# DBMS Tutorial



DBMS Tutorial provides basic and advanced concepts of [Database](https://www.javatpoint.com/what-is-database). Our DBMS Tutorial is designed for beginners and professionals both.

Database management system is software that is used to manage the database.

Our [DBMS](https://www.tutorialandexample.com/dbms-tutorial/) Tutorial includes all topics of DBMS such as introduction, ER model, keys, relational model, join operation, [SQL](https://www.javatpoint.com/sql-tutorial), functional dependency, transaction, concurrency control, etc.

## What is Database

The database is a collection of inter-related data which is used to retrieve, insert and delete the data efficiently. It is also used to organize the data in the form of a table, schema, views, and reports, etc.

**For example:** The college Database organizes the data about the admin, staff, students and faculty etc.

Using the database, you can easily retrieve, insert, and delete the information.

## Database Management System

* Database management system 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), etc are a very popular commercial database which is used in different applications.
* DBMS provides an interface to perform various operations like database creation, storing data in it, updating data, creating a table in the database 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 Updation:** 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 uses a digital repository established on a server to store and manage the information.
* 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

## 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.