

4-Feb-25

RDBMS → Relational Database management system.

Defi → Relational database management system. RDBMS is a computerized record keeping system that allows you to electronically organize and manipulate data using computer in a fast and secure way. RDBMS is a software program that helps store and manipulate data in interrelated table of data base system. RDBMS allows you to store and maintain data, using 3 levels of data & abstracting for retrieving the data from the DB, which is stored in diff. storage devices.

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Basic concept of RDBMS → 1. Data

1. Data - Data means known as facts that can be recorded and used to produce useful information. For eg. Name telephone

no. address of employee

2 Database → A database is a collection of interrelated data. For e.g. You may have recorded the name, telephone no. and address of the employee, using a personal computer and software suggest search as MS access, or MS excel.

RDBMS languages → There are three types of languages in RDBMS

1. Data definition language (DDL)
2. Data Manipulation language (DML)
3. Transaction control language (TCL)

DDL, DML, TCL are used for creating, maintaining, manipulating and controlling the data of a database

Defining a database → It involves specifying the database types, structural and

conditions for the data to be stored in the database.

constructing a data base → It is process of storing a real data and some storage medium with the help of an RDBMS

Maintaining the data base - This involves performing functions such as querying to specify the database to retrieve specific data, updating the data base by the user and generating reports from the data.

* Life in a college during new Sem.

College plays very important role in every student's life. College life is very beautiful part of a student life. College life is very memorable.

RDBMS

Data independance → RDBMS architecture can be used to explain the concept of data independance which is the ability to change the representation of the data at one level of a database system. The two type of data independance

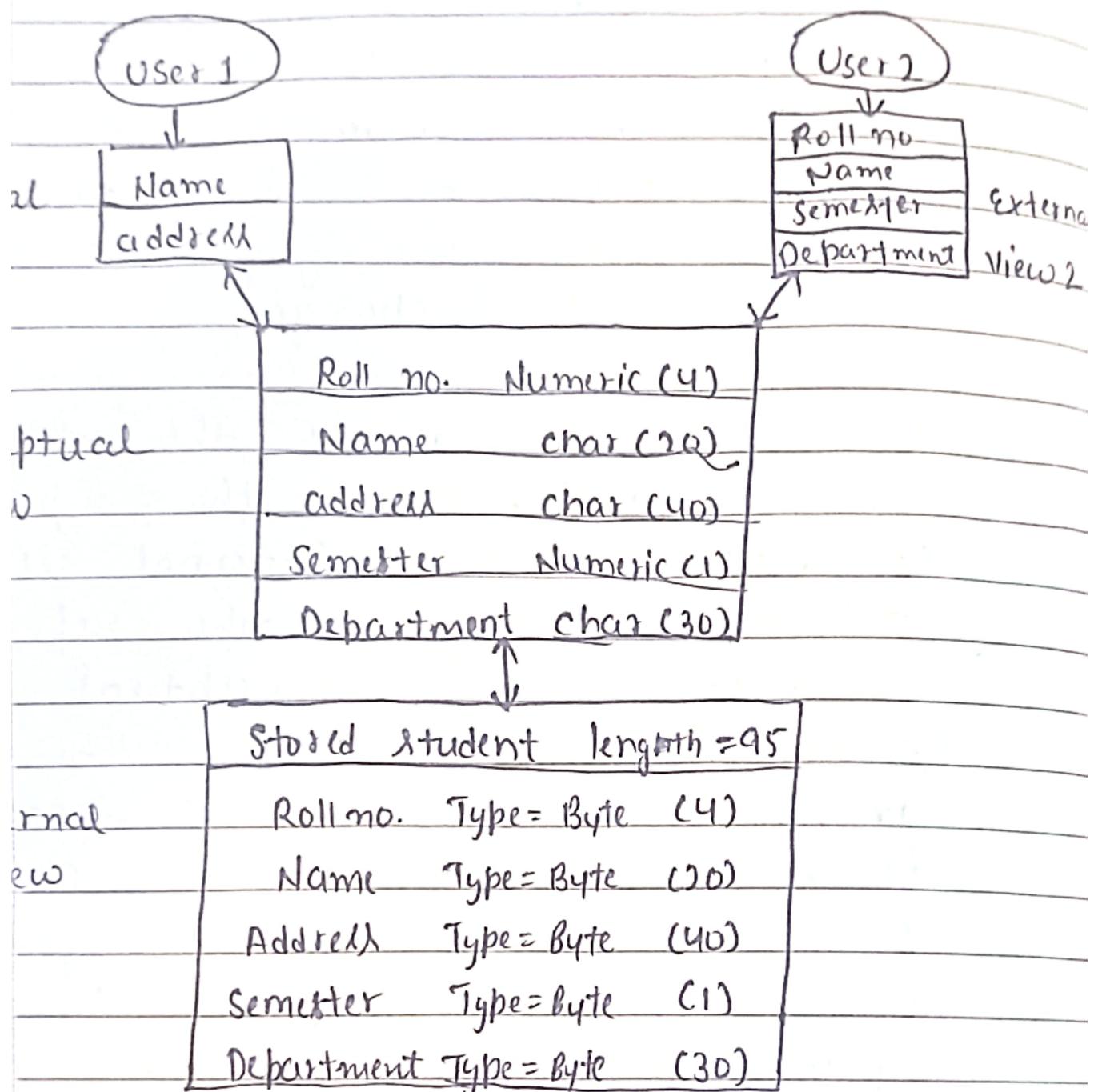
1. Logical data independance
2. Physical data independance

