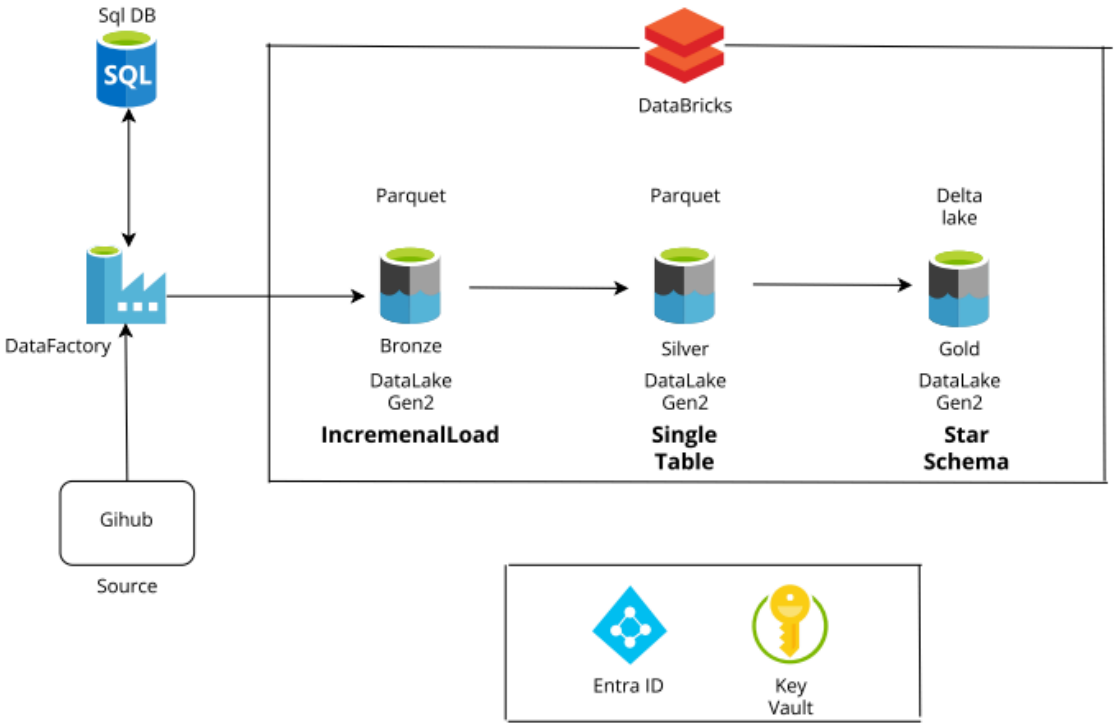
Architecture:



Environment Setup:

1. Create a Resource Group for the Project.

2. Create a Azure Data Factory.

3. Create a Azure Data Lake gen 2 storage account.

    Under storage account created bronze, silver and gold container.
    Bronze → to store the raw data
    Silver → to store the processed data
    Gold → to store the cleaned data that connect to power bi for end users

4. Create Azure SQL Database.

5. Create Azure Databricks.

6. Create Azure Key Vault

Dataset required:

Project_dataset

PHASE 1:

1. Created a source table in Azure SQL database.

```
create table source_cars_data
(
        Branch_Id varchar(200),
        Dealer_Id varchar(200),
        Model_Id varchar(200),
        Revenue bigint,
        Units_Sold bigint,
        Date_Id varchar(200),
        Day int,
        Month int,
        Year int,
        Branch_Name varchar(200),
        Dealer_Name varchar(200)
)
```

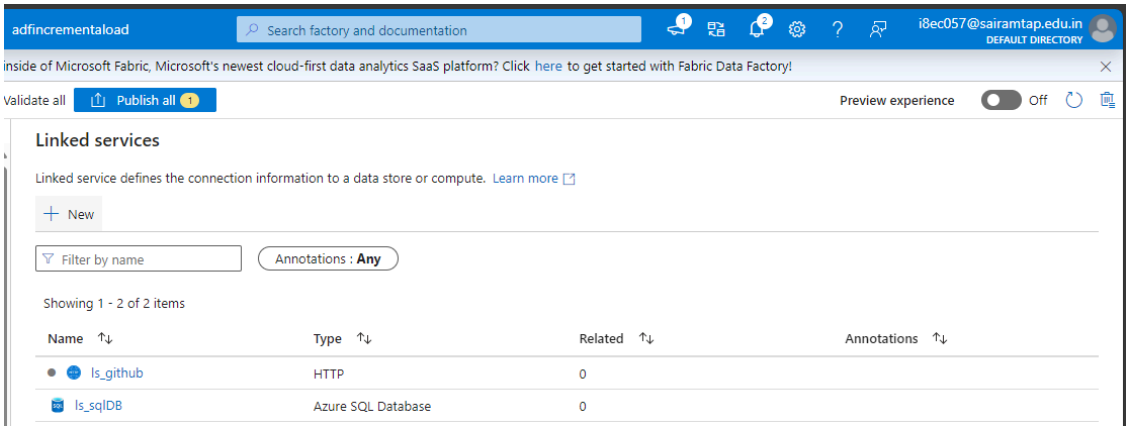
In phase 1, we have created a pipeline to copy the data from **Project_dataset** to Azure Sql databse using Azure Data Factory.

