**Database Modeling**

What is a Schema?

A schema is a structured framework that defines how data is organized in a database or data model.

Key components of a Schema

1. Tables
2. Fields
3. Relationships

In a dimensional model, all of the data is organized into either **facts** or **dimensions.**

Facts: measurements like profit

Dimensions: that give additional context to those measurements like for example, it can be something like a month time period or also a product category.

**Star Schema**:

Dimension

|

Dimension — Fact — Dimension

Example:

Date

|

Product — Fact Table — Customer

|

Store

Example 2:

Fact Table for measures: Sales Info

| Product Code | Time Code | Store Code | Sales | Quantity |
| --- | --- | --- | --- | --- |

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Dimension Table: Store Info Dimension Table: Product Info Dimension Table: Time Info

Dimension Table = Primary Key+ Foreign Key + Dimensions

Example:

1. People: Employees, Managers, Customers
2. Products: Product category, Product subcategory
3. Places: Regions, Cities or Addresses
4. Time or Date-related

**Snowflake Schema:**

Dimension — Dimension — Dimension

|

Dimension — Fact Table — Dimension — Dimension — Dimension — Dimension

|

Dimension — Dimension

Example:

Product — Product Subcategory — Product Category

|

Date — Fact Table — Customer — Address — City — Country

|

Store — Store Type

**Cardinality in PowerBI**

It defines the relationship between rows in one table and rows on another table.

There are 3 main types of relationships:

1. One to One (1:1): Each rows in Table A relates exactly to one row in Table B.
2. One to Many (1:\*): A single row in Table A relates to multiple rows in Table B.
3. Many to Many: Multiple rows in Table A relate to multiple rows in Table B.

**Introduction to DAX in PowerBI**

**What is DAX?**

DAX (Data Analysis Expressions) is the formula language used in Power BI, Power Pivot, and Analysis Services. It is used to perform **calculations** and create **custom** fields in your data models.

Think of DAX as similar to Excel formulas- but made for **relational data models, tables** and **context-aware calculations.**