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COHORT 13

**ENTITY RELATED DIAGRAM CLASSWORK**

1. **DISADVANTAGES OF FILE PROCESSING SYSTEM**

**Ans:** file processing system is a type of system that is used to maintain data and information, though it isn’t advisable for use in big firms with big data cause of the underlisted disadvantage.

* **DATA DUPLICATION**: Data is stored more than once in different files, that means duplicate data may occur in all these files. Since all the files are independent on each other so it is very difficult to overcome this error and if anyone finds this error then it will take time and effort to solve this issue.
* **DATA INCONSISTENCY**: Data is not consistent in this system. it means if a data item needs to be changed then all the files containing that data need to be modified. It may create a risk of outdated values of data.
* **POOR DATA INTEGRITY:** A collection of data is integrated if it meets certain consistency constraints. Programmers always puts these constraints in the programs by adding some codes. In File Processing System, poor data integrity often arises and it becomes very difficult to add new constraints at that time.
* **POOR DATA SECURITY:**  There is very less security in File Processing System as anyone can easily modify and change the data stored in the files. All the users must have some restriction of accessing data up to a level.

1. **WHAT IS DBMS? EXPLAIN ADVANTAGES AND DISADVANTAGES OF DBMS**

**ANS:** A database management system (DBMS) is a computer program designed to manage a large amount of structured data, and run operations on the desired data requested by the users.

Advantages;

* ***DATA REDUNDANCY SOLVED:*** In the File System, duplicate data is created in many places because all the programs have their own files which create data redundancy resulting in wastage of memory. In DBMS, all the files are integrated in a single database. So there is no chance of duplicate data.
* ***HIGH SECURITY LEVEL:*** Data security level is high by protecting your precious data from unauthorized access. Only authorized users should have the grant to access the database with the help of credentials.
* ***CONTROLS DATA INCONSISTENCY***: DBMS controls data redundancy and also controls data consistency. Data consistency is nothing but if you want to update data in any files then all the files should not be updated again.
* ***SHARING OF DATA***: Data can be shared between authorized users of the database in DBMS. All the users have their own right to access the database. Admin has complete access to the database. He has a right to assign users to access the database.

DISADVANTAGES;

* ***COMPLEXITY***: Failure to understand the system can lead to bad design decisions, which leads to a serious consequence for an organization.
* ***SIZE:*** The functionality of DBMS makes use of a large piece of software which occupies megabytes of disk space.
* ***COST OF DBMS***: The cost of DBMS varies significantly depending on the environment and functionality provided. There is also the recurrent annual maintenance cost.

1. **WHAT ARE THE DIFFERENT COMPONENTS OF DBMS?**

ANS: HARDWARE, SOFTWARE, DATA, USERS.

1. **EXPLAIN DATA ANOMALIES?**

**ANS:** Data anomalies are inconsistencies in the data stored in a database as a result of an operation such as update, insertion, and/or deletion.

1. **EXPLAIN HEIRARCHICAL DATA MODEL?**

**ANS:** It shows the relationship between smaller and larger components of a database or data file. This is a type of model where data is represented in a tree-like structure, it was one of the earliest data models. In this tree, parent could be associated to multiple child nodes, but a child node have only one parent.

1. **EXPLAIN RELATIONAL DATABASE MODEL?**

**ANS:** The Relational Database model is managed and accessed by a software called a relational database management system. It is comprised of rows and columns that use SQL as a query language for maintaining and querying the databases. The model arranges the data into tables with respect to rows and columns with a distinct key to find every row. Rows are defined as tuples or records. Columns are meant as attributes. Usually, each relation or table describes a single type of entity like a product or customer. If the table describes the product, the row holds the name of the product and the column holds the behavior or description of the product.

1. **EXPLAIN ENTITY RELATIONSHIP MODEL?**

**ANS:** Entity-Relationship Model is the diagrammatical representation of a database structure which is called an**ER diagram**. The ER diagram is considered a blueprint of a database which has mainly two components i.e. relationship set and entity set. The ER diagram is used to represent the relationship that exists among the entity set.

