Term Paper
E-commerce Management

Name: Yogesh Kumar Dewangan
Roll no: 19111064
Branch: Biomedical Engineering 21/01/2022

What is a Database and DBMS?

Today we deal with a large amount of data. Almost every website and mobile application are generating lots of data every day and these data need to be handled. This can't be handled with simple software or tool. We need to store all these data and then manage the data with some dedicated system. Here comes the role of Database and DBMS.

You all must be familiar with the term Database and DBMS. So, is there any difference between these two terms or they are almost the same term?? No, they are not the same term. In this blog, we will be learning about the term Database and DBMS. So, let's get started.

Database

The database sometimes referred to as an electronic database, is an organized collection of logically related data that is stored in an efficient manner so that it can be easily accessed managed and updated. Let's divide the whole definition into parts and understand in an easier way:
Organised Collection:Data should be arranged in such a way that the user can easily process the data when required. Example: If we have some details about Computer specifications, then we can represent the specification in two ways:
Unorganized Data: Lenovo35000i58, HP55000i34. The computer specifications are provided here like its brand name, price generation and RAM but they are unorganized and it is not easy to process them. Here, you can't identify the difference between the generation of the computer i.e i5 and its RAM i.e. 8GB. So, we have to organize the data.

Organized Data: Lenovo/35000/i5/8, HP/55000/i3/4. Here, we have made a separation between each specification so that it can be easily distinguished and processed. Here, we can see that the generation and RAM of the system are separated by /änd this helps us in distinguishing between the two features.

Logically Related Data Logically related data means that the data should be relevant in some context. Example: If we are going to make a database for a customer then the database may include customer name, contact number, age, past orders, address, email id, etc. All these information are in the context of the customer. But the information like the number of siblings of the customer is out of context and logically not related to the customer database, though this information is related to the customer, we shouldn't include this data in our database.

DBMS - DataBase Management System

The software which is used to manage the database is called Database Management System(DBMS). It provides us with an interface or a tool, to perform various operations like creating the database,manipulating the database,storing and retrieving the data from the database,deleting data from the database, etc.
The changes in the database have to be made according to certain rules and these rules are defined in DBMS itself. A DBMS can limit what data the end-user sees and provides multiple views of the same database depending upon the user accessibility. For example, you can provide access to write on the database to some particular users only and for other users, you can provide the read access. The best part is that all you need to do is just use some DBMS software and you are good to go. Some popular DBMS software is MySQL, Oracle, SQLite, PostgreSQL, MariaDB etc.

Characterstics of DBMS

Real-World Entity: A DBMS uses real-world entities(object) to design its architecture. Example: A customer database uses customers as an entity and the phone number of the customer as an attribute. Relation-based Tables: Using DBMS we can form tables based on relations between various entities.

Query Language: DBMS comes equipped with query language which allows the users to store and retrieve the data. We can apply as many filtering options as required and get specific results.

Multiple Views: It provides multiple views of the same data depending upon the user. Example: In a university database, the accountant will have a different view of data than a student. The accountant may have access to the salary of teachers but students won't have that access.

Multiple Views: It provides multiple views of the same data depending upon the user. Example: In a university database, the accountant will have a different view of data than a student. The accountant may have access to the salary of teachers but students won't have that access.

Multiple Users: DBMS allows multiple users can access the data at the same time and work upon it parallelly.

ACID Properties: The transaction(a group of tasks) in DBMS follows the concept of ACID(Atomicity, Consistency, Isolation, Durability). Atomicity means either the transaction will happen or it will not happen. Consistency means the state of the database will be consistent before and after the transaction. In Isolation, one transaction will not affect the working of others. Durability means the database should be durable and should not be affected by some system failures or any other errors.