Base URL: https://raw.githubusercontent.com

Relative URL: (Initial full load)
MohamedBashid/Azure_Project_IncrementalLoad/refs/heads/main/Dataset/SalesData.csv

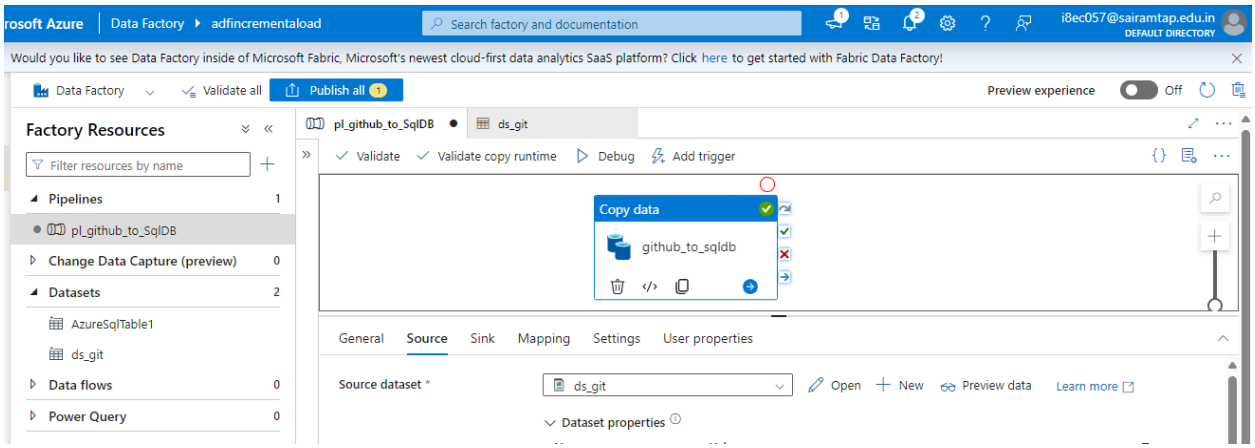
Relative URL: (incremental load)
MohamedBashid/Azure_Project_IncrementalLoad/refs/heads/main/Dataset/IncrementalSales.csv

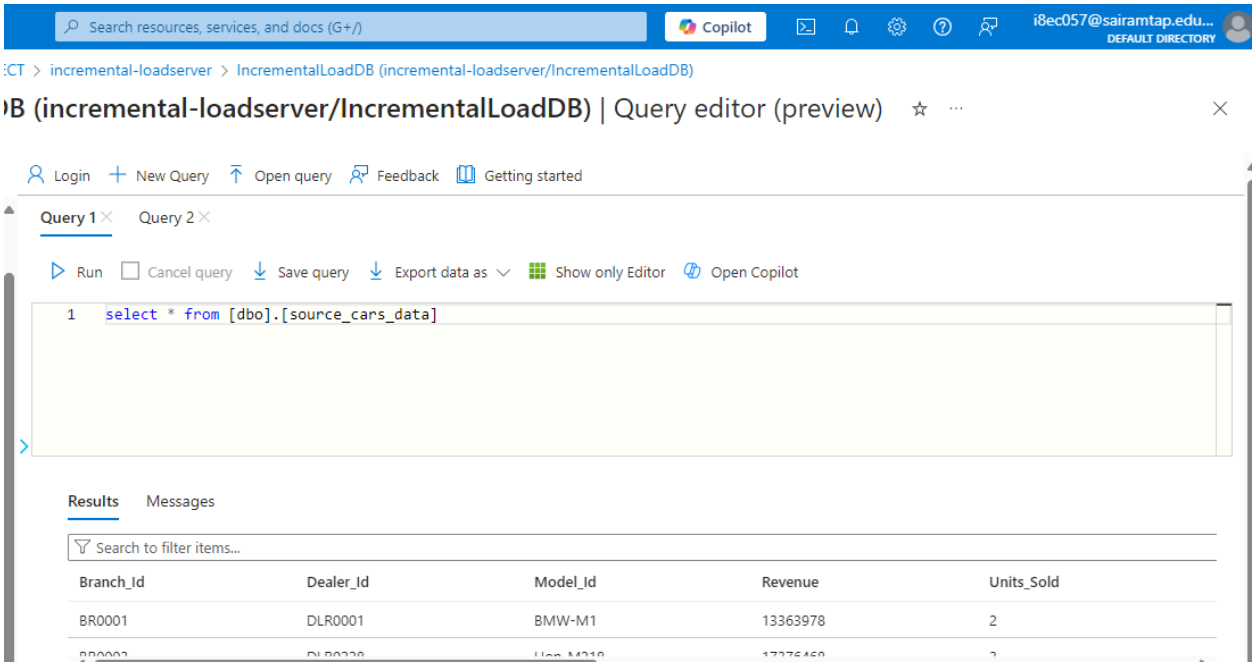
2. Created a Linked service for http(source) and Azure Sql DB(destination).



