What is Data/DataBase (DB)

- In computer science, **data** is anything in a form suitable for use with a computer. data is often distinguished from programs. a program is a set of instructions that detail a task for the computer to perform. in this sense, data is thus everything that is not program code.

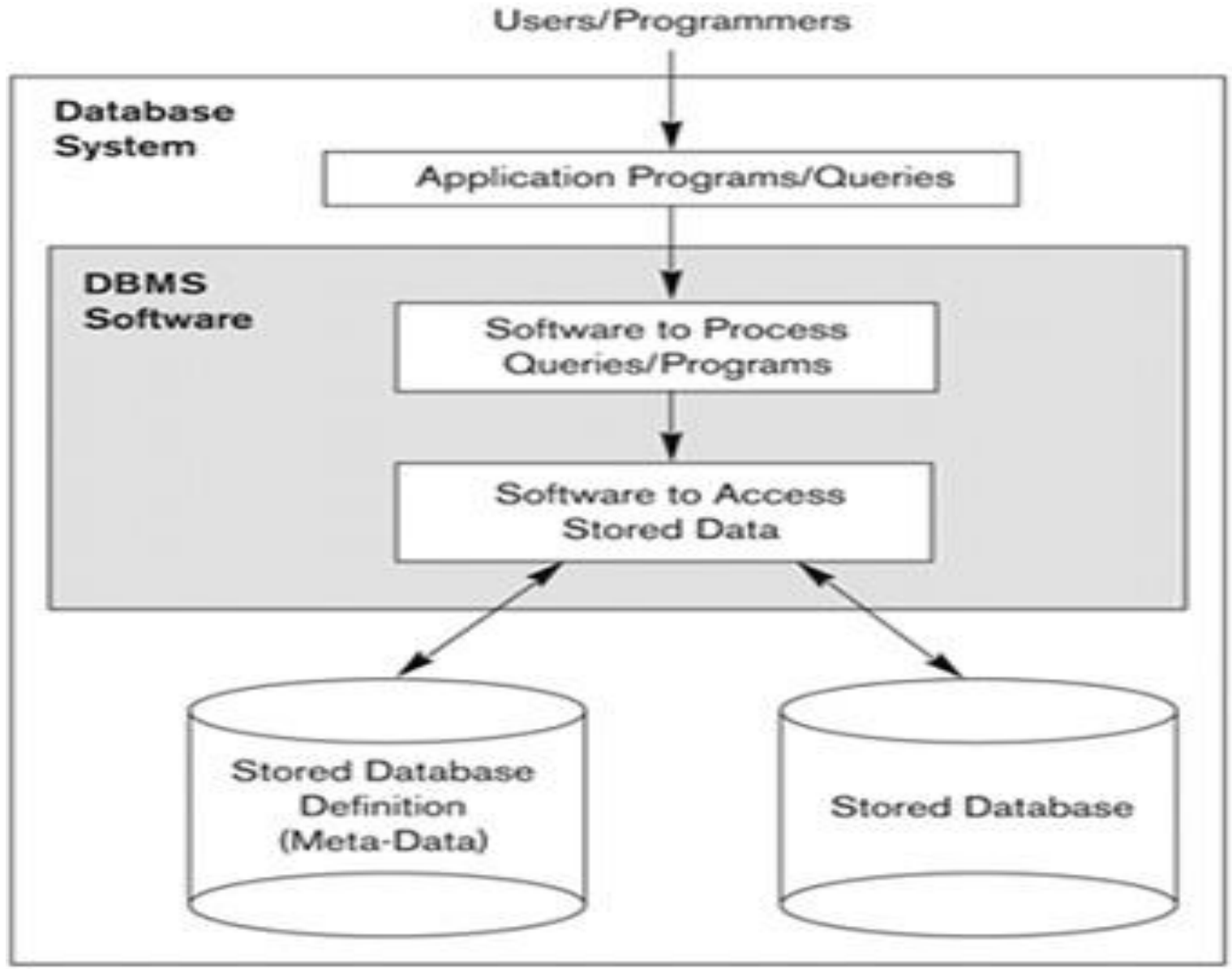
- Database is a collection of related data. by data we mean known facts that can be recorded and that have implicit meaning. for example, consider the names, telephone numbers and addresses of the people you know. you may have recorded this data in an indexed address book, or you may have stored it on a hard drive, using a personal computer and software such as microsoft access or excel. this is a collection of related data with an implicit meaning and hence is a database

What is Data Base Management System?

- A database management system (dbms) is system software for creating and managing databases. the dbms provides users and programmers with a systematic way to create, retrieve, update and manage data.

- A dbms makes it possible for end users to create, read, update and delete data in a database. the dbms essentially serves as an interface between the database and end users or application programs, ensuring that data is consistently organized and remains easily accessible

A Simplified Database System Environment



Disadvantages of File Oriented Systems

- **Data Redundancy**
  Data Redundancy means same information is duplicated in several files. This makes data redundancy.

  Data Inconsistency
  Data inconsistency means different copies of the same data are not matching. that means different versions of same basic data are existing. this occurs as the result of update operations that are not updating the same data stored at different places. Example: Address Information of a customer is recorded differently in different files.
- **Difficulty in Accessing Data**
  It is not easy to retrieve information using a conventional file processing system. Convenient and efficient information retrieval is almost impossible using conventional file processing system.
- **Data Isolation**
  Data are scattered in various files, and the files may be in different format, writing new application program to retrieve data is difficult.

- **Integrity Problem:**

The data values may need to satisfy some integrity constraints. For example the balance field Value must be grater than 5000. We have to handle this through program code in file processing systems. But in database we can declare the integrity constraints along with definition itself.

Atomicity Problem:

It is difficult to ensure atomicity in file processing system. For example transferring $100 from Account A to account B.If a failure occurs during execution there could be situation like $100 is deducted from Account A and not credited in Account B.

- **Concurrent Access anomalies:**

If multiple users are updating the same data simultaneously it will result in inconsistent data state. In file processing system it is very difficult to handle this using program code. This results in concurrent access anomalies.

Security Problem:

Enforcing Security Constraints in file processing system is very difficult as the application programs are added to the system in an ad-hoc manner.