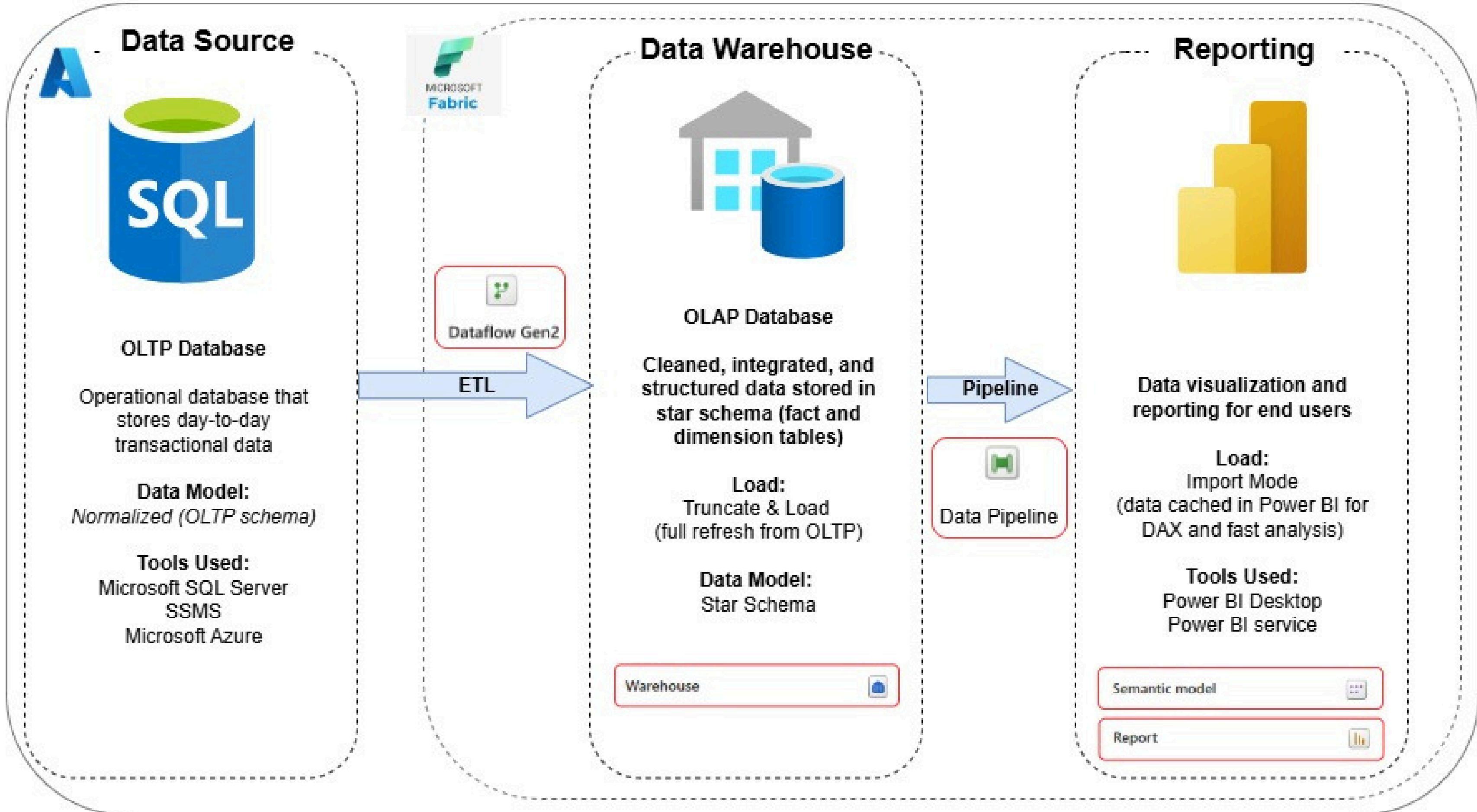


High Level Architecture





Microsoft Fabric

06

Seemlessly, the data is connected to Microsoft Fabric. This integration allows you to use Fabric for data transformation, modelling, reporting, and advanced insights.

