SQL fundamentals 01, Volume 01

Chapter: introduction

01. What is data?

Ans: Any pieces of information are called data.

02. What is database?

Ans: A database is an organized collection of information.

03. Write down the Types of database?

Ans: There are four main types of databases-

i. Hierarchical database
ii. Network database
iii. Relational database
iv. Object relational database

04. What is DBMS?

Ans: A DBMS is a program that stores, retrieves, and modifies data in database on request.

05. What is relational database?

Ans: A relational database is a collection of relations or two-dimensional tables.

06. Write the components of the relational model.

Ans:

- Collections of objects or relations that store the data
- A set of operators that can act on the relations to produce other relations
- Data integrity for accuracy and consistency.

07. Write down the key components of ER models?

Ans: There are three basic components of ER Models-

I. **Entity**
II. **Attribute**
III. **Relationship**

08. Write down the statements of DML.

Ans:

I. **SELECT**
II. **INSERT**
III. **UPDATE**
IV. **DELETE**
V. **MERGE**

09. Write down the statements for DDL

Ans:

I. **CREATE**
II. **ALTER**
III. **DROP**
IV. **RENAME**
V. **TRUNCATE**
VI. **COMMENT**

10. Write down the statements for DCL

Ans:

I. **GRANT**
II. **REVOKE**

11. Write down the statements for Transaction control

Ans:

I. **COMMIT**
II. **ROLLBACK**
III. **SAVEPOINT**

Chapter:01

01. Write the capabilities of SQL SELECT Statements

Ans:

I. **Projection.**
II. **Selection**
III. **Joining.**

02. Write the rules and guidelines for SQL statements.

Ans: There are some simple rules and guidelines to construct a valid SQL statement-

- SQL statements are not case sensitive (unless indicated).
- SQL statements can be entered on one or many lines.
- Keywords cannot be split across lines or abbreviated.
- Clauses are usually placed on separate lines for readability and ease of editing.
- Indents should be used to make code more readable

- Keywords typically are entered in uppercase; all other words, such as table names and columns, are entered in lowercase.

03. Write the rules of precedence for arithmetic operators.

Ans: Rules of precedence for arithmetic operators-

- Multiplication and division occur before addition and subtraction.
- Operators of the same priority are evaluated from left to right.
- Parentheses are used to override the default precedence or to clarify the statement.

04. What is Null values ?

Ans: A null is a value that is unavailable, unassigned, unknown or inapplicable. A null is not the same as a zero or space.

05. What is SQL?

Ans: SQL is a command language for communication with the Oracle server from any tool or application.

06. Define Column alias

Ans: A column alias renames a column heading, is useful with calculations and immediately follows the column name.

07. How we use a column alias?

Ans:

- Specify the alias after the column in the SELECT list using a space as a separator.
- We can use the optional AS keyword between the column name and alias
- Requires double quotation marks if it contains spaces or special characters or if it is case sensitive.

Chapter: 02

01. Write about elements of WHERE clause.

Ans: The WHERE clause can compare values in columns, literal values, arithmetic expressions, or functions. It consists of three elements-

- Column name
- Comparison condition
- Column name, constant, or list of values.

Chapter: 03

01. Write about SQL Functions.

Ans: Functions are a very powerful feature of SQL. They can be used to do the following-

- Perform calculations on data
- Modify individual data items
- Manipulate output for groups of rows
- Format dates and numbers for display
- Convert column data types

02. Write the types of functions

Ans: There are two types of functions-

- **Single –row functions**
- **Multiple-row functions**

03. Write about Single-Row Functions

Ans: Single-row functions operate on single rows only and return one result per row.

04. Write the types of Single-row functions

Ans: There are different types of single-row functions-

- **Character**
- **Number**
- **Date**
- **Conversion**
- **General**

05. Write about Multiple-row functions (Group functions)

Ans: Multiple-row functions can manipulate groups of rows to give one result per group of rows. These functions are also known as group functions.

