

Assignment no. 1

Q.1 What is DBMS ? Explain its Advantages.

- Ans:
1. A Database Management system (DBMS) is defined as the software system that allows users to define, create, maintain & control access to the database.
 2. DBMS makes it possible for end user to create, read, update & delete data in database. It is a layer between programs & data.

* Advantages of DBMS :-

A) Reducing Data Redundancy

i) The file based data management contained multiple files that were stored in many different location in a system or even across multiple systems. ii) Because of this, there were sometimes multiple copies of the same file which lead to data redundancy.

B) sharing of Data

i) In a database, the users of the database can share the data among themselves.

ii) There are various levels of Authorisation to access the data, & consequently the data can also access the database simultaneously & share the data between themselves.

C) Data Integrity

i) Data integrity means that the data is accurate & consistent in the database.

ii) Data integrity is very important as there are multiple databases in a DBMS.

Page No.	
Date	

D) Data Security

- i) Data security is virtual concept in a Database.
- ii) only authorised user should be allowed to access the database & their identity should be authenticated using a username & password.

E) Privacy

- i) The privacy rule in a database means only the authorized users can access a database according to its privacy constraints.
- ii) there are levels of database access & a user can also view the data he is allowed to.

F) Backup & Recovery

- i) Database Management system automatically takes care of backup & recovery.

G) Data consistency

- i) Data consistency is ensured in a database because there is no data redundancy.

Q. 2. what is data Abstraction ? Explain its levels.

Ans: Database system are made-up of complex data structures. To ease the user interaction with database, the developer hide internal implement details from user.

* Level of Data Abstraction :-

- i) internal level / schema
 - a) The internal schema defines the physical storage of the database.
 - b) The internal schema is very low-level representation of the entire database.
 - c) It contains multiple occurrences of multiple types of internal records.

ii) Conceptual Schema / Level

- The Conceptual schema describes the Database structure of the whole database for the Community of users.
- This schema hides information about the physical storage structure & focuses on describing data types, entities, relationship, etc.

iii) External schema / Level

- An external schema describes the part of the database which specific user is interested in.
- It hides the unrelated details of the database from the user.
- There may be "n" number of external views for each database.

Q.3. Who is Database Administrator? Explain the various functions of database. (DBA)

Ans: Database Administrators (DBAs) are specialized software to store & organize data. The role may include capacity planning, installation, configuration, database design, migration, performance monitoring, security troubleshooting as well as backup & data recovery.

* Functions of DBA :-

functions of DBA include

i) Schema definition.

ii) Selection of hardware & software

- keep up with current technological trends
- predict future changes

- Emphasis on establishment off the self protection
- 2) Managing data security & privacy
 - protection of data against accidental or intentional loss, destruction, or misuse
 - firewalls
 - Establishment of user privileges
 - complicated by use of distributed systems such as internet access & client / server technology.

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

- Ans:-
- i) Data Model gives us an idea about how the final system will look after its complete implementation.
 - ii) It defines the data elements & the relationships between the data elements.

* Components of Data Model

- Data Set :-

A data set containing the logic to retrieve data from a single data source. A data set can retrieve data from a variety of data sources. A data model can have multiple data sets from multiple sources.

- Event triggers :-

A trigger checks for an event. When the event occurs the trigger runs the PL/SQL code associated with it.

The data model editor supports before data & after data triggers as well as schedule triggers.

- Flexfields

A flexfield is a structure specific to oracle Application. The data model editor supports retrieving data from flexfield structures defined in your oracle Application database tables.

- Lists of Values

A list of values is a menu of values from which report consumers can select parameter values to pass to the report.

- parameters

A parameter is a variable whose value can be set at runtime. The data model editor supports several parameter types.

- Bursting Definitions

Bursting is a process of splitting data into blocks generating documents for each data block, & delivering the documents, & delivering the output to one or more destination.

- Custom Metadata

If you have configured a web content server as a delivery destination & enabled custom metadata, the custom metadata component displays in the data model editor.

Q.5. Define - Entity, Attribute, relationship, tuple, degree, cardinality.

Ans: Entity :- An entity can be a real-world object, either animate or inanimate, that can be easily identifiable.

Attribute :- Attributes describes the characteristics or properties of an entity in a database table.

Relationship :- A relationship, in the context of databases, is a situation that exists between two relation database tables when one table has a foreign key that references the primary key of the primary key of the other table.

Tuple :- A single row of a table which contains a single record for that relation is called tuple.

Degree :- The degree of relationship is the number of entity types that participate in a relationship.

Cardinality :- In SQL, the term cardinality refers to the uniqueness of data values contained in a particular column (tuple) of database table.

Q.6. write a note on following:-

- a) primary key :- In the Relation model of databases, a primary key is a specific choice of a minimal set of attributes (columns) that uniquely specify a tuple (row) in a relation (table). informally, a primary key is "which attributes identify a record", & in simple cases are simply a single attribute: a unique id. more formally, a primary key is a choice of Candidate key (a minimal superkey); any other candidate key is an alternate key.
- b) Alternate key :- Alternate keys is a column or group of columns in table that uniquely identify every row in that table. A table can have multiple choices for a primary key but only one can be set as the primary key. All the keys which are not primary key are called an alternate key.

