Bootcamp Project

Project 5 - Migrating pipelines from ADF to Synapse

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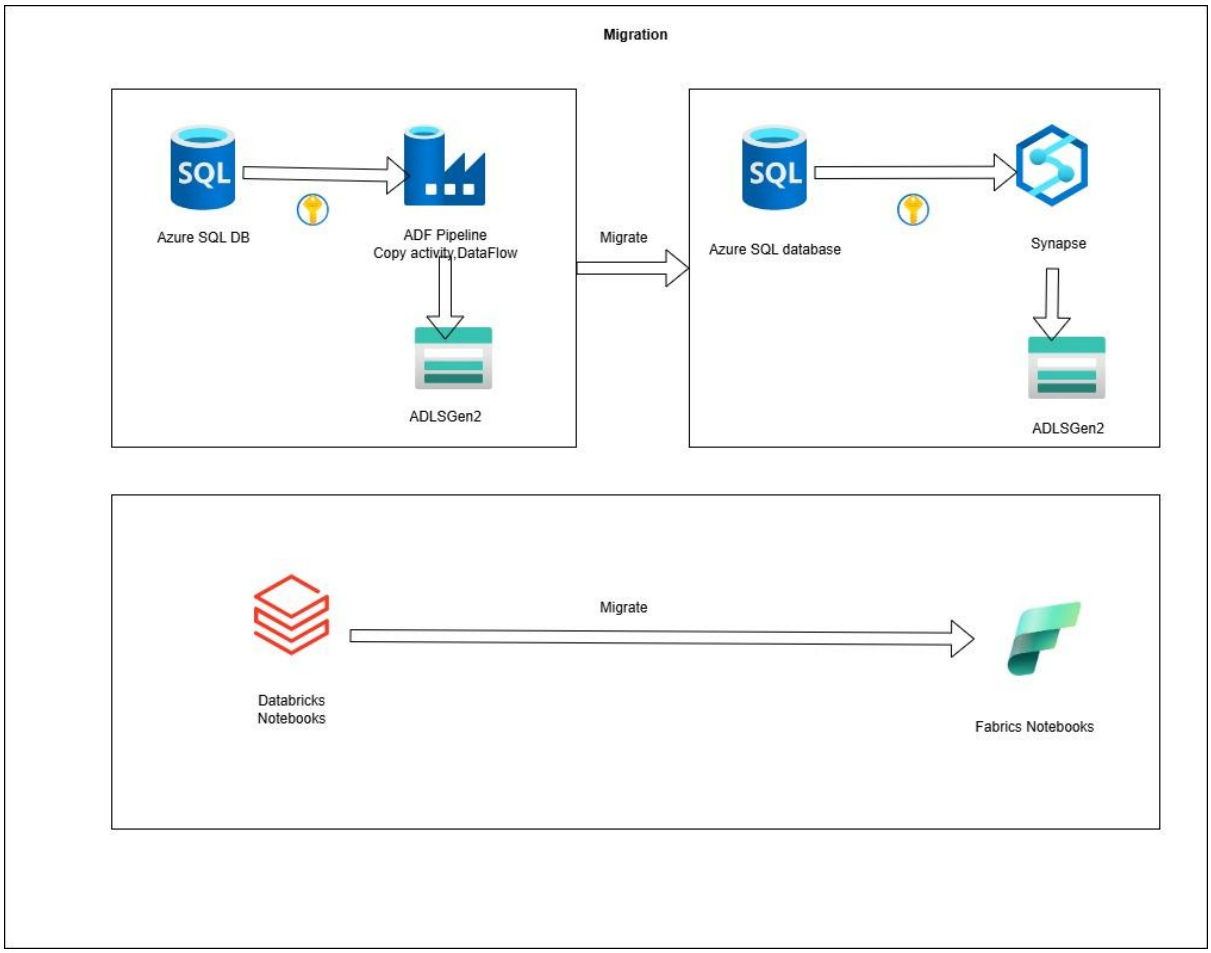
11-05-2025

Project Overview

Develop ADF pipelines (copy activity, foreach loop, look up) and migrate the pipelines, datasets, linked services to Azure Synapse.

Github link –https://github.com/DeepthiChethi/Azure_DE/tree/Madhumita/Project5.

Architecture



Tools and Technologies

- Azure Data Factory
- Azure Synapse
- Azure SQL database
- ADLSGen2
- Azure Key vault
- Databricks
- Fabrics
- Draw.io

Task -1: Migrating pipelines from ADF to Synapse

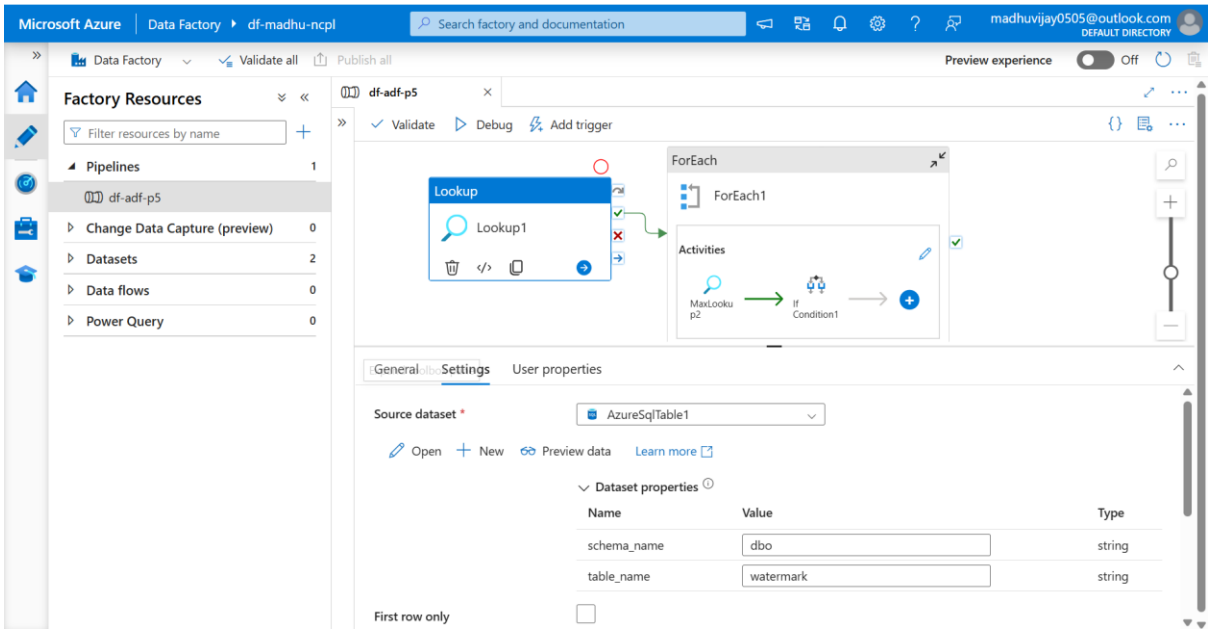
Create a watermark table in SSMS

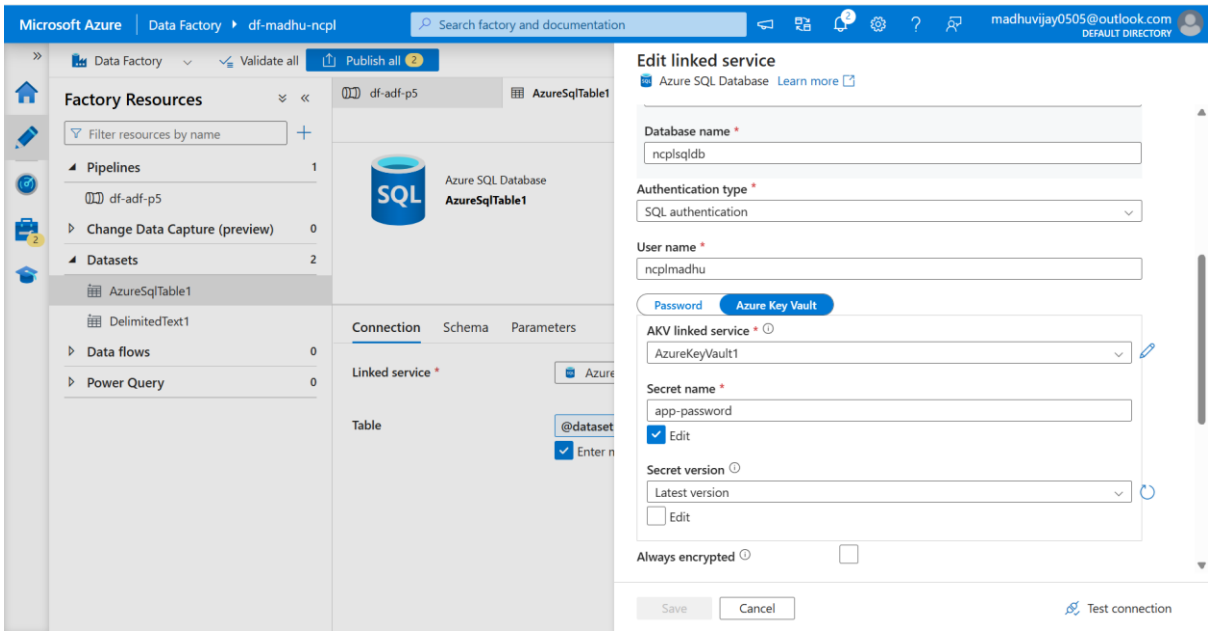
Insert the values in the watermark table

Create stored procedure for updating values in lpv column

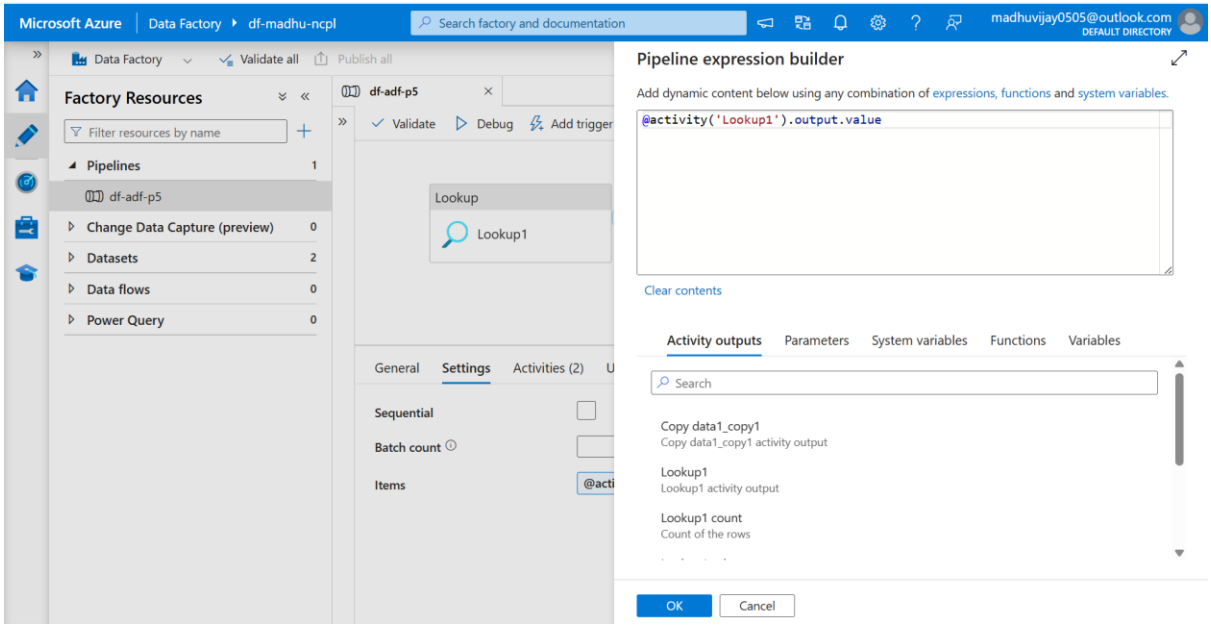
Navigate to ADF workspace

Create linked services for SQL database using key vault and connect lookup activity to foreach loop. Create parameters schema_name and table_name in lookup activity.

