

Northern India Engineering College, Shastri Park, New Delhi

Department of Information Technology

Fundamentals of Computing (Code ETCS – 111)

Course Facilitator: Dr Shafiq ul Abidin, HoD – IT

Introduction to DBMS

Define Database Management System (DBMS)

A database management system (DBMS) is a software package designed to define, manipulate, retrieve and manage data in a database. A DBMS generally manipulates the data itself, the data format, field names, record structure and file structure. It also defines rules to validate and manipulate this data. A DBMS relieves users of framing programs for data maintenance. Fourth-generation query languages, such as SQL, are used along with the DBMS package to interact with a database.

Simply a collection of programs that enables you to store, modify, and extract information from a database. There are many different types of DBMSs, ranging from small systems that run on personal computers to huge systems that run on mainframes. The following are examples of database applications:

Advantages of DBMS:

- More info from the same data
- Reduction of data duplication
- Improved data integrity
- Programs are independent of the data format
- Sharing of data resources

Disadvantages of DBMS:

- Added expense
- More hardware may be needed
- If it crashes....

- Sophisticated design and programming required
- Additional training
- Security is critical

Data Base Administrator

A database administrator (short form DBA) is a person responsible for the installation, configuration, upgrade, administration, monitoring and maintenance of databases in an organization.

The role includes the development and design of database strategies, system monitoring and improving database performance and capacity, and planning for future expansion requirements. They may also plan, co-ordinate and implement security measures to safeguard the database.

What are the attributes of data?

- Sharable
- Moveable
- Secure
- Accurate
- Timely
- Relevant

DBMS vs File System

DBMS (Database Management System) and File System are two ways that could be used to manage, store, retrieve and manipulate data. A File System is a collection of raw data files stored in the hard-drive whereas DBMS is a bundle of applications that is dedicated for managing data stored in databases. It is the integrated system used for managing digital databases, which allows the storage of database content, creation/ maintenance of data, search and other functionalities. Both systems can be used to allow the user to work with data in a similar way. A File System is one of the earliest ways of managing data. But due the shortcomings present in using a File

System to store electronic data, Database Management Systems came in to use sometime later, as they provide mechanisms to solve those problems. But it should be noted that, even in a DBMS, data are eventually (physically) stored in some sort of files.

Difference between DBMS and File System

In File System, files are used to store data while, collections of databases are utilized for the storage of data in DBMS. Although File System and DBMS are two ways of managing data, DBMS clearly has many advantages over File Systems. Typically when using a File System, most tasks such as storage, retrieval and search are done manually and it is quite tedious whereas a DBMS will provide automated methods to complete these tasks. Because of this reason, using a File System will lead to problems like data integrity, data inconsistency and data security, but these problems could be avoided by using a DBMS. Unlike File System, DBMS are efficient because reading line by line is not required and certain control mechanisms are in place.