Configured the base url in http(source) linked service.

I have created a pipeline to copy the initial full load of the data from github to Azure SQL DB.



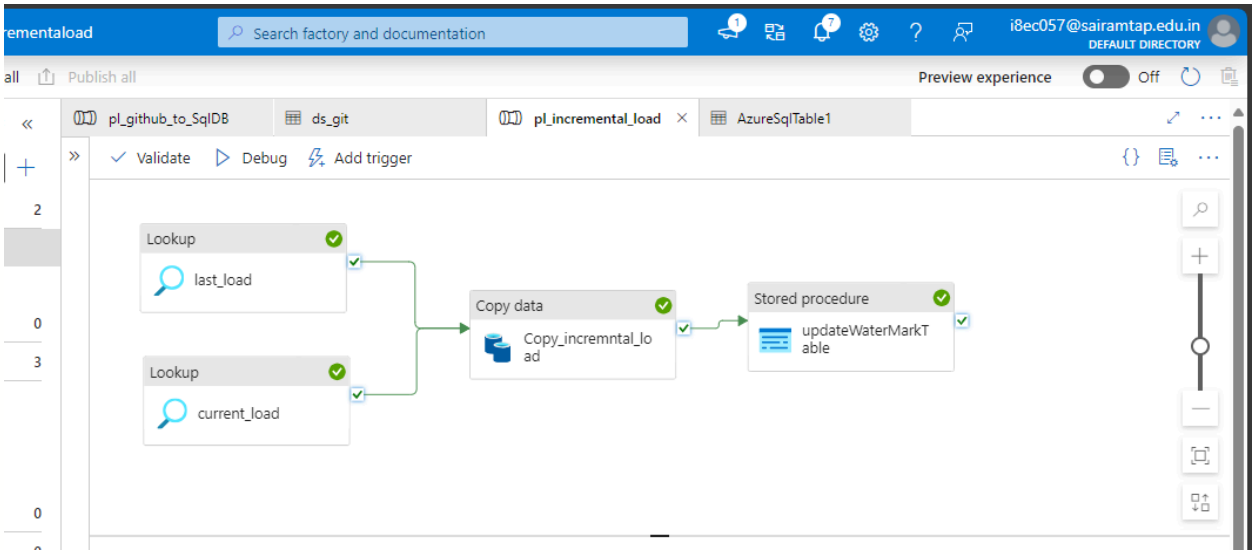


Now, for incremental load i have created a water_mark table and stored procedure in Azure SQL DB.

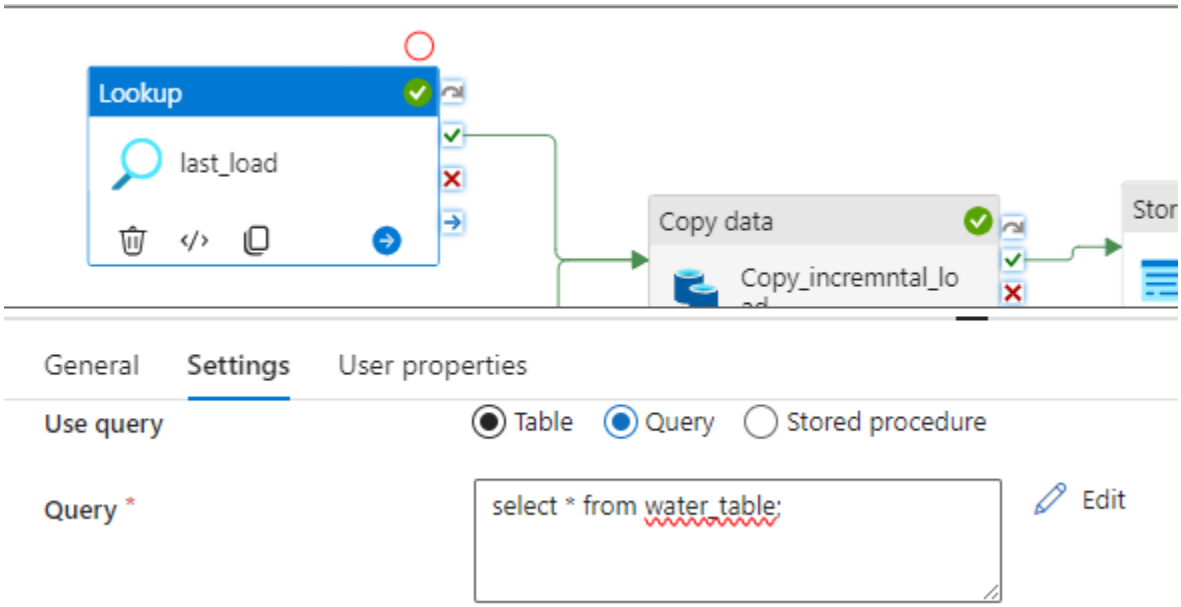
```
create table water_table
(
   last_load varchar(200)
)
insert into water_table (last_load) values ('DT00000')
```

```
create procedure updateWaterMarkTable @lastload varchar(200)
as
begin
   begin transaction;
   update water_table set last_load = @lastload
   commit transaction;
end;
```

