Databricks?

EDA:

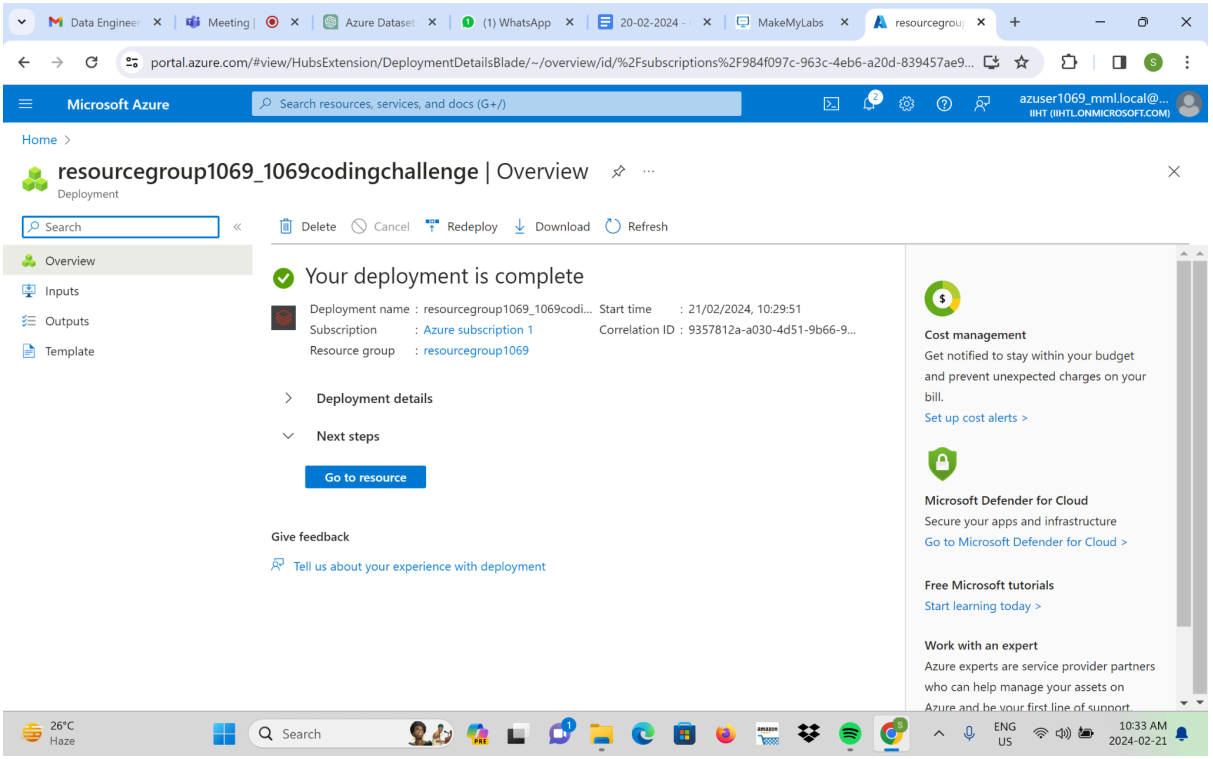
Exploratory Data Analysis is a data analysis approach that involves summarizing, visualizing, and understanding the main characteristics of a dataset to uncover patterns, trends, relationships.

Here are some common steps involved in EDA using Databricks,

Data Loading: Databricks allows users to load data from various sources such as databases, data lakes, or cloud storage into Spark DataFrames.

Data Profiling: Users can generate summary statistics and descriptive analytics to understand the structure and distribution of data. Databricks offers tools for generating summary statistics, histograms, box plots, and other visualizations.

