Database System Concepts

Chapter No 02

Sadullah Karimi

Thanks to **Shabir Ahmad Usmany** Sir

Traditional File Processing Systems

▶ Traditional file processing system or simple file processing system refers to the first computer-based approach of handling the commercial or business data.

▶ That is why it is also called a replacement of the manual file system.

▶ Before the use of computers, the data in the offices or business was maintained in the files.

▶ Obviously, it was laborious, time consuming, inefficient, especially in case of large organizations

Drawbacks of Traditional File Processing Systems

▸ Although Traditional File Processing Systems temporarily solved the problem of Manual work but soon it was realized that Traditional File Processing System is Also having a lot of drawbacks

▸ A major drawback in the traditional file system environment is the non-sharing of data.

▸ It means if different systems of an organization are using some common data then rather than storing it once and sharing it, each system stores data in separate files.

▸ This creates the problem of redundancy or wastage of storage.

Inconsistency

▸ One other important problem is inconsistency of data.

▸ The change in the data in one system sometimes is not reflected in the same data stored in other system.

▸ So different systems in organization; store different facts about same thing. This is inconsistency as is shown in figure below

Inconsistency(cont...)

Library	Exam	Registration
Reg_Number	Reg_Number	Reg_Number
Name	Name	Name
Father Name	Address	Father Name
Books Issued	Class	Phone
Time	Semester	Address
	Grade	Class

Duplication of Data leads to Data Inconsistency

Advantages of Database Approach (cont...)

Library	Examination	Registration
Library Application	Examination Application	Registration Application

**Database Management System**

University Students Database
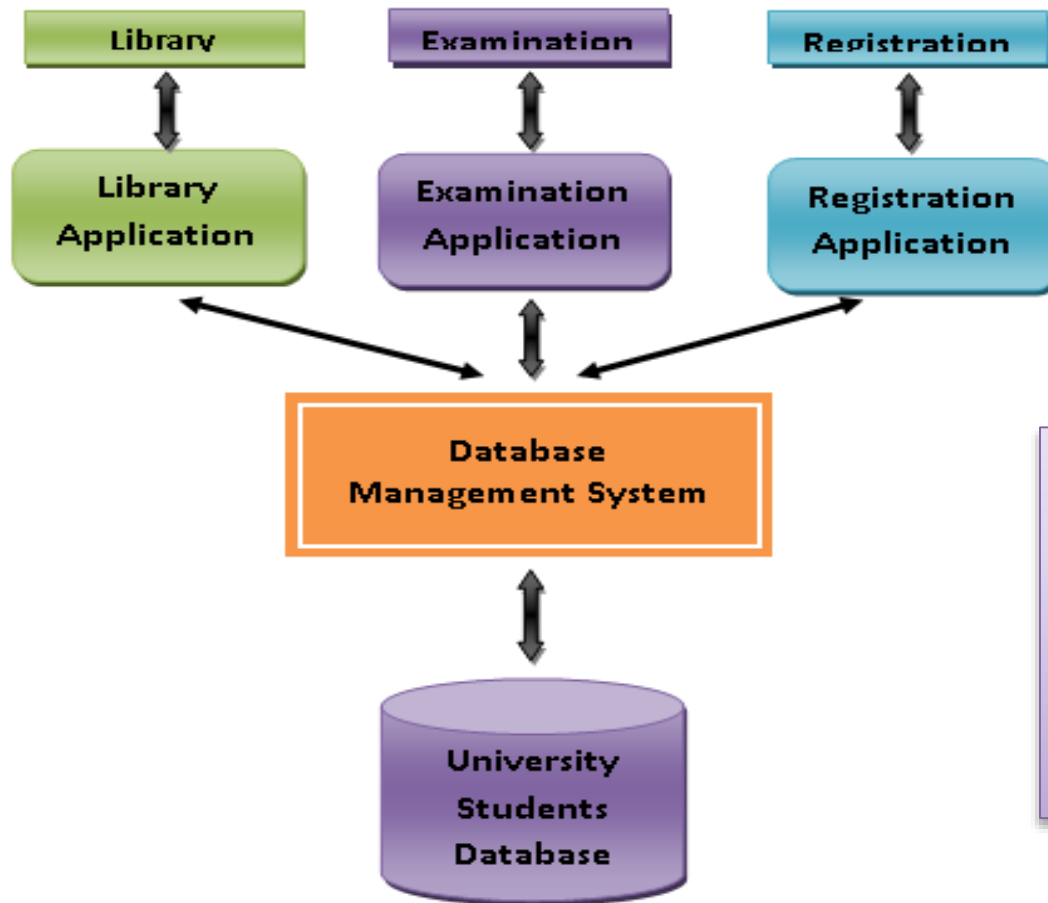
Data Sharing

Controlled Redundancy

Data Independence

Better Data Integrity

Advantages of Database Approach(cont...)