Fabric ITI_Lakehouse ITI_Lakehouse Dataflow_ETL ITI_DWH Search Trials activated: 29 days left Home Workspaces Copilot OneLake catalog Monitor Real-Time Workloads ITI_Examination_system My workspace

ITI_Examination_system Create deployment pipeline Create app Manage access Works List view

+ New item New folder Import Migrate Filter by keyword Filter

Name	Status	Type	Task	Owner	Refreshed	Next refresh	Endorsement	Sensitivity	Included in app
Dataflow_ETL	✓ ₂	Dataflow Gen2 (C...)	—	Mohamed Fayed...	12/1/2025, 9:22:28 PM	—	—	—	No
Final Project		Report	—	ITI_Examination_s...	12/11/2025, 1:47:34 P...	—	—	—	
Final Project		Semantic model	—	ITI_Examination_s...	12/11/2025, 1:47:34 ...	N/A	—	—	
ITI_DWH		Warehouse	—	Mohamed Fayed...	—	—	—	—	
ITI_Lakehouse		Lakehouse	—	Mohamed Fayed...	—	—	—	—	
ITI_Lakehouse		SQL analytics en...	—	Mohamed Fayed...	—	—	—	—	
ITI_Pipeline		Pipeline	—	Mohamed Fayed...	—	—	—	—	
LinkedIn Dataflow	✓	Dataflow Gen2 (C...)	—	Mohamed Fayed...	11/24/2025, 8:43:28 P...	—	—	—	
Notebook_ITI		Notebook	—	Mohamed Fayed...	—	—	—	—	

Dataflow Gen2

Prep, clean, and transform data.



Warehouse



Provide strategic insights from multiple sources into your entire business.



Lakehouse



Store big data for cleaning, querying, reporting, and sharing.

Notebook



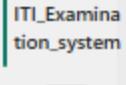
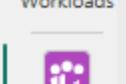
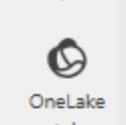
Pipeline



Explore, analyze, and visualize data and build ML models. Supports Apache Spark, Python, T-SQL, and more.

Ingest data at scale and schedule data workflows.

Trials activated:
29 days left



...

ITI_Examination_system

+ New item

New folder

Import

Micro

Create deployment pipeline

Create app

Manage access

Worksp

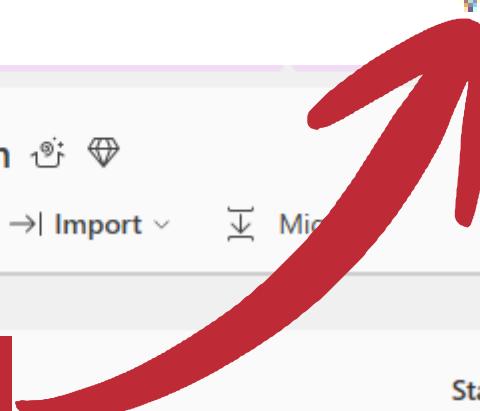
List view

Filter by keyword

Filter

Grid

Name
Dataflow_ETL
Final Project
Final Project
ITI_DWH
ITI_Lakehouse
ITI_Lakehouse
ITI_Pipeline
LinkedIn Dataflow
Notebook_ITI