Data Visualization: Databricks provides integration with popular visualization libraries like Matplotlib, Seaborn, and Plotly, allowing users to create insightful plots and charts to visualize patterns and relationships within the data.
Data Cleaning: EDA often involves identifying and handling missing values, outliers, and inconsistencies in the data. Databricks offers powerful data manipulation and transformation capabilities using Spark SQL and DataFrame APIs.
Feature Engineering: Databricks enables users to create new features or derive insights from existing features to improve model performance. This may involve tasks such as feature scaling, encoding categorical variables, or creating new variables through transformations.
Statistical Analysis: Databricks allows users to perform statistical tests and analyses to validate assumptions, test hypotheses, and uncover relationships between variables.
Interactive Exploration: Databricks notebooks provide an interactive environment where users can iterate on their analysis, visualize results, and collaborate with team members.
Scalability: Databricks leverages the distributed computing capabilities of Apache Spark, enabling EDA on large-scale datasets that may not fit into memory on a single machine.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Resource group : resourcegroup1069
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Deployment details
Next steps
Go to resource
Give feedback
Tell us about your experience with deployment
Cost management
Get notified to stay within your budget and prevent unexpected charges on your bill.
Set up cost alerts >
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Azure experts are service provider partners who can help manage your assets on
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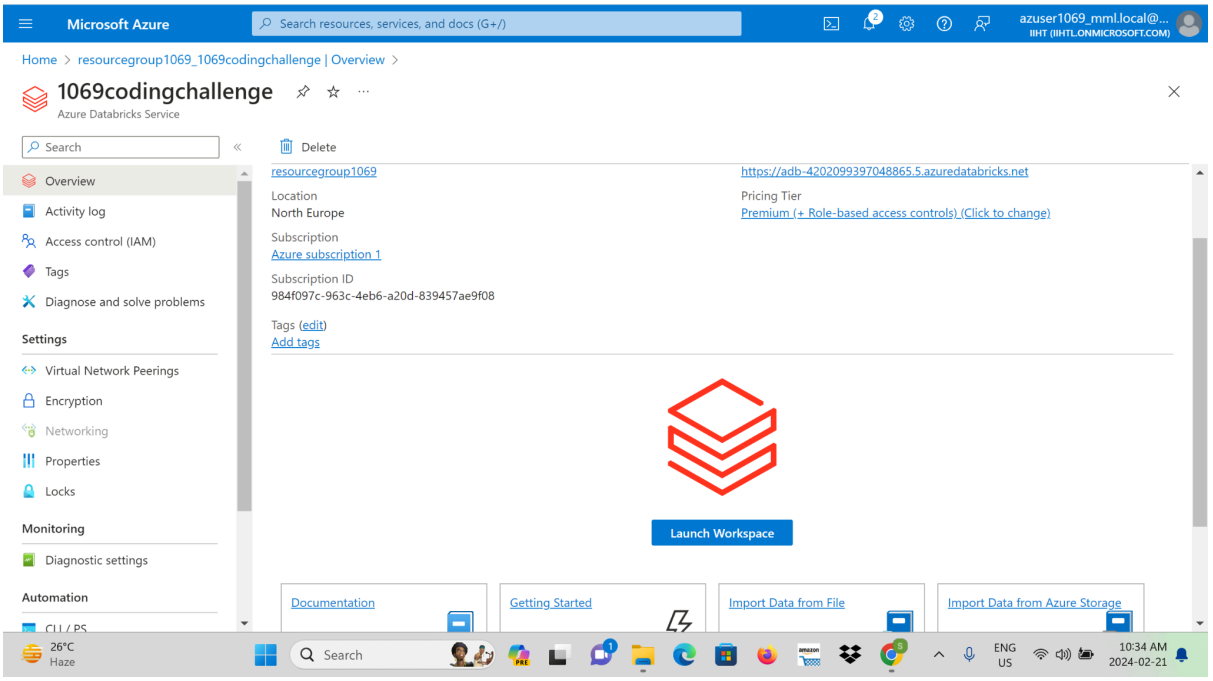
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Azure Databricks Service
Search
Delete
Overview
Activity log
Access control (IAM)
Tags
Diagnose and solve problems
Settings
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Tags (edit)
Add tags
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Premium (+ Role-based access controls) (Click to change)
Launch Workspace
Documentation
Getting Started
Import Data from File
Import Data from Azure Storage
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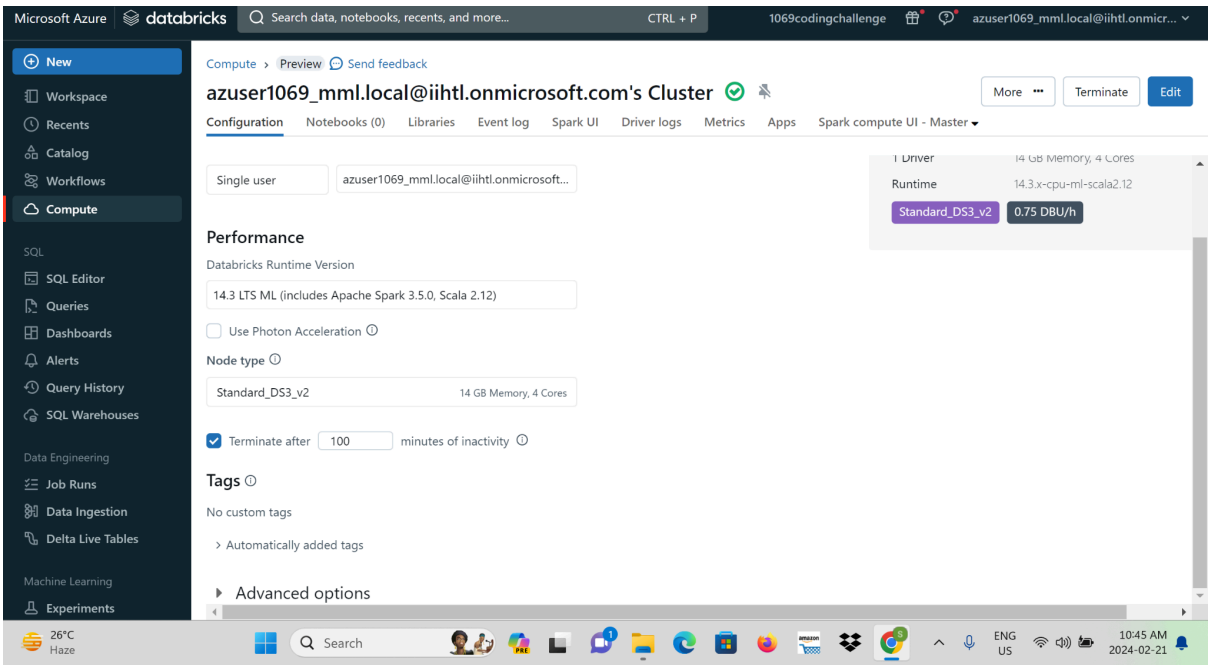
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Workspace
Recents
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Spark UI
Driver logs
Metrics
Apps
Spark compute UI - Master
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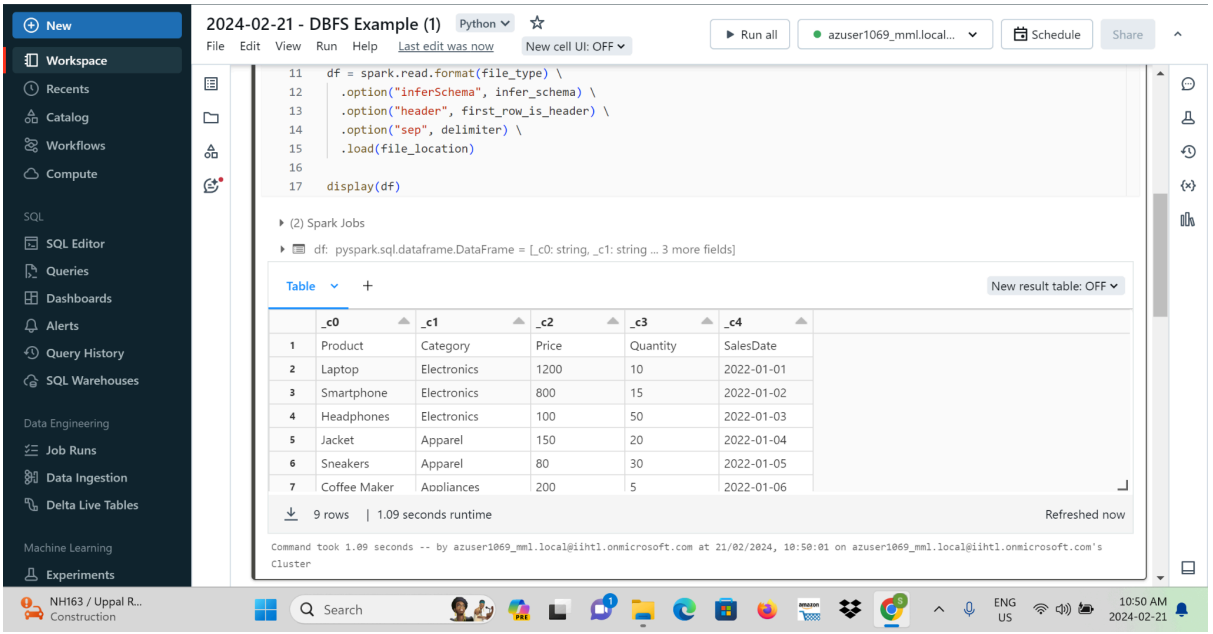
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Data Engineering
Job Runs
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Machine Learning
Experiments
2024-02-21 - DBFS Example (1)
Python
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New cell UI: OFF
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Schedule
Share
df = spark.read.format(file_type) \
.option("inferSchema", infer_schema) \
.option("header", first_row_is_header) \
.option("sep", delimiter) \
.load(file_location)
display(df)
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Table
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1 Product Category Price Quantity SalesDate
2 Laptop Electronics 1200 10 2022-01-01
3 Smartphone Electronics 800 15 2022-01-02
4 Headphones Electronics 100 50 2022-01-03
5 Jacket Apparel 150 20 2022-01-04
6 Sneakers Apparel 80 30 2022-01-05
7 Coffee Maker Appliances 200 5 2022-01-06
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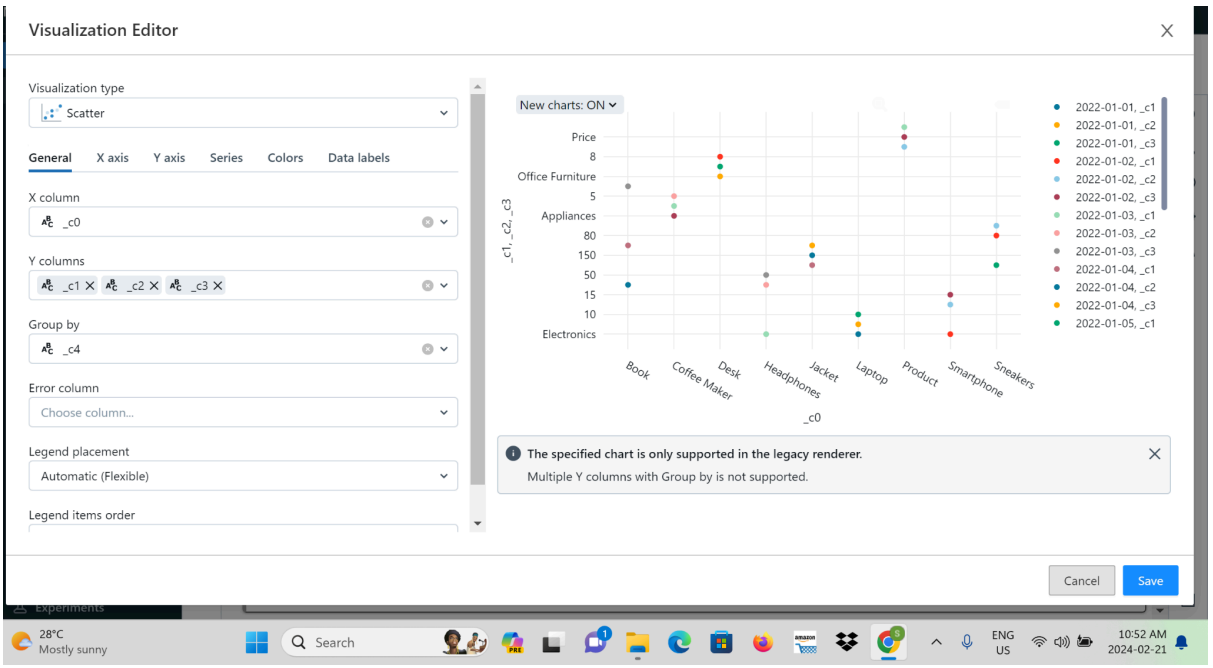
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Y axis
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Headphones
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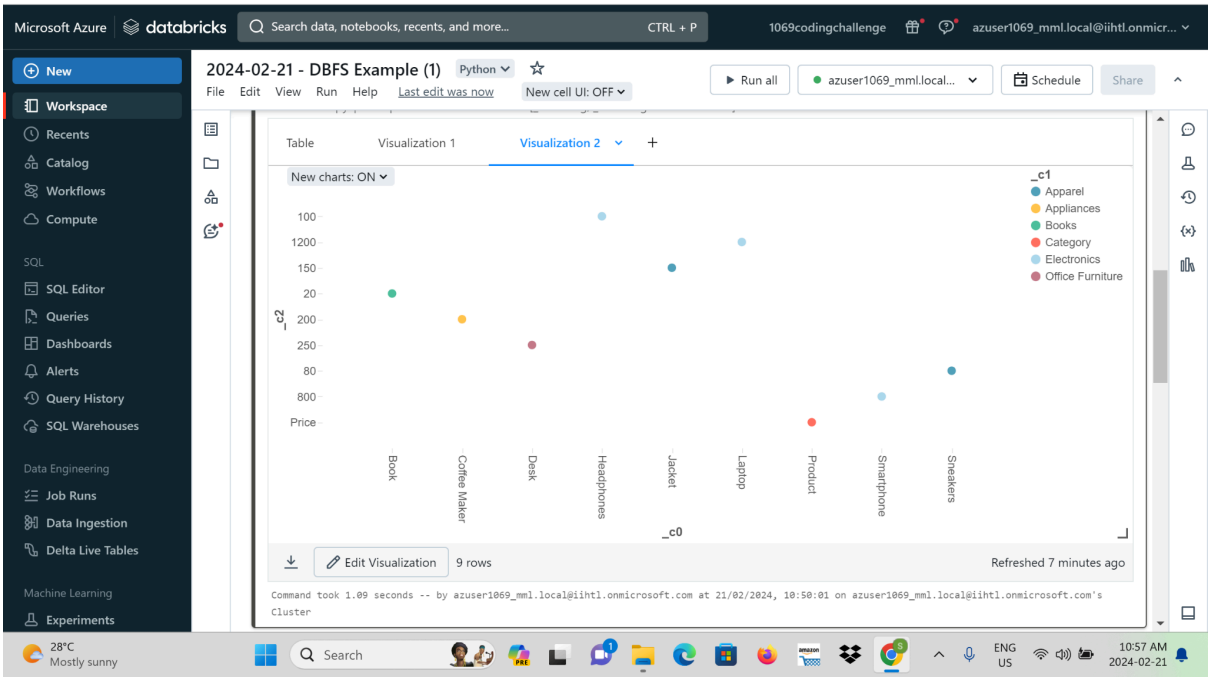
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Job Runs
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Machine Learning
Experiments
2024-02-21 - DBFS Example (1)
Python
File
Edit
View
Run
Help
Last edit was now
New cell UI: OFF
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Visualization 1
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3)Execute & explain Azure datafactory and its copy activity?

