**WORKSHEET**

**SQL**

**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 Modeling 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 Warehousing** (DW) is process for collecting and managing data from varied sources to provide meaningful business insights. A Data warehouse is typically used to connect and analyze business data from heterogeneous sources. The data warehouse is the core of the BI system which is built for data analysis and reporting. 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.The decision support database (Data Warehouse) is maintained separately from the organization's operational database. However, the data warehouse is not a product but an environment. It is an architectural construct of an information system which provides users with current and historical decision support information which is difficult to access or present in the traditional operational data store.

12. What is the difference between OLTP VS OLAP?

Ans.

* Online Analytical Processing (OLAP) is a category of software tools that analyze data stored in a database whereas Online transaction processing (OLTP) supports transaction-oriented applications in a 3-tier architecture.
* 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.

| **Parameters** | **OLTP** | **OLAP** |
| --- | --- | --- |
| **Process** | It is an online transactional system. It manages database modification. | OLAP is an online analysis and data retrieving process. |
| **Characteristic** | It is characterized by large numbers of short online transactions. | It is characterized by a large volume of data. |
| **Functionality** | OLTP is an online database modifying system. | OLAP is an online database query management system. |
| **Method** | OLTP uses traditional DBMS. | OLAP uses the data warehouse. |
| **Query** | Insert, Update, and Delete information from the database. | Mostly select operations |
| **Table** | Tables in OLTP database are normalized. | Tables in OLAP database are not normalized. |
| **Source** | OLTP and its transactions are the sources of data. | Different OLTP databases become the source of data for OLAP. |
| **Data Integrity** | OLTP database must maintain data integrity constraint. | OLAP database does not get frequently modified. Hence, data integrity is not an issue. |
| **Response time** | It's response time is in millisecond. | Response time in seconds to minutes. |
| **Data quality** | The data in the OLTP database is always detailed and organized. | The data in OLAP process might not be organized. |
| **Usefulness** | It helps to control and run fundamental business tasks. | It helps with planning, problem-solving, and decision support. |
| **Operation** | Allow read/write operations. | Only read and rarely write. |
| **Audience** | It is a market orientated process. | It is a customer orientated process. |
| **Query Type** | Queries in this process are standardized and simple. | Complex queries involving aggregations. |
| **Back-up** | Complete backup of the data combined with incremental backups. | OLAP only need a backup from time to time. Backup is not important compared to OLTP |
| **Design** | DB design is application oriented. Example: Database design changes with industry like Retail, Airline, Banking, etc. | DB design is subject oriented. Example: Database design changes with subjects like sales, marketing, purchasing, etc. |
| **User type** | It is used by Data critical users like clerk, DBA & Data Base professionals. | Used by Data knowledge users like workers, managers, and CEO. |
| **Purpose** | Designed for real time business operations. | Designed for analysis of business measures by category and attributes. |
| **Performance metric** | Transaction throughput is the performance metric | Query throughput is the performance metric. |
| **Number of users** | This kind of Database users allows thousands of users. | This kind of [Database](https://www.guru99.com/introduction-to-database-sql.html) allows only hundreds of users. |
| **Productivity** | It helps to Increase user's self-service and productivity | Help to Increase productivity of the business analysts. |
| **Challenge** | Data Warehouses historically have been a development project which may prove costly to build. | An OLAP cube is not an open SQL server data warehouse. Therefore, technical knowledge and experience is essential to manage the OLAP server. |
| **Process** | It provides fast result for daily used data. | It ensures that response to the query is quicker consistently. |
| **Characteristic** | It is easy to create and maintain. | It lets the user create a view with the help of a spreadsheet. |
| **Style** | OLTP is designed to have fast response time, low data redundancy and is normalized. | A data warehouse is created uniquely so that it can integrate different data sources for building a consolidated database |

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

Ans.

1. 1. Subject oriented

A data warehouse is subject-oriented, as it provides information on a topic rather than the ongoing operations of organizations. Such issues may be inventory, promotion, storage, etc. Never does a data warehouse concentrate on the current processes. Instead, it emphasized modeling and analyzing decision-making data. It also provides a simple and succinct description of the particular subject by excluding details that would not be useful in helping the decision process.