1. Logical DI → It is the ability to change the representation of data at the conceptual level without changing the representation

of data at the external level. For e.g. If you want to expand the database by adding a record type or data type, you will have to change the conceptual level. The changes in the conceptual level can be made accordingly and the external level that refers to the remaining data need not to be changed.

2. Physical DI → It is the ability to change the representation of data at the internal level without changing the representation of data at the conceptual or external level. Changes to the internal level may be needed if some physical files are to be recognized. For e.g. If you want to improve the performance of retrieval or update a database you may need to create additional access structure. This may result

in file reorganization. If the data stored in the data base does not change, you will not have to change the conceptual level.

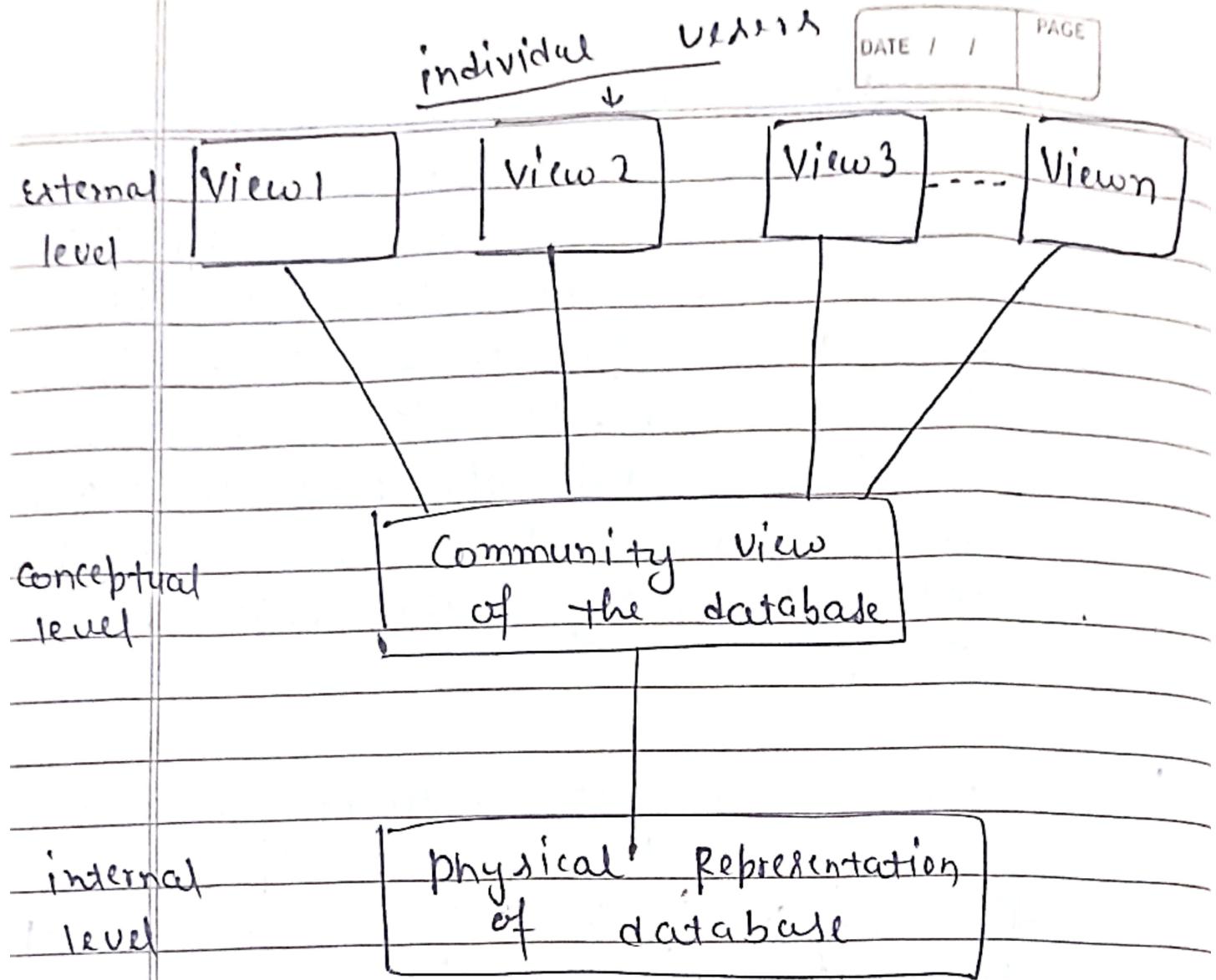


Three scheme architecture.

Internal level \Rightarrow The internal level of database specifies the way in which the data is physically stored in the database. The internal or physical level of database system architecture also provide description the relationship that exist between the data.

External level \Rightarrow The external level of the database specifies the way in which the data is stored in the database is viewed by the user.

conceptual level \Rightarrow The conceptual level specifies the level of interaction between the internal and the external level of system architecture.



Advantages of using

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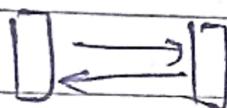
Source
Logical

Destination
Physical

Protocol → Set of rules

Primary key → unique key (for e.g. roll no)

Duplex → Full duplex , Half duplex
Two way one way



Fiber optics -

PBMS

Defi → Data base Management System
Database is a collection of related information stored so that it is available to many user for diff. purposes. The content of the a database is obtained by combining data from all the different sources in an organization.