Name	Status	Type	Task	Owner	Refreshed	Next refresh	Endorsement	Sensitivity	Included in app
Dataflow_ETL	✓ ₂	Dataflow Gen2 (C...)	—	Mohamed Faye... ITI_Examination_s...	12/1/2025, 9:22:28 PM	—	—	—	No
Final Project		Report	—	ITI_Examination_s...	12/11/2025, 1:47:34 P...	—	—	—	
Final Project		Semantic model	—	ITI_Examination_s...	12/11/2025, 1:47:34 ...	N/A	—	—	
ITI_DWH		Warehouse	—	Mohamed Faye... ITI_Examination_s...	—	—	—	—	
ITI_Lakehouse		Lakehouse	—	Mohamed Faye... ITI_Examination_s...	—	—	—	—	
ITI_Lakehouse		SQL analytics en...	—	Mohamed Faye... ITI_Examination_s...	—	—	—	—	
ITI_Pipeline		Pipeline	—	Mohamed Faye... ITI_Examination_s...	—	—	—	—	
LinkedIn Dataflow	✓	Dataflow Gen2 (C...)	—	Mohamed Faye... ITI_Examination_s...	11/24/2025, 8:43:28 P...	—	—	—	
Notebook_ITI		Notebook	—	Mohamed Faye... ITI_Examination_s...	—	—	—	—	

Fabric Dataflow_ETL X

Trials activated:
7 days left

Power Query

Home Transform Add column View Help

Copilot OneLake catalog Monitor Real-Time Workloads My workspace

Queries [11]

DimBranch DimCourse DimDepartment DimExam DimInstructor DimIntake DimStudent FactStudent_Grades DimTrack DimDate Dimlinkedprofiles

Table.SelectColumns(#"Navigation 1", {"Bran_ID", "Bran_Name", "Location"})

	Bran_ID	Bran_Name	Location
1	1	Cairo	Cairo
2	2	Alexandria	Alexandria
3	3	Giza	Giza
4	4	Mansoura	Dakahlia
5	5	Damanhur	Beheira
6	6	Tanta	Gharbia
7	7	Asyut	Asyut
8	8	Ismailia	Ismailia
9	9	Port Said	Port Said
10	10	Minya	Minya

Query settings

Properties Name: DimBranch

Applied steps

- Source
- Navigation 1
- Choose col...

Data destination

Warehouse

Completed (2.49 s) Columns: 3 Rows: 10 Column profiling based on top 1,000 rows Add default destination... Last run on 12/1/25 at 9:22 PM Step

Fabric Dataflow_ETL X

Power Query

Home Transform Add column View Help

Queries [11]

- DimBranch
- DimCourse
- DimDepartment
- DimExam
- DimInstructor
- DimIntake
- DimStudent
- FactStudent_Grades
- DimTrack
- DimDate
- Dimlinkedprofiles

Completed (2.49 s) Columns: 3 Rows: 10

Search

Trials activated: 7 days left

SQL Server database

Server * iti-exam-sqlsrv.database.windows.net

Database ITI_Examination_System

Advanced options

OK Cancel

Data destination

Warehouse

Step

Query settings

Name DimBranch

Applied steps

- Source
- Navigation 1
- Choose col...