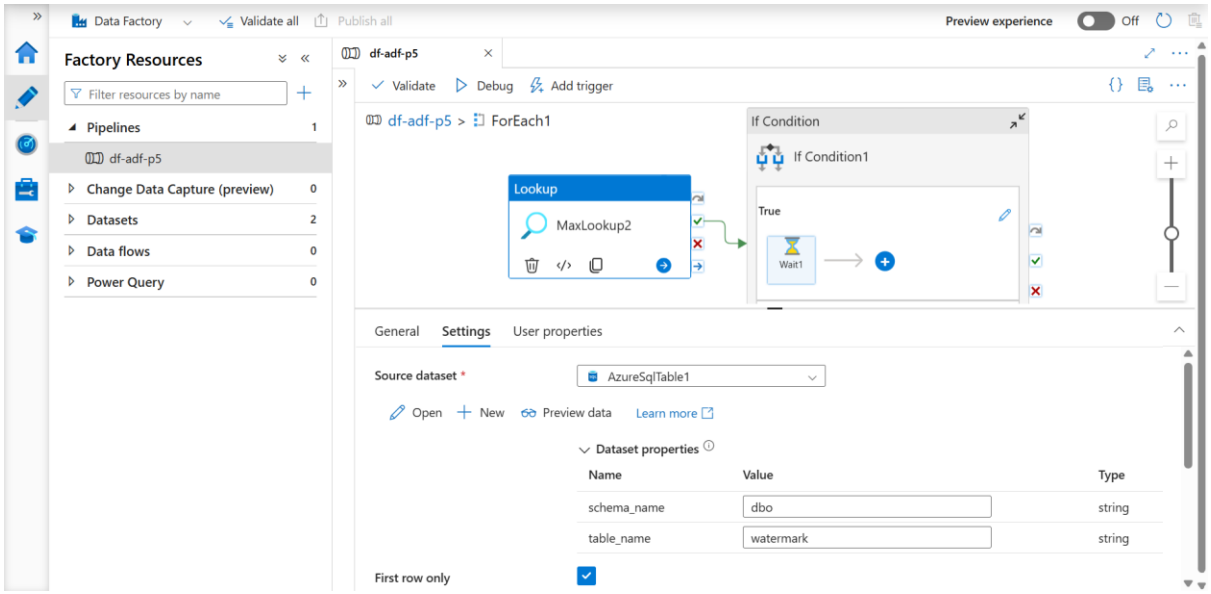




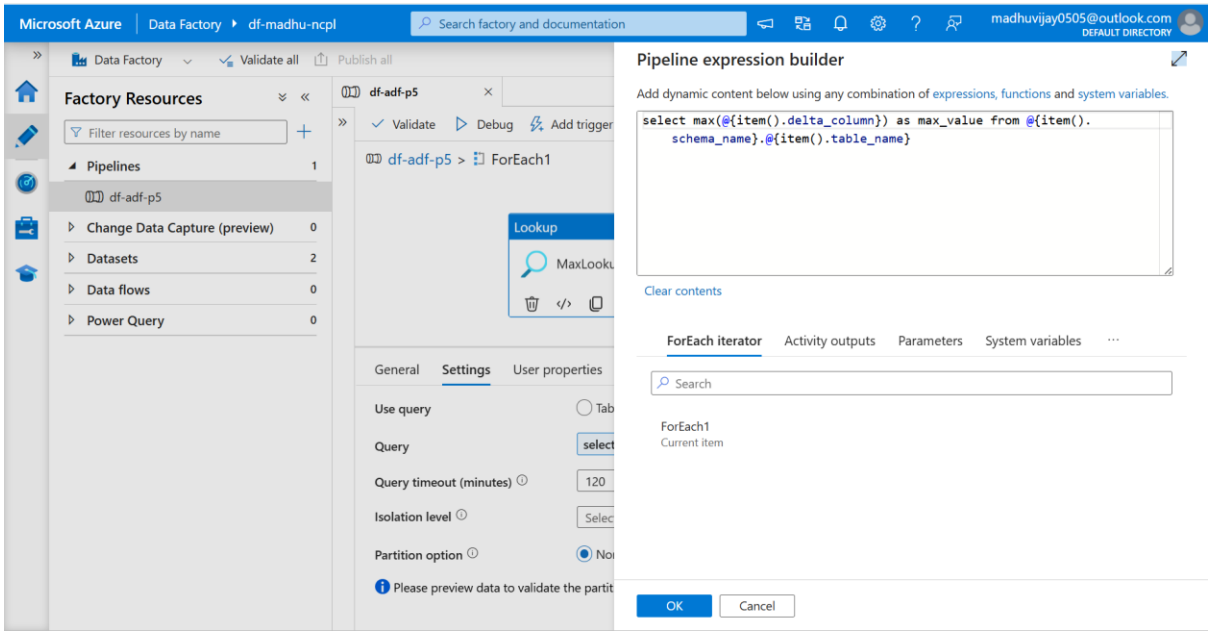
In foreach loop activity, click lookup value array for looping look up activity.



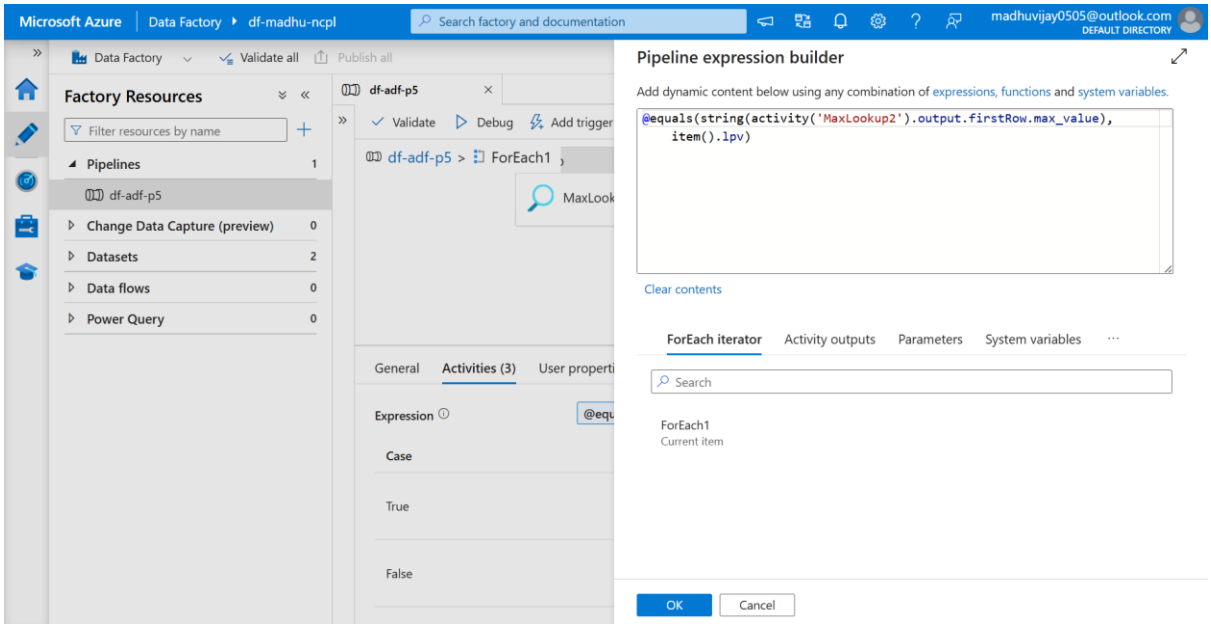
Drag and drop look up activity, enable first row only.



Use the query to select the maximum value of delta column.

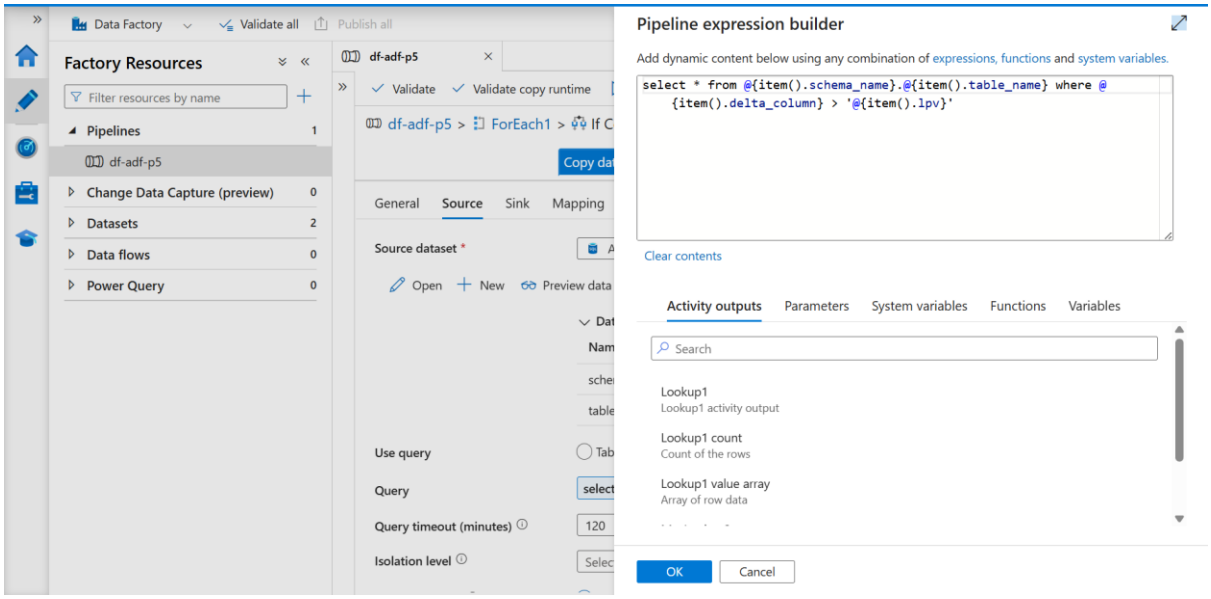


Drag and drop the if condition activity, if condition is true, wait activity will be executed and if condition is false, copy activity and Stored Procedure will be executed.



