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## **Characteristics of Database Management System**

The main characteristics of a DBMS are as follows:

1. **Self-describing Nature of a Database System:** DBMS contains not only the database but also the description of the data that it stores. This description of data is called metadata. Meta-data is stored in a database catalogue or data dictionary. It contains the structure of the data and also the constraints that are imposed on the data.
2. **Insulation Between Programs and Data:** Since the definition of data is stored separately in a DBMS, any change in the structure of data would be done in the catalogue and hence programs which access this data need not be modified. This property is called Program-Data Independence.
3. **Sharing of Data:** A multiuser environment allows multiple users to access the database simultaneously. Thus a DBMS must include concurrency control software to allow simultaneous access of data in the database without any inconsistency problems.

Types of Users of DBMS

Advantages of using DBMS Approach

## Limitations of using DBMS Approach

DBMS is used by many types of users depending on their requirements and interaction with the DBMS. There are mainly four types of users:

1. End Users: Users who use the database for querying, modifying and generating reports as per their needs. They are not concerned about the working and designing of the database. They simply use the DBMS to get their task done.

2. Database Administrator (DBA): As the name implies, the DBA administers the database and the DBMS. The DBA is responsible for authoring access, monitoring its use, providing technical support, acquiring software and hardware resources.

3. Application Programmers: Application programmes write application programs to interact with the database. These programs are written in high level languages and SQL to interact with the database.

4. System Analyst: System analyst determines the requirements of the end users and then develops specifications to meet these requirements. A system analyst plays a major

role in the database design and all the technical, economic and feasibility aspects. The need of DBMS itself explains the advantages of using a DBMS. Following are the

### **advantages of using a DBMS:**

1. Reduction in Redundancy: Data in a DBMS is more concise because of the central

repository of data. All the data is stored at one place. There is no repetition of the same data. This also reduces the cost of storing data on hard disks or other memory devices.

2. Improved Consistency: The chances of data inconsistencies in a database are also reduced as there is a single copy of data that is accessed or updated by all the users.

3. Improved Availability: Same information is made available to different users. This helps sharing of information by various users of the database.

4. Improved Security: Though there is improvement in the availability of information to users, it may also be required to restrict the access to confidential information. By making use of passwords and controlling users' database access rights, the DBA can provide security to the database.

5. User Friendly: Using a DBMS, it becomes very easy to access, modify and delete data. It reduces the dependency of users on computer specialists to perform various data related operations in a DBMS because of its user friendly interface.