Star Schema

vs

Snowflake Schema

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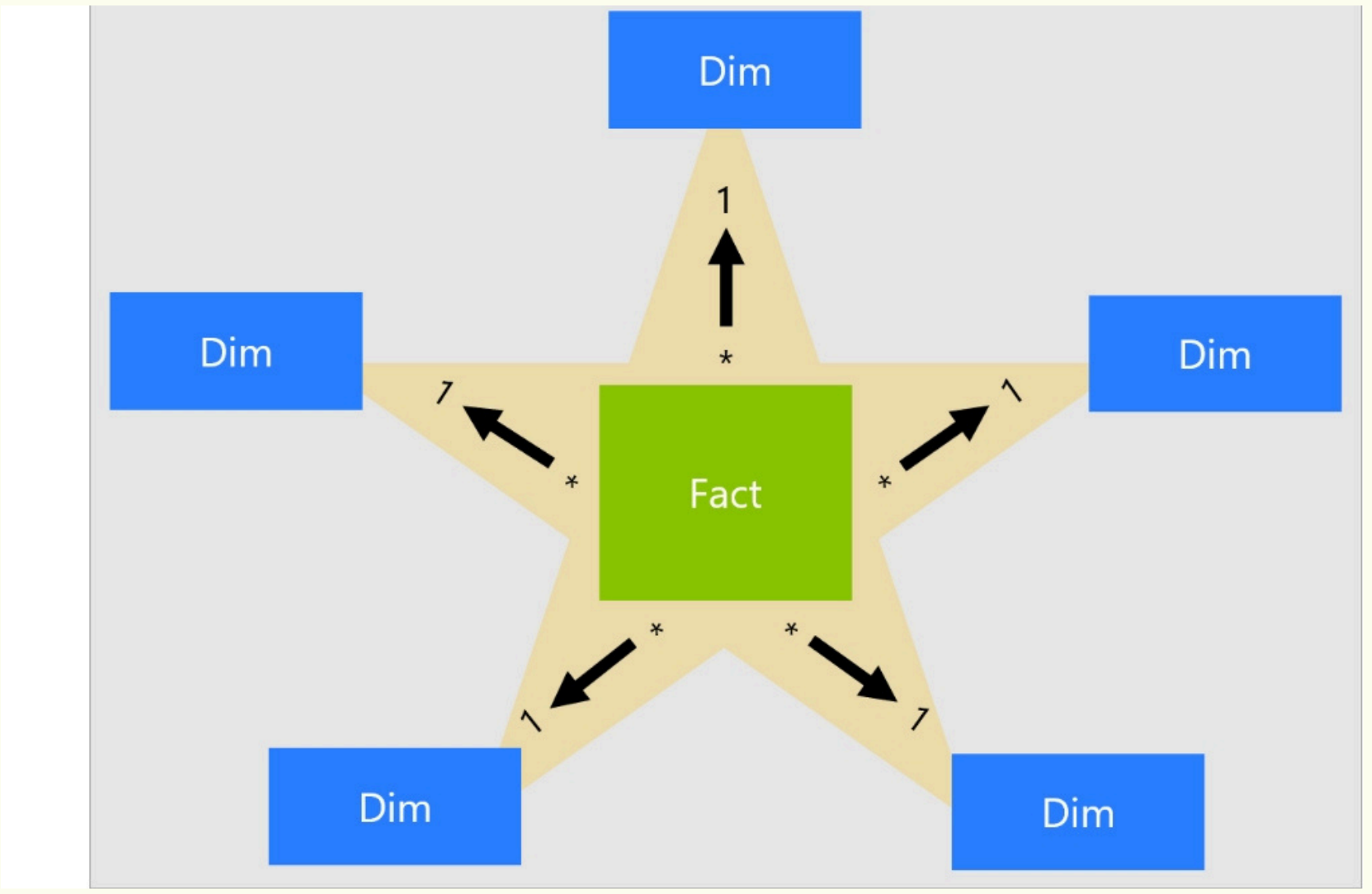
What is Star schema