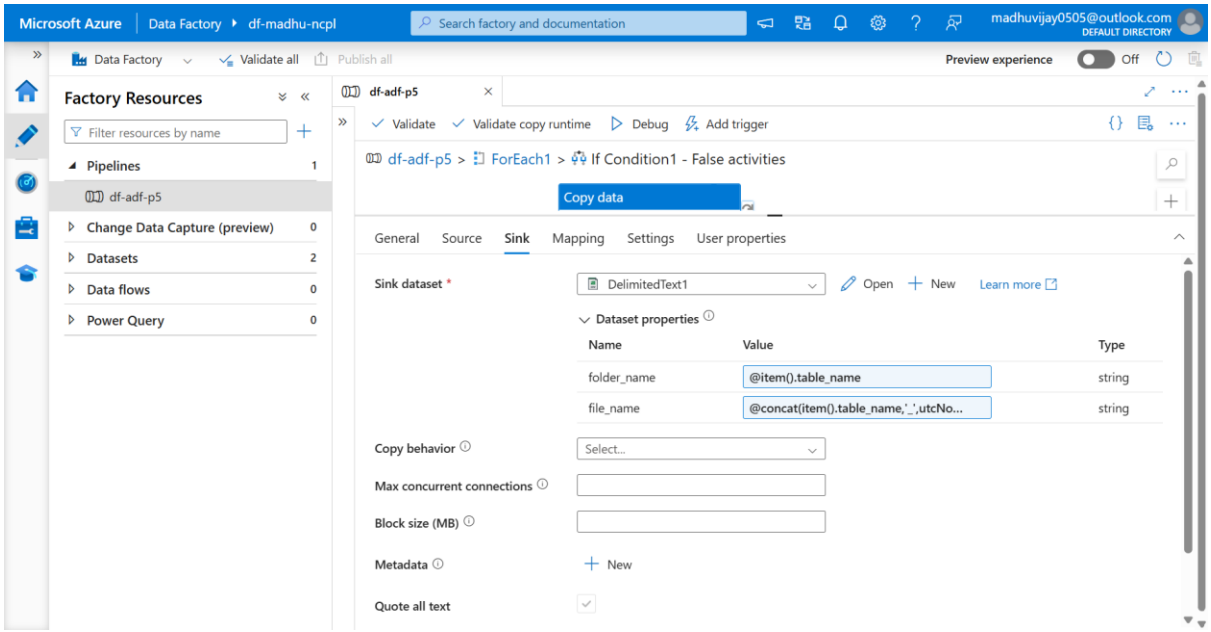
Copy activity-Source

Retrieve the records where the value in delta_column greater the value in LPV.

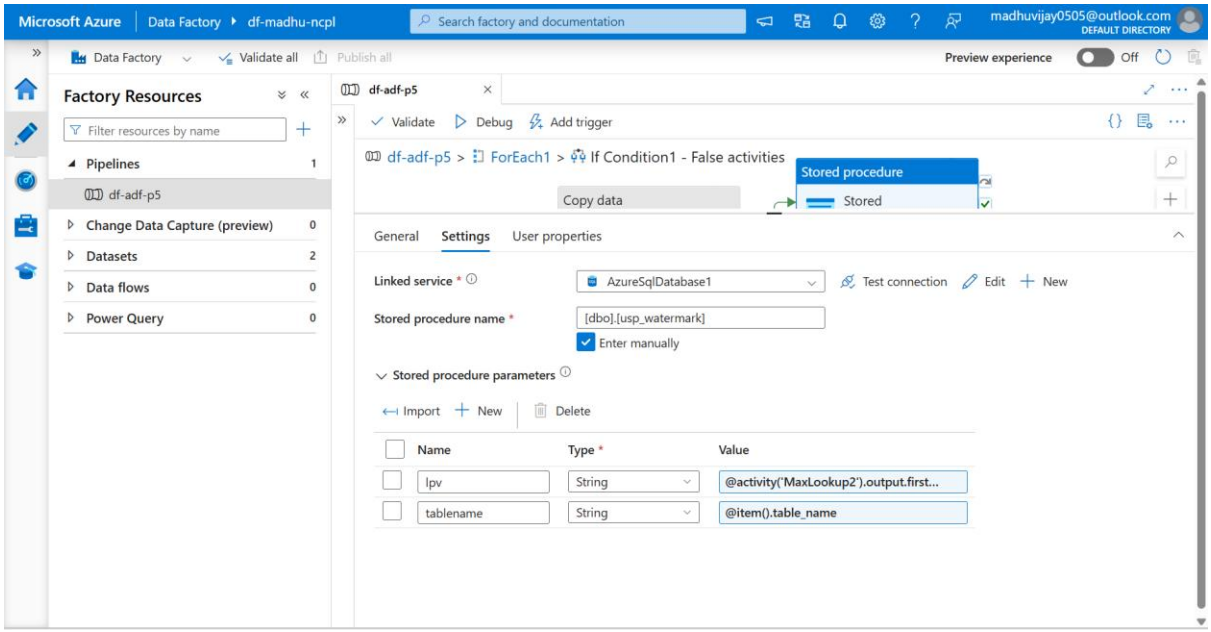


Sink

Select delimited text as sink dataset, create folder_name and file_name parameters and add @item().table_name and @concat(item().table_name,'_',utcNow(),'.csv') in the following parameters



Drag and drop stored procedure and on success connect copy activity with stored procedure


Microsoft Azure
Data Factory
df-madhu-ncpl
Search factory and documentation
madhuvijay0505@outlook.com
DEFAULT DIRECTORY
Data Factory
Validate all
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Preview experience
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Factory Resources
Filter resources by name
Pipelines 1
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Change Data Capture (preview) 0
Datasets 2
Data flows 0
Power Query 0
df-adf-p5
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@activity('MaxLookup2').output.first...
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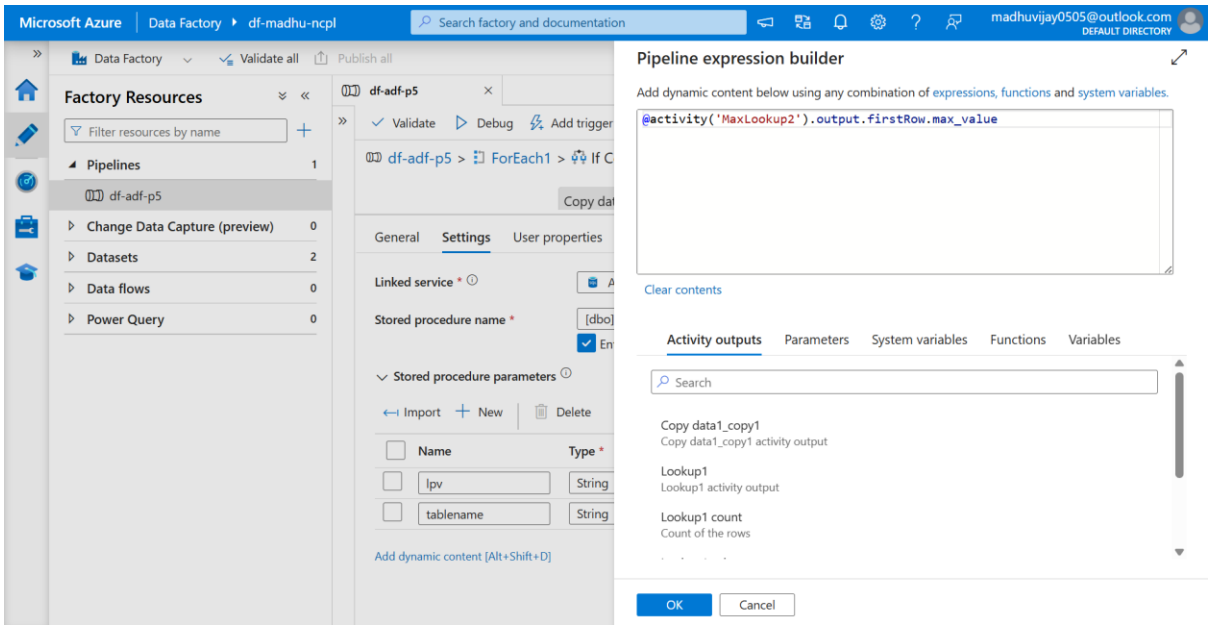
@item().table_name


