**SQL Commands**

**Q1. What are the different Languages/categories of SQL Commands?**

Ans:- Different Languages of SQL (Structural Query Language) Commands:

1. DDL – Data Definition Language **(Create, Drop, Alter, Truncate)**
2. DQL – Data Query Language **(Select)**
3. DML – Data Manipulation Language **(Insert, Update, Delete)**
4. DCL – Data Control Language **(Grant, Revoke)**
5. TCL – Transaction Control Language **(Commit, Savepoint, Rollback)**

**Q2. What are the different SQL Datatypes?**

Ans:-

|  |  |
| --- | --- |
| Datatype | Properties |
| Numeric | These are used to store numeric values. Examples include INT, BIGINT, DECIMAL, and FLOAT. |
| Character | These are used to store character strings. Examples include CHAR, VARCHAR, and TEXT. |
| Date and Time | These are used to store date and time values. Examples include DATE TIME, and TIMESTAMP |
| Binary | These are used to store binary data, such as images or audio files. Examples include BLOB and BYTEA. |
| Boolean | This data type is used to store logical values. The only possible values are TRUE and FALSE. |
| Interval | These are used to store intervals of time. Examples include INTERVAL YEAR, INTERVAL MONTH, and INTERVAL DAY. |
| Array | These are used to store arrays of values. Examples include ARRAY and JSON. |

**Q3. DDL – Data Definition Language (Create, Drop, Alter, Truncate)?**

Ans:-

1. **CREATE TABLE** statement is used to create table in a database. If you want to create a table, you should name the table and define its column and each column's data type.

**Syntax**: CREATE TABLE <tablename> ("column1" "data type", "column2" "data type", "column3" "data type", ... ,"columnN" "data type");

**Example**:- CREATE TABLE STUDENTS (Id INT NOT NULL, Name VARCHAR (20) NOT NULL, Age INT NOT NULL, Address CHAR (25), PRIMARY KEY (Id));

1. **DROP TABLE** statement is used to delete a table definition and all data from a table. This is very important to know that once a table is deleted all the information available in the table is lost forever, so we have to be very careful when using this command.

**Syntax:-** DROP TABLE <table\_name>;

1. **ALTER TABLE** statement allows you to add, modify, and delete columns of an existing table. This statement also allows database users to add and remove various SQL constraints on the existing tables.

**Syntax:-** ALTER TABLE <table\_name> ADD (column\_Name1 column-definition, column\_Name2 column-definition, .....,column\_NameN column-definition);

**Example:-** ALTER TABLE Employee ADD (Emp\_ContactNo NUMBER(13), Emp\_EmailID VARCHAR(50));

1. **TRUNCATE TABLE** statement is used to remove all rows (complete data) from a table. It is similar to the DELETE statement with no WHERE clause.

* Truncate table is faster and uses lesser resources than DELETE TABLE command. TRUNCATE TABLE doesn't delete the structure of the table.
* The rollback process is not possible after truncate table statement. Once you truncate a table you cannot use a flashback table statement to retrieve the content of the table.

**Syntax:-** TRUNCATE TABLE <table\_name>;

**Example:**- TRUNCATE TABLE Employee;

**Q4. DQL – Data Query Language (Select)**

**Ans:- SELECT** Statement – It is used to access the records from one or more database tables and views. It also retrieves the selected data that follow the conditions we want.

**Syntax:** SELECT Column\_Name\_1, Column\_Name\_2, ....., Column\_Name\_N FROM <Table\_Name> [WHERE Condition | GROUP BY columnName] [HAVING Condition];

**Example:-** SELECT \* FROM table\_name;

SELECT \* FROM Employee\_Details WHERE Emp\_Panelty = 500;

SELECT COUNT (Car\_Name), Car\_Price FROM Cars\_Details GROUP BY Car\_Price;

SELECT SUM (Employee\_Salary), Employee\_City FROM Employee\_Having GROUP BY Employee\_City HAVING SUM(Employee\_Salary)>5000;

SELECT \* FROM Employee\_Order ORDER BY Emp\_Salary DESC;

**Q5. DML – Data Manipulation Language (Insert, Update, Delete)**

**Ans:- CRUD -** CREATE, READ / SELECT, UPDATE, DELETE commands

1. **INSERT** statement It is used to insert a single or a multiple records in a table.

**Syntax**:-INSERT INTO <table\_name> (column1, column2, column3....) VALUES (value1, value2, value3.....);

**Example**:- INSERT INTO Students (ROLL\_NO, NAME, AGE, CITY) VALUES (2, ALKA, 20, GHAZIABAD);

* A single query to insert multiple records in the student table

**Example:-** INSERT INTO ItemTbl (ID, Item\_Name, Item\_Quantity, Item\_Price, Purchase\_Date) VALUES (1, "Soap", 5, 200, "2021-07-08"), (2, "Toothpaste", 2, 80, "2021-07-10"), (3, "Pen", 10, 50, "2021-07-12"));

1. **UPDATE** statement is used to change the data of the records held by tables. Which rows is to be update; it is decided by a condition. To specify condition, we use WHERE clause

**Syntax:-** UPDATE <table\_name> SET [column\_name1= value1,... column\_nameN = valueN] [WHERE condition]

**Example:-** UPDATE students SET User\_Name = 'beinghuman' WHERE Student\_Id = '3';

UPDATE students SET User\_Name = 'beserious', First\_Name = 'Johnny' WHERE Student\_Id = '3';

1. **DELETE** statement is used to delete rows from a table. Generally DELETE statement removes one or more records from a table.

