# What is Data?

Data is a collection of a distinct small unit of information. It can be used in a variety of forms like text, numbers, media, bytes, etc. it can be stored in pieces of paper or electronic memory, etc.

Word 'Data' is originated from the word 'datum' that means 'single piece of information.' It is plural of the word datum.

In computing, Data is information that can be translated into a form for efficient movement and processing. Data is interchangeable.

**What is Database ?**

The database is a collection of inter-related and organized collection of data, so that it can be easily accessed and managed.



**Extra**: You can organize data into tables, rows, columns, and index it to make it easier to find relevant information.

**Purpose of Database**

Time saving and fast serving is the main purpose of database.

**Why Database is useful?**

**Database is** able to store very large amounts of data efficiently. It saves time and ensures accuracy, security, control avoid redundancy of data and many more features.

**Database Management System**

* DBMS is a software which is used to manage the database. For example: [MySQL](https://www.javatpoint.com/mysql-tutorial),  [Oracle](https://www.javatpoint.com/oracle-tutorial), MongoDB etc are a very popular commercial DBMS.
* DBMS provides an interface to perform various operations like database creating, inserting, Deleting, updating, sorting, searching and a lot more.
* It provides protection and security to the database. In the case of multiple users, it also maintains data consistency.

**DBMS allows users the following tasks:**

* **Data Definition:** It is used for creation, modification, and removal of definition that defines the organization of data in the database.
* **Data Update:** It is used for the insertion, modification, and deletion of the actual data in the database.
* **Data Retrieval:** It is used to retrieve the data from the database which can be used by applications for various purposes.
* **User Administration:** It is used for registering and monitoring users, maintain data integrity, enforcing data security, dealing with concurrency control, monitoring performance and recovering information corrupted by unexpected failure

**Characteristics of DBMS**

* It is a digital repository established on a server to store and manage the data.
* It can provide a clear and logical view of the process that manipulates data.
* DBMS contains automatic backup and recovery procedures.
* It contains ACID properties which maintain data in a healthy state in case of failure.
* It can reduce the complex relationship between data.
* It is used to support manipulation and processing of data.
* It is used to provide security of data.
* It can view the database from different viewpoints according to the requirements of the user.

**Advantages of DBMS**

* **Controls database redundancy:** It can control data redundancy because it stores all the data in one single database file and that recorded data is placed in the database.
* **Data sharing:** In DBMS, the authorized users of an organization can share the data among multiple users.
* **Easily Maintenance:** It can be easily maintainable due to the centralized nature of the database system.
* **Reduce time:** It reduces development time and maintenance need.
* **Backup:** It provides backup and recovery subsystems which create automatic backup of data from [hardware](https://www.javatpoint.com/hardware) and [software](https://www.javatpoint.com/software) failures and restores the data if required.
* **multiple user interface:** It provides different types of user interfaces like graphical user interfaces, application program interfaces, terminal interface.

**Disadvantages of DBMS**

* **Cost of Hardware and Software:** It requires a high speed of data processor and large memory size to run DBMS software.
* **Size:** It occupies a large space of disks and large memory to run them efficiently.
* **Complexity:** Database system creates additional complexity and requirements.
* **Higher impact of failure:** Failure is highly impacted the database because in most of the organization, all the data stored in a single database and if the database is damaged due to electric failure or database corruption then the data may be lost forever.

**Some DBMS name**

* MySQL,
* MongoDB,
* SQL Server
* Oracle
* Sybase,
* Informix,
* PostgreSQL,