A)<u>DATA FACTORY</u>: Azure Data Factory is a cloud-based data integration service that allows you to create data-driven workflows in the cloud for orchestrating and automating data movement and data transformation. ADF does not store any data itself. It allows you to create data-driven workflows to orchestrate the movement of data between supported data stores and then process the data using compute services in other regions or in an on-premise environment. It also allows you to monitor and manage workflows using both programmatic and UI mechanisms.

—> It works in 3 steps

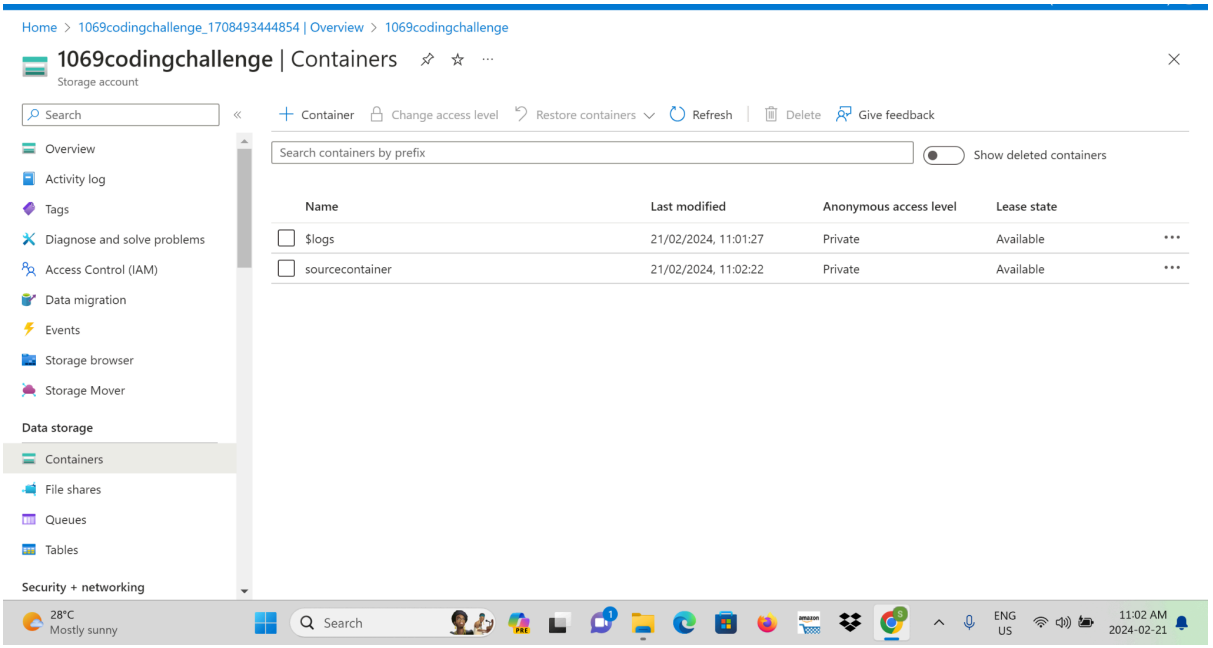
i) Connect and collect

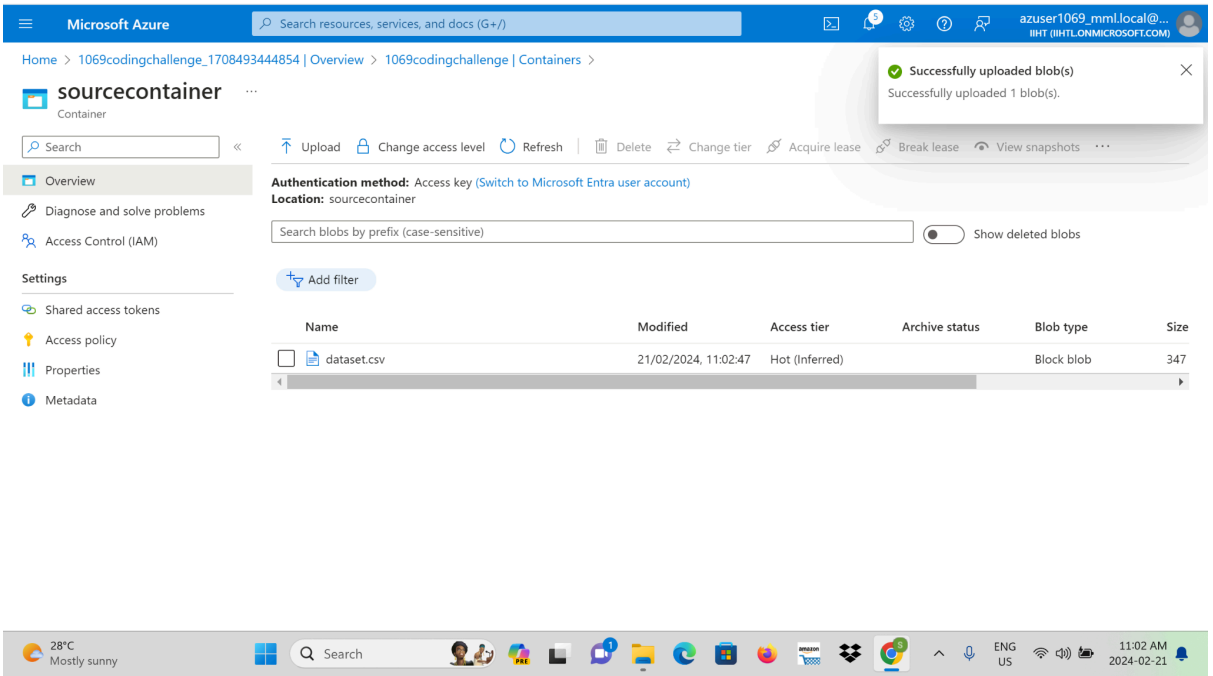
ii) Transform and enrich

iii) Publish

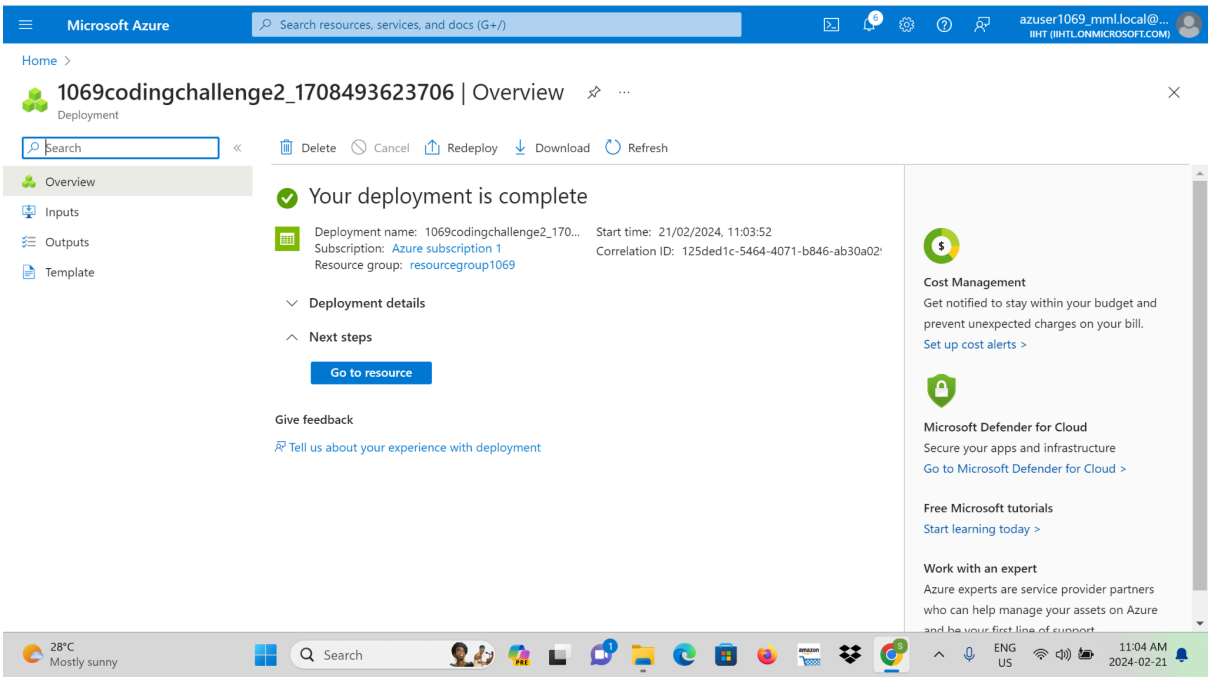
COPY ACTIVITY: Copy Activity in Azure Data Factory copies data from a source data store to a sink data store.

