

SCHEMA & INSTANCE

Let us first learn about some basic concepts:

Schema– A schema is a logical container or structure that organizes and defines the structure of a database.

It defines how data is organized, what data types are used, what constraints are applied, and the relationships between different pieces of data. A schema acts as a blueprint for the database, ensuring data integrity, consistency, and efficient data retrieval.

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Types of Schema :

1. Physical Schema– A physical schema defines how data is stored on the underlying hardware, including details such as storage format, file organization, indexing methods, and data placement.

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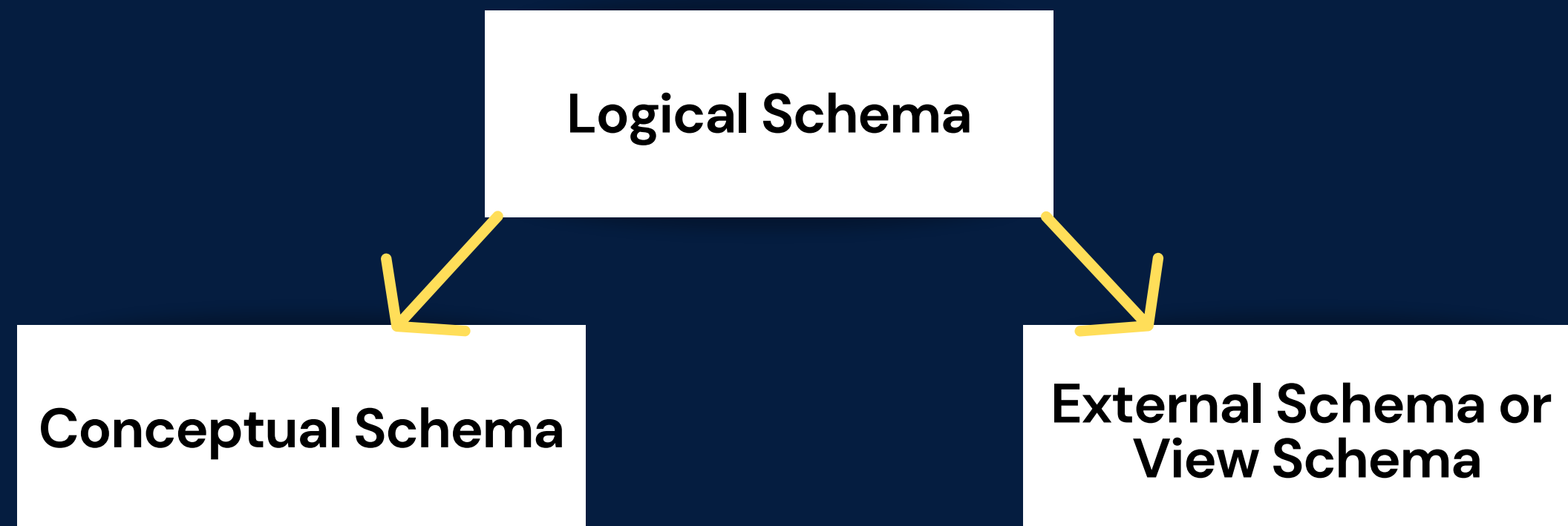
Characteristics of Physical Schema :

- Its primary focus lies in enhancing the storage and retrieval of data to boost performance.
- Modifications made to the physical schema demand meticulous planning and can potentially affect the overall performance of the database.
- Example: Deciding to use clustered indexes on specific columns for faster retrieval.

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Types of Schema :

2. Logical Schema– A logical schema defines the database's structure from a logical or conceptual perspective, without considering how the data is physically stored.



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Types of Logical Schema :

- Conceptual Schema: The conceptual schema represents the overall view of the entire database. It defines the high-level structure and relationships between all data elements.
- External/View Schema: An external schema defines the user-specific views of the database. It focuses on the portions of the database that are relevant to specific user roles or applications.

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Characteristics of Logical Schema :

- It delineates how data is structured into tables, the interconnections between these tables, and the restrictions placed on the data.
- Logical schemas prioritize data modeling and database design over considerations related to hardware or storage specifics.
- Example: Defining tables, specifying primary and foreign keys, and creating views for data access.

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Instance – The information residing within a database at a specific point in time is referred to as the database's "instance."

Within a given database schema, the declarations of variables within its tables pertain to that specific database. The term "instance" in this context denotes the current values of these variables at a particular moment in time for that database.