Microsoft Azure
Data Factory
df-madhu-ncpl
Search factory and documentation
madhuvijay0505@outlook.com
DEFAULT DIRECTORY
Pipeline expression builder
Add dynamic content below using any combination of expressions, functions and system variables.
@activity('MaxLookup2').output.firstRow.max_value
Clear contents
Activity outputs
Parameters
System variables
Functions
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Lookup1 count
Count of the rows
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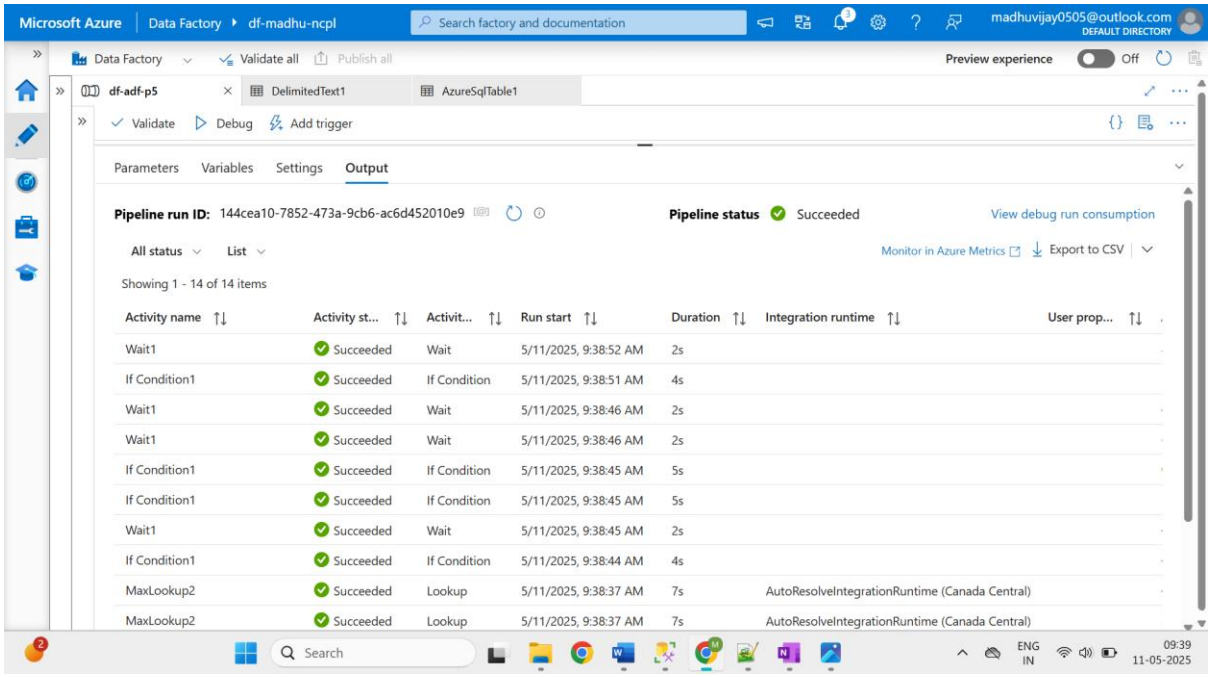
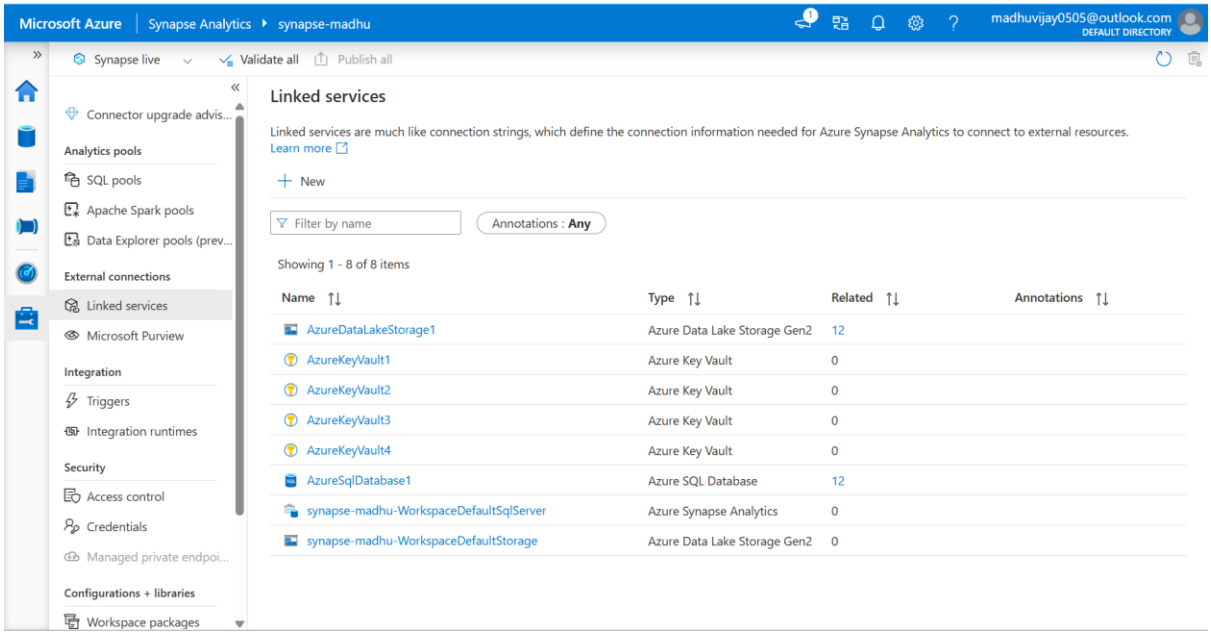


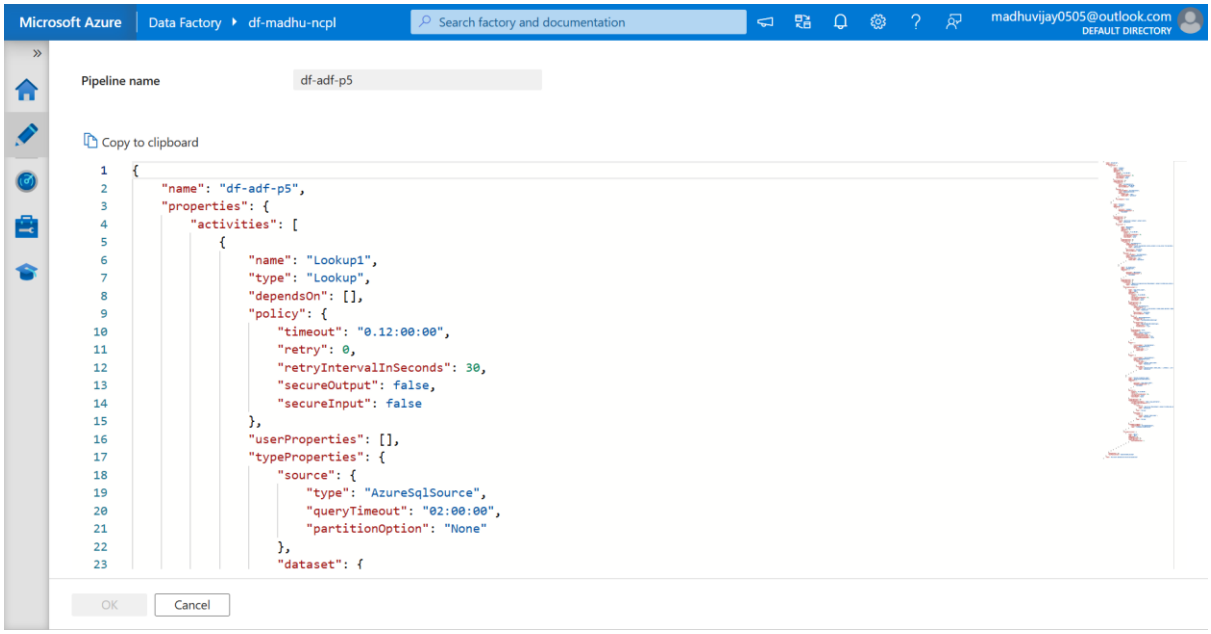
Synapse pipeline

At first, create linked service and datasets in synapse workspace.

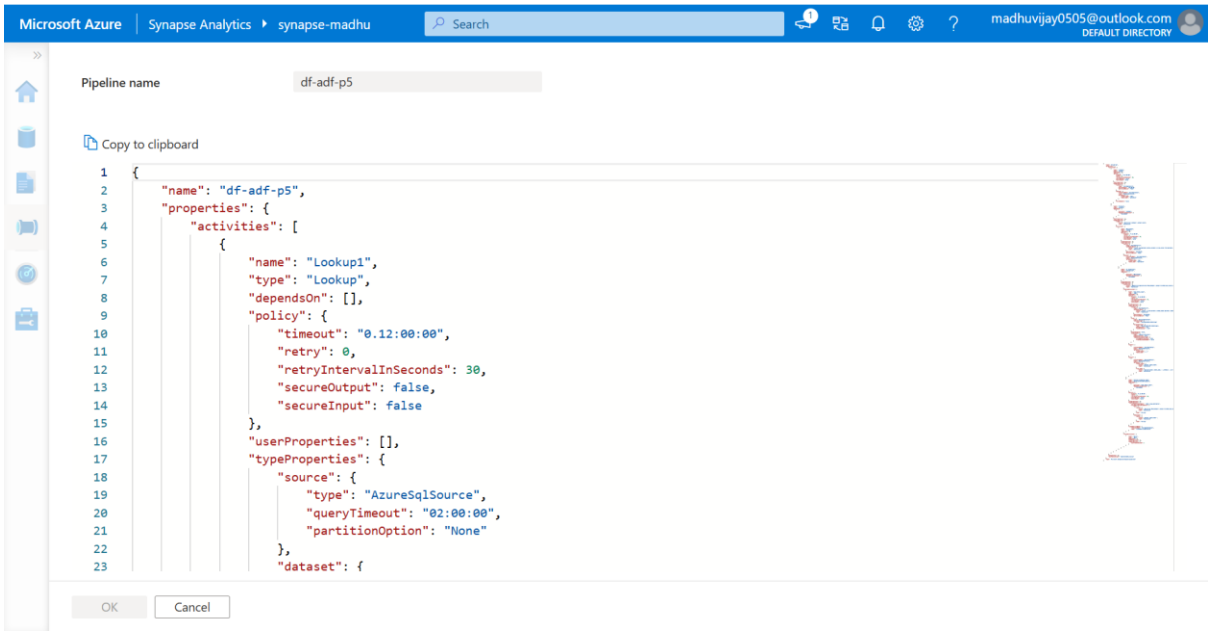


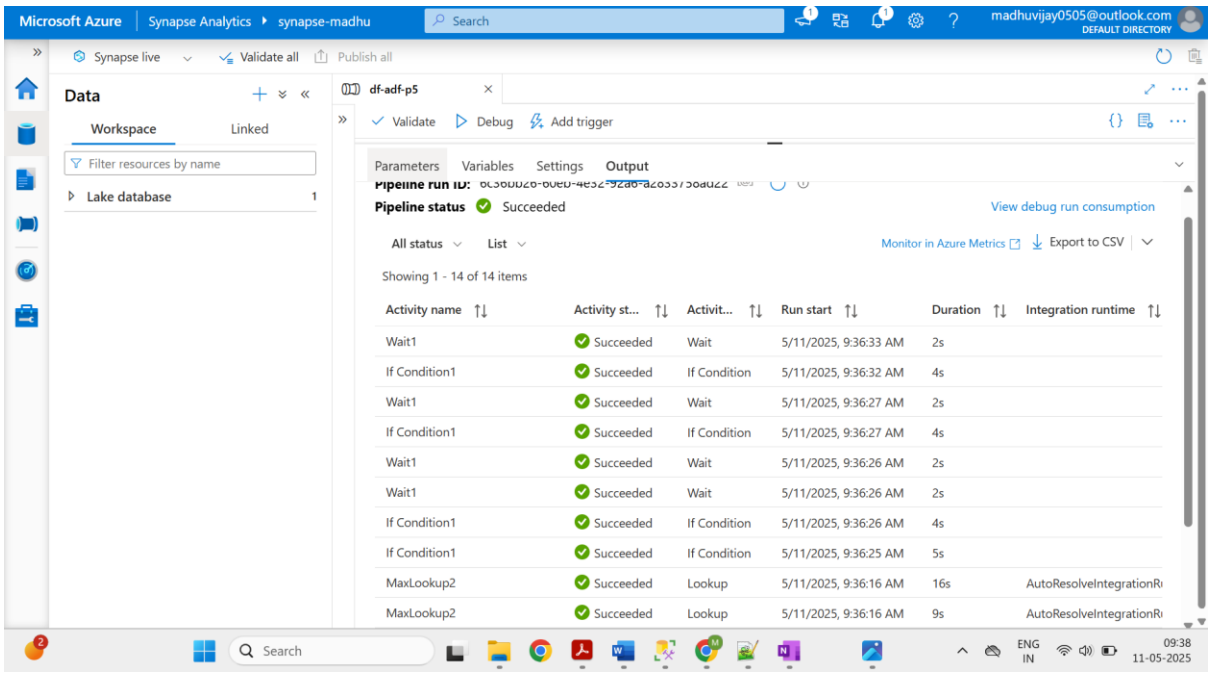
Create a pipeline in synapse workspace with same as ADF pipeline

