**Microsoft Fabric and Lakehouse**

**Exploring Lakehouse & Its Features in Microsoft Fabric**

A **Lakehouse** in **Microsoft Fabric** is a **modern data architecture** that combines the best of **data lakes** and **data warehouses**. It allows you to store, manage, and analyze structured, semi-structured, and unstructured data in a single environment.

**Key Features of Lakehouse**

1️. **Unified Storage & Processing**

* Stores both structured (tables) and unstructured (files) data.
* Supports **Delta Lake** for transactional consistency.

2️. **SQL Endpoint for Querying**

* Provides a **built-in SQL analytics engine** to query Lakehouse tables using T-SQL.
* Supports **direct querying** without needing ETL processes.

3️.  **Integration with OneLake & Fabric**

* Uses **OneLake** for seamless data storage and access across Fabric.
* Directly integrates with **Power BI, Data Factory, and Spark Notebooks**.

4️.  **Multi-Format Data Support**

* Works with **CSV, Parquet, JSON, Delta, and other file formats**.

5️.  **Governance & Security**

* Built-in **access control & permissions**.
* Supports **Microsoft Purview** for data governance.

**What is a SQL Endpoint in a Lakehouse?**

A **SQL Endpoint** in a Lakehouse is a **serverless SQL query engine** that allows you to query structured **Lakehouse tables** using T-SQL.

**Why Use SQL Endpoint?**

* Run SQL queries **directly on Lakehouse tables**.
* No need for separate SQL Server installation.
* Integrates with **Power BI** for visualization.
* Supports **ACID transactions with Delta Lake**.

**Difference Between Lakehouse Tables & Files**

| **Feature** | **Lakehouse Tables** | **Files** |
| --- | --- | --- |
| **Format** | Structured (Delta, Parquet) | Unstructured (CSV, JSON, Parquet) |
| **Storage** | Stored in Delta Lake format | Stored in OneLake |
| **Querying** | SQL queries via SQL Endpoint | Needs Spark/Python for processing |
| **Transaction Support** | Yes (ACID transactions) | No (raw data files) |
| **Schema** | Defined schema | Schema-on-read |

**When to Use?**

* **Use Tables** when you need **structured queries, transactions, and SQL-based analytics**.
* **Use Files** for **raw data ingestion, semi-structured data, or archival storage**.

**Creating a Lakehouse & Uploading a File**

First, we need to run fabric capacity to create a lake house in workspace

A screenshot of a computer

Description automatically generatedCreate a workspace A screenshot of a computer

Description automatically generatedA screenshot of a computer

Description automatically generatedAdd new item (lake house)A screenshot of a computer

Description automatically generatedA screenshot of a computer

Description automatically generatedA screenshot of a computer

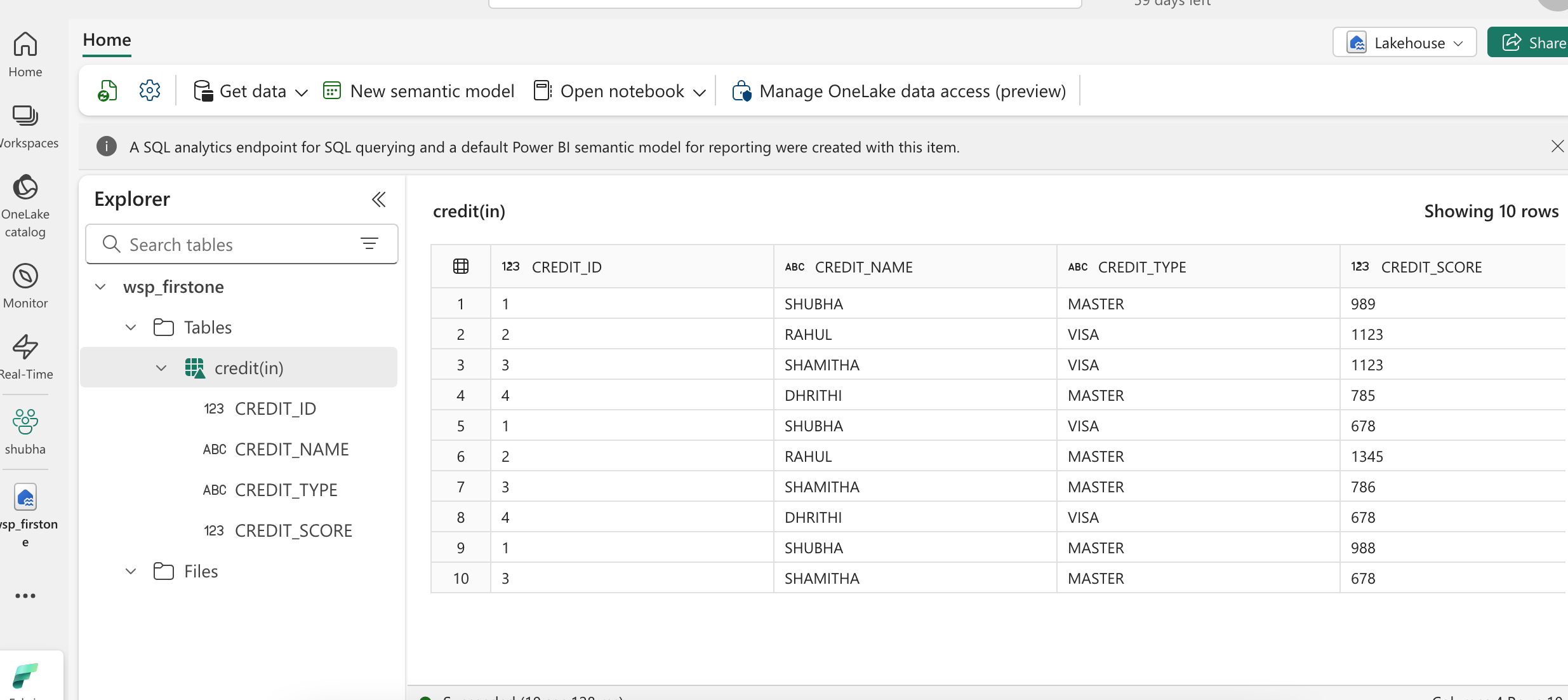
Description automatically generatedUpload files A screenshot of a computer

Description automatically generatedA screenshot of a computer

Description automatically generatedNow convert this files into tableA screenshot of a computer

Description automatically generatedA screenshot of a computer

Description automatically generatedA screenshot of a computer

Description automatically generatedNow table is created successfullyand double click the table name to preview the data Now in the workspace we can see two thing sematic and SQL analytics, To query data click on SQL analyticsA screenshot of a computer

Description automatically generatedSelect New queryA screenshot of a computer

Description automatically generatedRun the queryA screenshot of a computer

Description automatically generatedAnd using this workspace we can create pipeline , shortcut , event stream and dataflow gen2 and using monitor tab we can see the progress also A screenshot of a computer

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