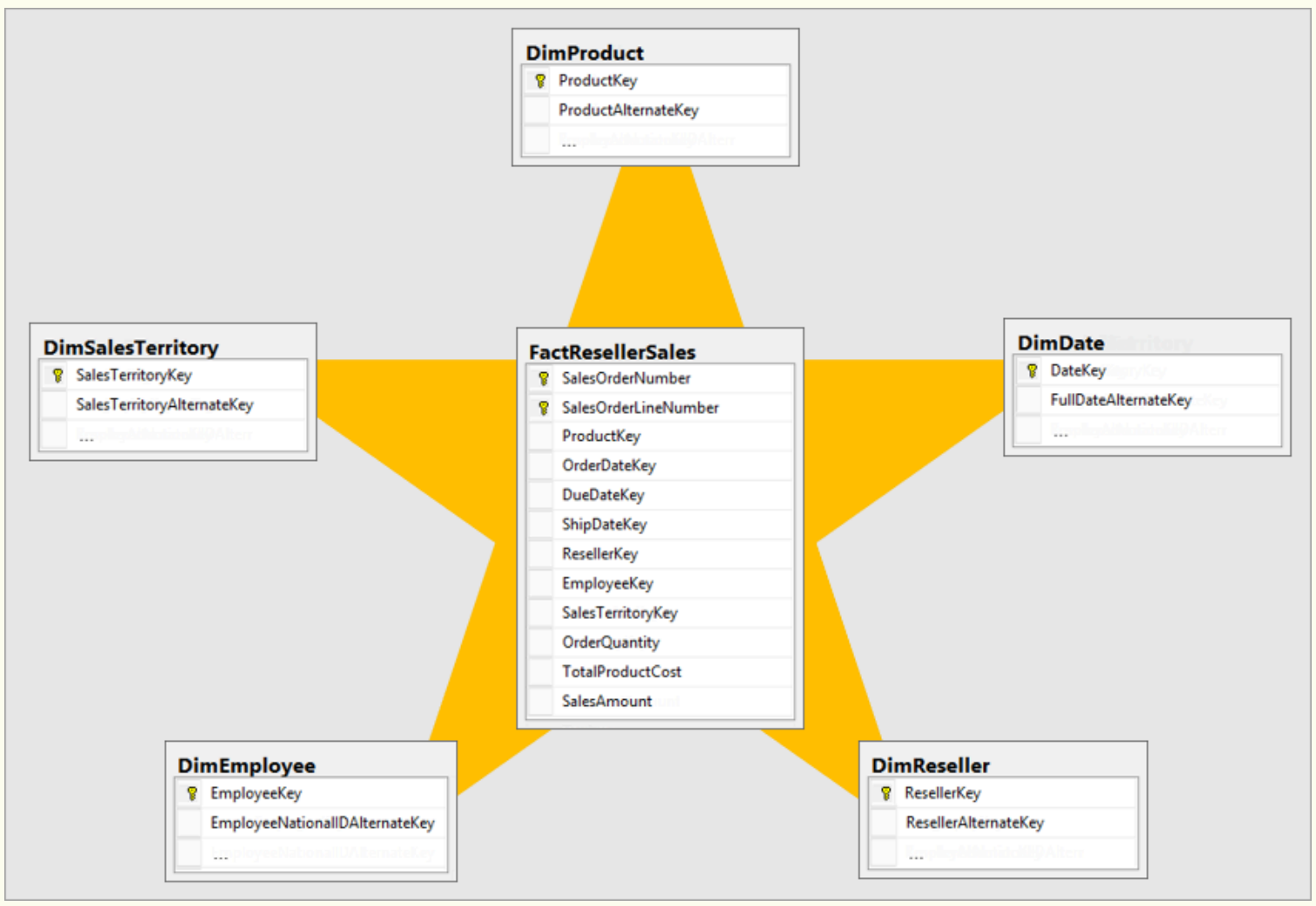
- The Star Schema in PowerBI is a widely used data modeling technique that organizes data into a central fact table surrounded by dimension tables.
- This structure resembles a star, hence the name. It’s popular for its simplicity and efficiency, making it easier to query large datasets and create powerful visualizations.



Key components

- **Dimension Table**
  - A dimension table provides context and additional details to the numerical data stored in a fact table.
  - For example, a product dimension table might contain columns for the product name, product category, product description, and supplier name.

- **Fact Table**
  - It Contain measurable, quantitative data, such as sales, transactions, or revenues
  - For example, a sales fact table might have columns for the date of the sale, the product sold, the quantity sold, and the revenue generated.