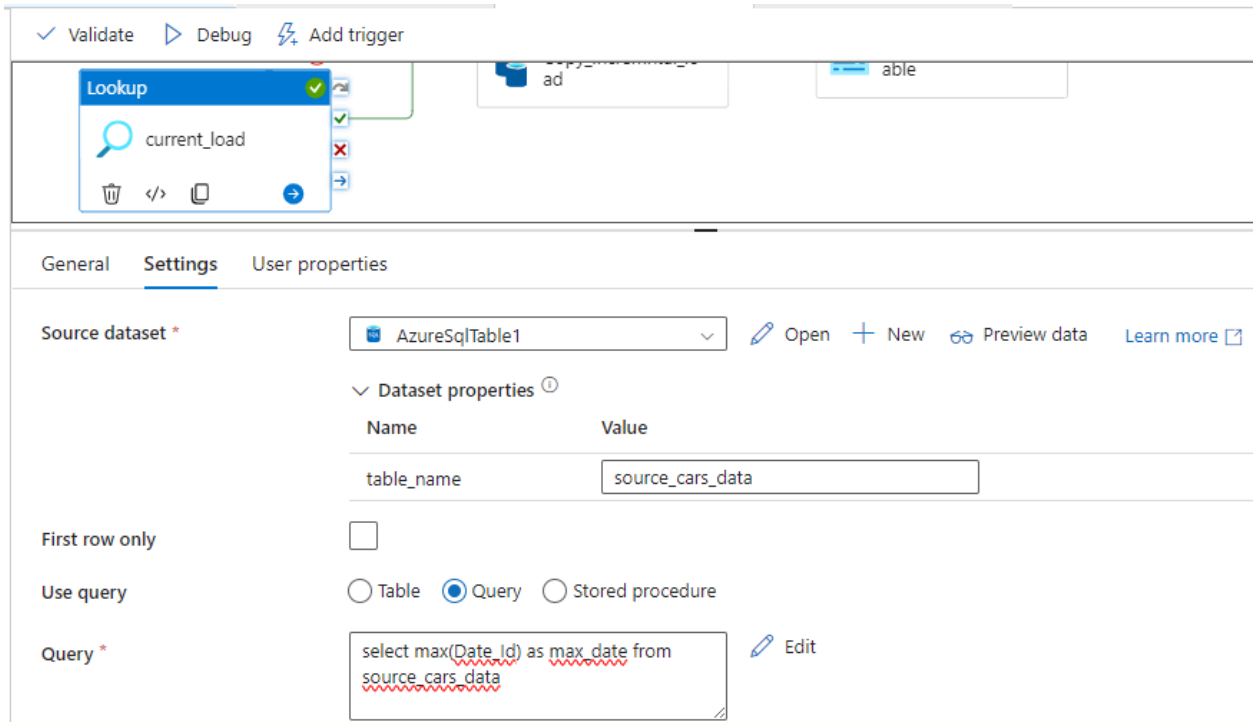
I have created a end to end incremental load pipeline to copy data from Azure SQL DB to Azure ADLS gen2.



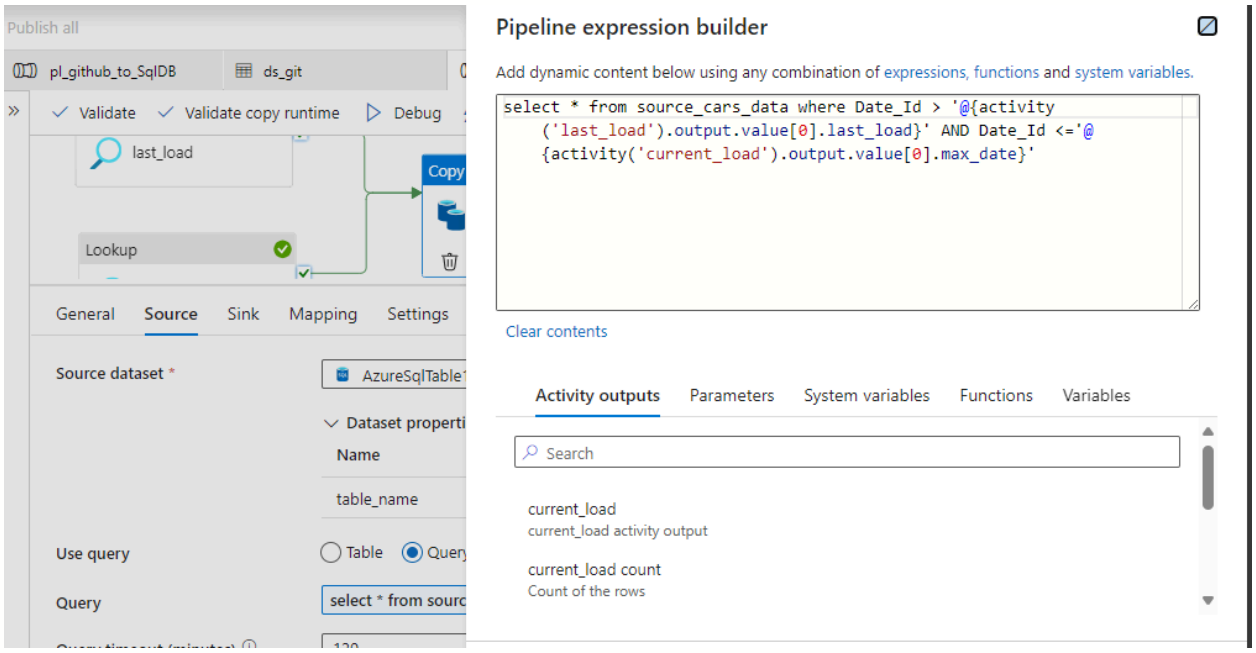
last_load Lookup Activity:



