WORKSHEET-3

SQL

(Correct answers are marked in green)

Q1 and Q2 have one or more correct answer. Choose all the correct option to answer your question.

1. Which of the following is/are DDL commands in SQL?

A) Create
B) Update
C) Delete
D) ALTER

2. Which of the following is/are DML commands in SQL?

A) Update
B) Delete
C) Select
D) Drop

Q3 to Q10 have only one correct answer. Choose the correct option to answer your question.

3. Full form of SQL is:

A) Strut querying language
B) Structured Query Language
C) Simple Query Language
D) None of them

4. Full form of DDL is:

A) Descriptive Designed Language
B) Data Definition Language
C) Data Descriptive Language
D) None of the above.

5. DML is:

A) Data Manipulation Language
B) Data Management Language
C) Data Modelling Language
D) None of these

6. Which of the following statements can be used to create a table with column B int type and C float type?

A) Table A (B int, C float)
B) Create A (B int, C float)
C) Create Table A (B int,C float)
D) All of them

7. Which of the following statements can be used to add a column D (float type) to the table A created above?

A) Table A (D float)
B) Alter Table A ADD COLUMN D float
C) Table A (B int, C float, D float)
D) None of them

8. Which of the following statements can be used to drop the column added in the above question?

A) Table A Drop D B) Alter Table A Drop Column D
C) Delete D from A D) None of them

9. Which of the following statements can be used to change the data type (from float to int) of the column D of table A created in above questions?

A) Table A (D float int) B) Alter Table A Alter Column D int
C) Alter Table A D float int D) Alter table A Column D float to int

10. Suppose we want to make Column B of Table A as primary key of the table. By which of the following statements we can do it?

A) Alter Table A Add Constraint Primary Key B B) Alter table (B primary key)
C) Alter Table A Add Primary key B D) None of them

Q11 to Q15 are subjective answer type questions, Answer them briefly.

11. What is data-warehouse?

Ans: A data warehouse is a large collection of data used to help an organization make decisions. Data warehousing is the process of constructing and using a data warehouse. A data warehouse is constructed by integrating data from multiple heterogeneous sources that support analytical reporting, structured and/or ad hoc queries, and decision making. Data warehousing involves data cleaning, data integration, and data consolidations.

It is a blend of technologies and components which aids the strategic use of data. It is electronic storage of a large amount of information by a business which is designed for query and analysis instead of transaction processing. It is a process of transforming data into information and making it available to users in a timely manner to make a difference.

A Data Warehouse works as a central repository where information arrives from one or more data sources. Data flows into a data warehouse from the transactional system and other relational databases.

Data may be:

1. Structured
2. Semi-structured
3. Unstructured data

The data is processed, transformed, and ingested so that users can access the processed data in the Data Warehouse through Business Intelligence tools, SQL clients, and spreadsheets. A data warehouse merges information coming from different sources into one comprehensive database.

By merging all of this information in one place, an organization can analyse its customers more holistically. This helps to ensure that it has considered all the information available. Data warehousing makes data mining possible. Data mining is looking for patterns in the data that may lead to higher sales and profits.

Types of Data Warehouse

1. Enterprise Data Warehouse (EDW):

2. Operational Data Store:

3. Data Mart:

12. What is the difference between OLTP VS OLAP?

Ans: OLAP stands for Online Analytical Processing, it consists of a type of software tools that are used for data analysis for business decisions. OLAP provides an environment to get insights from the database retrieved from multiple database systems at one time. Example- Any type of Data warehouse system is an OLAP system. Uses of OLAP are as follows: 1. Netflix movie recommendation

OLTP stands for Online transaction processing, it supports transaction-oriented applications in a 3-tier architecture. OLTP administers day to day transaction of an organization. Example: Online banking, Online airline ticket booking.

Key Differences:

.OLAP creates a single platform for all type of business analysis needs which includes planning, budgeting, forecasting, and analysis while OLTP is useful to administer day to day transactions of an organization.

.OLAP is characterized by a large volume of data while OLTP is characterized by large numbers of short online transactions.

.In OLAP, data warehouse is created uniquely so that it can integrate different data sources for building a consolidated database whereas OLTP uses traditional DBMS.

13. What are the various characteristics of data-warehouse?

Ans: A data warehouse is a subject-oriented, integrated, time-variant and non-volatile collection of data in support of management's decision making process.

So the Characteristics of data warehouse are:

.Subject-Oriented: A data warehouse can be used to analyse a particular subject area. For example, "sales" can be a particular subject.

.Integrated: A data warehouse integrates data from multiple data sources. For example, source A and source B may have different ways of identifying a product, but in a data warehouse, there will be only a single way of identifying a product.

.Time-Variant: Historical data is kept in a data warehouse. For example, one can retrieve data from 3 months, 6 months, 12 months, or even older data from a data warehouse. This contrasts with a transactions system, where often only the most recent data is kept. For example, a transaction system may hold the most recent address of a customer, where a data warehouse can hold all addresses associated with a customer.

.Non-volatile: Once data is in the data warehouse, it will not change. So, historical data in a data warehouse should never be altered.

14. What is Star-Schema?

Ans. Star schema is the fundamental schema among the data mart schema and it is simplest. This schema is widely used to develop or build a data warehouse and dimensional data marts. It includes one or more fact tables indexing any number of dimensional tables. The star schema is a necessary case of the snowflake schema. It is also efficient for handling basic queries.
It is said to be star as its physical model resembles to the star shape having a fact table at its center and the dimension tables at its peripheral representing the star's points.

Advantages of Star Schema –

1. **Simpler Queries:**
   Join logic of star schema is quite cinch in compare to other join logic which are needed to fetch data from a transactional schema that is highly normalized.
2. **Simplified Business Reporting Logic:**
   In compared to a transactional schema that is highly normalized, the star schema makes simpler common business reporting logic, such as as-of reporting and period-over-period.
3. **Feeding Cubes:**
   Star schema is widely used by all OLAP systems to design OLAP cubes efficiently. In fact, major OLAP systems deliver a ROLAP mode of operation which can use a star schema as a source without designing a cube structure.

Disadvantages of Star Schema –

1. Data integrity is not enforced well since in a highly de-normalized schema state.
2. Not flexible in terms if analytical needs as a normalized data model.
3. Star schemas don't reinforce many-to-many relationships within business entities – at least not frequently.

15. What do you mean by SETL?

Ans. SETL (SET Language) is a very high-level programming language based on the mathematical theory of sets. It was originally developed by (Jack) Jacob T. Schwartz in the late 1960s.

SETL provides two basic aggregate data types: *unordered sets*, and *sequences* (the latter also called *tuples*). The elements of sets and tuples can be of any arbitrary type, including sets and tuples themselves. *Maps* are provided as sets of *pairs* (i.e., tuples of length 2) and can have arbitrary domain and range types. Primitive operations in SETL include set membership, union, intersection, and power set construction, among others.

SETL provides quantified Boolean expressions constructed using the universal and existential quantifiers of first-order predicate logic.

SETL provides several iterators to produce a variety of loops over aggregate data structures.