Example:-

In this table, studID, Roll NO, Email are required to become a primary key. But since studID is the primary key, Roll NO, Email became the alternate key.

studID	Roll NO	First Name	Last Name	Email
1	85	Rajesh	Rane	xyz@gmail.com
2	76	Aayush	Sanghi	abc@gmail.com
3	89	Shrikant	Chavan	imnu@gmail.com

c) Candidate Key :- Candidate key is a set of attributes that uniquely identify tuples in a table. Candidate key is a Super key with no repeated attributes. The primary key should be selected from the Candidate key. Every table must have at least a single Candidate key. A table can have multiple Candidate keys but only a single primary key.

* properties of Candidate keys :-

- It must contain unique value
- Candidate key may have multiple attributes
- must not contain null values
- It should contain minimum fields to ensure uniqueness
- uniquely identify each records in a table.

d) Attributes & its types:- In database management system (DBMS), an attribute refers to a database component such as a table. It also may refer to a database field. Attributes describe the instances in the column of database.

Types of Attributes :-

1. Simple attributes :- An attribute which cannot be further subdivided into components is a simple attribute.
2. Composite attributes :- An attribute which can be splitted into components is a composite attribute.

3. Single-valued attributes :- The attribute which takes up only a single value for each entity instance is single-valued attributes.

4. Multi-valued attributes :- The attributes which take up only a single value for each entity instance is multi-valued attributes.

5. Derived attributes :- An attribute that can be derived from other attributes is derived attribute.

e) Strong Entity :- The strong entity has a primary key. Weak entities are dependent on strong entity. Its existence is not dependent on any other entity. Continuing our previous example, professor is a strong entity here, & the primary key is professor-ID.

f) Generalization :- Generalization is like a bottom-up approach in which two or more entities of lower level combine to form a higher level entity if they have some attributes in common.

In generalization, an entity of a higher level can also combine with the entities of the lower level to form a further higher level entity.

Generalization is more like subclass & superclass system, but the only difference is the approach.

Q) Specialization :- It is a process in which an entity is divided into sub-entities. You can think of it as a reverse process of generalization. In generalization two entities combine together to form a new higher level entity. Specialization is a top-down process.

Q.7 Explain relationship with its types.

Ans: Any association between two entity types is called a relationship. Entities takes part in the relationship. It is represented by a diamond shape.

Types of Relationship:-

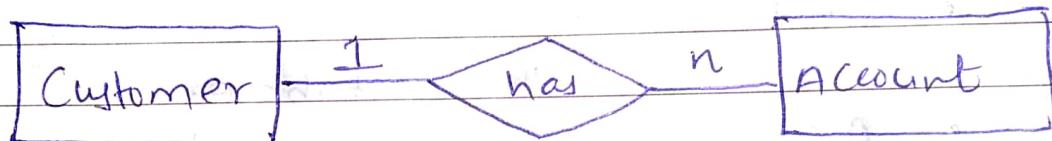
- One-to-one relationship
- One-to-many or many-to-one relationship
- Many-to-many relationship.

i) One-to-one relationship:-

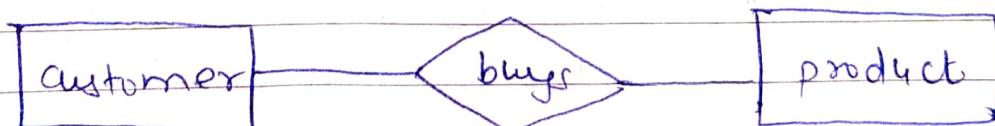
Such a relationship exists when each record of one table is related to only one record of the other table.

For example :- If there are two entities 'Person' (Id, Name, Age, Address) and 'Passport' (passport-id, passport-no). So each person can have only one passport & each passport belongs to only one person.

iii) One - to - Many OR Many - to - one Relationship
 Such a relationship exists when each record of one table can be related to one or more than one record of the other table. This relationship is the most common relationship found.
 A one-to-many relationship can also be said as a many-to-one relationship depending upon the way we view it.



iii) Many - to - Many Relationship :-
 Such a relationship exists when each record of the first table can be related to one or more than one record of the second table & a single record of the second table can be related to one or more than one record of the first table. A many-to-many relationship can be seen as a two one-to-many relationships which is linked by a 'linking table' or 'associate table'.



Q.8. Explain DDL & DML Commands.

i) DDL Command :- DDL or data definition language actually consists of the SQL commands that can be used to define the database schema.

- CREATE :- is used to create the database or its objects
- DROP :- is used to delete objects from the database.
- ALTER :- is used to alter the structure of database.
- TRUNCATE :- is used to remove all records from a table
- COMMENT :- is used to add comments to the data dictionary
- RENAME :- is used to rename an object existing in the database.

ii) DML Command :- The SQL commands that deals with the manipulation of data present in the database belong to DML or Data Manipulation Language. & it this includes most of the SQL statements.

- INSERT - is used to insert data into a table
- UPDATE - is used to update existing data within a table.
- DELETE - is used to delete records from database table.