

SQL

- * Data :- Data is a Rowfact which describes Attributes of an entity

(note :- rowfact it can be change and cannot be change)

example :-

Attribute	Data
My Name Is Karan	

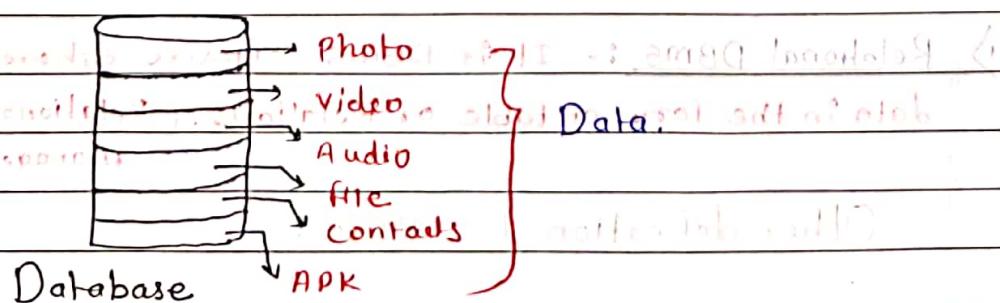
Information

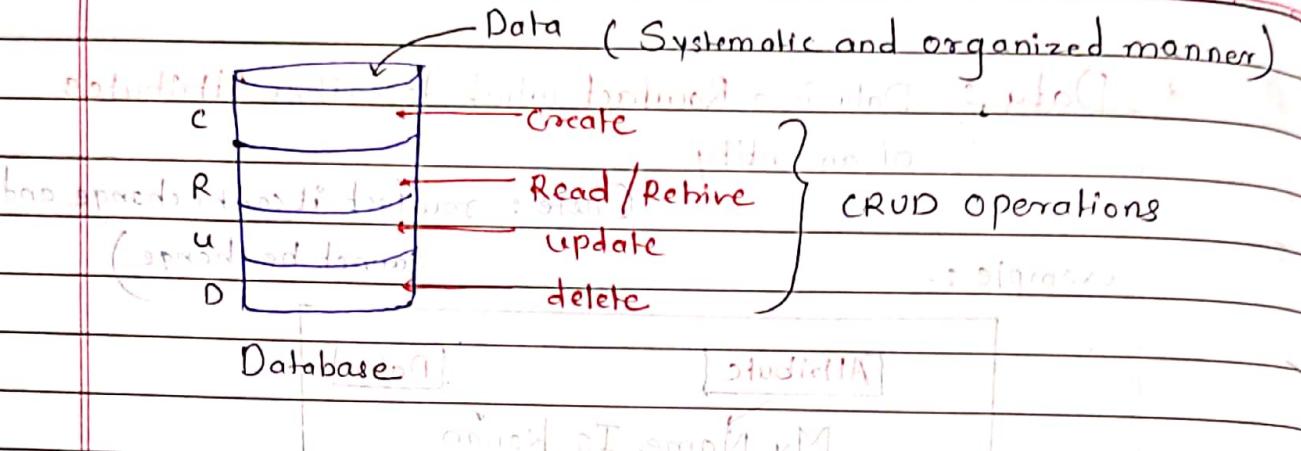
Attribute → data / Raw fact

object entities	Name	Yash	Sakshi	Karan	Aman
Age	20	22	23	24	25
Height	5'4"	5'4"	5'5"	5'5"	5'5"
Weight	80 kg	40 kg	50 kg	55 kg	55 kg
Gender	m	f	f	m	m

Attribute :- It is property of an object

* Operations on Data





* **Database** :- It is place or media where we store data in Systematic and Organized manner.

DBMS :- DATABASE MANAGEMENT SYSTEM

Definition for DBMS

DBMS :- It stands for Database management system it is software which is used to maintain and manage the database.