Copy JSON code from ADF to synapse



Paste it in synapse workspace



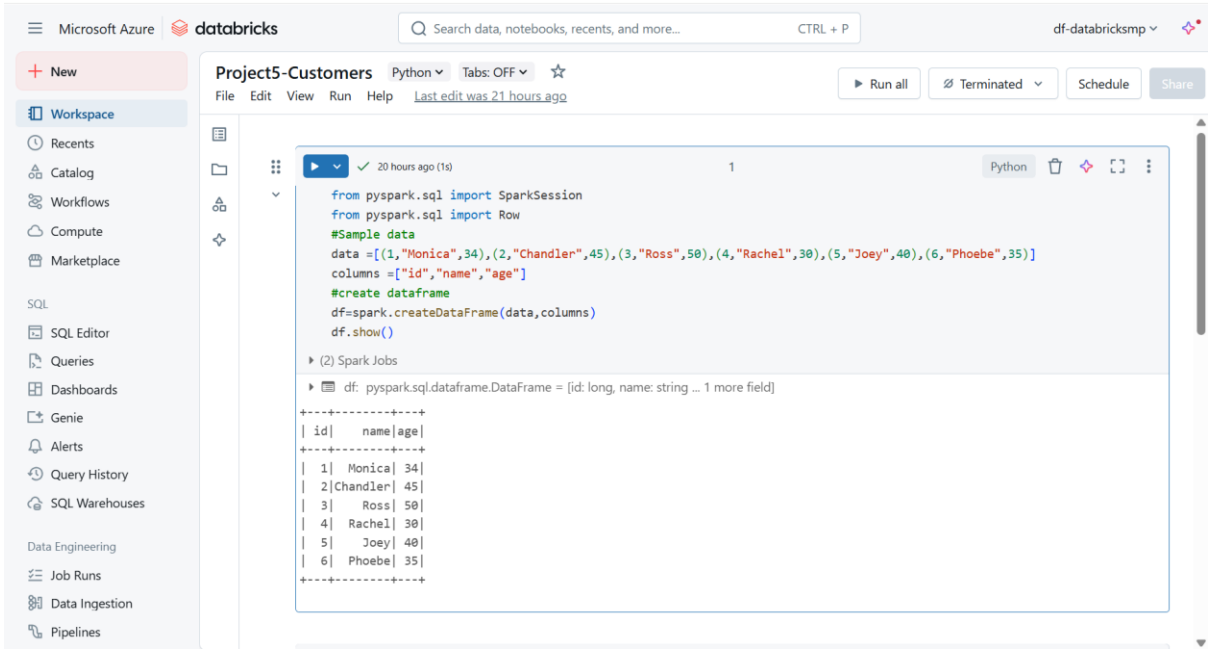


Run the pipeline and it successfully executed.

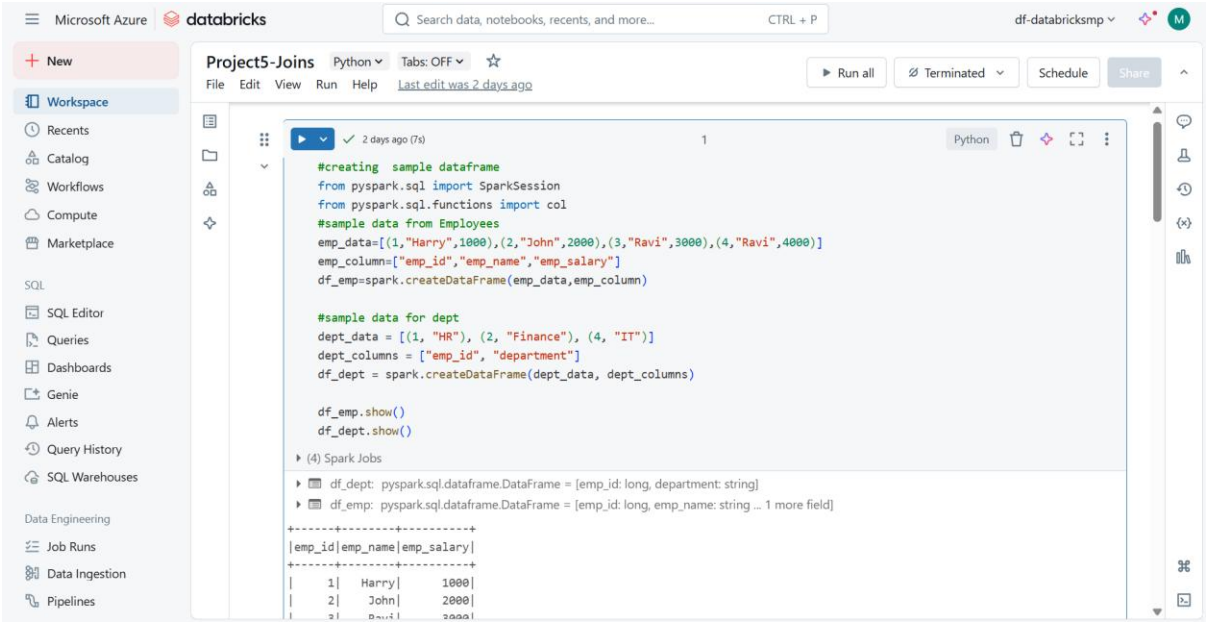
Task 2

Migrate databricks notebook to fabric notebook.

