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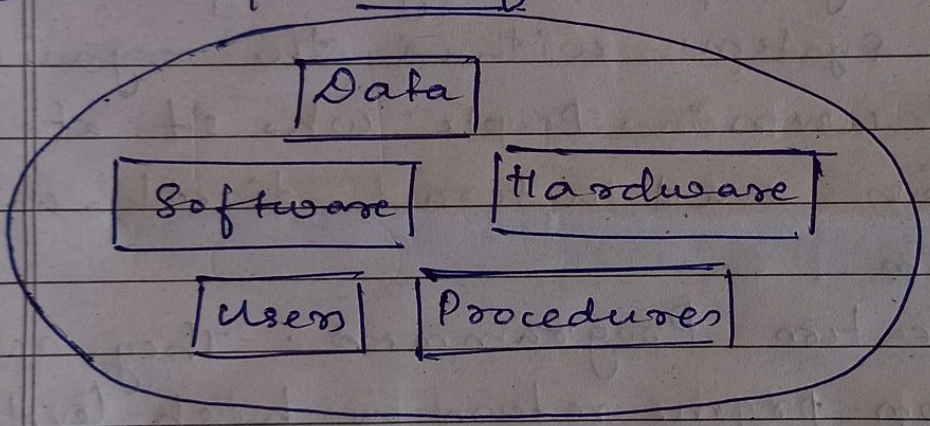
Questions

1. Components of DBMS
2. Data models
3. Three level architecture
4. Advantages of DBMS
5. Data Independence.

1. Components of DBMS



→ The hardware is the actual computer system used for keeping and accessing database.

→ The software is the actual DBMS It acts as the mediator b/w database and the users Eg: Oracle, SQL etc.

→ The data is the heart of DBMS The database should contain all the data needed by an organisation

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The data focus on some real world objects called entities. The characteristics that describe or quality of an entity are called Attributes. For each attribute the set of possible values that attribute can take is called domain

3 types of users:-

- DBA (Data Base Administration): It is a person or group incharge implementing the DB systems within the organisation.
- End users: People who sit at workstations and interact directly with the system
- Application Programmers: They access data from prgms written in high level language

→ Procedures control the behaviour of the system.

② Data Models

Collection of conceptual tools for describing data

Two types

i) Object Based logical model
ii) Record based logical model

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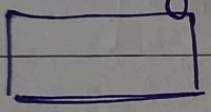
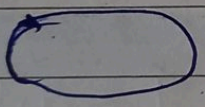
i) Object Based logical model : They are used in describing data at the logical and view level.

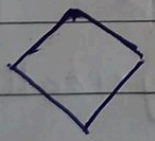
* Entity relationship model
* Object oriented model

The ER model is based on a perception of a real world that consist of a collection of basic object called entities and of relationship among these objects.

The logical structure can be expressed graphically :-

a)  - represent entity set

b)  - Ellipse → represent attributes

c)  - Diamonds - represent relationship among entity set

d) —— → Link attributes

* Object Oriented Model : It is based on the collection of objects

ii) Record Based logical model :

- Relational model
- Network model
- Hierarchical model

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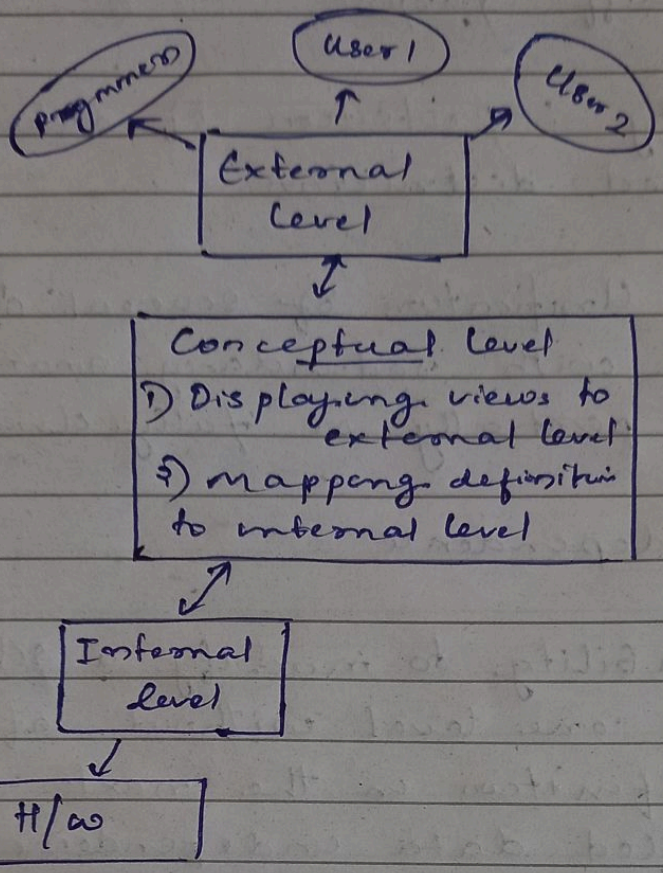
→ Relational model: uses collection of tables to represent both data and the relationships among those data.
→ Network model: Represented by collection of records and relationship among data are represented by links which can be viewed as pointers.
→ Hierarchical mode: Records are organised as a collection of trees rather than graph

(8) The three level architecture are;
1) Internal level
2) Conception level
3) External level

Internal: Data are physically stored on the hardware
Conception level: A conception level, the logical definition of the database, is sometimes referred to as the community view.
External: Whether the users are application programmers or end users, they still have a view.

Graphical representation:



(24) Advantages of DBMS

* DB reduces data redundancy :- Data redundancy means duplication of data. The DB systems do not maintain separate copy of the same data rather it keeps all the data at one location and applications that require data refer to the centrally Controlled database

* DB control data inconsistency :- When the redundancy isn't controlled, there may be a situation in which two entries about the same data do not agree and the database is inconsistence. By controlling redundancy, inconsistency is also controlled

* Sharing of data: It means individual uses of data shared among several diff users for diff purpose.

* Data security : protection of data against unauthorized destruction

* Integrity : Unification of several distinct data files with redundancy among these files partially or fully eliminated

⑤ Data Independence :

The ability to modify a schema definition in one level without affecting a schema definition in the next higher level is called data independence