- Data → Data can be define w/ a representation of facts and instructions in a formalized manner suitable for communication or processing by human or electronic machine. Data is represented with the help of characters of like alphabets (A-Z & a-z) digits (0-9). special character (+, =, <, >).
- Data item (field) ⇒ A set of characters which are used together to represent a specific data element for e.g. name of a student in a class is represented by the data item, say a NAME.
- Record ⇒ Record is a collection of related data items e.g. pay-roll

Record for an employee contains such data fields as name, age, qualification, gender, basic pay, DA, HRA, PF etc.

File → File is collection of related records

e.g. A payroll file might consist of the employee pay record for a company.

Roll No.	Name	Mark	→ Data item
1001	Amrit	85	→ Record
1002	Ritu	75	
1003	Aman	50	

Student file

Characteristics of DBMS :-

1. A database represent some aspects of the real world application.
For e.g. consider the student database, maintaining records of attendance, unit examination marks, scholarships etc.

- DATE / / PAGE / /
- related to each student of the college.
2. A database is designed and built with data for a specific purpose.
 3. Operations like update, insert, retrieve etc. on the database can be carried out in a simple and flexible way.
 4. A database provides a logical relationship between its records and data.

```
#include<iostream.h>
#include<stdio.h>
int main()    void main()
{ clrscr();
  double num1, num2, weight1, weight2;
  std::cout << "Enter 1st number:";
  std::cin >> num1;
  std::cout << "Enter second number:";
  std::cin >> num2;
  std::cout << "Enter weight first number:";
  std::cin >> weight1;
  std::cout << "Enter weight second number:";
  std::cin >> weight2;
  double mean = (num1 + num2) / 2;
  double weightedMean = (num1 * weight1 +
    num2 * weight2) / (weight1 + weight2);
```

K.

```

std::cout << "Mean :" << mean << std::endl;
std::cout << "Weighted Mean :" << weighted_mean
<< std::endl;
return 0; } getch();