Notebook 1 -Customers



Notebook 2- Joins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Data Engineering
Job Runs
Data Ingestion
Pipelines
Project5-Joins
Python
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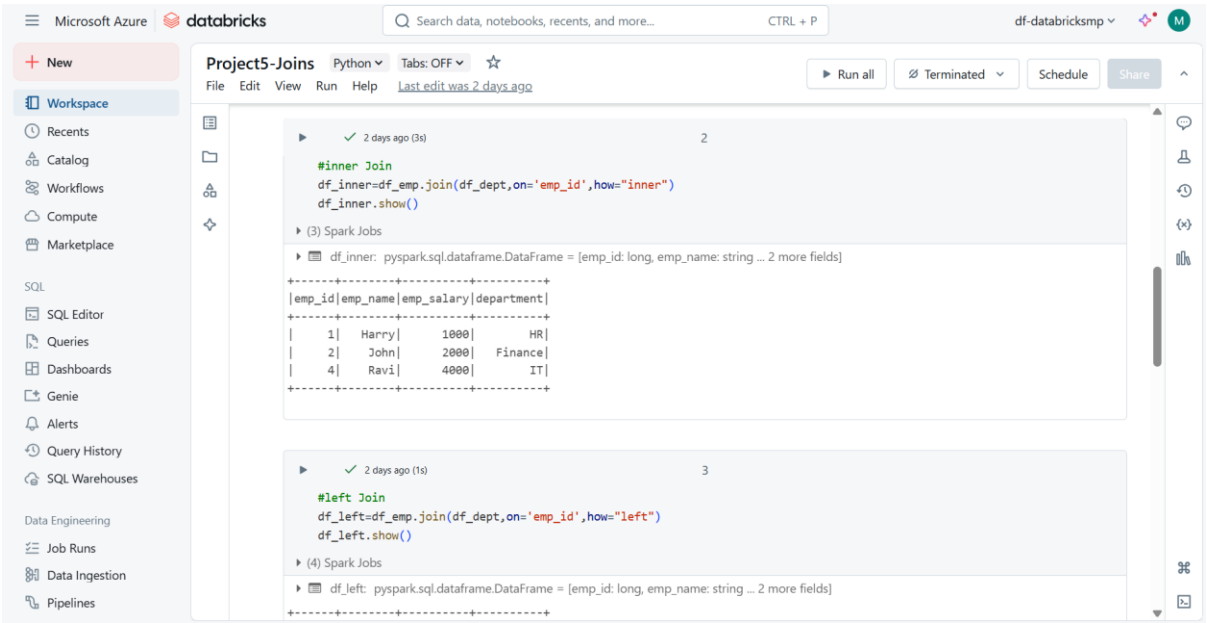
1
Python
#creating sample dataframe
from pyspark.sql import SparkSession
from pyspark.sql.functions import col
#sample data from Employees
emp_data=[(1,"Harry",1000),(2,"John",2000),(3,"Ravi",3000),(4,"Ravi",4000)]
emp_column=["emp_id","emp_name","emp_salary"]
df_emp=spark.createDataFrame(emp_data,emp_column)
#sample data for dept
dept_data = [(1, "HR"), (2, "Finance"), (4, "IT")]
dept_columns = ["emp_id", "department"]
df_dept = spark.createDataFrame(dept_data, dept_columns)
df_emp.show()
df_dept.show()
(4) Spark Jobs
df_dept: pyspark.sql.dataframe.DataFrame = [emp_id: long, department: string]
df_emp: pyspark.sql.dataframe.DataFrame = [emp_id: long, emp_name: string ... 1 more field]
+------+--------+----------+
|emp_id|emp_name|emp_salary|
+------+--------+----------+
| 1| Harry| 1000|
| 2| John| 2000|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Search data, notebooks, recents, and more... CTRL + P
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Marketplace
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Dashboards
Genie
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SQL Warehouses
Data Engineering
Job Runs
Data Ingestion
Pipelines
Project5-Joins
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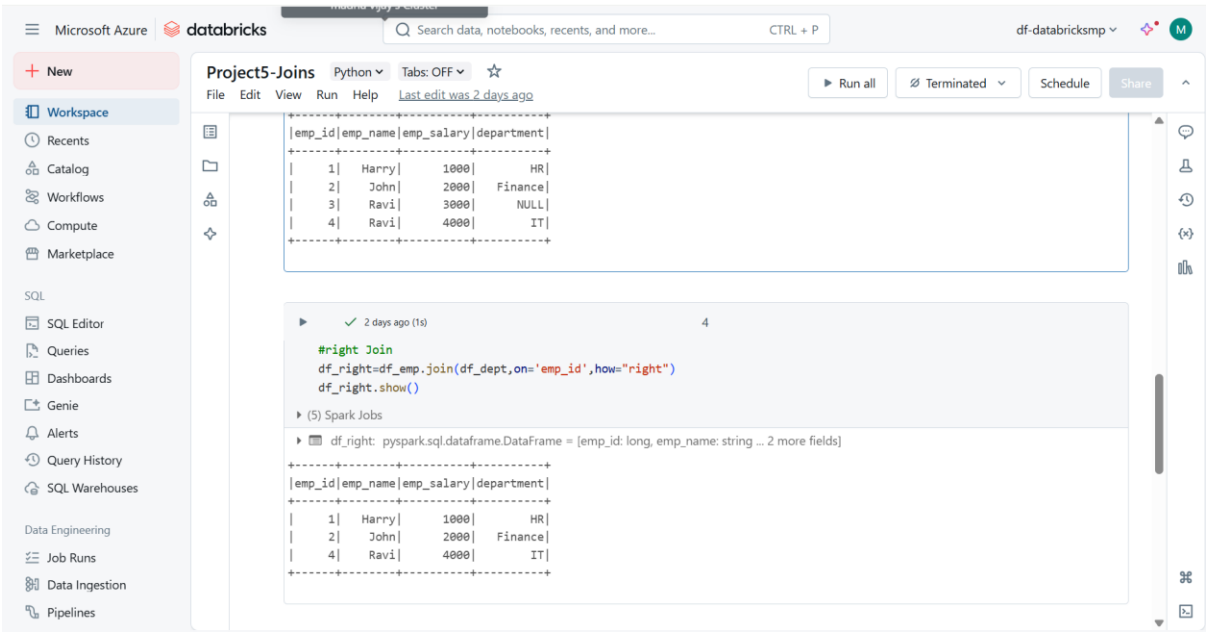
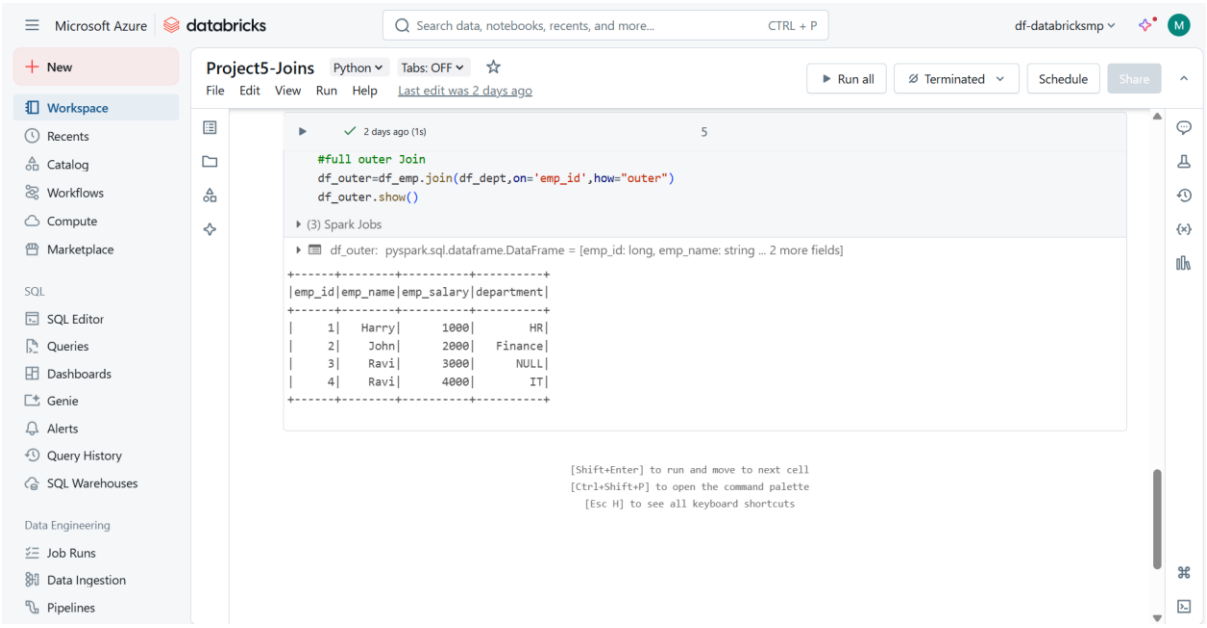
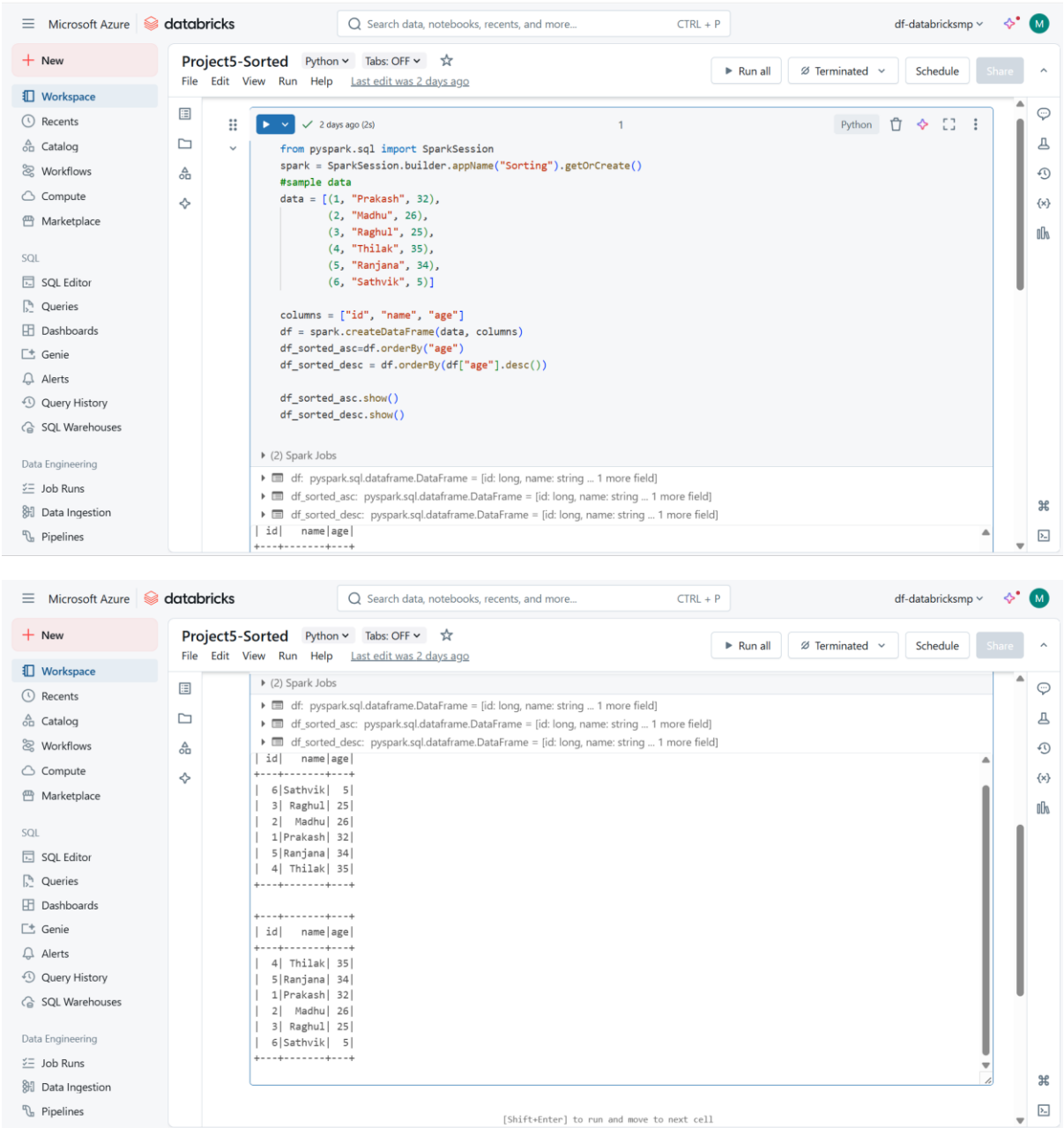
Terminated
Schedule
Share
2 days ago (3s)
2
#inner Join
df_inner=df_emp.join(df_dept,on='emp_id',how="inner")
df_inner.show()
(3) Spark Jobs
df_inner: pyspark.sql.dataframe.DataFrame = [emp_id: long, emp_name: string ... 2 more fields]
+------+--------+----------+----------+
|emp_id|emp_name|emp_salary|department|
+------+--------+----------+----------+
1	Harry	1000	HR
2	John	2000	Finance
4	Ravi	4000	IT
+------+--------+----------+----------+
2 days ago (1s)
3
#left Join
df_left=df_emp.join(df_dept,on='emp_id',how="left")
df_left.show()
(4) Spark Jobs
df_left: pyspark.sql.dataframe.DataFrame = [emp_id: long, emp_name: string ... 2 more fields]