Data destination

Warehouse

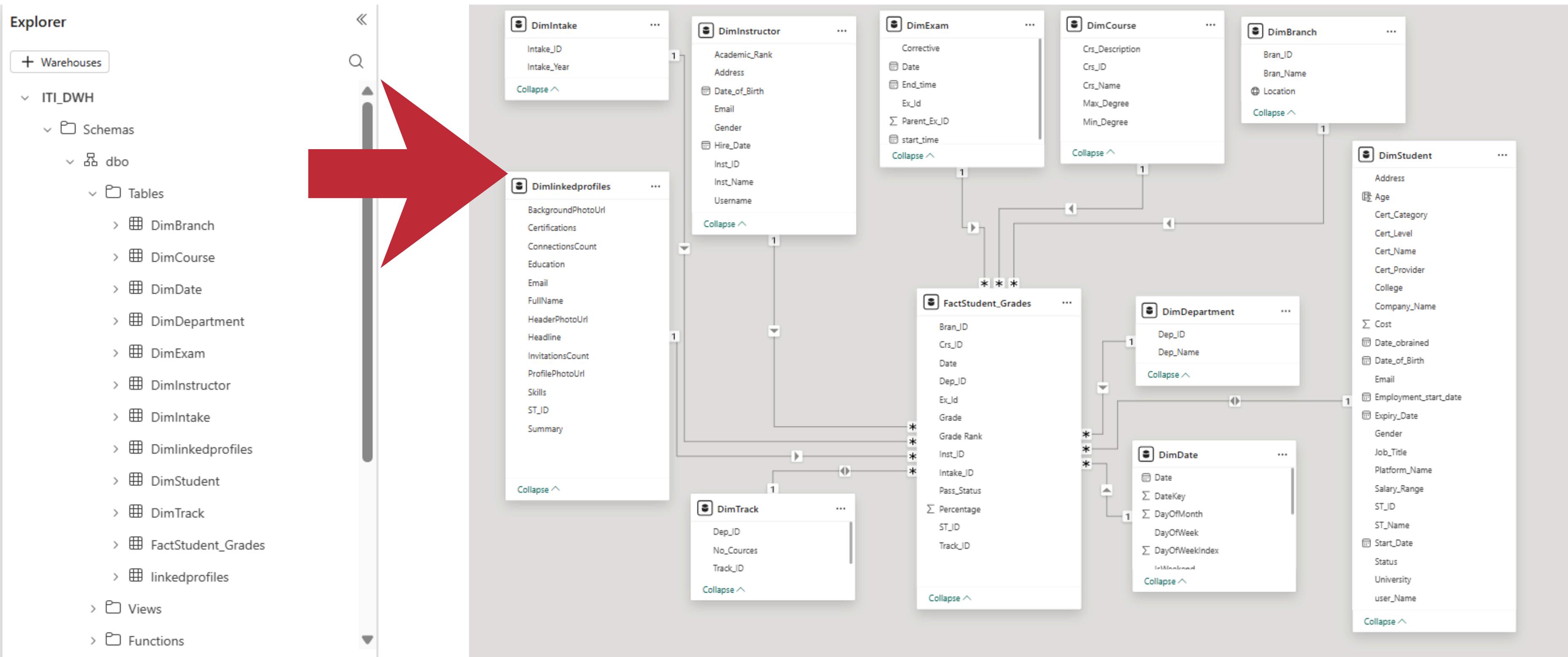
Step

Column profiling

Branch ID	Branch Name
1	Cairo
2	Alexandria
3	Giza
4	Mansoura
5	Damanhur
6	Tanta
7	Asyut
8	Ismailia
9	Port Said
10	Minya

Data Modeling

Convert tables in the data warehouse (OLAP) into Fact and dimensions tables (Star Schema). It will help to improve performance and be clear to understand.



Fabric ITI_Lakehouse Notebook_ITI Saved Trials activated: 7 days left Home Edit AI tools Run View Comments History Develop Share

Home Connect PySpark (Python) Environment Workspace default Data Wrangler Copilot

Explorer Files > ... > Ahmed Search files Certifications.csv Connections.csv Education.csv Email Addresses.csv Invitations.csv Learning.csv Profile.csv Rich_Media.csv Skills.csv

1 # -----
2 # PART 1: Setup & Test Reading a CSV File
3 # -----
4
5 from pyspark.sql import SparkSession
6 from pyspark.sql import functions as F
7 from pyspark.sql import types as T
8
9 spark = SparkSession.builder.getOrCreate()
10
11 print("Spark session started")
12
[26] ✓ - Command executed in 267 ms by Mohamed Fayed Abd Ellatif Elbasuoney on 2:35:21 PM, 11/24/25
... Spark session started

1 # =====
2 # PART 2 – Student folders + Safe CSV loader + Record template
3 # =====
4
5 from pyspark.sql.utils import AnalysisException
6
7 # -----
8 # 1. List of student folders (based on your Lakehouse)
9 # -----
10 students = [
11 "Ahmed",
12 "Aya",
13 "Manar",
14 "Mennatullah",
15 "Mohamed Elbasuoney"
16]
17
18 print("Students detected: ", students)

PySpark (Python)

ITI_Examination_system My workspace

Not connected AutoSave: On Selected Cell 1 of 5 cells

Data Flow & Pipeline

