

# What is Database Design?

Database Design is a collection of processes that facilitate the designing, development, implementation and maintenance of enterprise data management systems. It helps produce database systems

1. To meet the requirements of the users
2. To provide an improved performance on data access, efficient data storage , data retrieval and data manipulation facilities

## Objectives of database design:

To produce logical and physical designs models of the proposed database system.

- The logical model concentrates on the data requirements and the data to be stored independent of physical considerations. It does not concern itself with how the data will be stored or where it will be stored physically.
- The physical data design model involves translating the logical design of the database onto physical media using hardware resources and software systems such as database management systems (DBMS).

## Topics to be learned:

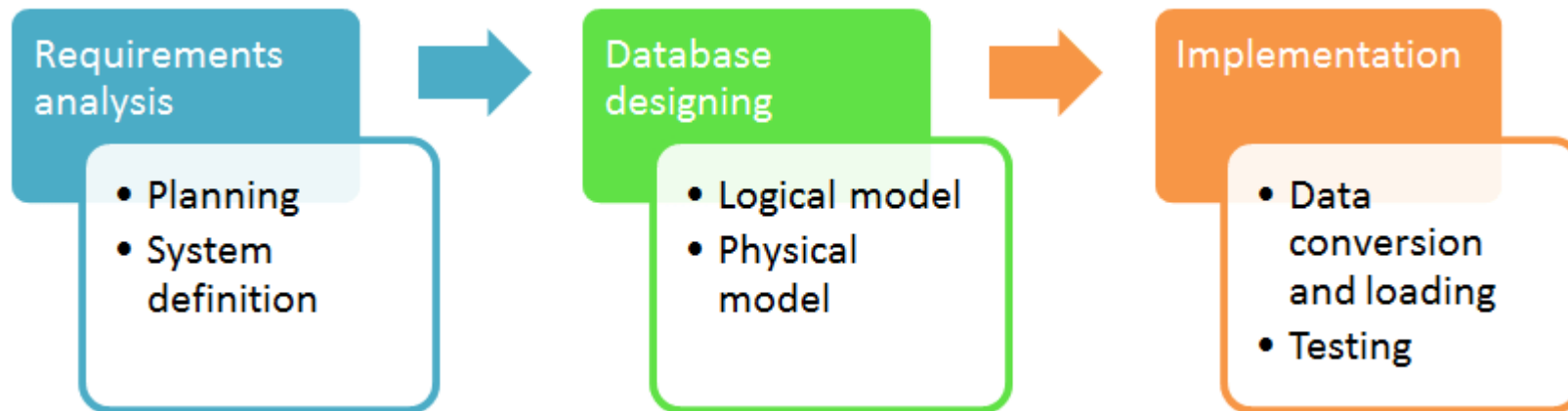
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## Why Database Design is Important?

- Database designing is crucial to **high performance** database system.
- Well-designed database is easy to maintain, improves data consistency, ensures data integrity and enables cost effective means for data storage space.

Note: Focus of a database lies in its design. Data operations using SQL is relatively simple and easy to learn.

## Database development life cycle:



The database development life cycle Steps:

# 1.Requirements or Scope of the Database system

- **Planning –**
  - To Plan entire Database Development Life Cycle along with consideration of the Information Systems strategy of the organization.
- **System definition** - This stage
  - To Define the scope and boundaries of the proposed database system.

## 2.Database designing

- **Logical model –**
  - To Develop a database model based on user requirements on a paper or tool without any physical DBMS implementations.
- **Physical model –**
  - To implement the logical model of the database taking into account the DBMS and physical implementation factors.

## 3.Implementation

- **Data conversion and loading –**
  - **Create data base schema, entities, attributes, constraints, database structures, Tables etc.,**
  - If old system already exists, then import and convert data from the old system into the new database.
- **Testing –**
  - **Test the database to ensure** the newly implemented system is in working condition with no errors .It checks the database against user requirement specifications.

## **Two Types of Database Techniques**

1. **Normalization**
2. **ER Modeling**