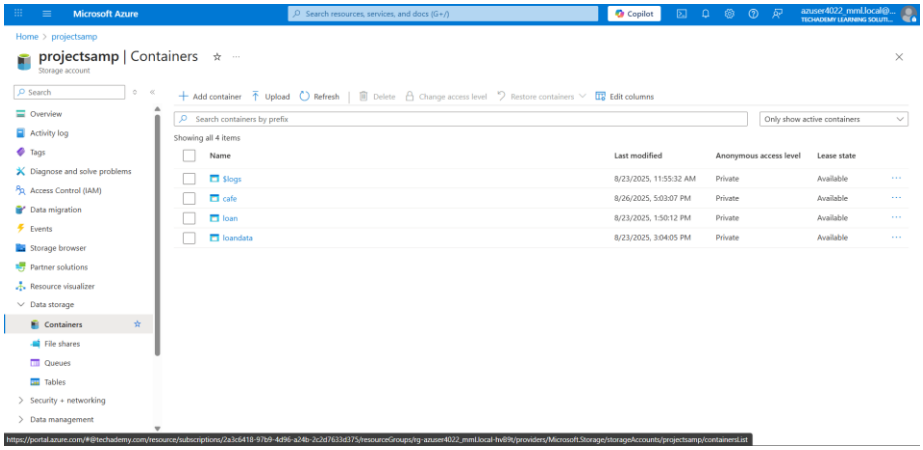
Azure DevOps Coding Challenge

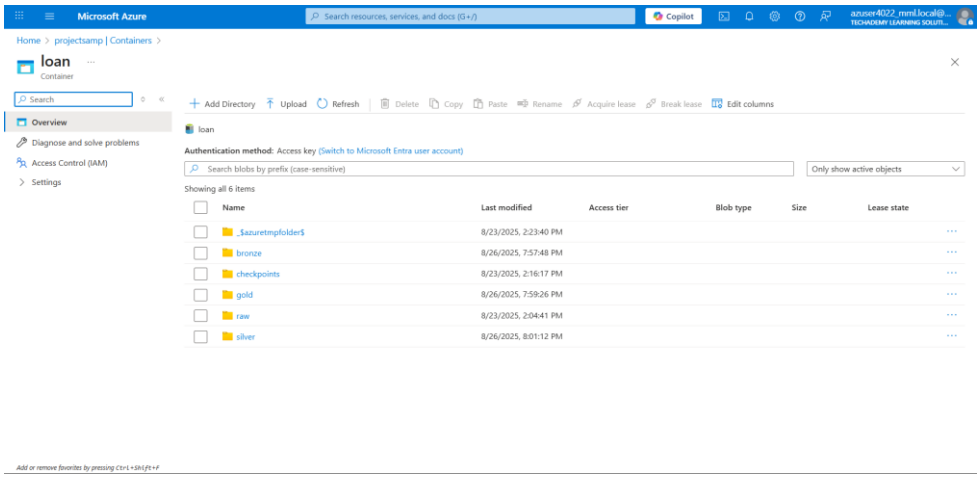
Implementing CI/CD pipline activiry in Azure devops,

Step 1: Create Azure Storage Account

- Provision a Storage Account in Azure.
- Create containers:
    - source → for raw CSV files
    - bronze/silver/gold → for processed data



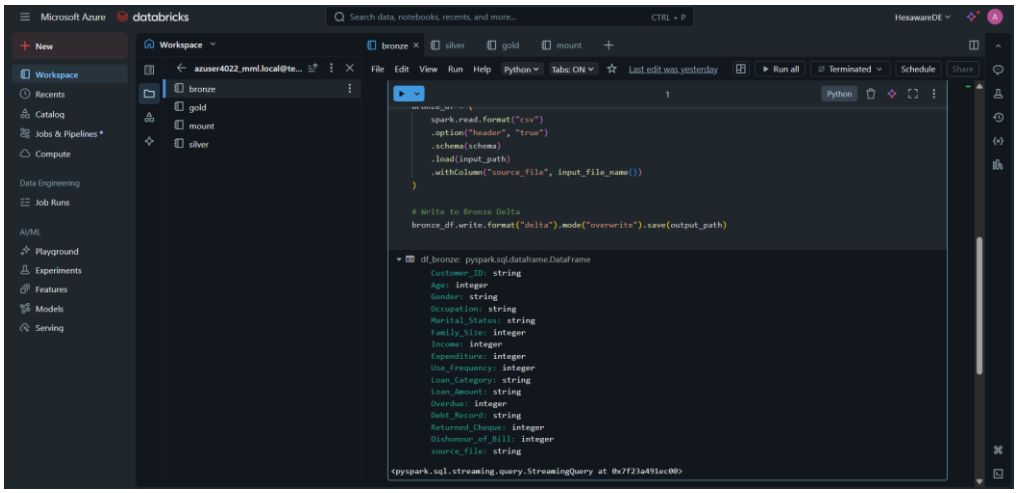
- Upload the raw loan CSV files into the source container.