**Syntax:-** DELETE FROM <table\_name> [WHERE condition];

**Example:-** DELETE FROM Employee;

**Q6. DCL – Data Control Language (Grant, Revoke)**

Ans:-

**Q7. TCL – Transaction Control Language (Commit, Rollback)**

Ans:- All the commands that are executed consecutively, treated as a single unit of work and termed as a transaction. To start our transaction by using the BEGIN / START TRANSACTION command.

**Syntax**: START TRANSACTION;

* **COMMIT:** If you want to save all the commands which are executed in a transaction, then just after completing the transaction, you have to execute the commit command. This command will save all the commands which are executed on a table.

**Syntax**: COMMIT;

* **ROLLBACK:** The rollback command is used to get back to the previous permanent status of the table, which is saved by the commit command.
* **Syntax**: ROLLBACK;

**Q8. Difference between TRUNCATE and DELETE and DROP?**

Ans:-

|  |  |  |
| --- | --- | --- |
| **DELETE** | **TRUNCATE** | **DROP** |
| It is a Data Manipulation Language Command (DML) | It is a Data Definition Language Command (DDL) | It is a Data Definition Language Command (DDL) |
| It is used to delete one or more tuples/rows of a table. | It is used to delete all the rows of a table in one go. But we cannot delete single row using truncate. | It is used to drop the whole table. we can drop (delete) the whole structure in one go |
| If we want to delete the row of the table as per the condition then we use the WHERE clause, | With the help of the “TRUNCATE” command, we can’t delete the single row as here WHERE clause is not used. | By using this command the existence of the whole table is finished or say lost. |
| Here we can use the “ROLLBACK” command to restore the tuple because it does not auto-commit. | Here we can’t restore the tuples of the table by using the “ROLLBACK” command. | Here we can’t restore the table by using the “ROLLBACK” command because it auto commits. |

**Q9. What are the different Aggregate Functions?**

Ans:- An SQL aggregate function calculates on a set of values and returns a single value.

The following are the commonly used SQL aggregate functions:

1. **AVG()**: This function will return the average of all values present in a column. Returns the average of set.

**Syntax**: SELECT AVG(column\_name) FROM table\_name WHERE condition;

**Example**: SELECT AVG(Price) FROM sales;

SELECT AVG(Price) FROM sales WHERE Product\_name = 'Mobile';

1. **COUNT():** This function returns the no. of records (rows) in a table. Returns the number of items in a set.

**Syntax:** SELECT COUNT(column\_name) FROM table\_name WHERE condition;

**Example:** select COUNT(\*) FROM Student;

select COUNT(\*) FROM Student WHERE Department = 'CSE';

1. **MAX():** The MAX function in SQL is used to return the highest value in a column for a group of rows that satisfy a given condition in a table. Returns the maximum value in set.

**Syntax**: SELECT MAX(column\_name) FROM table\_name WHERE condition;

**Example**: select MAX(salary) FROM employees;

SELECT MIN(salary) FROM employees WHERE department = 'R&D';

1. **MIN()**: This function produces the lowest value in a column for a group of rows that satisfy a given criterion. Returns the minimum value in a set.

**Syntax**: SELECT MIN(column\_name) FROM table\_name WHERE condition;

**Example**: SELECT MIN(salary) FROM employees;

SELECT MIN(salary) FROM employees WHERE department = 'R&D';

1. **SUM()**: This function returns the sum of all values of a column in a table. Returns the sum of all or distinct values in a set

**Syntax**: SELECT SUM(column\_name) FROM table\_name WHERE condition;

**Example**: select SUM(Price) FROM sales;

select SUM(price) FROM sales WHERE Product\_name = 'Mobile';

* You can use aggregate functions as expressions only in the following:

**SELECT** statement, either a subquery or an outer query.

A **HAVING** clause

**Q10. What are different SQL Clauses?**

Ans:- WHERE, GROUP BY, HAVING, ORDER BY

1. **WHERE Clause:** To select specific rows from a table, we use a WHERE clause in the SELECT, UPDATE, DELETE statement. The WHERE clause appears immediately after the FROM clause. The WHERE clause contains one or more logical expressions that evaluate each row in the table. If a row causes the condition to evaluate to FALSE or NULL, the row will not be returned.

**Example: S**elect \* FROM Student WHERE Department = 'CSE';

1. **GROUP BY:**
2. **HAVING Clause:**
3. **ORDER BY:**

**Q11. What are the different Constraints in SQL?**

Ans:- PRIMARY KEY, FOREIGN KEY, UNIQUE, NOT NULL

**Q12. Different Operators in SQL:**

Ans:-

1. Comparison Operator: =, <>, <, <=, >, >=, !=
2. Logical Operator: AND, OR, NOT, IS NULL, LIKE, BETWEEN, IN, EXISTS
3. SET Operator: UNION, UNION ALL, INTERSECT, MINUS
4. DISTINCT

**Q13. What are different Joins in SQL?**

Ans:- INNER JOIN, OUTER JOIN, LEFT JOIN, RIGHT JOIN, CROSS JOIN, FULL JOIN

**Q14. What is mean by ACID property?**

Ans:- ACID stands for Atomicity, Consistency, Isolation and Durability