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Assignment 1

1) What is DBMS ? Explain its advantages

Ans 1) A database management system (DBMS) is collection of ~~prog~~ programs that manages the database structure and controls access to the data stored in the database.

2) The DBMS serves as the intermediary between the user and database. the database ~~structu~~ structure itself is stored as a collection of files, so we can access the data in those files through DBMS.

3) The ~~po~~ purpose of a database is store ~~and~~ and retrive information in a way that is accurate and effective and to manage the different database it contains (performance, ~~Sec~~ Security, availability, integrity etc.)

Advantages of DBMS

1) Shared data:- A database allocus the sharing of data under its control ~~its~~ by any of application programs or users. for example, the application of the public relations and payroll departments can share the same data.

2] Reduction of Redundancies :- Centralized control of data by the DBA avoids unnecessary duplication of data and effectively reduces the total amount of data storage required. It also eliminates the extra processing necessary to trace the required data in large mass of data.

3] Data Independence :- The ability of modify a schema definition in one level without affecting a schema definition in the next higher level is called data independence. Application programs should be as independance. Application programs should be as independence 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.

2 What is Data Abstraction? Explain its levels.

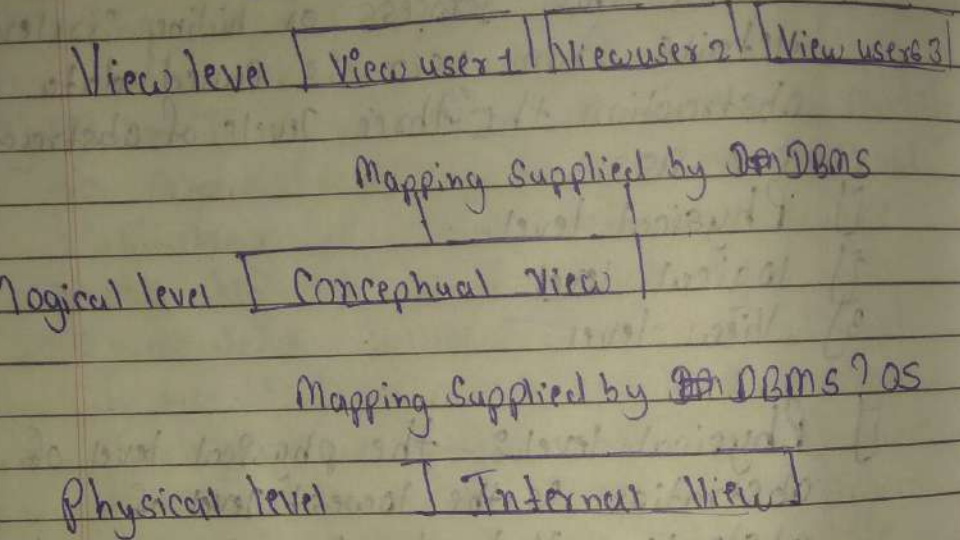
Ans Database System are made-up of complex data structure. To ease the user interaction with database the developers hide internal irrelevant details from users. This process of hiding irrelevent details from user is called data abstraction the three levels of abstraction are as:

1) Physical level
2) logical level
3) View level

1) Physical level:- the physical level of abstration is the lowest level of abstration that describes how the data is actually stored. The physical level or internal schema, which contains the ~~define~~ definition of stored record the method of representing the data fields, express the internal view and the access aids used.

2) Logical level:- The logical level of data abstraction define what are actully stored in the database and what relationship exist among those data In relational DBMS, the conceptual Schema describe all relation that are stored in the database.

3) View level :- This is the highest levels of abstraction as seen by a user. This level of abstraction describes only the part of entire database which exists to simply the interaction with the system



3) What is Database Administrator? Explain the various function of DBA

Ans A person who has such control over the system is called a database Administrator (DBA)

The following are the function of a Database Administrator

i) Schema Definition :- The Database Administrator creates the database schema by executing DDL statements Schema includes the logical structure of database table creation, the data type

of attributes length of attributes, integrity and constraints etc.

2) Storage Structure and access Method definition :- Database tables or indexes are stored in Flat files, heaps, B+ tree etc.

3) Schema and physical organization modification :- The DBA carries out changes to the existing existing schema and physical organization.

4) Granting authorization for data modification the DBA provides different access right to the acc users according to thier level ordinary user might have higher restricted access to data while you go up in the hierarchy to the administrator, you will get more access rights.

5) Routine Maintenance :- Some of the routine maintanance ~~del~~ activities of DBA are given below :

* taking backup of Database periodically
* Ensuring enough disk space is available all the time.
* Monitoring job running on the database
* Performing Tuning
* Ensure that performance is not degraded by some expensive task submitted by some users.

4) Why data models are used in database? Explain its components.

Ans A database model defines logical structure of Database It describes the design of database to reflect entities attribute relationship among data constraints etc Data model can be define as an intergrated collection of concepts for describing and maipulating data, relationship between data, and constraints on the in an organization

i) Hierarchial model :- this database model organises data into a tree-like structure with a single root to which all the other data is linked the hierarchy starts from the Root data and

expand like a tree, adding child nodes to the parent nodes In this model a child node will only have a single parent node.

2) Network model :- In the network data model data model data are represented by collections of records Relationship among data are representence by links In this data model graph data structure is used It permits a record to have more than more than one.