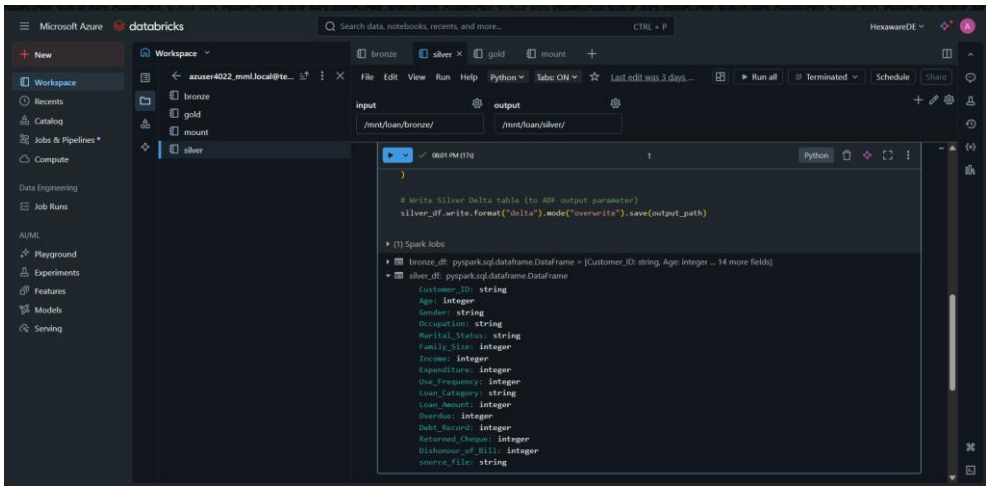
Step 2: Set up Azure Databricks

- Create a Databricks workspace and a Spark cluster.
- Mount the ADLS Gen2 containers into Databricks.

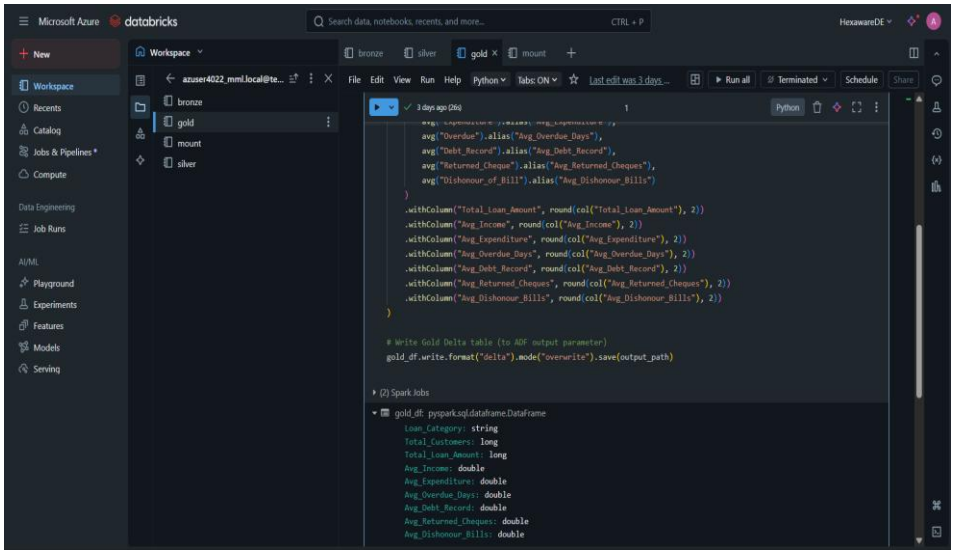
- Create and run notebooks:
    - **Bronze notebook** → ingest raw CSV into Bronze Delta tables.



    - **Silver notebook** → clean, standardize, and transform data.

