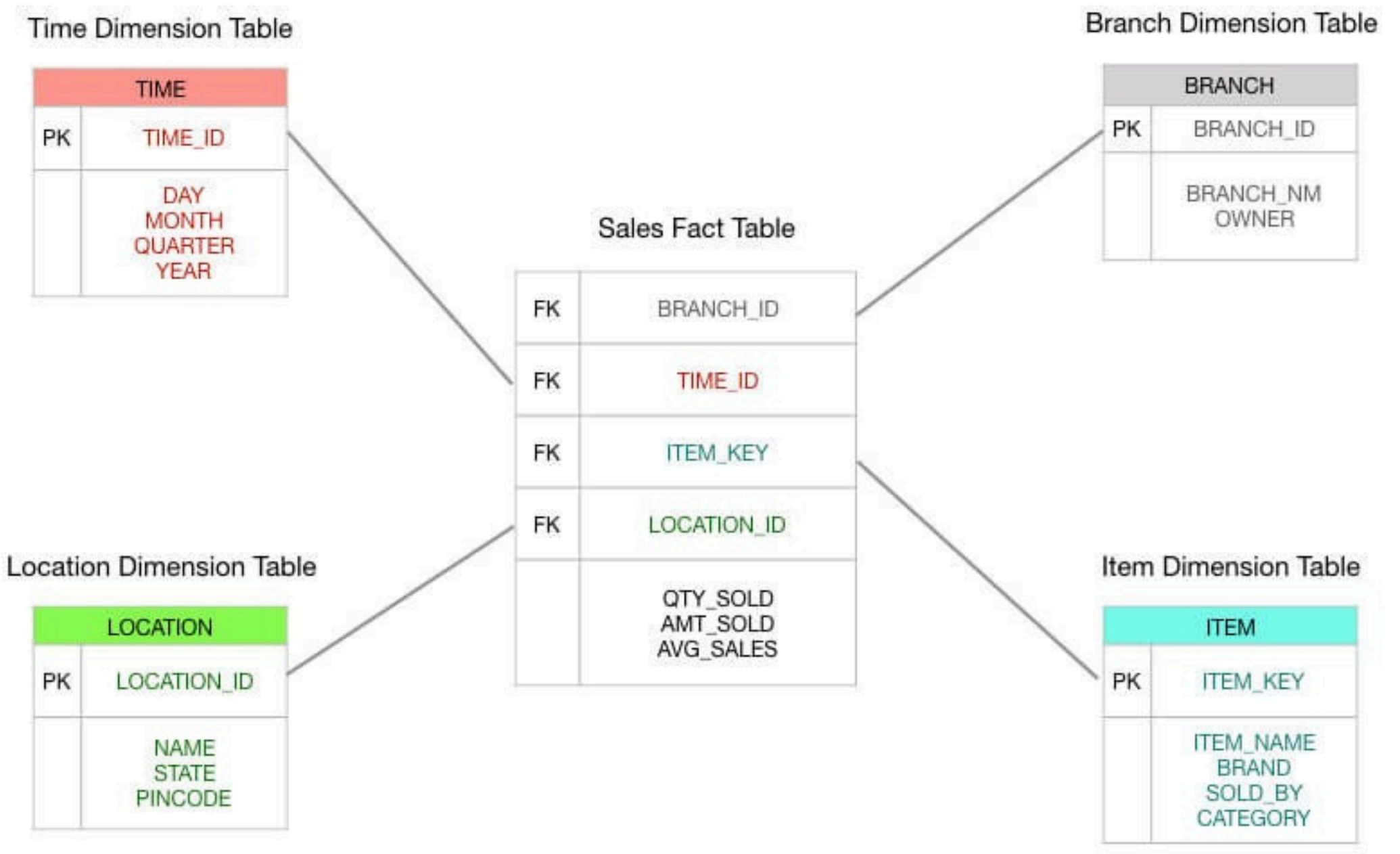
Difference Between Fact Table and Dimension Table

