# Overview of Database Design

## What is Database Design?

**Database Design** is a collection of processes that facilitate the designing, development, implementation and maintenance of enterprise data management systems. Properly designed database are easy to maintain, improves data consistency and are cost effective in terms of disk storage space. The database designer decides how the data elements correlate and what data must be stored.

The main objectives of database designing are 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).

## The design process

The design process consists of the following steps:

- **Determine the purpose of your database**

This helps prepare you for the remaining steps.

- **Find and organize the information required**

Gather all of the types of information you might want to record in the database, such as product name and order number.

- **Divide the information into tables**

Divide your information items into major entities or subjects, such as Products or Orders. Each subject then becomes a table.

- **Turn information items into columns**

Decide what information you want to store in each table. Each item becomes a field, and is displayed as a column in the table. For example, an Employees table might include fields such as Last Name and Hire Date.

- **Specify primary keys**

Choose each table's primary key. The primary key is a column that is used to uniquely identify each row. An example might be Product ID or Order ID.

- **Set up the table relationships**

Look at each table and decide how the data in one table is related to the data in other tables. Add fields to tables or create new tables to clarify the relationships, as necessary.

- **Refine your design**

Analyze your design for errors. Create the tables and add a few records of sample data. See if you can get the results you want from your tables. Make adjustments to the design, as needed.

- **Apply the normalization rules**

Apply the data normalization rules to see if your tables are structured correctly. Make adjustments to the tables, as needed.

## Why Database Design is Important?

It helps produce database systems

1. That meet the requirements of the users

2. Have high performance.

Database designing is crucial to **high performance** database system.

Note , the genius of a database is in its design . Data operations using SQL is relatively simple