Data are raw facts. The word raw indicates that the facts have not yet been processed to reveal their meaning.

Information is the result of processing raw data to reveal its meaning.

Database is a shared, integrated computer structure that stores a collection of:

- End-user, that is, raw facts of interest to the end user.
- Metadata, or data about data, through which the end-user data are integrated and managed.

Metadata provide a description of the data characteristics and the set of Relationships that link the data found within the DB.

Database management system DBMS:

Is collection of programs that manages the DB structure and controls access to the data stored in the database.

Role and advantages of the DBMS

-improved data sharing
-Improved data security
-better data integration
-minimized data inconsistency
-improved data access
-improved decision making
-Increased end-user productivity.
Types of DB:

number of users according

1-Single user desktop database, single user on desktop computer

2-Multiuser database supports multiple users
   - Workgroup DB: small number of users
   - Enterprise DB: more than so

Location classify the DB

1-Centralized DB: single site

2-Distributed DB: Data distributed across several different sites

Database Design

Refers to the activities that focus on the design of the DB structure that will be used to store and manage end-user data.

Database System

Refers to an organization of components that define and regulate the collection, storage, management from general management point of view, the DB system is composed of

* Hardware

* Software

* People – system administrators: database systems operations
  - DB administrators: manage the DBMS and ensure the DB is functioning properly
  - DB designers
  - System analysts and programmers design and implement the application programs.
DBMS Functions

A DBMS performs several important functions that guarantee the integrity and consistency of the data in the DB.

- **Data dictionary management**

  The DBMS stores definitions of the data elements and their relationship in data dictionary.

- **Data storage management**

  The DBMS creates and manages the complex structures required for data storage, thus relieving you from the difficult task of defining and programming the physical data characteristics.

- **Data transformation and presentation**

  The DBMS transforms entered data to conform to required data structures.

- **Security management**

  The DBMS creates a security system that enforces user security and data privacy.

- **Multiuser access control**

  To provide data integrity and data consistency.

- **Backup and recovery management**

  To ensure data safety and integrity.

- **Data integrity management**
Enforces integrity rules, thus minimizing data redundancy and maximizing data consistency

- **DB access languages and application programming interfaces**

- **DB communication interfaces**

  Current-generation DBMS accept end-user requests via multiple, different network environments

**Disadvantages of DB systems**

- Increased costs
- Management complexity
- Maintaining currency
- Vendor dependence
- Frequent upgrade/replacement cycles