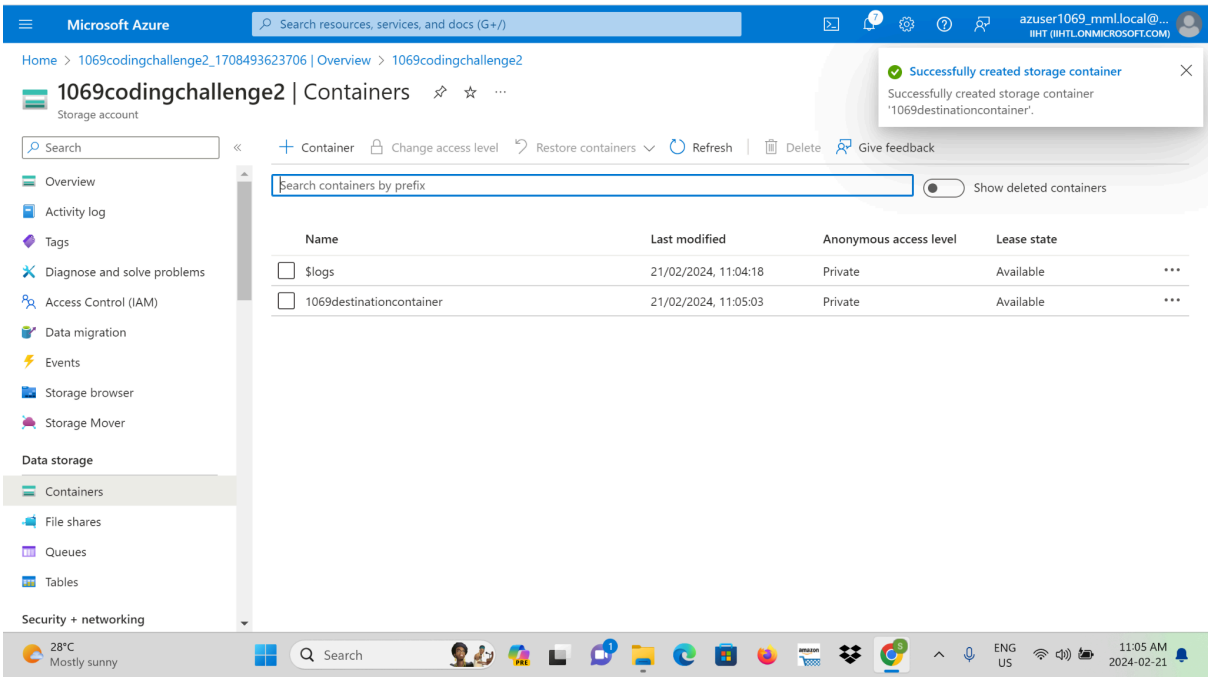
—> to create a data factory account firstly we need to create two storage accounts one is for source group and one is for destination group.
—> I have created a source storage account and then created a container and uploaded a file in it .

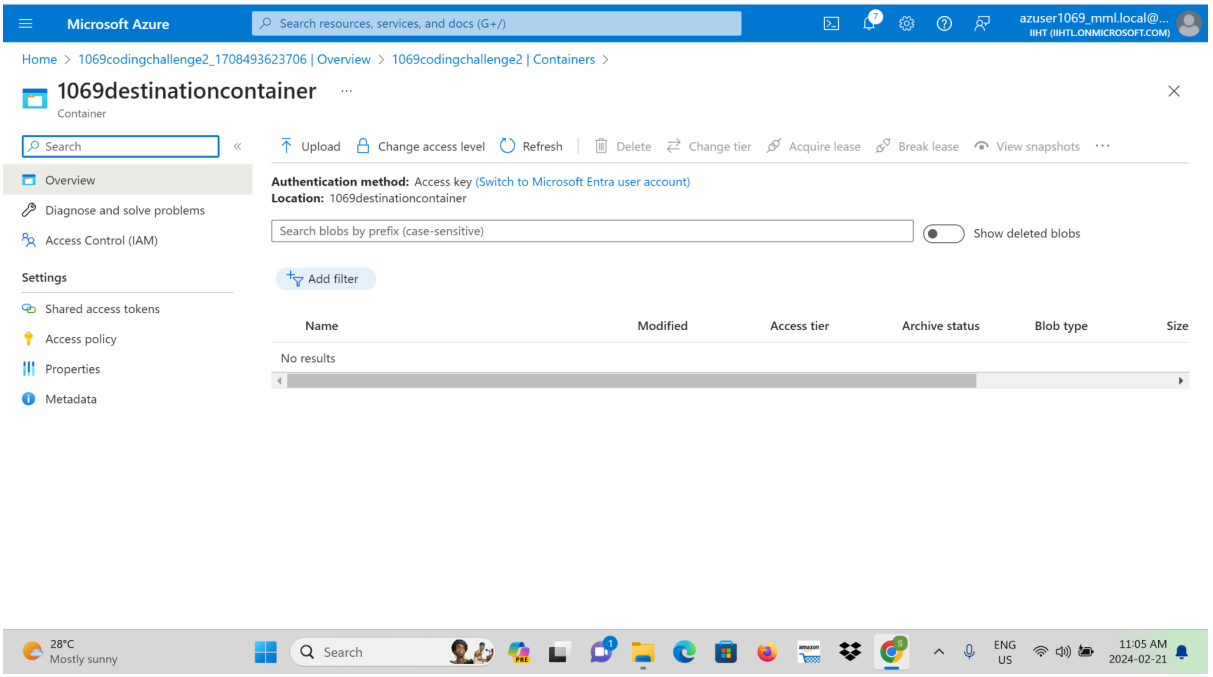




→I have created another storage account for the destination group and then I have created a container without upload a file in it.



