**DIFFERENCE BETWEEN WHERE & HAVING CLAUSES :-**

* **Where**
* **Having**
* Where clause is used to filter the records
* Having clause is used to filter the groups
* It executes [row-by-row]
* It executes [group-by-group]
* We cannot write Multi Row Functions

**ORDER BY:-**

It is used to arrange the records in ASCENDING or DESENDING order in result table.

* By default, order by clause arranges the records in ascending order.
* Order by clause will be executed after the select clause.
* Order by clause should be written as the last statement.

**Syntax:-**

**SELECT GROUP\_BY\_EXPRESSION/GROUP\_FUNCTION**

**FROM TABLE\_NAME**

**[WHERE <FILTER CONDITION>]**

**[GROUP BY COLNAME/EXPRESSION]**

**[HAVING <GROUP FILTER CONDITION>]**

**ORDER BY COL\_NAME [ASC]/DESC;**

**WAQTD names of employees who are earning salary more than 2000 in ascending order**

SELECT ENAME

FROM EMP

WHERE SAL>2000

ORDER BY ENAME;

**WAQTD salaries of employees in descending order and names in ascending order**

SELECT ENAME, SAL

FROM EMP

ORDER BY ENAME , ENAME DESC;

**SUB QUERY: -**

A query written inside another query is called sub query.

**Working principle:**

* Let us consider two queries, outer query & inner query
* Inner query executes first and produces the output.
* The output of inner query is given as an input to the outer query.
* The outer query depending on inner query

**WHY OR WHEN WE USE SUB QUERY?**

* Whenever there is an unknown present in the question. to find that unknown we use subquery.

|  |  |  |
| --- | --- | --- |
| **EID** | **ENAME** | **SAL** |
| 1 | Smith | 1000 |
| 2 | Allen | 1500 |
| 3 | King | 5000 |
| 4 | James | 2000 |

**WAQTD name and Sal of all the emp. Who is earning salary more than Allen.**

SELECT SAL

FROM EMP

WHERE SAL> (SELECT SAL FROM EMP

WHERE ENAME = ‘ALLEN’);

**WAQTD details of emp who are working in the same dept as Scott.**

SELECT \*

FROM EMP

WHERE DEPTNO = (SELECT DEPTNO FROM EMP

WHERE ENAME=’SCOTT’);

**WAQTD name and hire date of emp. who hired before James.**

SELECT ENAME, HIREDATE

FROM EMP

WHERE HIREDATE < (SELECT HIREDATE FROM EMP WHERE ENAME = ‘James’);

**WAQTD name and Sal of all the emp. Who are earning Sal more than smith but less than king.**

SELECT ENAME, SAL

FROM EMP

WHERE SAL BETWEEN (SELECT SAL FROM EMP WHERE ENAME=’SMITH’) AND

(SELECT SAL FROM EMP WHERE ENAME =’KING’);

**WAQTD details of emp. Who are earning Sal more than 2000 in the same dept as Adams.**

SELECT \*

FROM EMP

WHERE SAL > 2000 AND DEPTNO = (SELECT DEPTNO FROM EMP

WHERE ENAME = ‘ADAMS’);

**NOTE: -**

* In subquery or inner query we cannot select more than 1 column
* If we need to select multiple columns then the corresponding side also should be same no of columns
* The corresponding columns need not be the same but the datatype of these has to be same.

**WAQTD**

SELECT ENAME

FROM EMP

WHERE DEPTNO = (SELECT DEPTNO FROM EMP

WHERE ENAME = ‘JAMES’) AND SAL > (SELECT SAL FROM EMP

WHERE ENAME= ‘ADAMS’)

AND JOB = (SELECT JOB FROM EMP

WHERE ENAME = ‘MILLER’) AND HIREDATE> (SELECT HIREDATE

FROM EMP

WHERE ENAME = ‘MARTIN’);

**CASE ii: -**

* Whenever the data to be selected and condition to be executed are present in two different tables, we use sub query

**WAQTD NAMES OF EMPLOYEE EHO ARE WORKING IN LOCTION NEW YORK**

SELECT ENAME

FROM EMP

WHERE DEPTNO=(SELECT

**WAQTD NO.OF EMPLOYEES WORKING IN SALES DEPARTMENT**

SELECT COUNT (\*)

FROM

**WAQTD DETAILS OF EMPLOYEE WHO ARE WORKING IN THE LOC CHICAGO AND IN THE SAME DESIGNATION AS WARD**

SELECT \*

FROM EMP

WHERE DEPTNO=(SELECT DEPTNO

FROM DEPT

WHERE LOC=’CHICAGO’) AND JOB=(SELECT JOB FROM EMP

WHERE ENAME = ‘WARD’);