1. 2. Integrated

Integration in Data Warehouse means establishing a standard unit of measurement from the different databases for all the similar data. The data must also get stored in a simple and universally acceptable manner within the Data Warehouse. Through combining data from various sources such as a mainframe, relational databases, flat files, etc., a data warehouse is created. It must also keep the naming conventions, format, and coding consistent. Such an application assists in robust data analysis. Consistency must be maintained in naming conventions, measurements of characteristics, specification of encoding, etc.

1. 3. Time-variant

Compared to operating systems, the time horizon for the data warehouse is quite extensive. The data collected in a data warehouse is acknowledged over a given period and provides historical information. It contains a temporal element, either explicitly or implicitly.

One such location in the record key system where Data Warehouse data shows time variation is. Each primary key contained with the DW should have an element of time either implicitly or explicitly. Just like the day, the month of the week, etc.

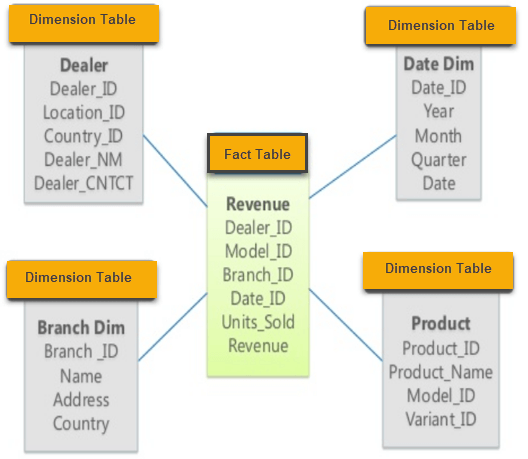
1. 4. Non-volatile

Also, the data warehouse is non-volatile, meaning that prior data will not be erased when new data are entered into it. Data is read-only, only updated regularly. It also assists in analyzing historical data and in understanding what and when it happened. The transaction process, recovery, and competitiveness control mechanisms are not required. In the Data Warehouse environment, activities such as deleting, updating, and inserting that are performed in an operational application environment are omitted.

14. What is Star-Schema??

Ans. **Star Schema** in data warehouse, in which the center of the star can have one fact table and a number of associated dimension tables. It is known as star schema as its structure resembles a star. The Star Schema data model is the simplest type of Data Warehouse schema. It is also known as Star Join Schema and is optimized for querying large data sets.

In the following Star Schema example, the fact table is at the center which contains keys to every dimension table like Dealer\_ID, Model ID, Date\_ID, Product\_ID, Branch\_ID & other attributes like Units sold and revenue.

[](https://www.guru99.com/images/1/022218_0758_StarandSnow1.png)Example of Star Schema Diagram

**Characteristics of Star Schema:**

* Every dimension in a star schema is represented with the only one-dimension table.
* The dimension table should contain the set of attributes.
* The dimension table is joined to the fact table using a foreign key
* The dimension table are not joined to each other
* Fact table would contain key and measure
* The Star schema is easy to understand and provides optimal disk usage.
* The dimension tables are not normalized. For instance, in the above figure, Country\_ID does not have Country lookup table as an OLTP design would have.
* The schema is widely supported by BI Tools

15. What do you mean by SETL?

Ans. SETL is a [high-level programming language](https://www.webopedia.com/definitions/high-level-language/) that’s based on the mathematical theory of sets. It was developed in the early 1970’s by mathematician Professor J. Schwartz. SETL is an interpreted language with a [syntax](https://www.webopedia.com/definitions/syntax/) that is resembles [C](https://www.webopedia.com/definitions/c-language/) and in many cases similar to [Perl](https://www.webopedia.com/definitions/perl/). In SETL every statement is terminated by a semicolon. [Variable](https://www.webopedia.com/definitions/variable/) names are case-insensitive and are automatically determined by their last assignment.

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](https://en.wikipedia.org/wiki/Universal_quantifier) and [existential quantifiers](https://en.wikipedia.org/wiki/Existential_quantifier) of [first-order predicate logic](https://en.wikipedia.org/wiki/First-order_predicate_logic).

SETL provides several [iterators](https://en.wikipedia.org/wiki/Iterator) to produce a variety of loops over aggregate data structures.