Advantage of star schema

Improved Performance

Queries are faster because the schema is denormalized, minimizing the need for complex joins.

Simplified Analysis

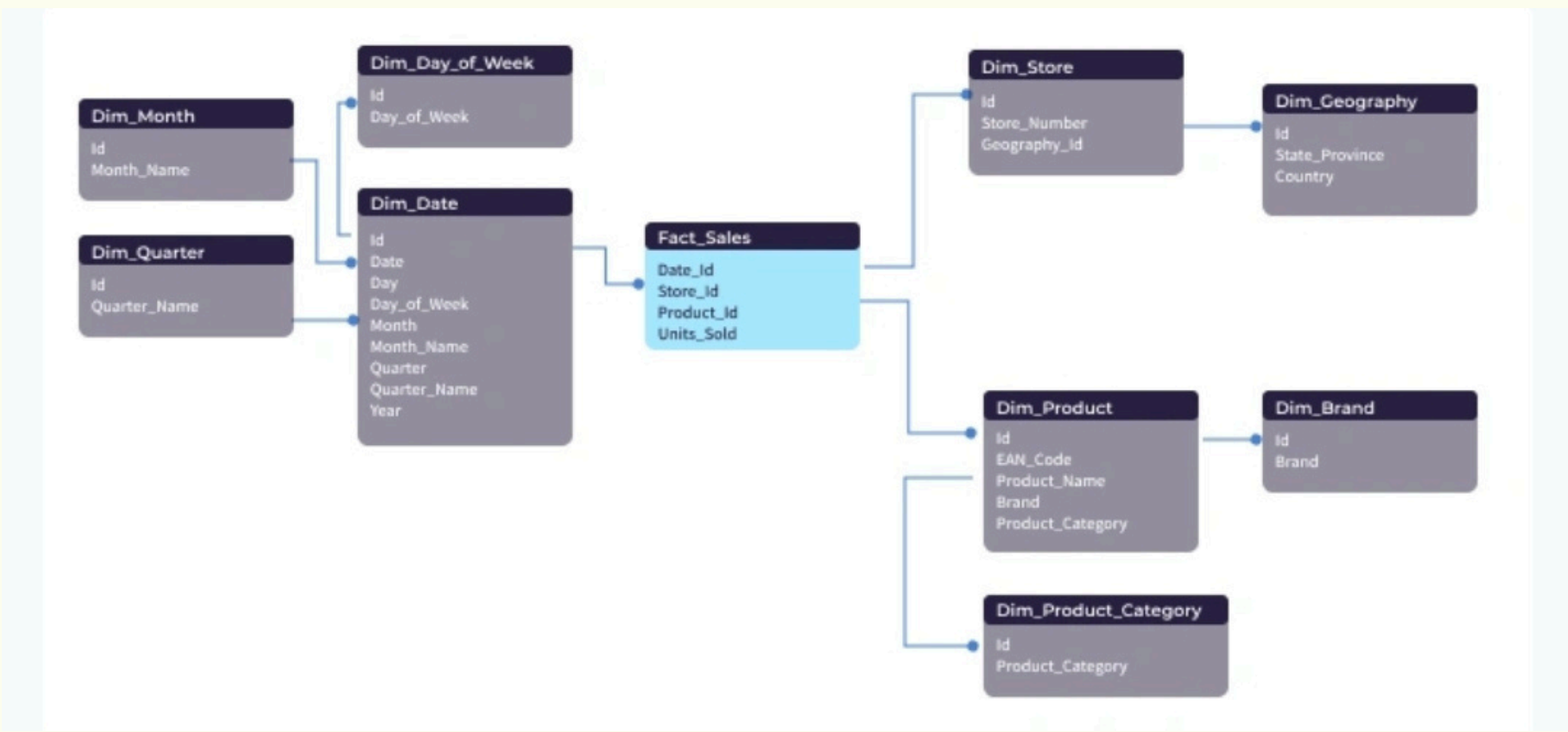
Easy to understand and navigate, making it user-friendly for both developers and business users.