1. **WHAT IS A TABLE AND EXPLAIN IT’S CHARACTERISTICS?**

**ANS**: A table is an arrangement of information or data, typically in rows and columns, or possibly in a more complex structure. Tables are widely used in communication, research, and data analysis. ***CHARACTERISTICS;***

* A table is perceived as a two-dimensional structure composed of rows and columns.
* Each table row (also known as tuple) represents a single instance of the entity within the entity set.
* Each column represents an attribute and each column has distinct name.
* Each row/column intersection represents a data value.
* Each table must have an attribute or combination of attributes that uniquely identifies each row.
* All values in a column must confirm to the same data format.
* Each column has specific range of values known as the domain of the attribute.

1. **EXPLAIN DIFFERENT TYPES OF KEYS AVAILABLE IN RELATIONAL MODEL?**

**ANS**: A key is a combination of one or more columns that is used to identify particular rows in a relation, they allow you to find the relationship between two tables The underlisted are types of keys available in a relation model

* COMPOSITE KEY: is a candidate key that consists of two or more column(attribute(s)) that uniquely helps to identify rows in a table.
* CANDIDATE KEY: is a single key or multiple keys that uniquely identify rows in a table. They are also super Keys with no repeated values.
* SUPER KEY: this is a group of single or multiple keys that identifies rows in a table.
* PRIMARY KEY: is a column or group of column that uniquely identify every row in that table.
* FOREIGN KEY: is a column that creates a relationship between two tables. Their aim is to maintain data integrity and allow navigation between two different instances of an entity.
* COMPOUND KEY: has two or more attributes that allows you to uniquely recognize a specific record.
* SURROGATE KEY: an artificial key which uniquely identify each record in a table. They are unique because they are created when you don’t have any natural primary key. They are hidden in forms and report. Their values are meaningless to users.

1. **EXPLAIN DATABASE INTEGRITY RULES?**

**ANS:** Database Integrity rules are imperative to good database design and The purpose of the below listed constraints is to create database integrity, which means that the data in our database will be useful and meaningful data. The constraints are listed below;

* ENTITY INTEGRITY CONSTRAINT: The requirement that in order to function properly, the primary key must have unique data values inserted into every row of the table. this explains that no component of a primary key should be NULL. All entities should be distinguishable i. e. they must have a unique identification of some kind.
* REFERENTIAL INTEGRITY CONSTRAINT: This type of integrity limits the values of the foreign key to those already existing as primary key values in the corresponding relation. This helps to maintain consistency among the rows of the two relations.
* DOMAIN INTEGRITY CONSTRAINT: The requirement that all of the values in a column are of the same kind. The term Domain means a grouping of data that meets a specific type definition.

1. **EXPLAIN DIFFERENT TYPES OF JOINS?**

ANS: Joins in SQL can be of four different types, subjected to the outcome expected by combining records from two or more tables by making use of the common columns from tables involved in the Join function. **Inner Join** is used to get records with same values In both tables, **Left Join** is used to get all records from Left side table and only matching values from right table and **Right Join** is used to get all records from Right table and only matching records in left table. **Full Join** is used to get all the records from both tables irrespective of matching records.

1. **WHAT DO YOU UNDERSTAND BY FUNCTIONAL DEPENDENCY?**

**ANS:** a type of constraint that occurs when a column or more determines that of another column in a relation. This helps to maintain the quality of data in the database. They are denoted by the “ 🡪 ”. they are different type of functional dependency: Multivalued dependency, Transitive dependency, Partial dependency.

1. **LIST THE CHARACTERISTICS OF A RELATION?**

ANS: As we know we have several relations in a database. Now, each relation must be uniquely identified. If it is not so, then it would create a lot of confusion. The characteristics are listed below;

* Rows must contain data about an entity
* Column contain data about attributes of the entity
* All entries in a column are of the same kind
* Each column has a unique name
* Cells of the table hold a single value
* The orders of the column and row are unimportant
* No two rows may be identical.

1. **Explain the Union and Decomposition Rule?**

**ANS:** **UNION RULE** - This rule is also known as **additive rule**. In the **union rule**, if X determines Y and X determines Z, then X also determines both Y and Z.

**DECOMPOSITION RULE**: This rule is the reverse of Union rule and also known as **project rule**. In the **decomposition rule**, if X determines Y and Z together, then X determines Y and Z separately.