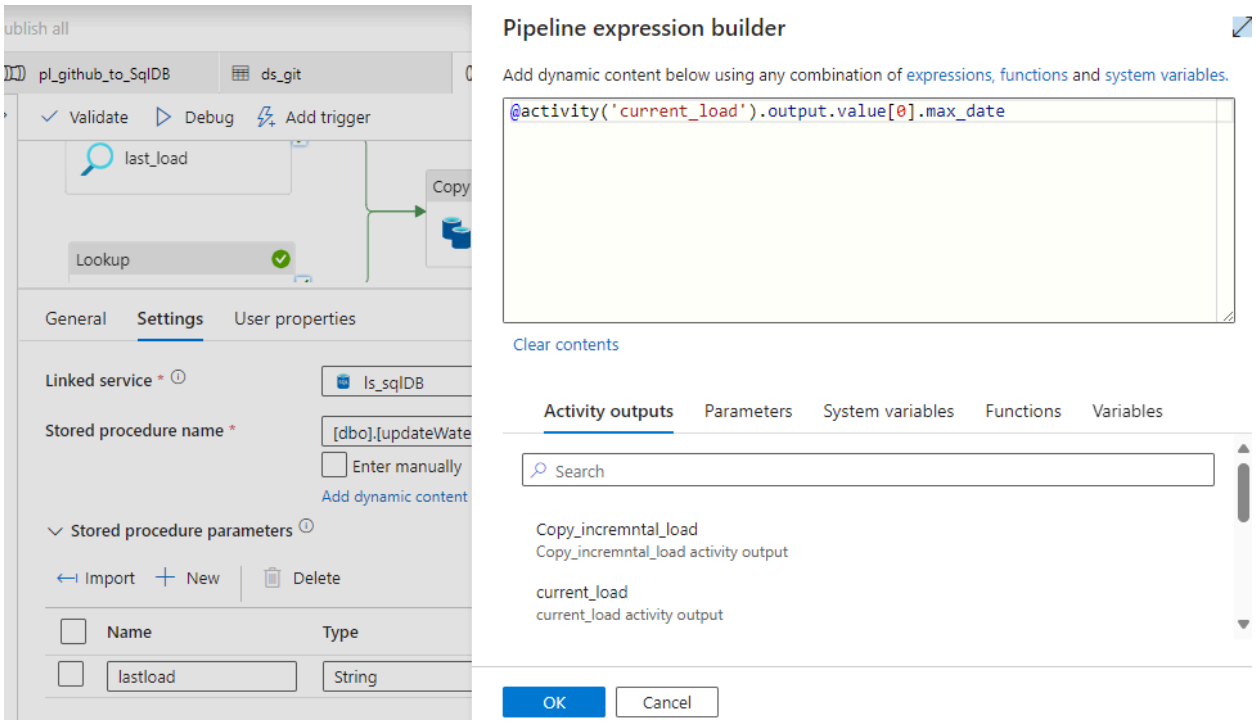
current_load Lookup Activity:



Copy activity:



Stored procedure Activity:



In the above pipeline, last_load lookup activity will contain the start date_id value with the help of water_mark_table and the current_load lookup activity will contain the maximum date_id value with the help of source_cars_data table.