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1069destinationcontainer
Container
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Overview
Diagnose and solve problems
Access Control (IAM)
Settings
Shared access tokens
Access policy
Properties
Metadata
Upload
Change access level
Refresh
Delete
Change tier
Acquire lease
Break lease
View snapshots
Authentication method: Access key (Switch to Microsoft Entra user account)
Location: 1069destinationcontainer
Search blobs by prefix (case-sensitive)
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Name
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Blob type
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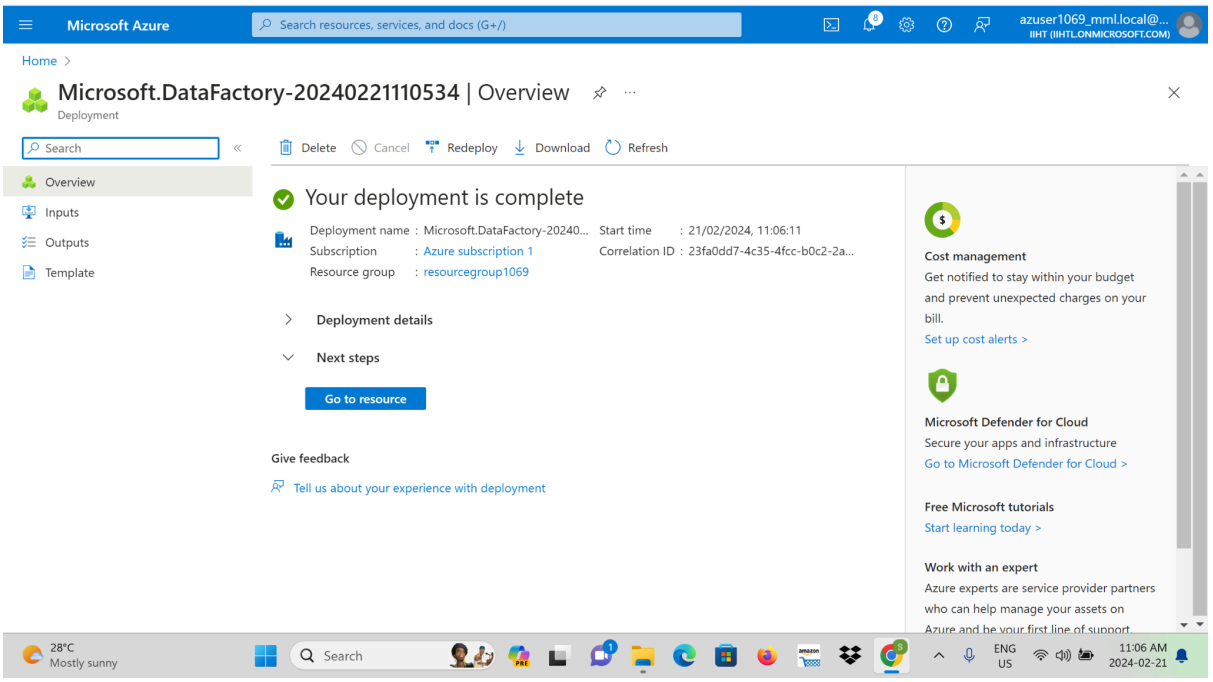
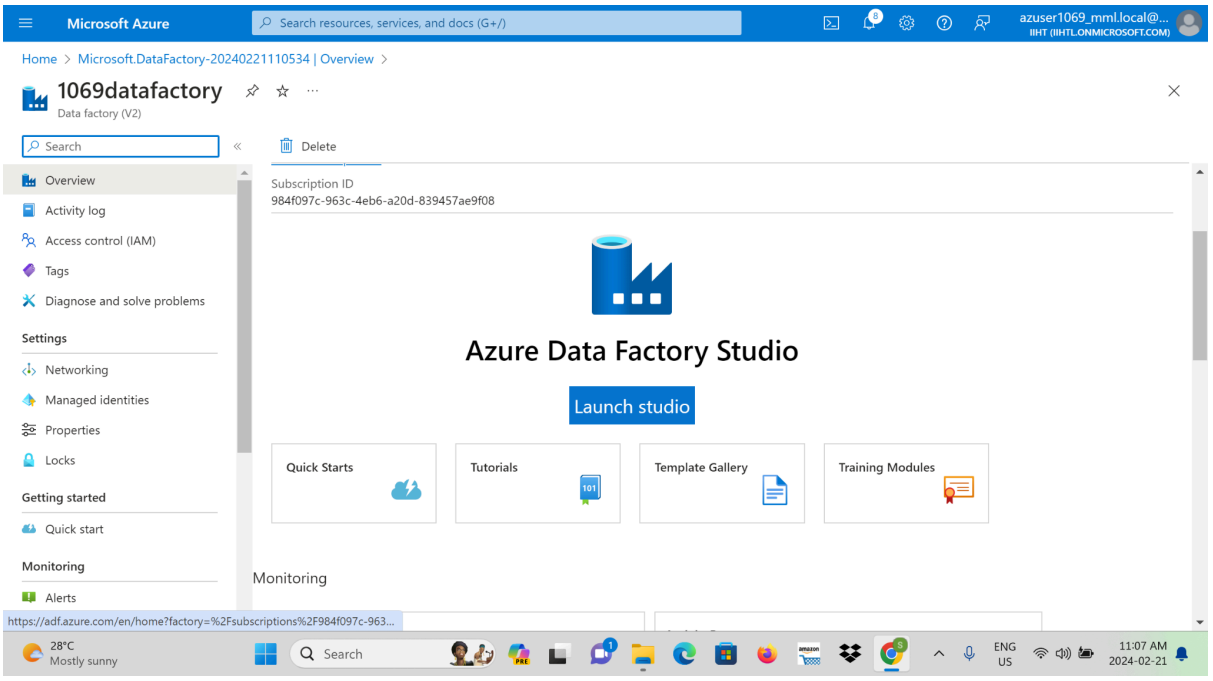
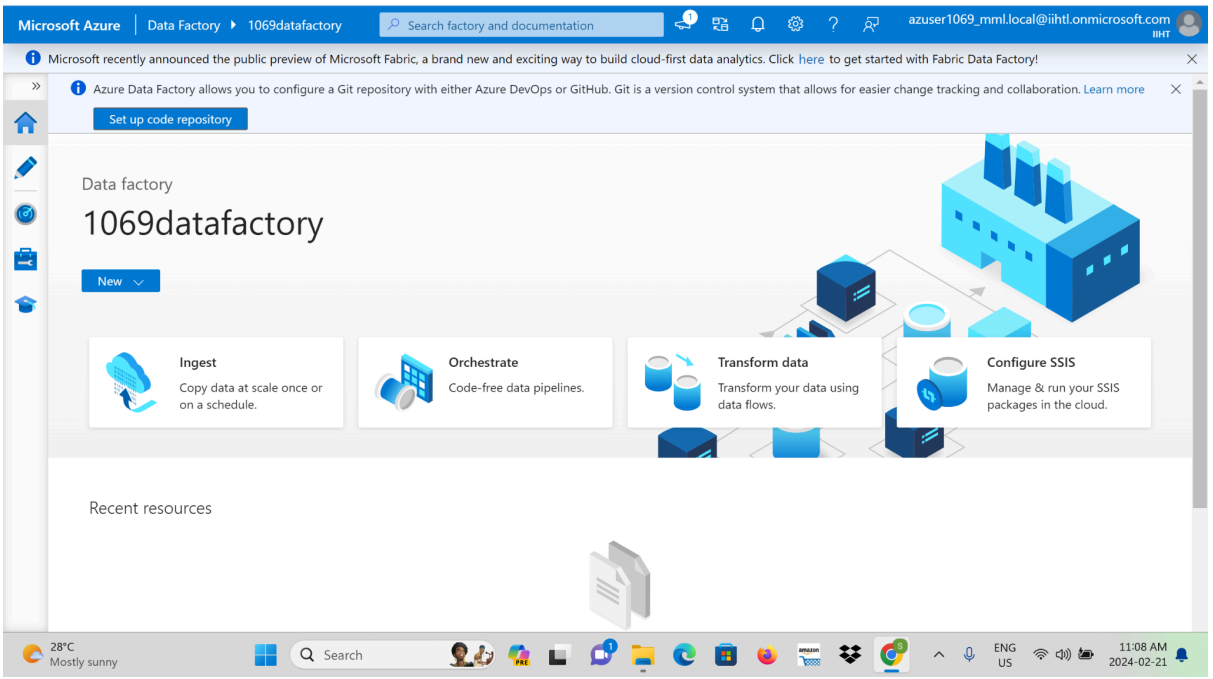
—>Then I created a data factory account with the same resource group and clicked on launch studio.

