**Objectives of Database Management Systems:**

Data Availability, Integrity, Security and Independence

Database management systems have made a revolution in modern society. Business houses are making huge profits just because of the database management system. DBMS provides a lot of benefits in all spheres of human activity the objectives are manifold. The main objectives of a database management system are data availability, data integrity, data security, and data independence.

Data Availability: Data availability refers to the fact that the data are made available:

* To a wide variety of user
* In a meaningful format
* At reasonable cost
* With the ease of access
* When and where required

Data availability defines the degree or extent to which data is readily usable along with the necessary IT and management procedures, tools and technologies required to enable, manage and continue to make data available. Data availability also refers to data acquisition by the system. It also refers to how data can be drawn from different sources, different types and different formats. It refers to format conversions before becoming part of a project. Much data needs to be pre-processed before becoming part of the database.

**Data availability** is a term used by computer storage manufacturers and storage service providers (SSPs) to describe products and services that ensure that data continues to be available at a required level of performance in situations ranging from �normal� through �disastrous�. Anytime a server loses power, for example, it has to reboot, recover data and repair corrupted data. The time it takes to recover, known as the mean time to recover (MTR), could be minutes, hours or days. Data availability is also affected by MTR.

**Data Integrity**: Integrity is a critical aspect to the design, implementation and usage of any system which stores, processes, or retrieves data. Data integrity refers to the correctness of the data in the database other words, how reliable is the data available in the database. Integrity also means your data is authentic, accurate and consistent. DBMSs have various validity checks that make your data completely accurate and consistent. Data integrity is the maintenance and assurance of accuracy and consistency of data over its entire life-cycle. Data integrity is implemented within a database by a suitable design, and authenticating the data by using error checking and validation routines. For example, to maintain data integrity numeric columns/cells should not accept alphabetic data.

As a state or condition, Data Integrity is also a measure of the validity and fidelity of a data object. The DBMS should also be able to verify that data has remained unaltered in transit. As a function related to security, data integrity maintains information exactly as it was inputted, and is verifiable to confirm its reliability. Data undergo any number of operations in support of decision-making, such as capture, storage, retrieval, update and transfer. Data integrity can also be a performance measure during these operations based on the detected error rate. Data must be kept free from corruption, modification or unauthorized disclosure. Inaccuracies in data can occur either accidentally (e.g .through programming errors), or maliciously. Database security professionals employ several practices to assure data integrity, including:

* Data encryption, which locks data by encryption
* Data backup, which stores a copy of data in an altered reading, location
* Access controls, including assignment of reading/, write privileges
* Input validation, to prevent incorrect data entry
* Data validation, to certify uncorrupted transmission

Data Security: Data security refers to protective digital privacy measures that are applied to prevent unauthorized access to computers, websites, databases or parts thereof. Data security refers to the fact that only authorized users can access the data. Data security can be enforced by passwords. If two separate users are accessing a particular data at the same time, the DBMS must not allow them to make conflicting changes. Data security protects data from corruption. It also refers to the collective measures used to protect and secure a database and its management software from illegitimate use and malicious threats and attacks. It includes the processes, tools and methodologies that ensure security within a database environment. Data security is an essential aspect of IT for organizations of every size and type.

* For various reasons, much of the data handled by database management systems are stored in the cloud. Here are five data security tips to help you tackle issues of cloud privacy:
* Avoid storing sensitive information in the cloud.
* Read the user agreement to find out how your cloud service storage works.
* Be serious about passwords.
* Encrypt.
* Use an encrypted cloud service.

**Data Independence**: One of the main objectives of DBMS is to facilitate sharing of a database by current and future applications. The DBMS should not be tailored to a specific platform. One should be able to run DBMS on any platform. DBMS must ensure data independence for application programs.

A database system normally contains a lot of data in addition to users data. For example, it stores data about data (known as metadata) which helps in locating the data easily. For example, a table (relation) stored in the database and all its constraints, applied on that relation. As the database expands over time, this metadata needs to be updated too. Data independence refers to the ease with which the metadata can be updated without affecting the data itself. Data independence is the mechanism which dissociates the DBMS from the actual data stored on the disk. If we make some changes on table format, it should not change the data residing on the disk. Data independence also refers to the ease with which we can change the physical data without impacting the metadata. For example, if� we want to change or upgrade the storage system itself � like replacing a hard-drive with a SSD � it should not have any effect on the logical data or schemas. Data independence allows:

* Change of database without affecting application programs
* Change of hardware or system software without affecting application programs
* Sharing of data by different applications by providing views appropriate for the application
* Control of Redundancy � Avoid duplication