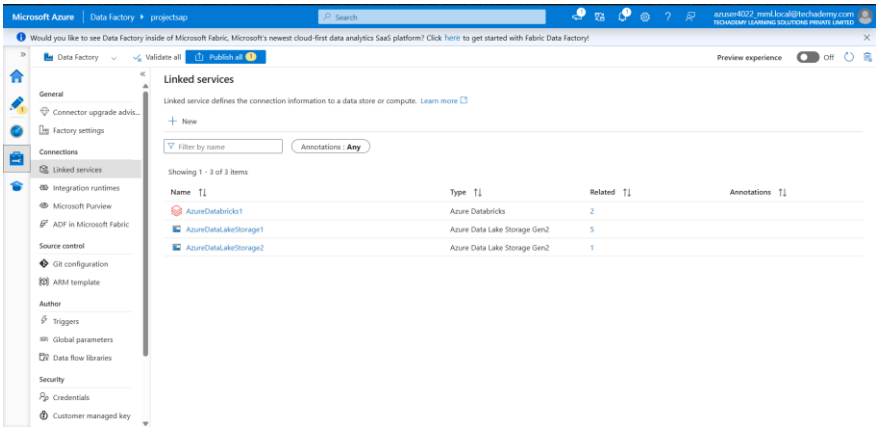


    - **Gold notebook** → aggregate metrics (loan amounts, overdue trends, repayment stats).



Step 3: Create Azure Data Factory (ADF)

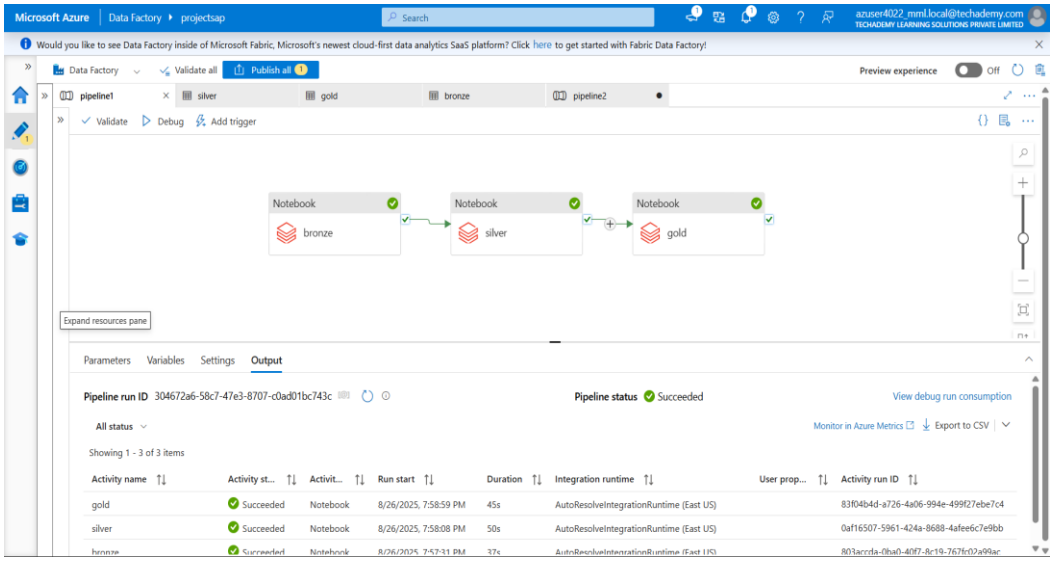
- Launch ADF Studio in the portal.
- Build a pipeline with activities:
  - Databricks Notebook Activity → call Bronze, Silver, Gold notebooks.
- Configure linked services:
  - to Azure Storage (ADLS)
  - to Databricks workspace



Step 4: Configure Pipeline Activities

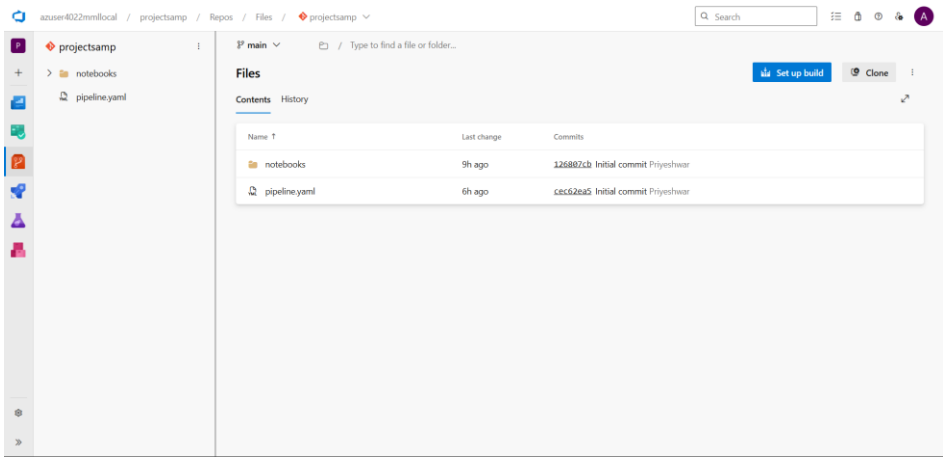
- Parameterize input/output paths.
- Chain activities so Silver runs after Bronze, Gold runs after Silver.
- Validate and debug the pipeline.