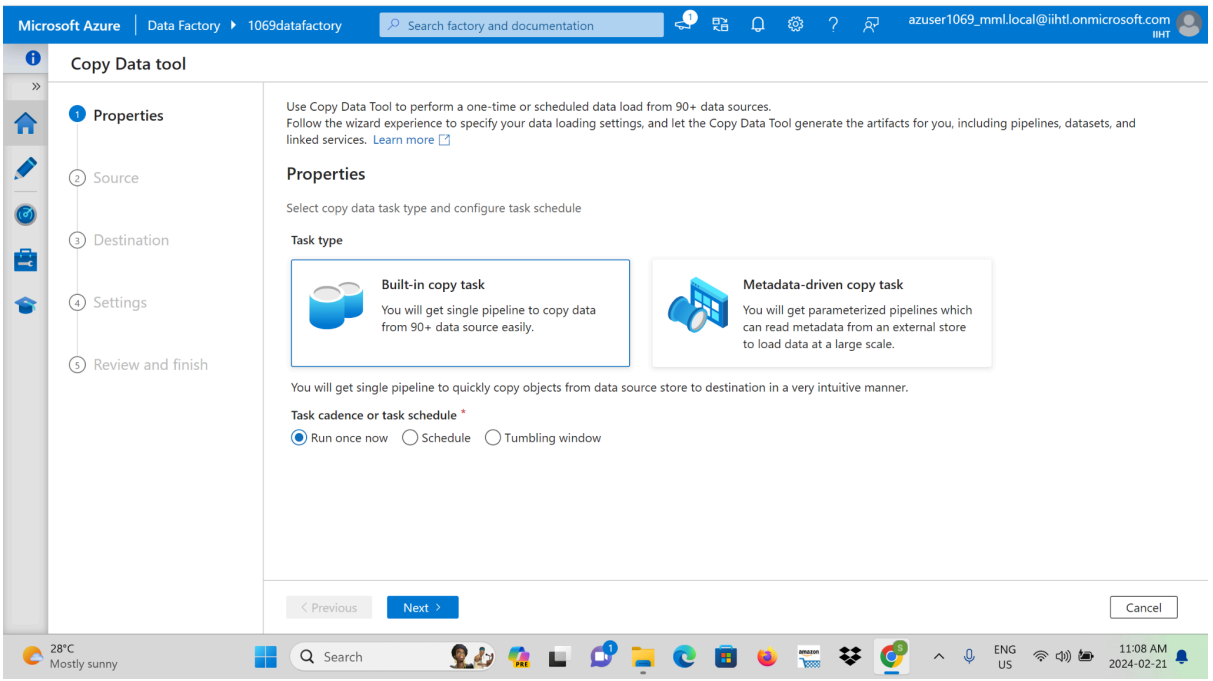




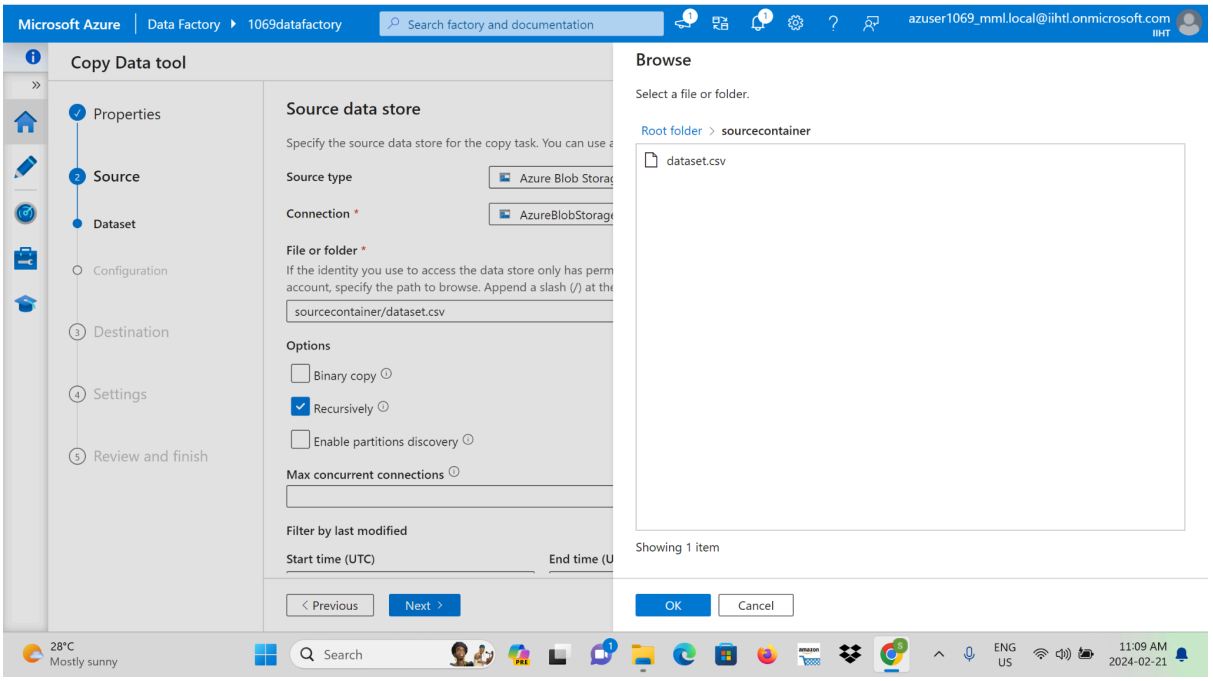
—>Then I have selected an option called ingestion to set the connection .

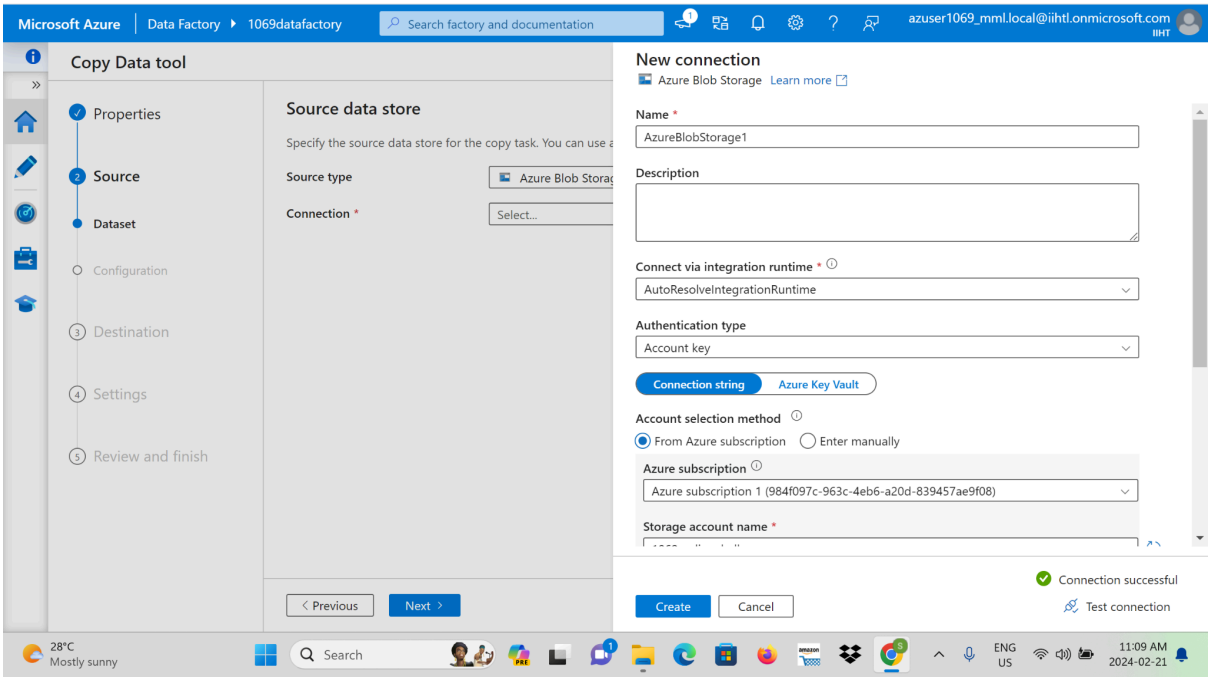


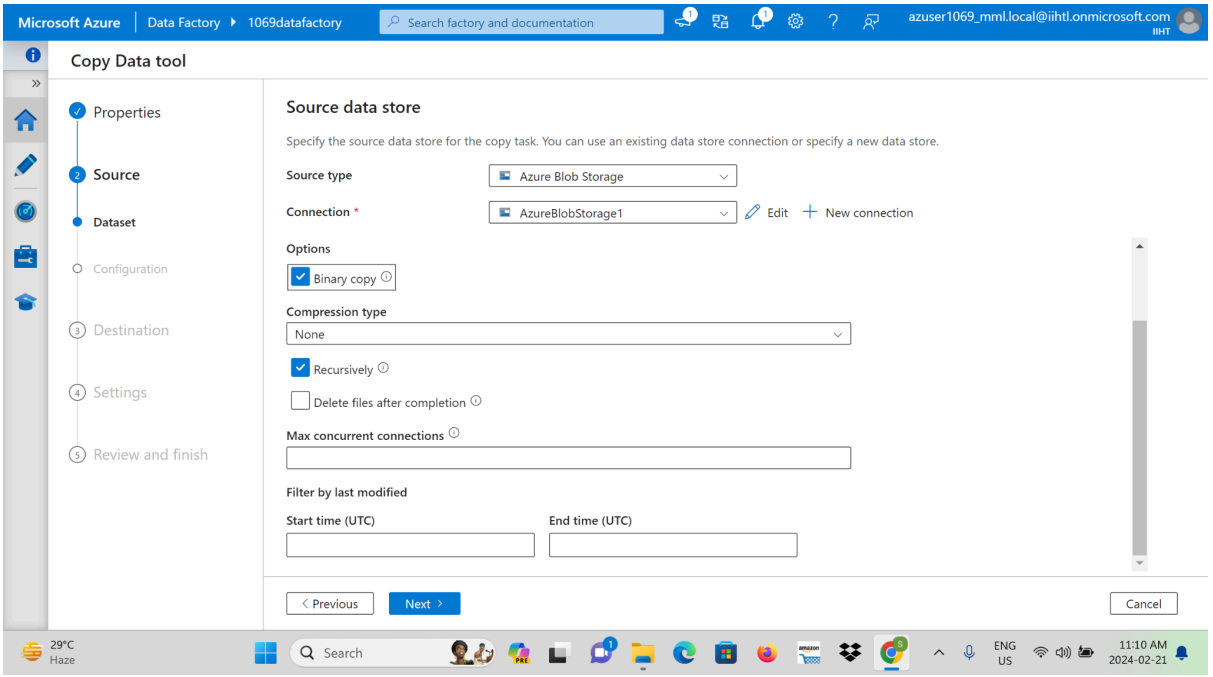
—>Then I have given all the properties and clicked on next .



—>Then I have created a source data source and then I have selected azure blob storage as source type and created a connection by giving a source storage name and source container in it.