06. Write the classifications of General functions.

Ans:

- **NVL**
- **NVL2**
- **NULLIF**
- **COALESCE**
- **CASE**
- **DECODE**

07. Write about single-row character functions.

Ans: Single-row character functions accept character data as input and return both character and numeric values. It can be divided into following-

- **Case-manipulation functions**
    - **LOWER**
    - **UPPER**
    - **INITCAP**
- **Character-manipulation functions**
    - **CONCAT**
    - **SUBSTR**
    - **LENGTH**
    - **INSTR**
    - **LPAD**
    - **RPAD**
    - **REPLACE**
    - **TRIM**

08.Write about Number functions

Ans: Number functions accept numeric input and return numeric values. Some of the number functions are –

- **ROUND:** rounds the column,expression,or value to n decimal places.
- **TRUNC:** truncates the column,expression,or value to n decimal places
- **MOD:** finds the remainder of the first argument divided by the second argument

09.Write down the names of Date functions

Ans: There are many types of date functions such as

- **MONTHS_BETWEEN**
- **ADD_MONTHS**
- **NEXT_DAY**
- **LAST_DAY**
- **ROUND**
- **TRUNC**
- **SYSDATE**

10. Write the types of conversion in SQL

Ans: SQL Provides three functions to convert a value from one data type to another-

- **TO_CHAR**
- **TO_NUMBER**
- **TO_DATE**

11. What is NVL function?

Ans: The NVL function is used to convert a null value to an actual value.

12. Which functions use IF-THEN-ELSE ?

Ans: *There are two functions use IF-THEN-ELSE these are given bellow;*

- **Case**
- **Decode**

Chapter: 04

01. Define Group Functions

Ans: Group functions operate on sets of rows to give one result per group. These sets may comprise the entire table or the table split into groups.

02. Write the types of group functions.

Ans: There are many types of group functions-

- **AVG**
- **COUNT**
- **MAX**
- **MIN**
- **STDDEV**
- **SUM**
- **VARIANCE**

03. write the guidelines of Group functions

Ans:

- DISTINCT makes the function consider only nonduplicate values.
- All group functions ignore null values ; to substitute a value for null values we can use the NVL,NVL2,or COALESCE.
- The data type of the functions with an expr argument may be CHAR, VARCHAR2, NUMBER, or DATE.

04. Write the guidelines of Group by clause

Ans:

- We cannot use a column alias in the group by clause
- We must include the columns in the group by clause
- Using a where clause, we can exclude rows before dividing them into groups
- If we include a group function in a SELECT clause, we cannot select individual results as well, unless the individual column appears in the group by clause.

05. Write the guidelines of illegal queries using group functions

Ans:

- We cannot use WHERE clause to restrict groups
- We use the HAVING clause to restrict groups
- We cannot use group functions in the WHERE clause

06. When You use the HAVING clause

Ans: The Oracle server restricts groups as follows-

- Rows are grouped
- The group function is applied
- Groups matching the HAVING clause are displayed

Chapter: 05

01. Write the types of joins.

Ans: There are many types of joins in SQL-

- **Equijoins**
- **Nonequijoins**
- **Outer joins**
- **Self-joins**
- **Cross joins**
- **Natural joins**
- **Full (or two-sided) outer joins**

02. What is table alias and why we use it?

Ans: A table alias gives a table another name. we use table aliases to simplify queries and to improve performance . it speed up database access and can help to keep SQL code smaller by conserving memory.

03. Define nonequijoin.

Ans: A nonequijoin is a join condition containing something other than an equality operator.

Database Fundamentals Chap: 08 & 09

01.Write the characteristics of OLTP database model.

Ans: The primary characteristics of OLTP database are as following

- **Large user population**
- **Very high concurrency**
- **Large database size**
- **Reaction time**
- **Small transactions**
- **Granularity**
- **Manageability**
- **Service window**

02.Write the characteristics of client-server database model.

Ans: The primary characteristics of client-server database are as following

- **Small user population**
- **Low level of concurrency**
- **Database size**
- **Reaction time**
- **Small and large transactions**
- **Granularity**
- **Manageability**
- **Service window**

03. Write the steps to create a database model

Ans:

I. **Analysis**
II. **Design**
III. **Construction**
IV. **implementation**