**Familiarization of Aggregate functions, group by, Having & Order by Clause**

**Aim:** To familiarize various aggregate functions, group by, having & order by clause

**Description**

Aggregate functions return a single value, using values in a table column. Aggregate functions perform a variety of actions such as counting all the rows in a table, averaging a column's data, and summing numeric data. Aggregates can also search a table to find the highest "MAX" or lowest "MIN" values in a column.

Following is the list of all useful SQL aggregate functions −

* [SQL COUNT Function](https://www.tutorialspoint.com/sql/sql-count-function.htm) - The SQL COUNT aggregate function is used to count the number of rows in a database table.
* [SQL MAX Function](https://www.tutorialspoint.com/sql/sql-max-function.htm) - The SQL MAX aggregate function allows us to select the highest (maximum) value for a certain column.
* [SQL MIN Function](https://www.tutorialspoint.com/sql/sql-min-function.htm) - The SQL MIN aggregate function allows us to select the lowest (minimum) value for a certain column.
* [SQL AVG Function](https://www.tutorialspoint.com/sql/sql-avg-function.htm) - The SQL AVG aggregate function selects the average value for certain table column.
* [SQL SUM Function](https://www.tutorialspoint.com/sql/sql-sum-function.htm) - The SQL SUM aggregate function allows selecting the total for a numeric column.

**Use of DISTINCT, ALL keywords with Aggregate functions**

By specifying DISTINCT keyword with the input parameter, group by function considers only the unique value of the column for aggregation. By specifying ALL keyword with the input parameter, group by function considers all the values of the column for aggregation, including nulls and duplicates. ALL is the default specification.

**GROUP BY, ORDER BY AND HAVING CLAUSES**

The SQL **GROUP BY** clause is used in collaboration with the SELECT statement to arrange identical data into groups. This GROUP BY clause follows the WHERE clause in a SELECT statement and precedes the ORDER BY clause.

SELECT column1, column2

FROM table\_name

WHERE [ conditions ]

GROUP BY column1, column2

ORDER BY column1, column2

The SQL **ORDER BY** clause is used to sort the data in ascending or descending order, based on one or more columns. Some databases sort the query results in an ascending order by default.

SELECT column-list

FROM table\_name

[WHERE condition]

[ORDER BY column1, column2, .. columnN] [ASC | DESC];

The **HAVING Clause** enables you to specify conditions that filter which group results appear in the results.

The WHERE clause places conditions on the selected columns, whereas the HAVING clause places conditions on groups created by the GROUP BY clause.

SELECT

FROM

WHERE

GROUP BY

HAVING

ORDER BY

The HAVING clause must follow the GROUP BY clause in a query and must also precede the ORDER BY clause if used.