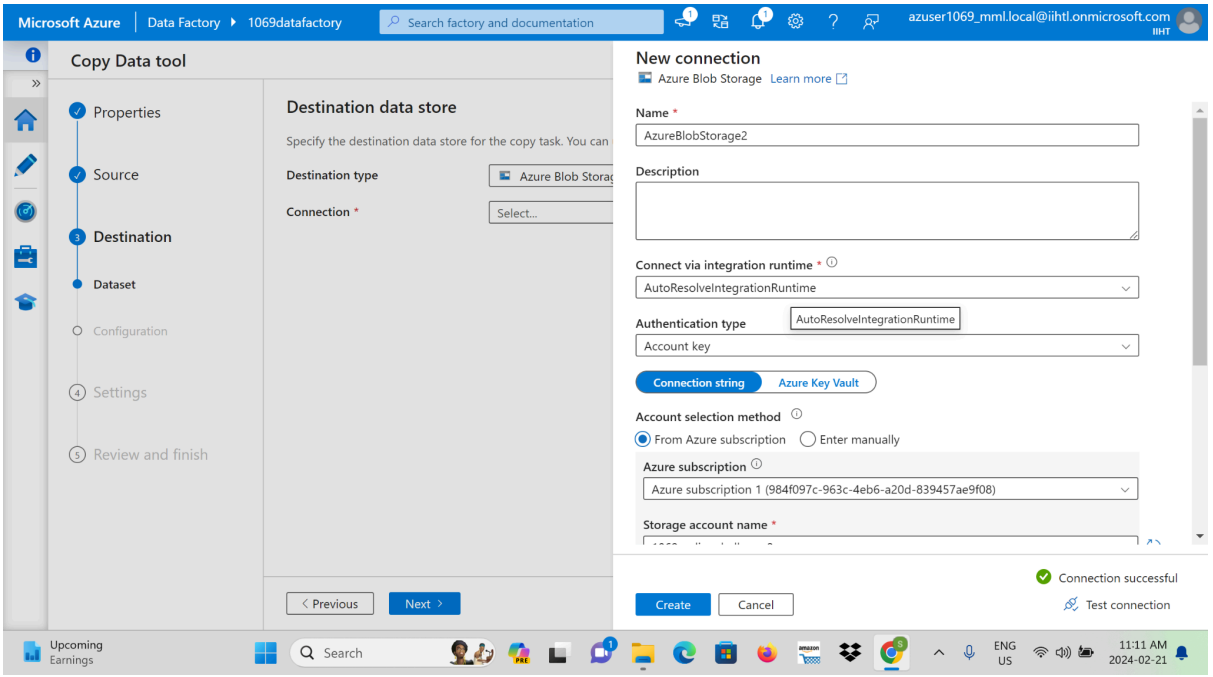


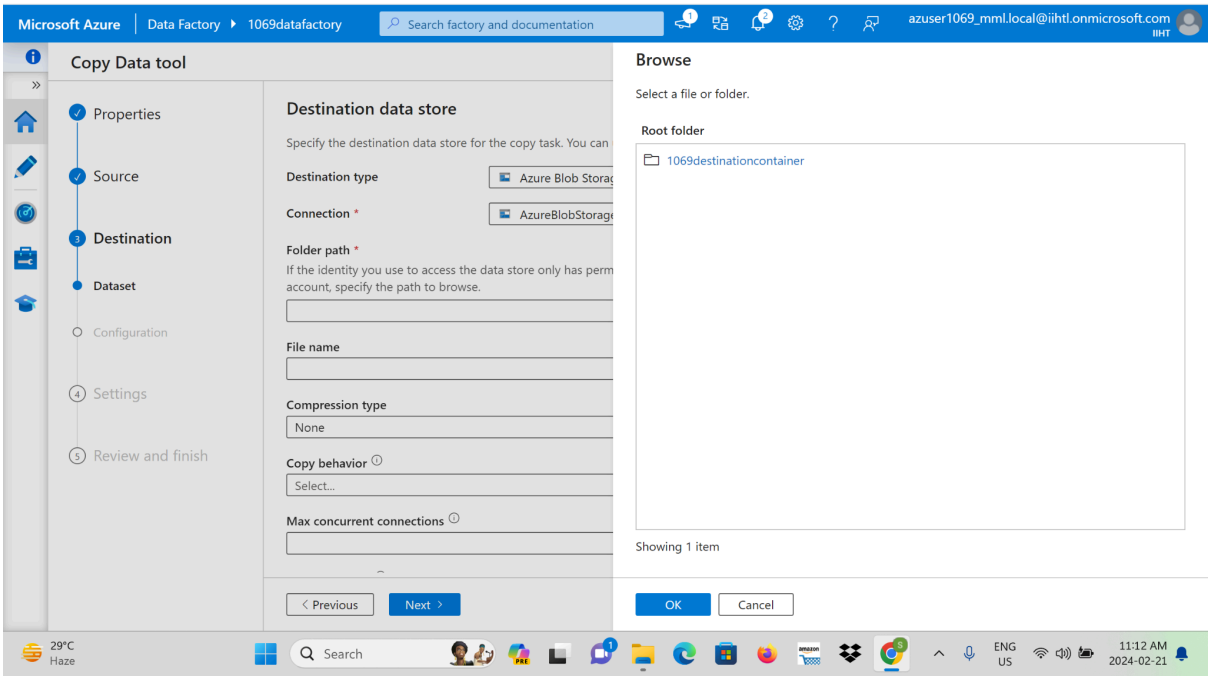




—>Later I have created a destination data source and then I have selected azure blob storage as destination type and created a connection by giving a destination storage name and destination container in it.

—>In the destination container there is no file present because we are copying source to destination type .So our motive is to copy the data from source and review at destination group . For that we need to give an empty destination container.




Microsoft Azure
Data Factory
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Search factory and documentation
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IIHT
Copy Data tool
Properties
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Dataset
Configuration
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Review and finish
Destination data store
Specify the destination data store for the copy task. You can
Destination type
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Connection *
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If the identity you use to access the data store only has perm
account, specify the path to browse.
File name
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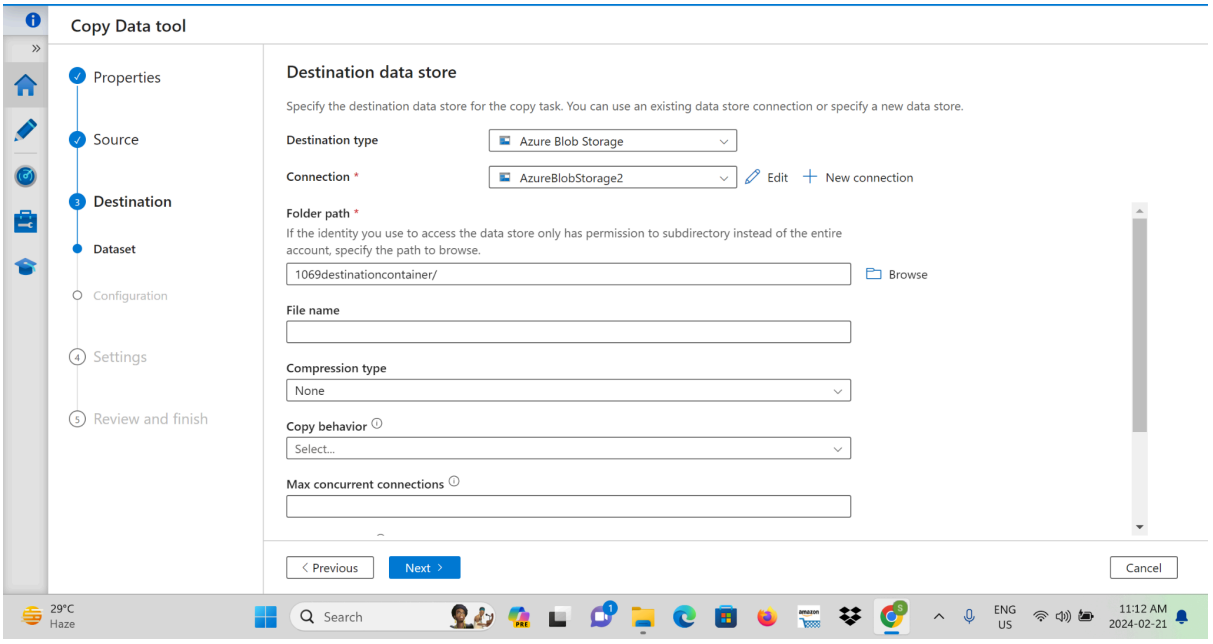
Copy Data tool
Properties
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Dataset
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Review and finish
Destination data store
Specify the destination data store for the copy task. You can use an existing data store connection or specify a new data store.
Destination type
Azure Blob Storage
Connection *
AzureBlobStorage2
Edit
New connection
Folder path *
If the identity you use to access the data store only has permission to subdirectory instead of the entire
account, specify the path to browse.
1069destinationcontainer/
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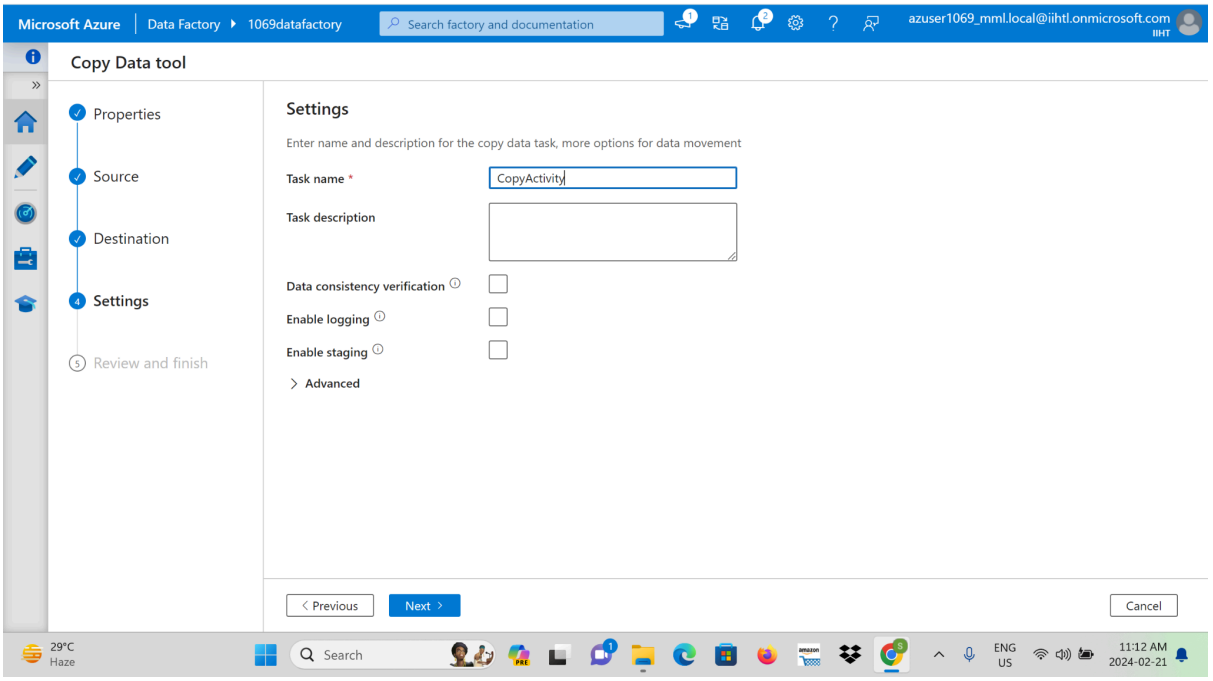
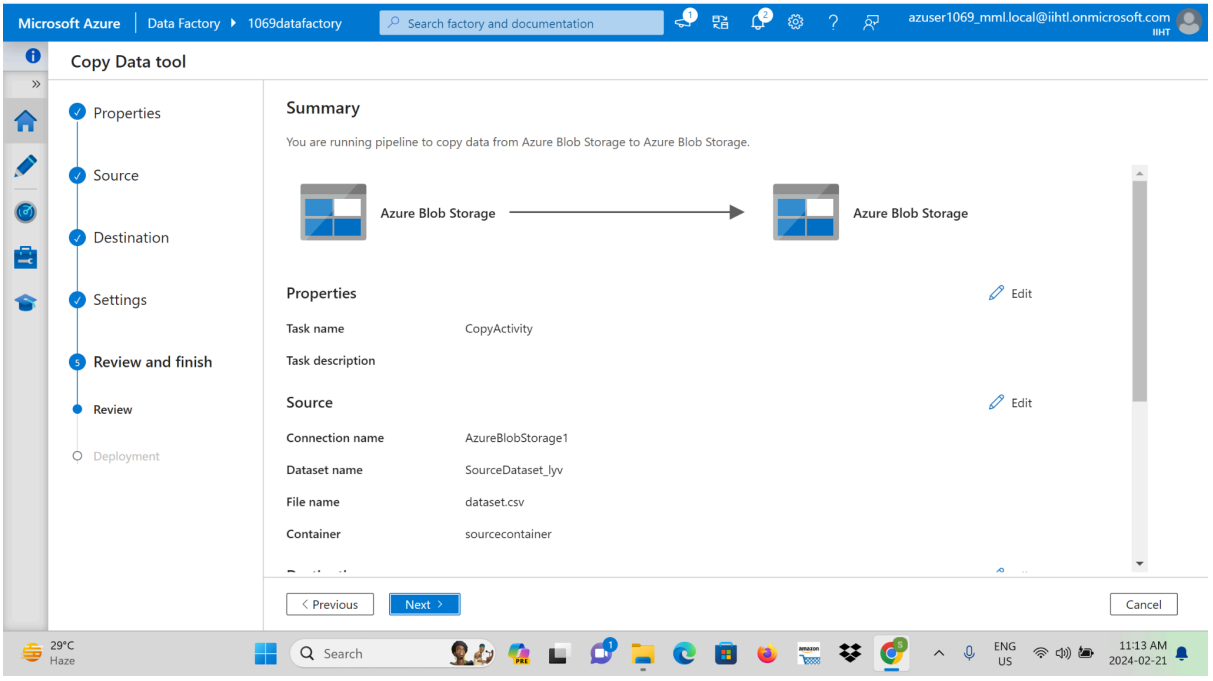
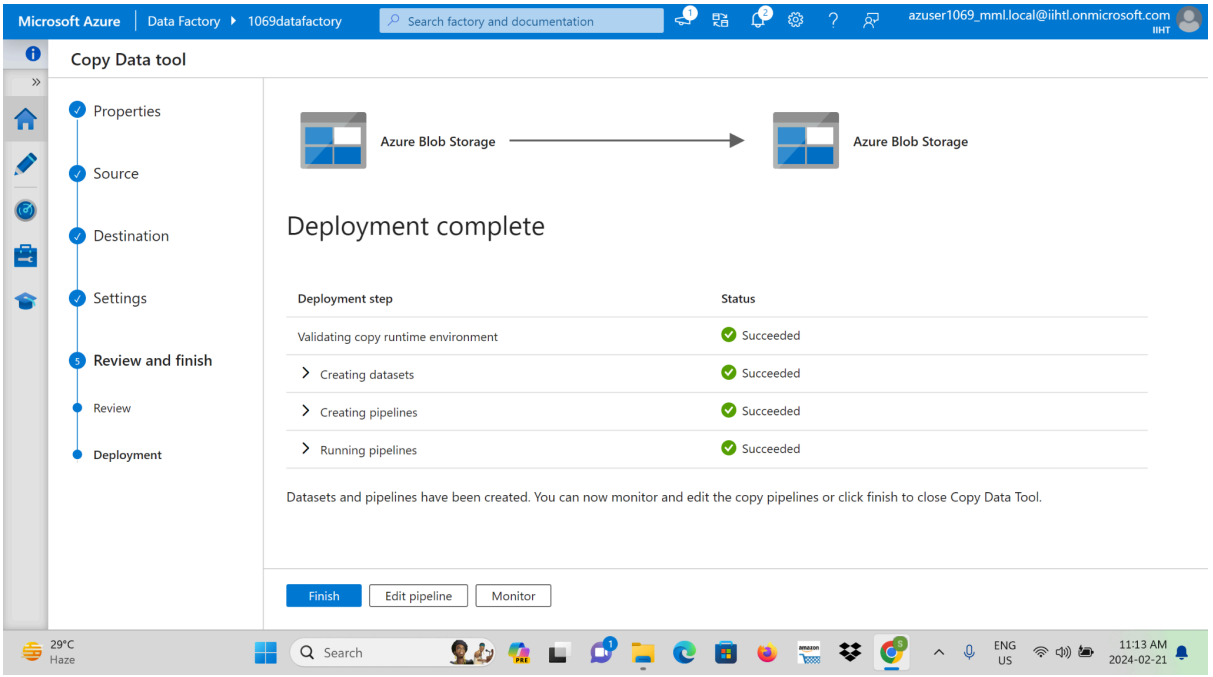
—>Then we need to give the task name as “CopyActivity” for the above process and click on the next .

