

CHAPTER TWO

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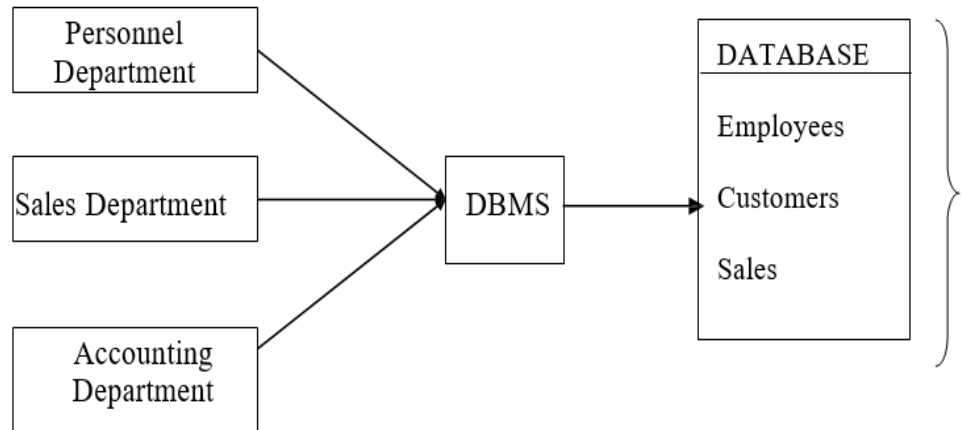
Database System Environment (components)

The term database system refers to an organization of components that define and regulate the collection storage, management and use of data within a database environment.

The database eliminates most of the file systems' data inconsistencies, anomalies and structural dependency problems.

The current generation of DBMS software stores not only the data structures in a central location but also stores the relationships between the database components

The DBMS also takes care of defining all the required access paths of the required component.



A Sample database

The database system is composed of 5 major parts i.e

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- Hardware
- Software
- People
- Procedures
- Data

1. Hardware

This identifies all the systems physical devices e.g. the composition peripherals, storage devices etc.

2. Software

These are a collection of programs used by the computers within the database system.

- (a) O.S - manages all hardware components and makes it possible for all other and software to run on the composition. The DBMS - manages the database within the database system e.g. Oracle, DB2, Ms Access etc.
- (b) Applications programs and utilities to access and manipulate data in the DBMS.

3. People

These are all database systems users:-

- (a) Systems administrator - Oversees the database systems general operations.
- (b) Database administrator (DBA) - Manages the DBMS use and ensures that the database is functioning properly. His functions include:
 - Scheme definition - The original database scheme is created by writing a set of definitions, which are translated by DDL compiler to a set of tables that are permanently stored in the data dictionary.
 - Storage structure and Access Methods Definitions - By writing a set of definitions for appropriate storage structures and access methods, which are translated by the data storage and definition language compiler.
 - Scheme and physical organisation modifications - Modification to either the database schema or description of the physical storage organisation are accompanied by writing a set of definitions which are used by either the DDL compiler or the data storage and definition language compiler to generate modification to appropriate internal systems tables e.g. data dictionary.

- Granting authorization to data access - This is so as to regulate which parts of the database users can access.
 - The database manager keeps integrity Constraints in a special system structure whenever an update takes place in the system.
- (c) Database designers - These are the database architects who design the database structure.
- (d) Systems Analysts Programmers (application programmers) - They design and implement the application programs they design create the data entry scheme, reports procedures through which users access and manipulate the databases data.
- (e) End users - These are the people who use the application programs to run the organizations daily operations. They fall in the following classes:
- i. Sophisticated users - These interact with the system without writing programs. They form their requests in a database query language.
 - ii. Specialized database applications that do not fit in the traditional data processing framework e.g. CAD Systems, knowledge based expert systems. Application programmers: These interact with the system through the DML applications systems by invoking one of the permanent application programs that have been written previously.
4. Procedures • These are instructions and rules that govern the design and use of the database system. • They enforce standards by which business is conducted within the organization and with customers. • They also ensure that there is an organized way to monitor and audit both the data that enter the database and the information that is generated through the use of such data.
5. Data This covers the collection for facts stored in the database and since data is the raw material from which information is generated the determination of what data is to be stored into the database and how the data is to be organized is a vital part of the database designer jobs.