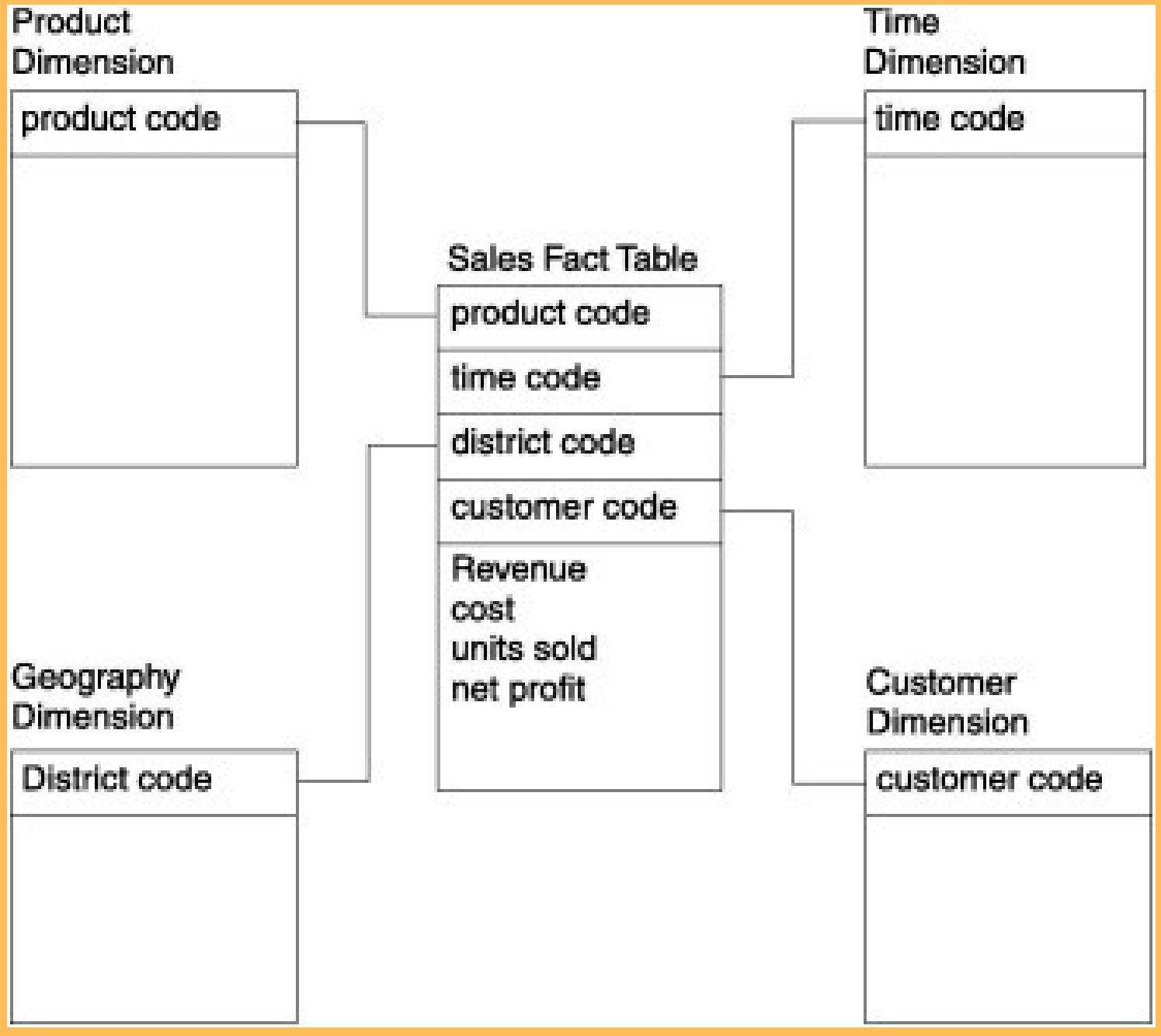


Ever wondered how data gets organized in a database? Do you struggle to understand how **Fact Table and Dimension Table** work and why they're important in data warehousing? Keep on swiping to know the difference...