- **Data Sharing**

- The figure shows different subsystem or applications in an educational institution, like library system, examination system, and registration system.

- These are separate, different application programs for every application or subsystem.

- However, the data for all applications is stored at the same place in the database and all application programs, relevant data and users are being managed by the DBMS.
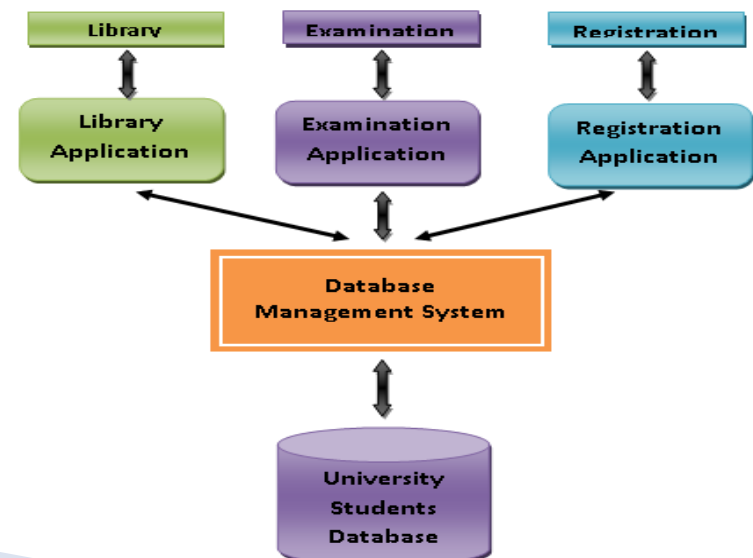
Advantages of Database Approach(cont...)

▸ **For example**

▸ Data like registration number, name, address, father name that is common among different applications is being stored repeatedly in the file processing system environment

▸ where as it is being stored just once in database system environment and is being shared by all applications.

Advantages of Database Approach (cont...)

b) **Data Independence**

▶ Data and programs are independent of each other, so change in one has no or minimum effect on other.

▶ Data and its structure are stored in the database where as application programs manipulating this data are stored separately, the change in one does not unnecessarily affect other

Advantages of Database Approach(cont…)

c) **Controlled redundancy**

▸ It means that we do not need to duplicate data unnecessarily; we do duplicate data in the databases, however, this duplication is deliberate and controlled.

Advantages of Database Approach(cont…)

d) **Better Data Integrity**

▸ It is very important feature and it means the validity of the data being entered in the database.

▸ Integrity of data is very important, since all the processing and the information produced in return are based on the data.

▸ Now if the data entered is not valid, how can we be sure that the processing in the database is correct and the results or the information produced is valid?

Advantages of Database Approach(cont...)

e) **Data Consistency**

▸ Data consistency means that the changes made to different set of data should be controlled and managed in such a way that all the set have same value for any specific data item.

▸ Data inconsistency leads to a number of problems, including loss of information and incorrect results.

▸ In database approach it is controlled because data is shared and consistency is controlled and maintained

12

Advantages of Database Approach(cont...)

f) **Better Data Security**

▸ All application programs access data through DBMS, So DBMS can very efficiently check that which user is performing which action and accessing which part of data ,

▸ So a DBMS is the most effectively control and maintain security of Data stored in a database.

Advantages of Database Approach (cont...)

i) **Better Concurrency Control**

▸ Concurrency means the access of database form number of points simultaneously.

▸ Concurrency control means to access the database in such a way that all the data accesses are completed correctly and transparently.

▸ One example of controlled concurrency is the use of ATM Machine for withdrawal of money (cash).

▸ All ATM machines of a bank are interconnected to a central database system worldwide, so that a user can access its account from anywhere in the world and can get cash from any ATM terminal.

Advantages of Database Approach(cont...)

i) **Better Concurrency Control**

▸ As there are thousands of ATM terminal across the world for a specific bank so as a result thousands of user process and access the bank's database.

▸ All this process is managed concurrently using the database systems and is done in such an efficient manner that no two user face any delay in the processing of their requests.

Thanks

Questions?