```

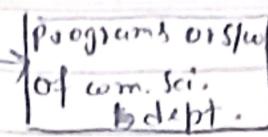
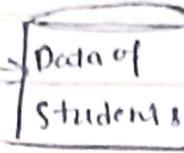
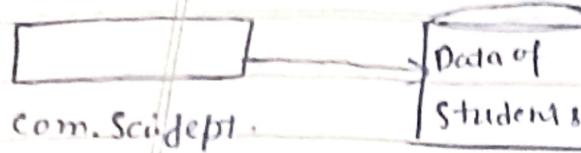
HERE sqrtf(m) →

DBMS → Traditional file environment system

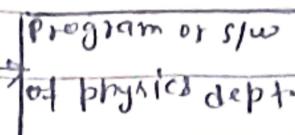
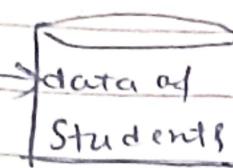
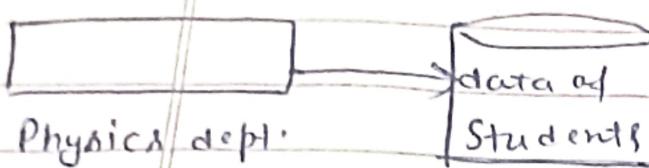
Advantages:-

→ The earlier business computer system for use to process business record and produce an information. They were generally faster and more accurate than equivalent manual systems. These systems stored groups of records in separate files and so they were called file processing system. In a typical file processing system, each department has its own files designed specific for those applications.

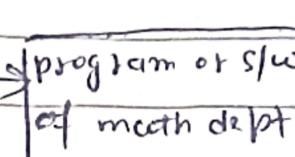
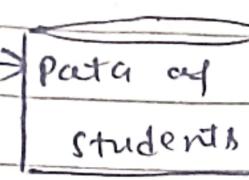
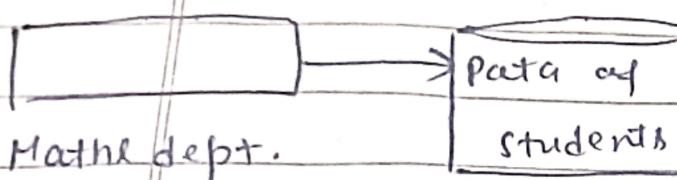
for e.g. Suppose a student got admission in Bsc. I (computer Science) in traditional file system, data of student required to be entered in three places



Report needed to com. sci. dept.



Report needed to physics dept.



Report needed to Maths dept.

Dihadvantages :-

1. Duplicate data :- All the files are independent of each other some fields are store in more then one files
2. Inconsistency → In file processing system, data is not consistent. If a data item is to be changed then all the files containing that data need to be updated
3. Poor data intigrating → A collection of data has integrity if data is logically consistent that is the duplicate data item agree with one another.

4. Data is isolated and separated.
5. Application programs → AP are dependent on file format.
The physical format of the file are entered in the application programs that process the files.
6. Poor data security.
7. Wastage of labour space.

Advantages of using the DBMS approach

- * Control Redundancy → 1. In the file processing approach, each user defined and implements the files needed and software application to manipulate those files.
- 2. Data redundancy leads to wastaged storage space, duplication of efforts.
- * Multiple user interfaces → DBMS provides a variety of user interfaces for the users of varying level of technical knowledge.
These includes query language for

casual users, programming language
and natural language interfaces,
for stand alone users etc

- * Providing backup and recovery → If hardware or software face in the middle of the update program, the recovery subsystem of DBMS ensures that update is resumed at the point of failure.
- * Restricting unauthorized access :- A DBMS provides a security and authorization subsystem which is used by DBA to create user accounts. To specific restrictions on user accounts.
- * Providing persistent storage for program objects → object oriented data base system are compatible with programming language such as C++ and Java.

- * Providing Storage Structures of efficient query processing → The DBMS utilizes a variety of techniques (View, indexed etc.) to store and retrieve the data efficiently that are utilized to improve the execution of time of queries on updated .
- * Representing complex relationships among data : A DBMS must have the capability to represent a variety of complex relationship among the data, to define new relationships as they arise and to retrieve and update the related data easily and efficiently