Better Reporting:

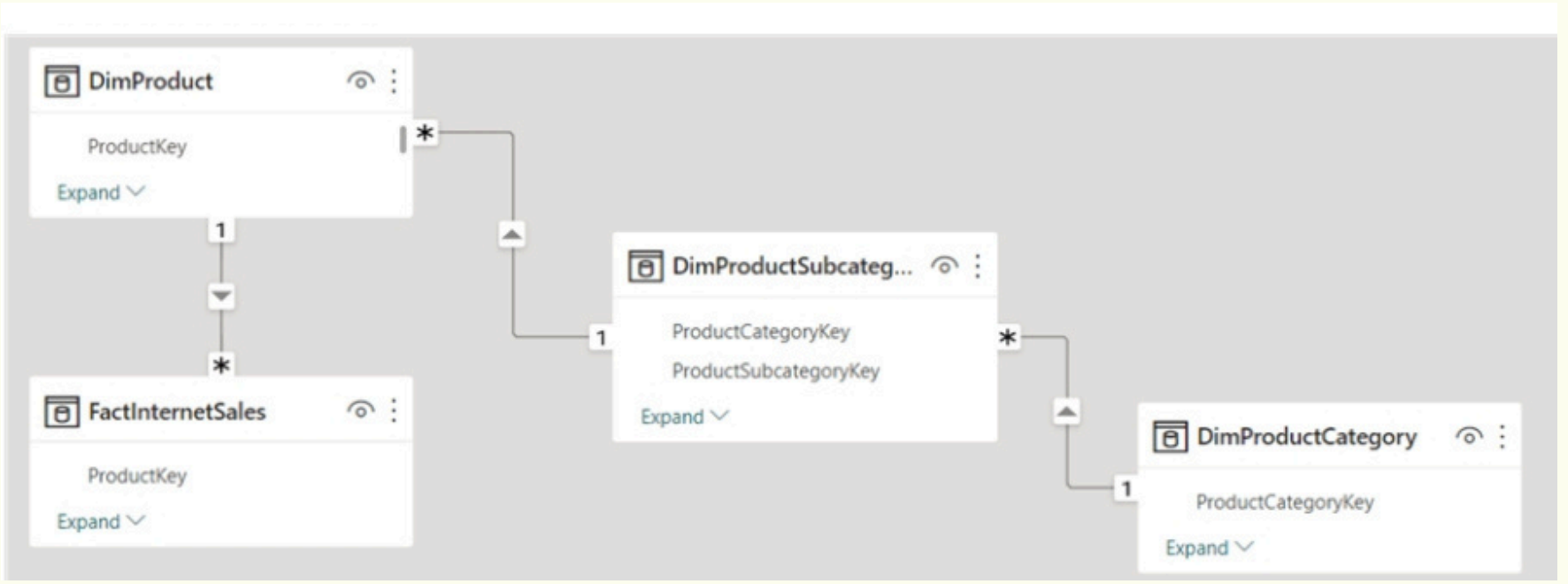
Allows for straightforward aggregation and filtering, facilitating the creation of insightful dashboards.

Snowflake Schema

- The Snowflake Schema in PowerBI is a more complex data modeling technique that builds upon the Star Schema by further normalizing the dimension tables into multiple related tables.
- This design resembles a snowflake, with dimension tables branching out into sub-dimension tables. It’s used when you want to reduce redundancy and save storage space, though it can lead to more complex queries.



Example



There, we have a product dimension, a product subcategory dimension, and a product category dimension. In a star schema, all three tables would have been one product dimension, but here they are split into three different tables.

Advantage

- Reduced Data Redundancy: By normalizing the tables, the same piece of data is stored only once, which saves space and maintains data consistency.
- Improved Data Integrity: Normalization helps to maintain the accuracy and integrity of the data by minimizing anomalies.
- Detailed Analysis: Allows for more granular analysis by breaking down dimensions into more specific sub-dimensions.

Difference b/w Star schema and snowflake schema

STAR SCHEMA	SNOWFLAKE SCHEMA
Star schema is a top-down model.	While it is a bottom-up model
In star schema The fact tables and the dimension tables are contained	**While in snowflake schema, The fact tables, dimension tables as well as sub dimension tables are contained**
It’s design is very simple	While it’s design is complex.
It’s understanding is very simple	While it’s understanding is difficult.
It has less number of foreign keys.	While it has more number of foreign keys.
The query complexity of star schema is low	While the query complexity of snowflake schema is higher than star schema

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