**Assignment 2**

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**Topic**: RDBMS,warehousing,OLAP,OLTP

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1.What is RDBMS?

Solution:

A database management system defines has creates and maintains a database whereas RDBMS defines as the data which is present in the database has some structure like it has tables, fields and records.

The relationships between these tables are defined by establishing keys, such as primary keys and foreign keys. RDBMS is based on the principles of relational algebra and is designed to manage and manipulate structured data.

Key characteristics of RDBMS include:

1. **Tables:** Data is organized into tables, which are similar to spreadsheets. Each table consists of rows and columns, where each row represents a record and each column represents a specific attribute or field.
2. **Relationships:** RDBMS allows the establishment of relationships between tables using keys. The primary key uniquely identifies each record in a table, while foreign keys establish links between tables.
3. **ACID Properties:** RDBMS adheres to the ACID (Atomicity, Consistency, Isolation, Durability) properties, which ensure the reliability and integrity of transactions in a database.

2.What is data ware housing?

Solution:

* Data warehousing is the efficient way to analyse the data

Definition:

Data warehouse is subject oriented,integrated,time variant and non-volatile collection of data in support of management’s system.

Features of Data Ware house:-

1.Subject Oriented

* Subject-oriented Data are organized according to the subject instead of application.
* It mainly focus on two things

1.modeling the data

2.analysing the data

2.Integrated

* It integrates different types of data sources like we have relational databases,flat files,online transaction records etc

3.Time-varient

* It provides the data information for the past five years like for example we take amazon website it collects data for our orders for past few years and give that type of suggestions

4.Non volatile

* Once the data is entered into the data warehouse then it is in static form only
* There are no updates or else we cannot delete the data once the data is entered to data ware house.

3.What is OLTP and OLAP?

Solution:

OLTP :

* Online transaction processing(OLTP) is a methodology to provide end user with access of large amount of data
* It works in an intuitive and rapid manner to assist with deductions based on investigative reasoning.
* OLTP refers to a class of systems that facilitate and manage transaction-oriented applications, typically for data entry and retrieval transaction processing.

Benfits of OLTP:

* It is faster and accurate
* It maintains data integrity and provide fast query processing

Drawbacks:

* It requires updates instantly
* The data is not suitable for analysis
* To perform simple transaction we need to write query by using joins

OLAP:

* It is an approach to answer multi-dimensional analytical queries
* OLAP cube is array of data that is understood in terms of its 0 to n dimensions which enables the users to gain insights in fast and efficient manner and also very easy to use
* OLAP server receives the data from data ware house by which representing the data in a user understandable way
* OLAP server mainly classifies into two types

1.ROLAP

2.MOLAP

* ROLAP performs dynamic multi-dimensional analysis of data stored in relational data base
* MOLAP helps the user to slice and dice the data and provide multi-dimensional analysis by putting data into cube structures

In summary, OLTP systems are geared towards efficient transaction processing, ensuring the integrity and consistency of data in day-to-day operations. OLAP systems, on the other hand, are designed for complex analysis and reporting, providing a platform for decision-makers to gain insights from large datasets. In some cases, organizations use both OLTP and OLAP systems in tandem to meet their operational and analytical needs.

4.What is SQL and its feauters?

Solution:

SQL, or Structured Query Language, is a standard programming language designed for managing and manipulating relational databases. SQL is used to interact with database systems, such as creating and modifying database schemas, inserting, updating, and deleting data, and retrieving data from databases.

Features of Sql:

Data Definition Language (DDL):

It is for defining the database structure and controlling access to data.

* CREATE: Used to create database objects like tables, indexes, and views.
* ALTER: Used to modify the structure of existing database objects.
* DROP: Used to delete database objects.

Data Manipulation Language (DML):

It is for retrieving and do crud operations in database.

* INSERT: Used to add new records (rows) to a table.
* UPDATE: Used to modify existing records in a table.
* DELETE: Used to remove records from a table.
* SELECT: Used to retrieve the data from a table

Data Control Language (DCL):

It concerns with rights ,permissions and other controls of the database system.

* GRANT: Provides specific privileges to database users.
* REVOKE: Removes specific privileges from database users.