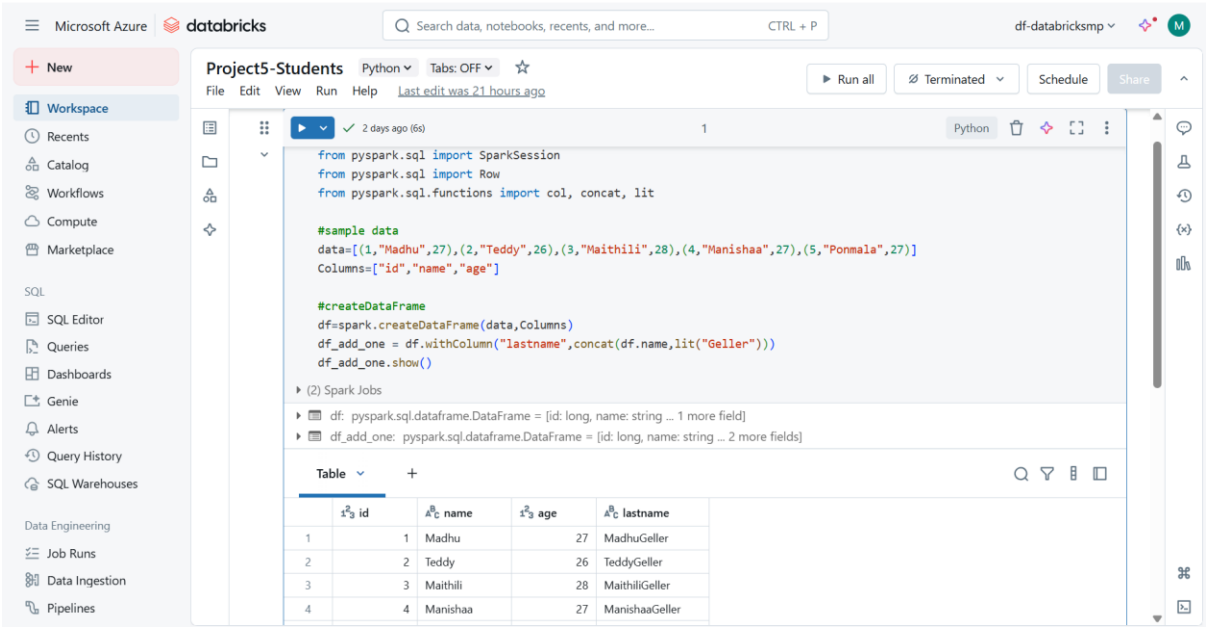


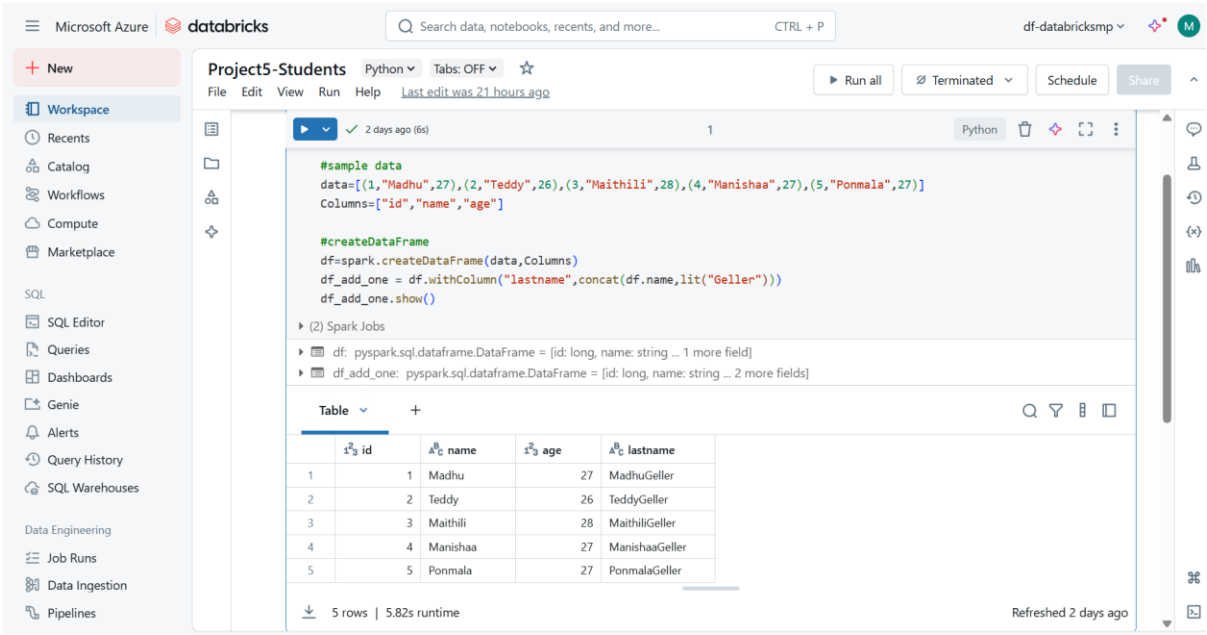


Notebook 3-Sorted



Notebook 4-Students

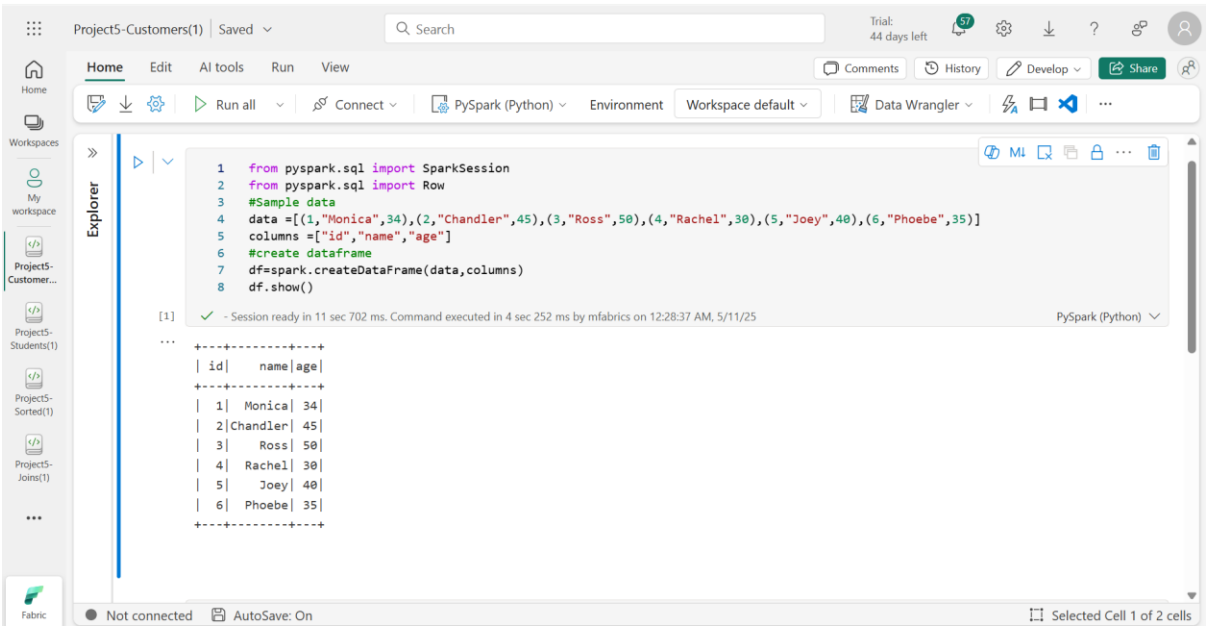


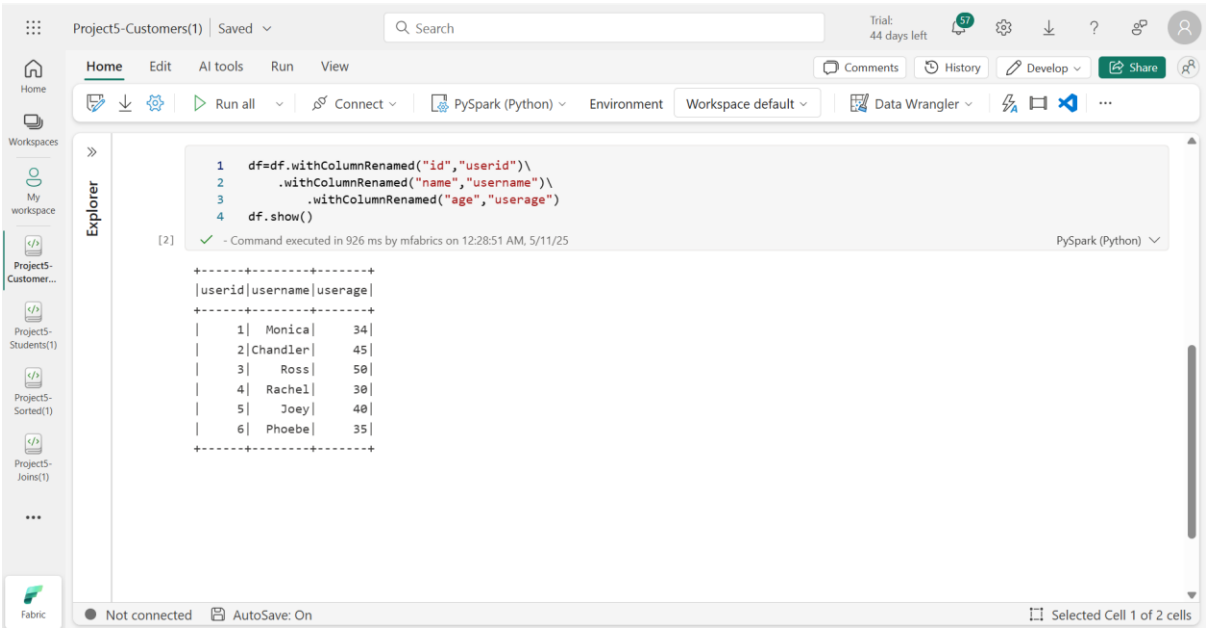


Export all the 4 notebooks from databricks in ipython notebook

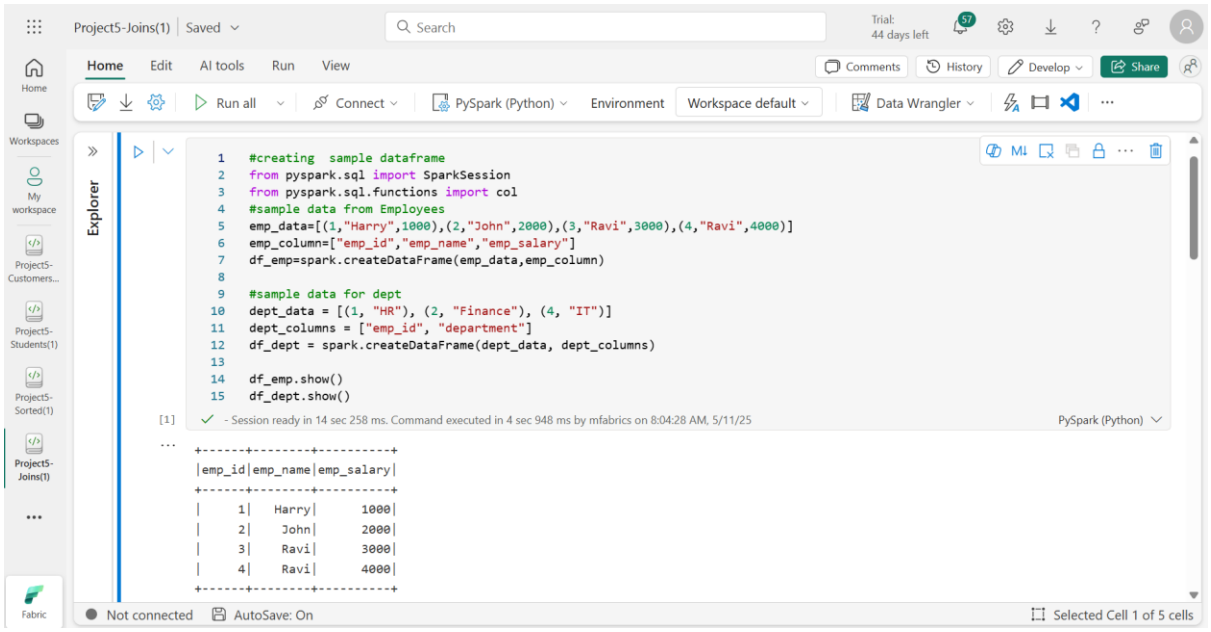
Import the all the ipython notebooks in fabrics. Go to workspace->import-> import notebook.

