

## **Advantages and disadvantages of DBMS:**

DBMS is a central system which provides a common interface between the data and the various front-end programs in the application. It also provides a central location for the whole data in the application to reside.

A DBMS is a complex set of software programs that controls the organization, storage, management, and retrieval of data in a database. DBMS are categorized according to their data structures or types. It is a set of prewritten programs that are used to store, update and retrieve a database.

### **Advantages of Database Systems:-**

- **Minimal Data Redundancy**

Since the whole data resides in one central database, the various programs in the application can access data in different data files. Hence data present in one file need not be duplicated in another. This reduces data redundancy. However, this does not mean all redundancy can be eliminated. There could be business or technical reasons for having some amount of redundancy. Any such redundancy should be carefully controlled and the DBMS should be aware of it.

- **Data Consistency**

Reduced data redundancy leads to better data consistency.

- **Data Integration**

Since related data is stored in one single database, enforcing data integrity is much easier. Moreover, the functions in the DBMS can be used to enforce the integrity rules with minimum programming in the application programs.

- **Data Sharing**

Related data can be shared across programs since the data is stored in a centralized manner. Even new applications can be developed to operate against the same data.

- **Enforcement of Standards**

Enforcing standards in the organization and structure of data files is required and also easy in a Database System, since it is one single set of programs which is always interacting with the data files.

- **Application Development Ease**

The application programmer need not build the functions for handling issues like concurrent access, security, data integrity, etc. The programmer only needs to implement the application business rules. This brings in application development ease. Adding additional functional modules is also easier than in file-based systems.

- **Better Controls**

Better controls can be achieved due to the centralized nature of the system.

- **Data Independence**

The architecture of the DBMS can be viewed as a 3-level system comprising the following:

- ✓ The internal or the physical level where the data resides.
- ✓ The conceptual level which is the level of the DBMS functions
- ✓ The external level which is the level of the application programs or the end user.

Data Independence is isolating an upper level from the changes in the organization or structure of a lower level. For example, if changes in the file organization of a data file do not demand for changes in the functions in the DBMS or in the application programs, data independence is achieved. Thus Data Independence can be defined as immunity of applications to change in physical representation and access technique. The provision of data independence is a major objective for database systems.

- **Reduced Maintenance**

Maintenance is less and easy, again, due to the centralized nature of the system.

### **Disadvantages of using a DBMS:-**

A database system generally provides on-line access to the database for many users. Because of the larger number of users accessing the data when a database is used, the enterprise may involve additional risks as compared to a conventional data processing system in the following areas.

- **Confidentiality, Privacy and Security**

When information is centralized and is made available to users from remote locations, the possibilities of abuse are often more than in a conventional data processing system. To reduce the chances of unauthorized users accessing sensitive information, it is necessary to take technical, administrative and, possibly, legal measures.

- **Data Quality**

Since the database is accessible to users remotely, adequate controls are needed to control users updating data and to control data quality. With increased number of users accessing data directly, there are enormous opportunities for users to damage the data. Unless there are suitable controls, the data quality may be compromised.

- **Data Integrity**

The main threat to data integrity comes from several different users attempting to update the same data at the same time. The database therefore needs to be protected

against inadvertent changes by the users.

- **Enterprise Vulnerability**

Centralizing all data of an enterprise in one database may mean that the database becomes an indispensable resource. The survival of the enterprise may depend on reliable information being available from its database. The enterprise therefore becomes vulnerable to the destruction of the database or to unauthorized modification of the database.

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