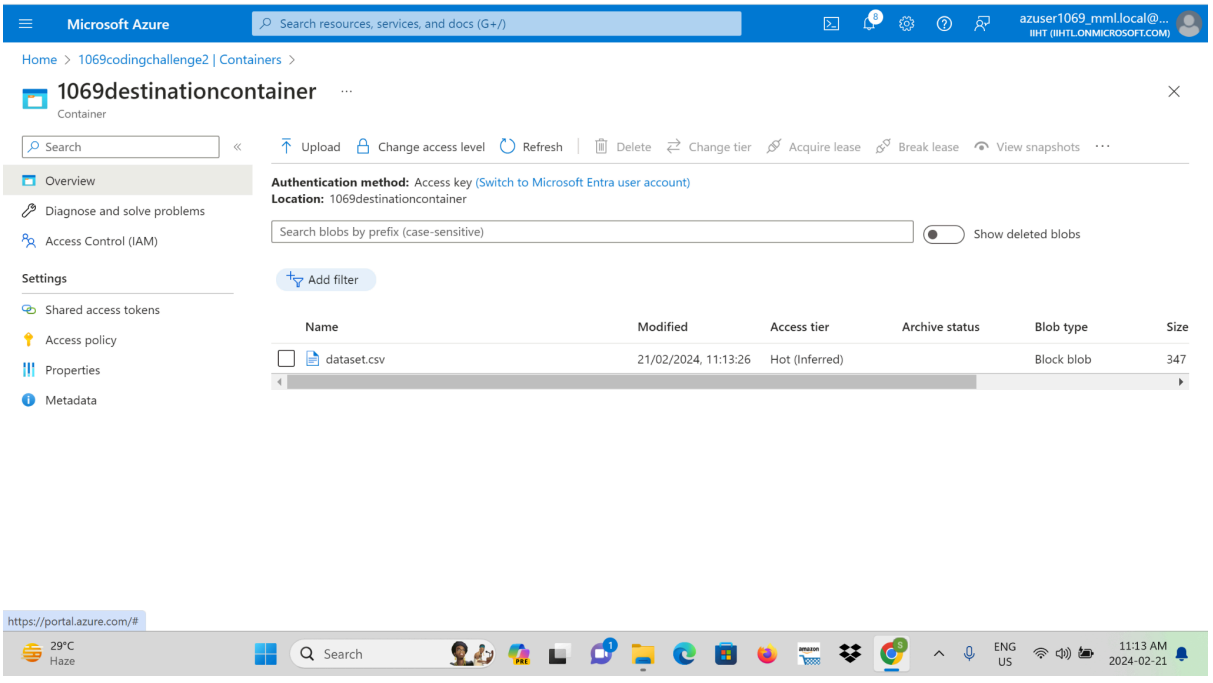


—>After giving the task name we need to review all the settings and click on finish .





—>Then we can see that datasets and pipelines are successfully created and running successfully.
—>Thereby we can see that in the destination container the file has been successfully copied from the source account .



2)Explain Overview of 3 level namespace and creating Unity Catalog objects?

A)

In Unity Catalog, the hierarchy of primary data objects flows from metastore to table or volume:

Metastore: The top-level container for metadata. Each metastore exposes a three-level namespace (catalog.schema.table) that organizes your data.

Catalog: The first layer of the object hierarchy, used to organize your data assets.

Schema: Also known as databases, schemas are the second layer of the object hierarchy and contain tables and views.

Tables, views, and volumes: At the lowest level in the data object hierarchy are tables, views, and volumes. Volumes provide governance for non-tabular data.

Models: Although they are not, strictly speaking, data assets, registered models can also be managed in Unity Catalog and reside at the lowest level in the object hierarchy.