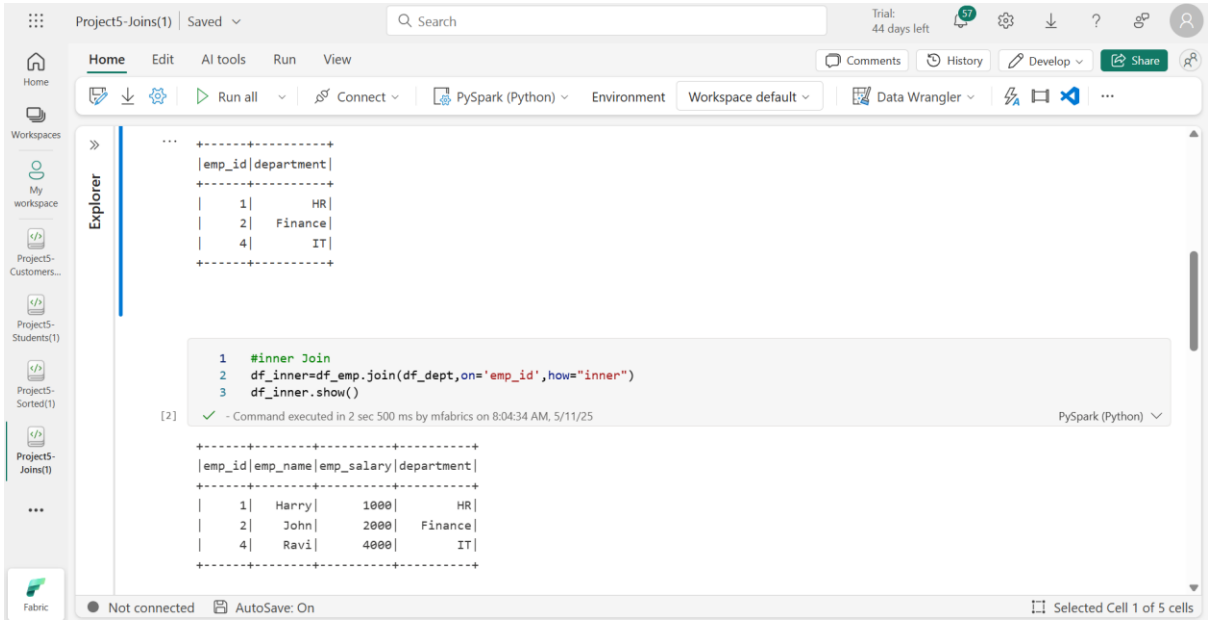
Notebook 1- Customers



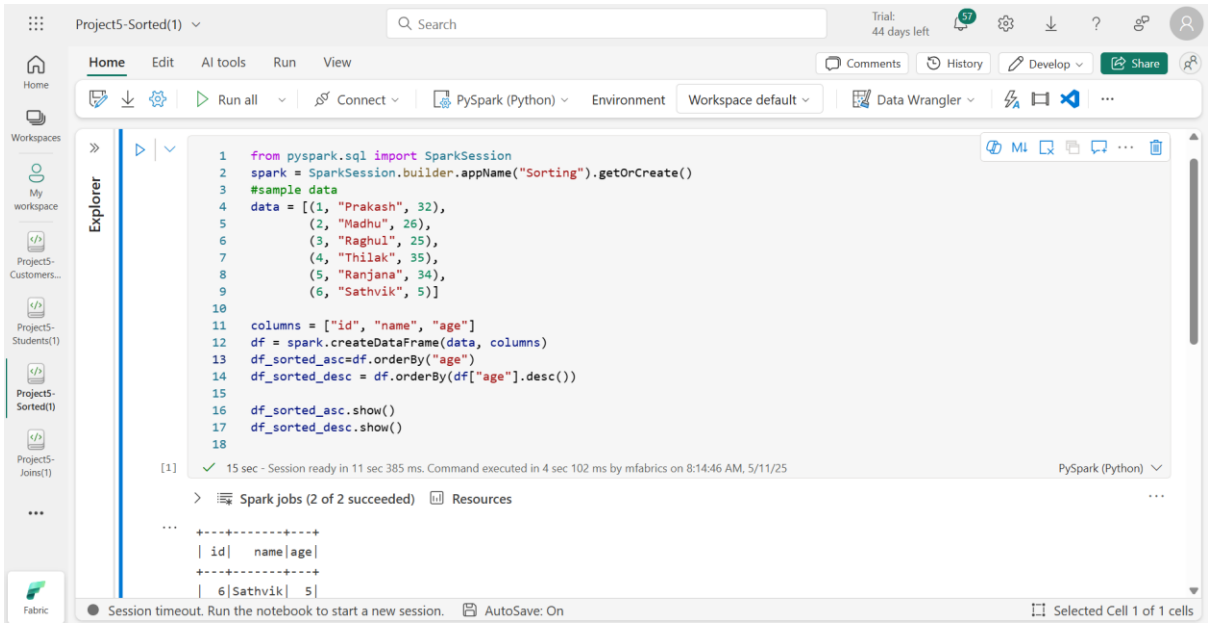


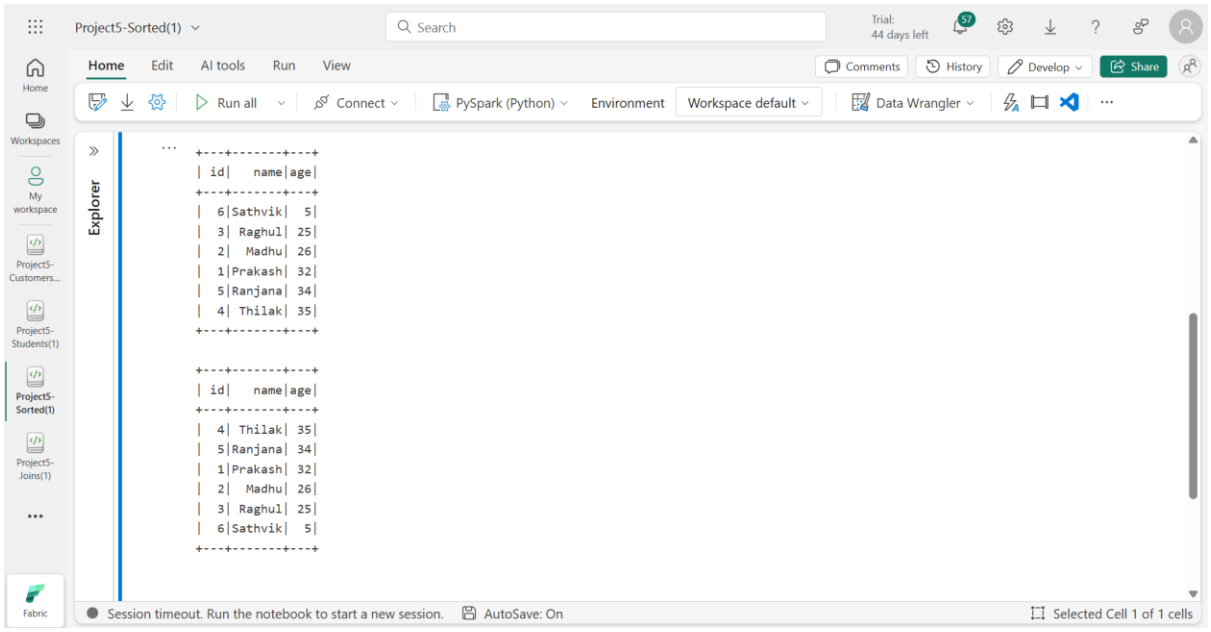
Notebook 2- joins



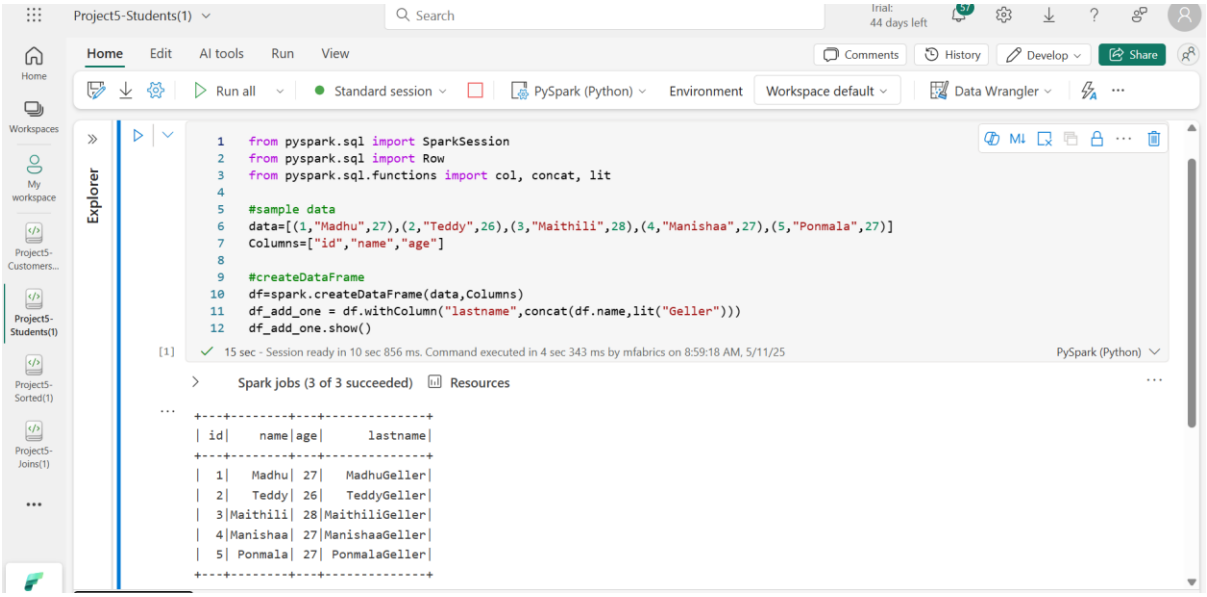


Notebook3- Sorted





Notebook 4-Students



All notebooks ran successfully