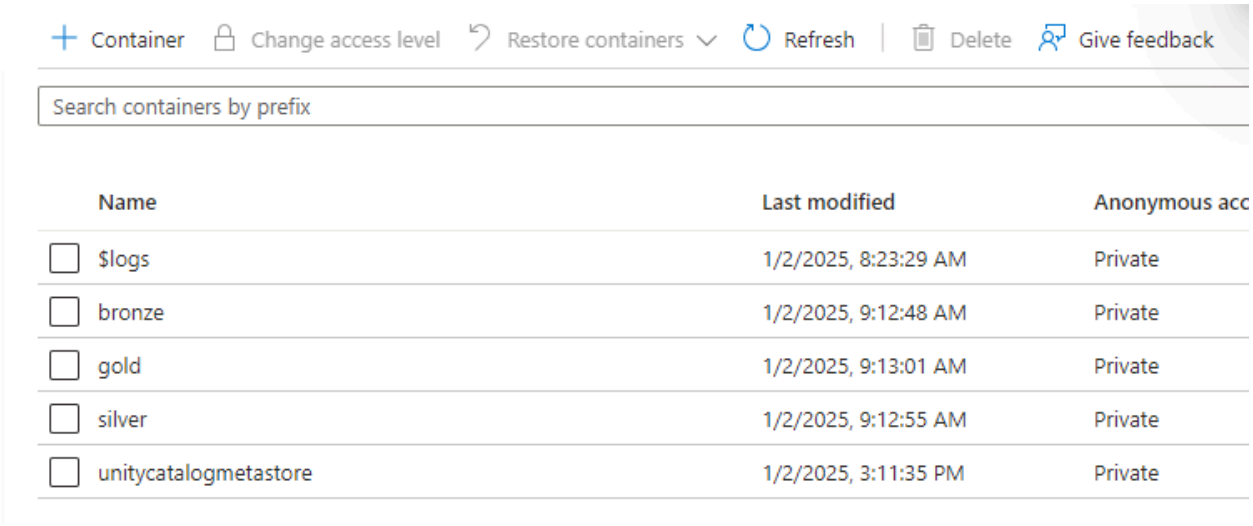
In the copy activity the data from start to maximum date_id value will be copied from DB to Data Lake. In the stored procedure activity the last_load value will be assigned with the current_load which is the maximum value.

PHASE 2:

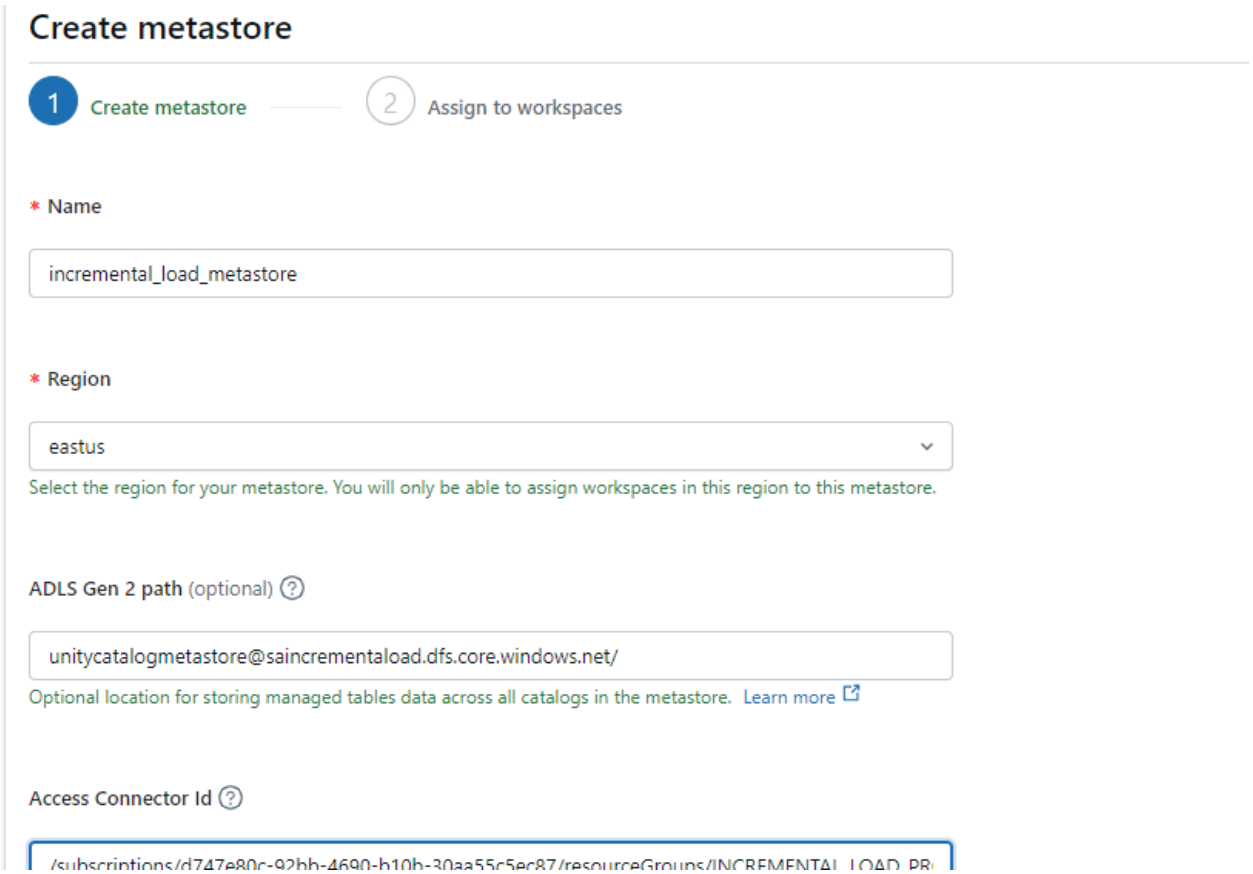
To Set up Unity Catalog:

Create a metastore in Databricks.

