DBMS

Data?

Database: A database is an organized collection of data, so that it can easily be accessed, managed, and updated.

DBMS:

A DBMS is a 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 pre-written programs that are used to store, update and retrieve a Database.

The DBMS accepts requests for data from the application program and instructs the operating system to transfer the appropriate data. When a DBMS is used, information systems can be changed much more easily as the organization's information requirements change. New categories of data can be added to the database without disruption to the existing system.

Functions of DBMS:

Data definition The DBMS provides functions to define the structure of the data in the application. These include defining and modifying the record structure, the type and size of fields, and the various constraints/conditions to be satisfied by the data in each field.

Data manipulation once the data structure is defined, data needs to be inserted, modified, or deleted. The functions which perform these operations are also part of the DBMS. These functions can handle planned and unplanned data manipulation needs. Planned queries are those which form part of the application. Unplanned queries are ad hoc (purpose based) queries which are performed on a requirement basis.

Data security and integrity The DBMS contains functions that handle the security and integrity of data in the application. These can be easily invoked by the application and hence the application programmer need not code these functions in his/her programmes

Data recovery and concurrency Recovery of data after a system failure and concurrent access of records by multiple users are also handled by the DBMS.

Data dictionary maintenance maintaining the data dictionary, which contains the data definition of the application, is also one of the functions of a DBMS.

Performance Optimizing the performance of the queries is one of the important functions of a DBMS. Hence the DBMS has a set of programs forming the query optimizer, which evaluates the different implementations of a query and chooses the best among them. Thus, the DBMS provides an environment that is both convenient and efficient to use when there is a large volume of data and many transactions to be processed.