**Group By Clause**

* It is used to arrange similar items into set of logical groups.
* It will reduce number of rows in each group.
* It is used in select statement.
* Syntax

SELECT columnname from tablename group by columnname;

Example#1

Write a query to display number of employee in each department from employee table by using group by clause.

SELECT department, count(\*) FROM employee GROUP BY department;

Example#2

Write a query to display each department’s minimum, maximum and average salary from employee table by using group by clause.

SELECT department, max(salary), min(salary), avg(salary) FROM employee GROUP BY department;

Rule#1

* We can use group by clause without using group by function.
* Example:

SELECT department FROM employee GROUP BY department;

Rule#2

* All non group function column specified after select then those all column must be specified after group by clause otherwise we will get error saying not a group by expression.
* Example

SELECT name,department,salary FROM employee GROUP BY department;

SELECT name,department FROM employee GROUP BY department, name;

**How group by clause works**

* Step1:
  + Select specified column from group by clause
  + It returns similar data items into set of group from that column and reduces number of rows.
  + Creates result set table and store these data
* Step2:
  + Execute select statement. It goes to result set table and fetch columns.

Note

* When we are trying to display group function along with another column then we will get error.

SELECT sum(salary) FROM employee;

SELECT department, sum(salary) FROM employee;

* We can use group by clause to overcome this.

SELECT department, sum(salary) FROM employee group by department;

Assignment#1

Write a query to display those departments having more than 3 employees from employee table by using group by clause.

SELECT department, count(\*) FROM employee GROUP BY department HAVING count(\*)>1;

**Having**

* We are not allowed to use where clause after group by clause. In this case we can use **having** clause.
* If we want to restrict rows in a table then we are using **where** clause.
* If we want to restrict group after group by clause we can use **having** clause.
* Generally we are not allowed to use group function in where clause where as we can use also use group function in having clause.

Example

Write a query to display those department sums of salary having more than 10000 from employee table using group by clause.

SELECT department, sum(salary) FROM employee GROUP BY department HAVING sum(salary) >= 72000;

SELECT department, sum(salary) FROM employee GROUP BY department HAVING department = 'hr';

SELECT department, sum(salary) as sal FROM employee GROUP BY department HAVING sal>60000;

Example

Write a query to display year and number of employee joining for year in which more than 1 employee was hired from employee table by using group by clause.

SELECT YEAR(hire\_date), count(\*) FROM employee GROUP BY YEAR(hire\_date) HAVING count(\*)>1;

Example

Write a query to display sum of salary of those department having more than 2 employee

SELECT department, count(\*), sum(salary) FROM employee GROUP BY department HAVING count(\*)>2;

**Order by Clause**

* Order by clause is used to sorting rows either in ascending or descending order.
* We will use ASC for ascending order and DESC for descending order.
* By default order by clause having ascending order.
* Syntax

SELECT \* FROM tablename ORDER BY columnname [ASC/DESC]

Example

SELECT \* FROM employee ORDER BY employee\_id;

SELECT \* FROM employee ORDER BY employee\_id ASC;

SELECT \* FROM employee ORDER BY employee\_id DESC;

SELECT salary FROM employee;

SELECT salary FROM employee ORDER BY salary;

SELECT salary FROM employee ORDER BY salary DESC;

SELECT \* FROM employee ORDER BY salary DESC;

Rule#1

* In order by clause we can use alias name or expression.
* Example:

SELECT name, salary, salary\*12 'ann\_salary' FROM employee order by ann\_salary;

Rule#2

* In order by clause we can also use numbers in place of column name but these numbers represents column positions within select list.
* Example:

SELECT \* FROM employee order by 4;

SELECT name, salary FROM employee order by 2;

Rule#3

* We can use more than one column with in order by clause.
* In this case data will be sorted based on first column. If the first column contains duplicate data then that group only sorted using second column.
* Example:

SELECT \* FROM employee ORDER BY department ASC, salary DESC;

SELECT department, salary, employee\_id FROM employee ORDER BY department ASC, salary DESC, employee\_id DESC;

**Assignments**

1. Write a query to display the number of orders placed by each customer.
2. Write a query to display the customers who have placed more than 3 orders.
3. Write a query to display the customers who have placed more than 3 orders in “Jan 2024”.
4. Write a query to display the number of orders placed by each customer from “Bhubaneswar” location and display only those customers who have placed more than 2 orders.
5. Write a query to display the number of orders placed by each customer from “Bhubaneswar” location and display customers in ascending order who have placed more than 2 orders.