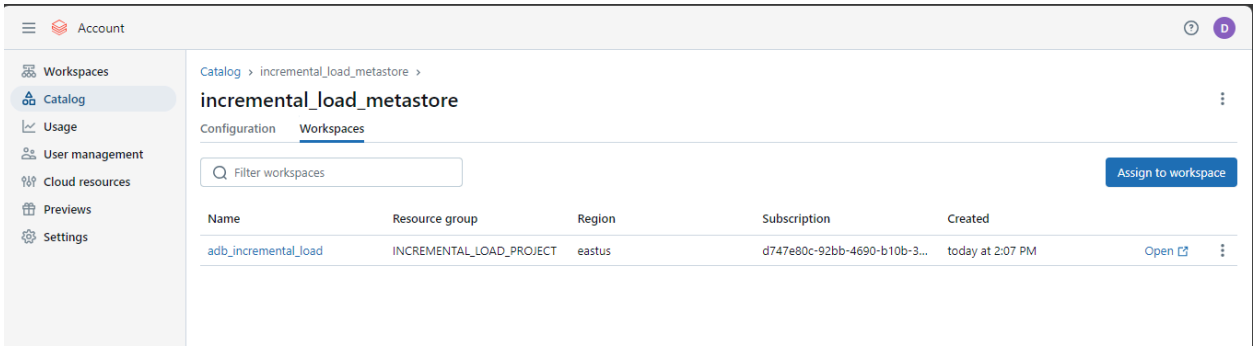
I have created a separate container for the unity catalog metstore.



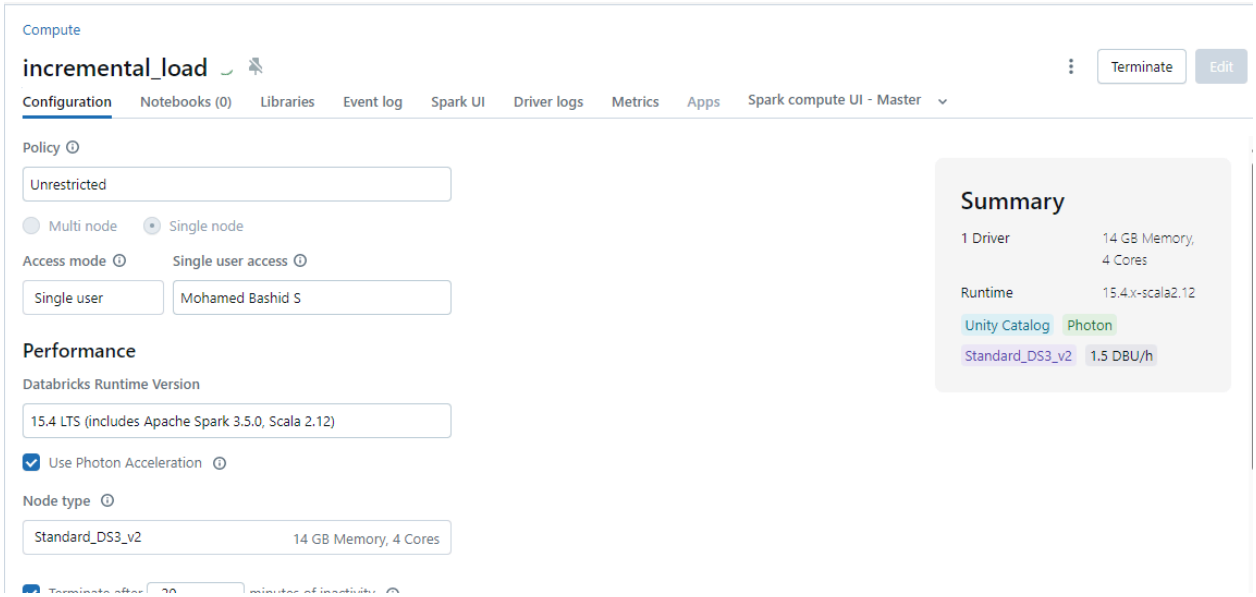
I have created a access connector to connect the data lake with the databricks.