there are 4 types of DBms

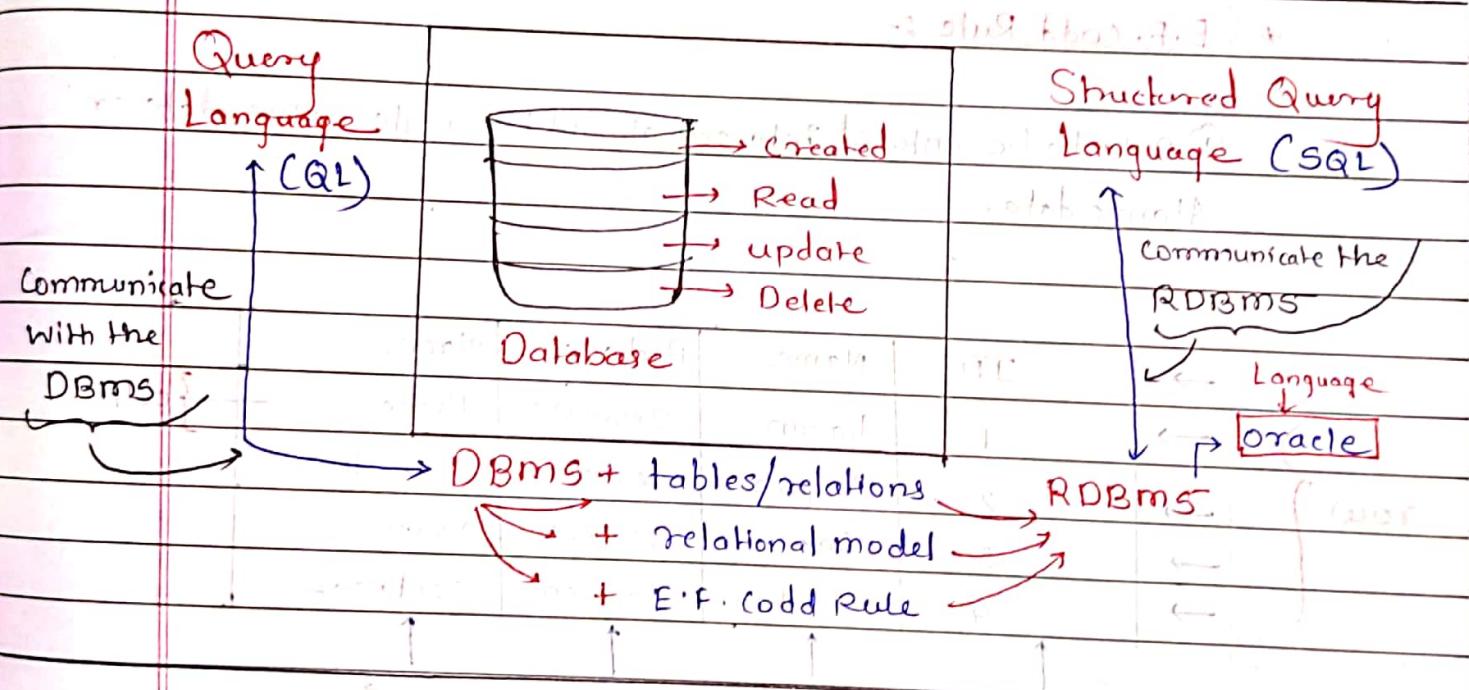
- 1) Relational DBms
- 2) Network DBms
- 3) Object-oriented DBms
- 4) Hierarchical DBms

1) **Relational DBms** :- It is DBms software where we store data in the form of table or Relations. (Relational Database Management System)

Other definition for RDBms

- ① whenever DBms Software store the data in the form of table or relations then it is called as RDBms .

- ② when DBMS software follows relational model then it is called as RDBMS.
- ③ when DBMS software follows E.F. CODD rule then it is called as RDBMS.



* QL :- Query Language

Definition QL

QL :- It is language which is used to communicate with the DBMS/Software.

* SQL :- Structure Query Language

Definition SQL

SQL :- structure Query Language it is used to communicate with RDBMS software.

* **Relational model :-** it is design by E.F. Codd (Edgar Frank Codd) when data is stored in the form of table that model is called as Relational model.

we can store metadata (data about data)

* E.F. Codd Rule :-

① Data to be entered into cell should be single value data or Atomic data.

	ID	Name	Package	place	
row	1	Karan	20,0000	Thane	cell
	2	Kalpesh	20,0000	Ghansoli	
	3	Aman	50,0000	Vashi	
	4	Abhishikham	60,0000	Santacruz	

↓ ↓ ↓ ↓

Column

② We can store data in multiple table and establish the connection between those two table by using key attributes.

Employee	ID	Name	Package	CD.	Manager	CID	Company	Place
	1	Karan	20,00000	20	10	20	Capgemini	Thane
	2	Kalpesh	50,00000	10	30	30	TCS	Airoli
	3	mahesh	70,00000	30	10	10	Marspace	Vikhroli

③ to validate the data we have to assign datatypes and constraints

Datatype →		unique	unique ← Constraints	
		number	char	number
	ID	name	Salary	number
1	Karan	50,0000	9967470198	
2	Kalpesh	20,0000	6767981598	
3	Manesh	10,0000	1415989720	

* What is Datatype ?

→ Datatype are the Rules given to a table

* What is Constraints ?

→ It is used to give condition to the table .

