UNIT 1: INTRODUCTION TO DBMS AND RDBMS

- **History of DBMS**
- **Difference between files and DBMS**
- **History of RDBMS**

Figure: 1-1 Introduction to DBMS and RDBMS

Notes:

HISTORY OF DBMS

Working with files

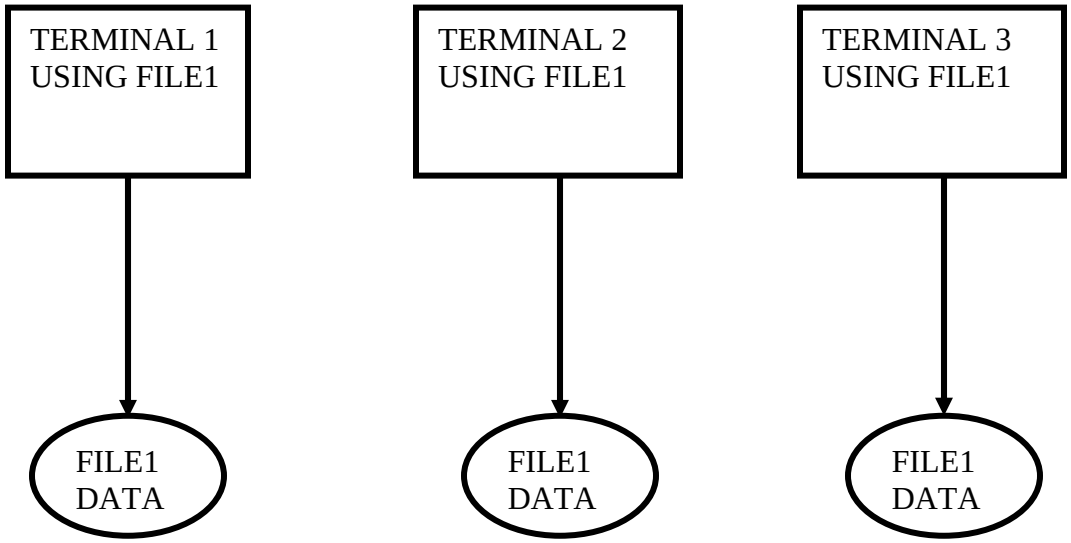

Figure: 1-2 History to DBMS

Notes:

Information is the backbone of any organization. It is the most critical resource of the organization. It is the indispensable link that ties together all the components of an organization for better operation and co-ordination and for survival in today's competitive environment.

Data on the mainframe systems can be stored in VSAM or non-VSAM datasets. As a standard, most information used as data (records) is stored in VSAM (KSDS, ESDS, RRDS, and LDS) datasets. All source codes and load modules are stored in non-VSAM datasets.

WORKING WITH DBMS

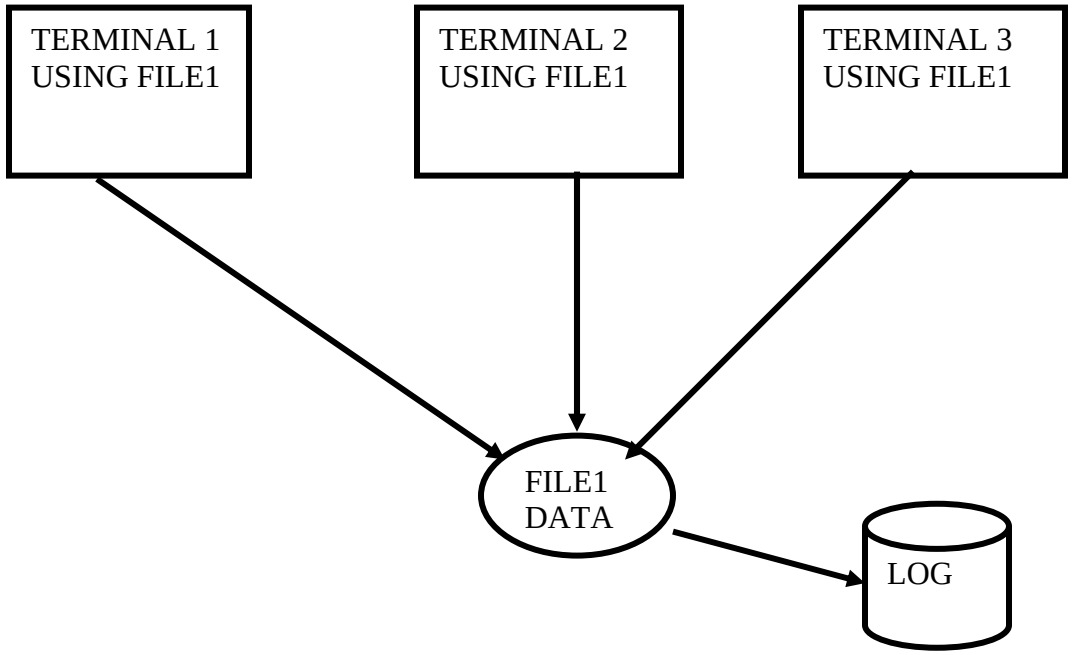

Figure: 1-3 Working with DBMS

One of the main things that are usually missing from the file system is the ability to do sharing of data within the file at the same time by many users. As a result when a new application is developed that needs the same data, the solution is to replicate this information in another file. The disadvantage of this is when data is replicated, synchronization of the duplicate data is a formidable task and inevitably causes discrepancies.

All database management systems have a locking mechanism that enables multiple users to access virtually the same data at the same time. This ability to handle concurrency eliminates the requirement to replicate data. A database management system supports security, concurrency and integrity.

Figure: 1-4 Working with DBMS (Cont….)

WORKING WITH RDBMS

The relational model is an abstract theory of data that is based on the mathematical theory whose principles were laid down by Dr. E. F Codd. The relational model of Codd used certain terms and principles, which were not familiar in the data processing circles at that time. The below table gives a list of relations terms and their corresponding informal equivalents.

Formal Relational Term	**Informal Equivalent**
Relation	Table
Tuple	Row, Record
Attribute	Column, Field
Primary Key	Unique identifier

Figure: 1-5 Working with RDBMS

WORKING WITH RDBMS (Cont…)

This relational model is concerned with three aspects of data. Data Structure, Data Integrity and Data Manipulation. The relational model has two integrity rules:

1. **Entity Integrity**- No attribute participating in the primary key of a base relation is allowed to contain any nulls. Primary key performs the unique identification function in a relational model. Thus a null primary key value within a base relation would be like as if that there was some entity that had no known identity. An entity that cannot be identified is a contradiction in terms, hence the name entity integrity.

2. **Referential Integrity**- If a base relation or table includes a foreign key matching the primary key or unique key of some other base relation, then every value of a foreign key in the first table or relation must either be equal to the value of primary key or unique key in some row of another Table .

Figure: 1-6 Working with RDBMS

ADVANTAGES OF RDBMS OVER FILES

1) **Ease of accessing the data from the database by issuing the SQL queries.**
2) **Redundancy can be reduced.**
3) **Consistency in data can be maintained.**
4) **Integrity of the data can be maintained.**
5) **Having central control of the database, the Administrator can enforce standards.**
6) **Security restrictions can also be applied to the database.**

Figure: 1-7 Advantages of RDBMS over Files