## 1.3 Files System:

The File is a block of arbitrary information, it is a place that application programs stores there data in it. These application programs either database application or non-database application. Each file has a format. The information stored in the file can be organized in a record, which is a collection of fields.

The file system is typically described as various files and a number of different application programs are written to read from and add to the appropriate files.

File System Disadvantage:

- Program dependence : Each file has a format, the non-database application must know exactly the format of the file to deal with it. Any other application cannot access the file unless knowing the format of the file.
- When file format updated, then the application program must be updated, it is complicated to update all programs when data format is update.
- Security problems existed. Any one can write a program to read the data in the file.
- Data redundancy , if there are application A deals with file A and application B deals with file B, if application A store an information in file A, and if application B need this information , application B can not access file A , so application B must record the same information in file B.

*Some basic Definitions:*

Field: one category of information( one data value), i.e., Name, Address, Semester Grade, Academic topic.

Record: Collection of fields i.e., one student's information, a recipe, a test question.

A File: A group or collection of similar records, like student File.

Digital databases are managed using database management systems (DBMS) , which store database contents, allowing data creation and maintenance, and search and other access to the database.

## 1.4 What is DBMS ?

A **Database Management System** (**DBMS**) is a set of computer programs that controls the –

- Creation of the database
- The storing and organization of the data in the database
- Maintenance the database
- Searching ,data retrieval and the use of a database.

The DBMS accepts requests for data from an application program and instructs the operating system to transfer the appropriate data as shown in figure (1.2)

*ADVANTAGES OF A DBMS*

1- Database Development: It allows organizations to place control of database development in the hands of database administrators (DBAs) and other specialists.

2-Data independence: Application programs should be as independent as possible from details of data representation and storage. The DBMS can provide an abstract view of the data to insulate application code from such details.

3-Efficient data access: A DBMS utilizes a variety of sophisticated techniques to store and retrieve data efficiently. It allows different user application programs to easily access the same database. Instead of having to write computer programs to extract information, user can ask simple questions in a query language.

4-Data integrity and security: If data is always accessed through the DBMS, the DBMS can enforce :

- integrity constraints on the data. For example, before inserting salary information for an employee, the DBMS can check that the department budget is not exceeded.
- Also, the DBMS can enforce access controls that govern what data is visible to different classes of users.

5-Crash recovery: the DBMS protects users from the effects of system failures.

6- Data administration and Concurrent access: When several users share the data( more than one user access the database at the same time), DBMS schedules concurrent accesses to the data in such a manner that users can think of the data as being accessed by only one user at a time.