Swipe next →

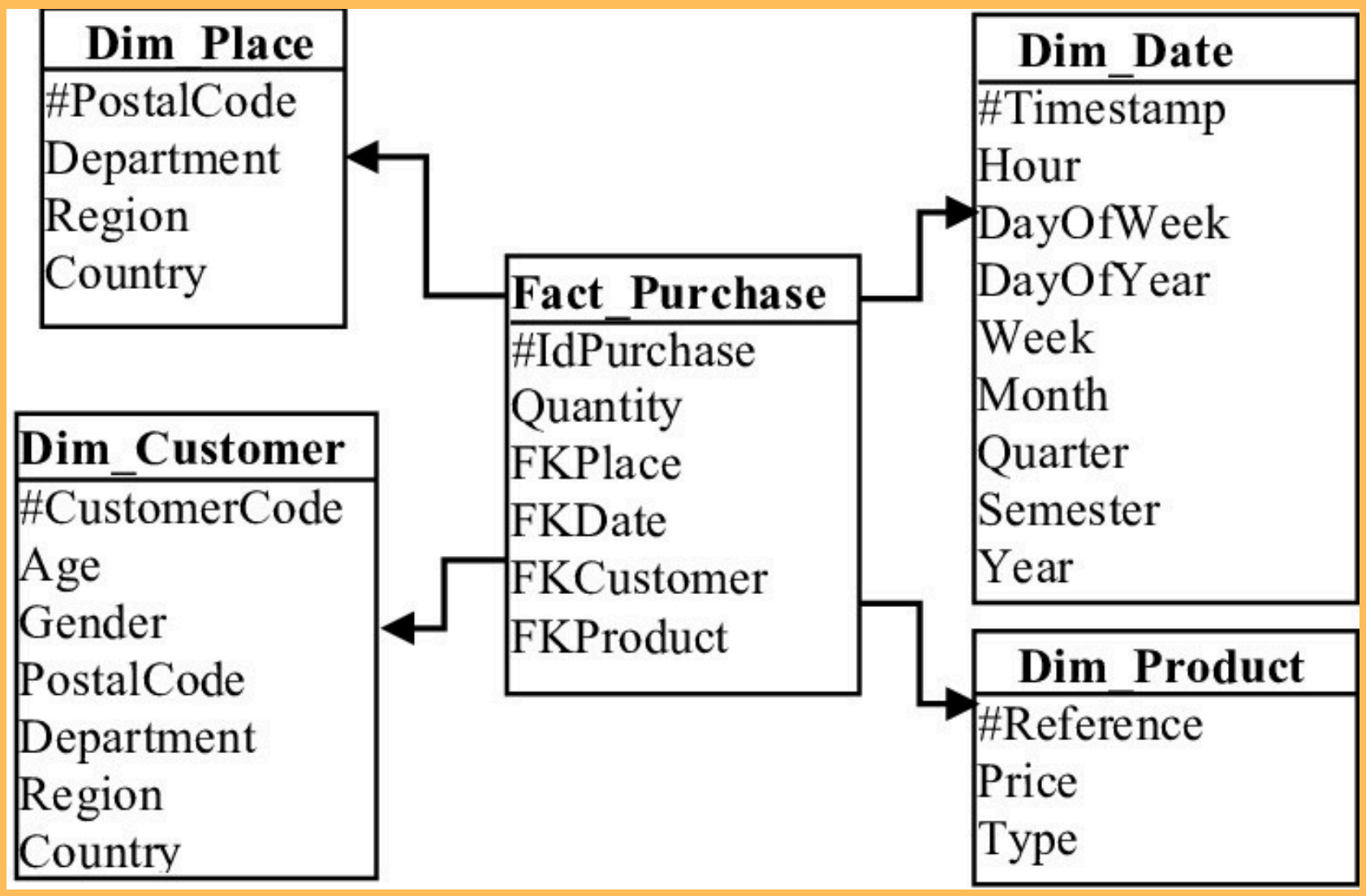
What is a Fact Table?

A fact table in a relational database stores quantitative data and is the centerpiece of a data warehouse or BI system. It's joined with dimension tables to provide context and allow analysts to gain insights into business performance and trends.



What is Dimension Table?

A dimension table is a table in a relational database that provides descriptive information about the data stored in a fact table. It contains attributes that can be used to group, filter, and aggregate data in the fact table.



Characteristics

Characteristics of Fact Table

- It contains one or more measures, which are **numerical values** that can be aggregated.
- It has **foreign keys** that link to dimension tables.
- It is typically large and contains a **high volume of data**.
- It is designed to support ad **hoc queries** and data analysis.
- It is often **denormalized** for performance reasons.
- It can have different levels of granularity, depending on the analysis needs.

Characteristics of Dimension Table

- A dimension table contains **descriptive data** (textual or categorical) that provides context for the measures in the fact table.
- It has a **primary key** that is used as a foreign key in the fact table.
- It is often smaller than the fact table and **contains fewer rows**.
- It is designed to **support filtering and grouping** of data in the fact table.
- It is **normalized** to reduce redundancy and improve data consistency.
- It can have hierarchies, such as product categories or geographic regions.

Limitations

Limitations of Fact Table

- Fact tables contain data up to a certain limit, beyond which they are unable to support and require reorganization and data processing.

- In case of alterations in the data source, the table must be accumulated.

- Higher the scale, the more difficult to maintain the performance in the fact table.

Limitations of Dimension Table

- Data redundancy issues occur when values get repeated. Resolving the issue by denormalization can worsen the problem.

- Data integrity could be hampered by inaccurate data, leading to errors in analysis.

Difference Between Fact Table and Dimension Table

Parameters	Fact Table	Dimension Table
Basic	Contains quantitative data concerning business events	Provides descriptive context and attributes for the data in the fact table
Sequence of creation	Made after dimension table	Created first
Components	Facts, metrics and measurements	Descriptive attributes
Quantity of components	Fewer attributes and more records	Fewer records and more attributes
Marked by	Grain or atomic level	Words, completeness, level of detail
Hierarchy	Absent	Present
Location in Star schema	Middle	Edges
Purpose	Analysis and decision making	Data and process storage
Growth	Vertical	Horizontal

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