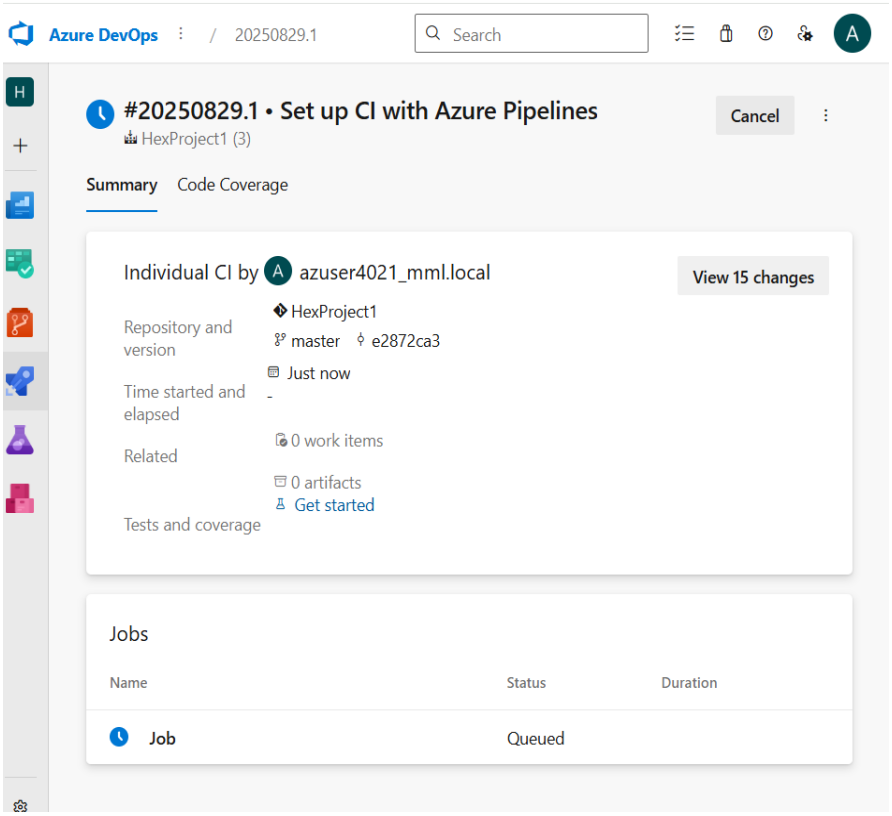
- Trigger execution (manual or schedule).



Step 5: Set up Azure DevOps (CI/CD)

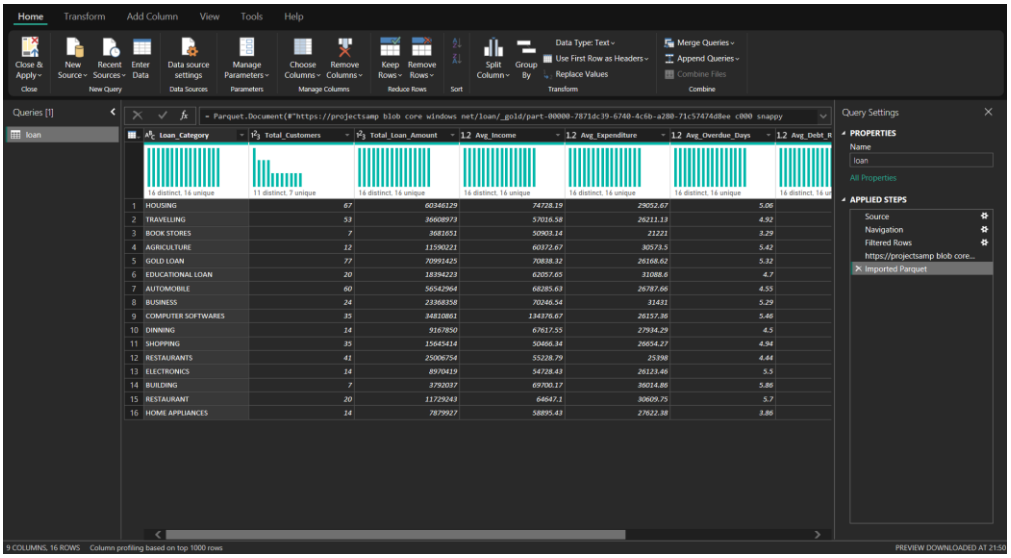
- Store notebooks and ADF JSON definitions in an Azure Repos Git repo.
- Create an Azure Pipelines YAML (azure-pipelines.yml) for CI/CD.
- Add steps to:
  - Deploy Databricks notebooks via databricks-cli.
  - Deploy ADF pipelines via ARM template deployment.
- Run pipeline → validate successful deployment.