**WAQTD DETAILS OF EMP WHO HIRED AFTER 1980 IN RESEARCH DEPT**

SELECT \*

FROM EMP

WHERE HIREDATE >

**WAQTD DEPT NAME OF EMPLOYEES WHO ARE WORKING AS CLERK**

SELECT DNAME

FROM DEPT

WHERE DEPTNO IN (SELECT DEPTNO ( single-row subquery returns more than one row

FROM EMP

WHERE JOB=’CLERK’);

**TYPES OF SUB QUERY: -**

1. Single row sub query
2. Multi row sub query

1.**single row sub query: -**

* If subquery or inner query returns exactly one value, then we call it as single row sub query
* If sub query returns exactly one value, then we can use a normal operator or special operator

**Example: -** SELECT DNAME

FROM DEPT

WHERE DEPTNO IN (SELECT DEPTNO

FROM Emp WHERE JOB=’CLERK’);

**MULTI ROW SUB QUERY: -**

* If subquery or inner query returns MORE THAN one value, then we call it as multi row sub query
* If sub query returns MORE THAN one value, then we should use a special operator only.

**NOTE :-**

* IT IS VERY DIFFICULT TO IDENTIFY whether a query is single row or multi row, so it always recommended to use special operator only

**CASE 3: USING SUBQUERY WITH MIN & MAX:**

**WAQTD MAX SAL OF EMP**

SELECT MAX(SAL)

FROM EMP;

**WAQTD NAME OF EMP WHO IS EARNING MAX SAL**

SELECT ENAME

FROM EMP

WHERE SAL= (SELECT MAX(SAL)

FROM EMP);

**WAQTD DEPT DETAILS OF EMP WHO IS MINIMUM SAL**

SELECT \*

FROM DEPT

WHERE DEPTNO IN (SELECT DEPTNO

FROM EMP

WHERE SAL IN (SELECT MIN(SAL)

FROM EMP));

**WAQTD DETAILS OF EMP WHO HIRED AS LAST EMPLOYEE**

SELECT \* FROM EMP

WHERE HIREDATE=(SELECT MAX(HIREDATE)

FROM EMP);

**ALL / AND: -**

**ALL OPERATOR: -**

* All operator is a subquery operator used along with relational operator to compare the values at RHS
* All operator return true when all conditions are satisfied.

**WAQTD ENAME AND SAL OF EMP WHO ARE**

**ANY OPERATOR :-**

* Any operator is a subquery operator used along with relational operator. to compare the values at RHS
* Any operator returns true any one of the conditions get satisfied at RHS.

**NESTED SUB QUERY: -**

Nested sub query to find nth max and nth min salary

* We can nest up to 255 sub query.

**WAQTD Second max salary**

SELECT MAX(SAL)

FROM EMP

WHERE SAL != (SELECT MAX(SAL)

FROM EMP);

**WAQTD details of emp who is earning second min salary**

SELECT \*

FROM EMP

WHERE SAL IN (SELECT MIN(SAL)

FROM EMP

WHERE SAL > (SELECT MIN(SAL)

FROM EMP));

**WAQTD 5TH MAX SALARY**

SELECT MAX(SAL)

FROM EMP

WHERE SAL<( SELECT MAX(SAL)

FROM EMP

WHERE SAL<( SELECT MAX(SAL)

FROM EMP

WHERE SAL<(SELECT MAX(SAL)

FROM EMP

WHERE SAL<( SELECT MAX(SAL)

FROM EMP))));

**SQL LIMIT Clause**

The LIMIT clause in SQL is used to control the number of rows returned in a query result.

It is particularly useful when working with large datasets

**OFFSET: -**

**number of rows to skip before returning the result set.**

**WAQTD FIRST RECORD FROM EMP TABLE**

SELECT \* FROM EMP

LIMIT 1;

**WAQTD TOP 5 RECORDS IN EMP TABLE**

SELECT \*

FROM EMP

LIMIT 5;

**WAQTD 5TH RECORD FROM EMP TABLE**

SELECT \* FROM EMP

LIMIT 1 OFFSET 4;

**FINDING NTH MAX AND NTH MIN USING LIMIT:**

**WAQTD 3RD MAX SALARY**

SELECT DISTINCT SAL FROM EMP

ORDER BY SAL DESC

LIMIT 1 OFFSET 2;

**WAQTD TOP 3 MINIMUM SALARY**

SELECT DISTINCT SAL FROM EMP

ORDER BY SAL LIMIT 1 OFFSET 2;