3) Relation model :- Relation model is most popular model and the most extensively used model In this model the data can be stored in the tables and this storing is called as relation, the relation can be normalized and the normalized relation value are called atomic values Each row in a relation contains ~~unique~~ unique value and it is called as tuple each column contains value from same domain and it is attributes.

5) Define

1) Entity :- An entity is a person, place, thing or event about which the data are to be collected and stored An entity is the fundamental item in any data model as it is distinguishable i.e each entity occurrence is unique and distinct.

2) Attribute :- An attribute is the charateristic of any entity for eg: CUSTOMER entity can be described by attribute such as name, phones, address, gender, Each attribute is associated with a set off values called domain.

3) Tuple :- It is nothing but a single row of table, which contains a sing record.

4) Degree :- The total number of attribute which in the relation is called degree of relation.

5) Cardinality :- Total number of rows present in the table.

6) Write a note on following:

a) Primary Key :- The primary key constraint uniquely each record in a table primary key must contain unique values and cannot contain NULL value A table can have only one primary key and in the table primary key consist of single or multiple columns.

b) alternate key :- Alternate key is a secondary key it If a table has more than one candidate key, one of them will become the primary key and rest of all are called alternate key Eg:- Student Contain (~~Ab~~ NAME, ROLL NO, ID) Here ROLL NO, is primary key and rest of all colums like Name, ID, are alterate key.

c) Candidate Key :- Candidate key is a set of attributes that uniquely indentify tuples candidate key is a super key with no repeated attributes the primary key should be selected from the candidate key A table can have multiple candidate key but only a single primary key.

d Attribute and its type :-
Attribute are the descriptive properties which are owned by each entity of an Entity Set There exist a specific domain or set of values for each attribute from where the attribute can take its values.

Types of Attributes

1) Simple attribute :- Simple ~~attir~~ attribute are those attributes which can not be dived further.
2) Composite attribute :- Composite attributes are those which are composed of many other simple attributes.
3) Single Value Attributes :- those attribute which can take only one value for a given entity from an entity set.
4) Multi valued Attributes :- those attribute which can take one value for a given entity from an entity set
5) Derived Attribute :- those attribute which can be derived from other attribute.
6) Key attribute :- those attributes which can identify an entity uniquely in an entity set

e] Strong entity :- Strong entity set always has a primary key. It represented by rectangle symbol It contains a primary key represented by underline symbol. The member of a strong entity set is called as domain entity set. Primary key is one of its attribute which helps to identify is member

F] Generalization :- A generalization hierarchy is a form of abstraction that specifies that two or more entities that share common attributes can be generalized into higher level entity type called supertype the lower level of entities become the subtypes to the supertype and is dependent entities. It is a process of defining a more general entity type from a set of more specialized type It is a bottom-up approach. It is denoted through a triangular component labeled "IS-A" Generalization is the abstraction process of viewing set of objects as a single general class by concentrating on the general characteristics of the constituent set while suppressing or ignoring.

their differences It is the union of a number of lower-level entity types for the purpose of producing a higher-level entity type.

4) Specialization :- Specialization is the obstracting process of introducing new charateristics to an existing class of objects to create one or more new classes of object. This involves taking a higher-level emtity and using additional characteristics generating lower-level entities The lower-level entitiy entities also inherite the Characteristics of the hegher level entity

7) Explain relationship with type.

Ans A relationship describes relation between entities. Relationship is represented using diam There are three types of relationship that exist between entities

1) Binary Relationship :- Binary relationship means relation between two entities
Cardinality Constraint defines the maximum number of relationship instances in which an entity can participate
Cardinality ratio
- Many - to - Many
- Many - to - one
- one - to - Many
- one - to - one

2) Recursive Relationship :- When an entity is related with itself it is known as Recursive relationship In the below example an employee can be a supervised so there is a recursive relationship.

3) Ternary Relationship :- Relationship of degree there is called Ternary relationship. A ternary relationship involves three entities. In such relationships we always consider two entities together and then look upon the third.

8] Explain DDL and DML Commands

Ans DDL - DDL Stand Data Definition Language DDL Changes the Structure of the Table like creating a table, ~~alterni~~ altering a table etc. All the command of DDL are auto-commited that means it ~~perma~~ permanatly save all the changes in the database. ~~Com~~ Commands that come under DDL

1] CREATE :- It is used to create new table in the database
Syntax :- CREATE TABLE Mehul (
(Name DATATypes, ...)

2] DROP : It is used to delete both the Structure and Recored stored in the Table.

3] ALTER :- It is used to alter structure of the database. This change could be either to modify the characteristics of an existing attribute or probable to add a new attribute.
Systax :- ⊕ To add new column in the table
Alter table Table_name
Add column_name column_definition
Alter ⊕ Table table_name
Modify (column Definition)

DML :- DML Stands for Data Manipulati language DML command are used to modify the database it resposible for all form of changes in database the command of DML is not auto-commited that means it can't permanently save all the changes in the deltabase.

1) Insert :- It is used to insert data into the row of the table.
Syntax :- Insert Into - Name Values (Value , Value2 , ...)

2) Update :- it is used to update or modify the value of a column in the table.
Syntax :- Update table-Name.
Set [Column-name - value - column-name -value] where Condition.

3) Delete :- it is used to remove one or more row from a table
Syntax :- Delete frome table-Name where condition.