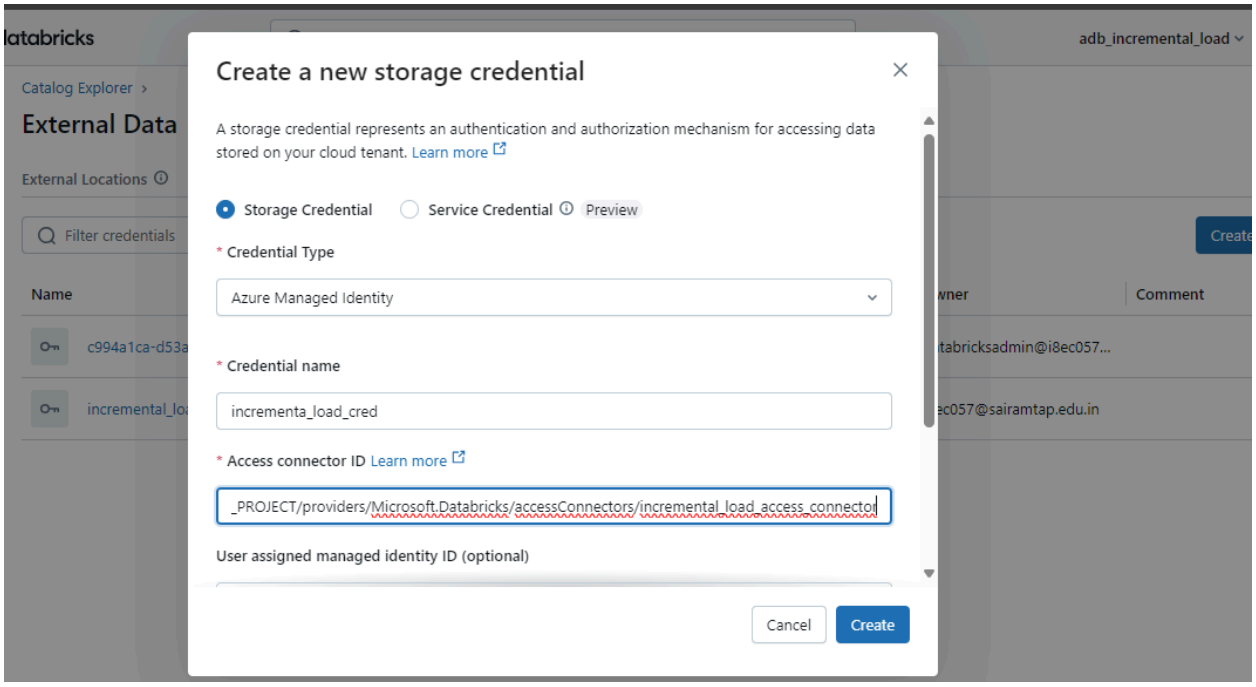
Assign the databricks workspace to the created unity catalog metastore.

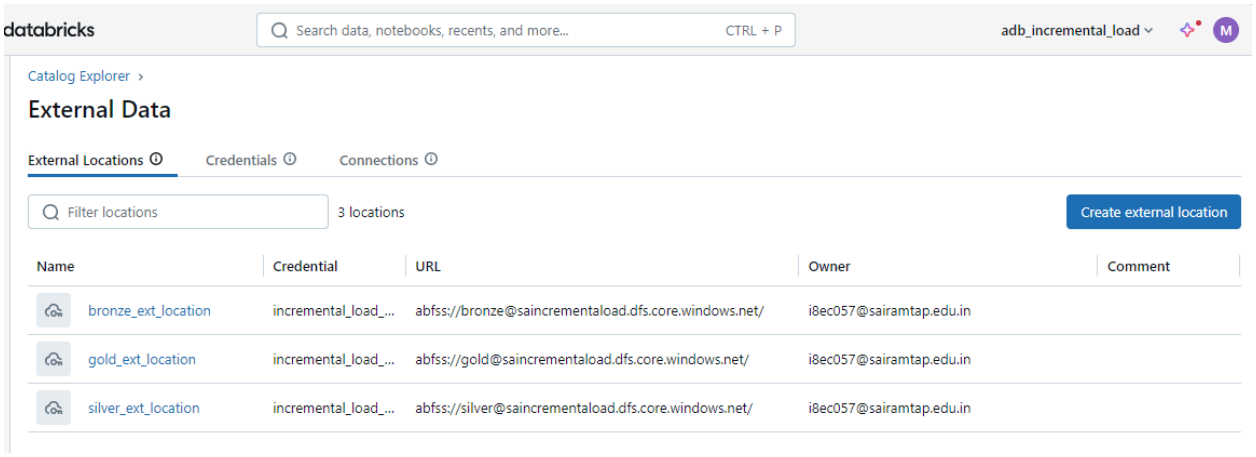


I have created a cluster.



Now, i have created a external location for bronze, silver and gold container.
To create a external location, storage credential is required.
For storage credential we can use the created access connector.





Refer catalog_notebook

Refer silver_notebook

PHASE 3:

Creating Star Schema

Creating a Dimension Tables:

Refer gold_notebook_dim_model

Refer gold_notebook_dim_branch

Refer gold_notebook_dim_dealer

Refer gold_notebook_dim_date

Creating a Fact Table:

Refer gold_notebook_fact_sales