Step 6: Verify & Visualize

- In ADF Monitoring → confirm Bronze → Silver → Gold pipeline run success.
- In Databricks → check Delta tables created for Bronze/Silver/Gold.
- Connect Power BI to Gold tables.
- Build dashboards for loan insights (loan distribution, overdue trends, repayment performance).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4 AGRICULTURE 12 11590221 60372.67 30573.5 5.42
5 GOLD LOAN 77 70991425 70838.32 26168.62 5.32
6 EDUCATIONAL LOAN 20 18294223 62057.65 31088.6 4.7
7 AUTOMOBILE 60 56542964 68285.63 26787.66 4.55
8 BUSINESS 24 23368358 70246.54 31431 5.29
9 COMPUTER SOFTWARES 35 34810881 134376.67 28157.38 5.48
10 DINNING 14 9167850 67617.55 27934.29 4.5
11 SHOPPING 35 15645414 50486.34 26854.27 4.94
12 RESTAURANTS 41 25006754 55228.79 25398 4.44
13 ELECTRONICS 14 8970419 54728.43 26123.46 5.5
14 BUILDING 7 3792037 69700.17 36014.86 5.86
15 RESTAURANT 20 11729243 64647.1 30609.75 5.7
16 HOME APPLIANCES 14 7879927 58895.43 27622.38 3.86
9 COLUMNS, 16 ROWS
Column profiling based on top 1000 rows
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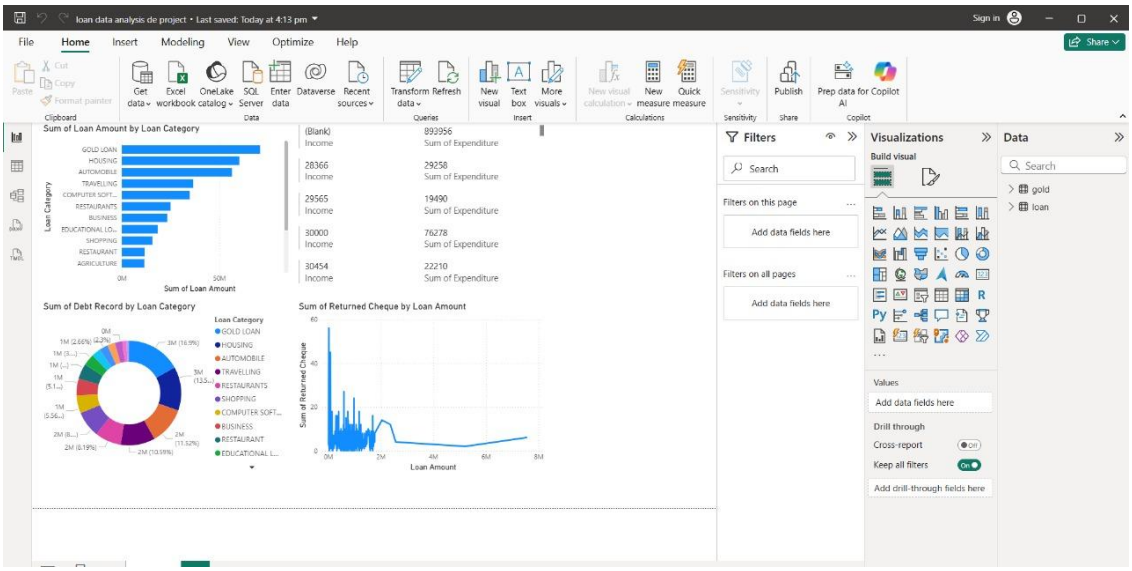
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Sum of Loan Amount by Loan Category
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