DBT

Data Transformation Service

JERIN SAM

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# DBT

DBT is an open-source data transformation tool designed for analytics engineering. It is widely used for ***transforming***, ***testing***, and ***documenting data*** in data warehouses. It is the “T” in ETL, it is used for transformation using SQL based syntax.

In DBT, Transformation is ***version controlled***.

A screenshot of a computer

Description automatically generated

DBT is not a processing engine. Instead, it is a data transformation tool that ***relies on the processing power of your data warehouse or query engine***.

## What DBT Is

* **SQL-Based Transformation Tool:** DBT uses SQL to define data transformations. You write SQL queries (models), and DBT compiles them into SQL scripts that your data warehouse executes.
* **Orchestration of SQL Jobs:** DBT organizes, manages, and orchestrates SQL transformations, but it does not directly handle the processing of data.
* **Workflow Management:** DBT handles dependencies between data models, allowing you to build complex workflows. It ensures that transformations run in the correct order based on these dependencies.
* **Code Management:** DBT provides a structured framework for managing SQL code, applying data tests, documenting transformations, and version-controlling data pipelines.

## What DBT Is Not

* **DBT is** **not a Database or Processing Engine**: DBT does not store data, nor does it have its own query execution engine. It depends on a data warehouse, such as:
  + BigQuery
  + Snowflake
  + Redshift
  + PostgreSQL
  + Databricks
  + Azure Synapse
* **Not an ETL Tool:** DBT focuses only on the Transformation (T) aspect of the ETL/ELT process. It does not handle Extraction (E) or Loading (L) of data from source systems into a data warehouse.

## How DBT Works

* **SQL Compilation:** DBT takes your SQL files (models) and Jinja templates, compiles them into raw SQL statements, and submits them to your data warehouse for execution.
* **Data Warehouse Execution:** The actual data processing happens in the data warehouse. DBT does not perform the heavy lifting; it delegates the query execution to the warehouse.
* **Results Storage:** Once the data warehouse completes the query, the results are stored in the tables or views specified by DBT.

## DBT Helps To

1. Modelling changes are easy to follow and revert by using version control feature of DBT.
2. View and create dependencies between models.
3. Data quality checks.
4. Error reporting.
5. Incremental load of fact tables.
6. Track history of dimension tables.
7. Easy-to-access documentation.

# Appendix

## Important Links