④ Datatype are mandatory Constraints are optional

Datatype →	Number	char	number	number	Datatype ←
Unique ↘	↓	↓	↓	↓	Unique ↗
Constraints	ID	name	Salary	numbers	Constraints
	1	Karan	50,0000	9870671499	
	2	Kalpesh	40,0000	6747019699	
	3	Manesh	30,0000	8898671998	

* Datatype

→ it is type of data which is used to give rules to the tables

introduction → SQL (part 1)

we have 5 types of datatype

① char

codman

protoz

amara

TE

② varchar

ffromt200

needz02

needz1

b

③ Date

312007373

312007373

312007373

c

④ Number

312007373

312007373

312007373

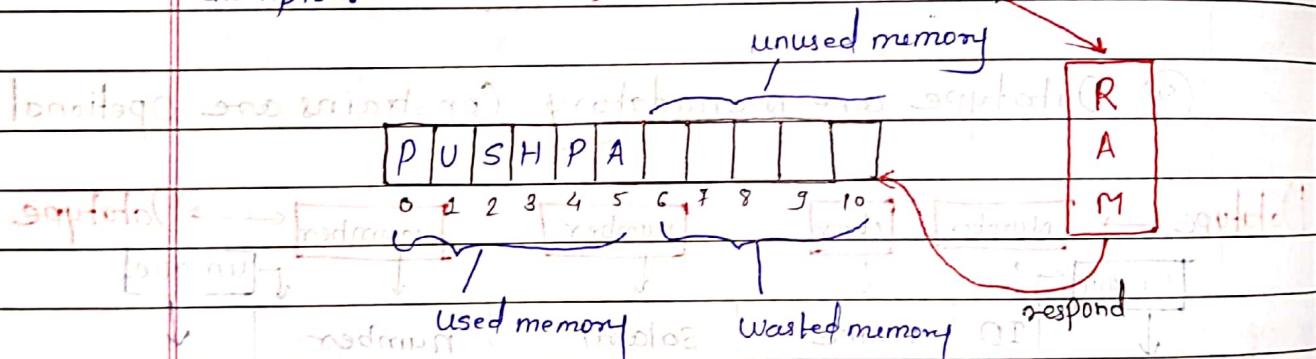
E

⑤ LargeObject

- ① char → it is used to store 'A'-'Z', 'a'-'z', '0'-'9', special characters (@, \$, #, -)

Syntax :- char(size)

example :- char(10)



- ① In char datatype unused memory will be wasted.

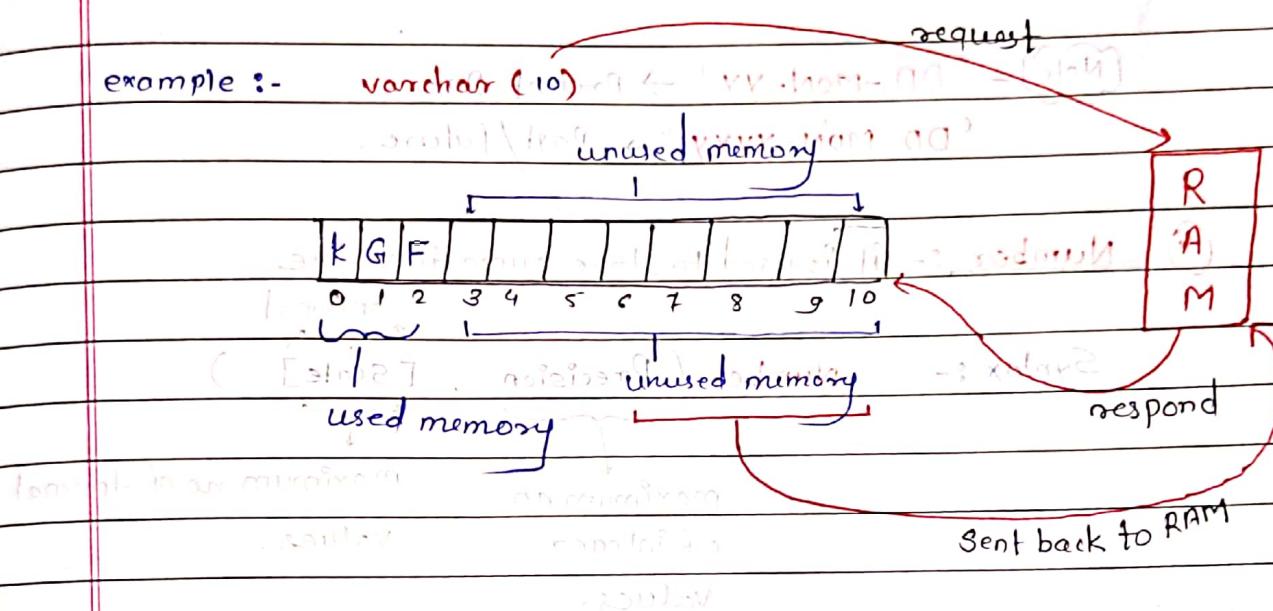
- ② we can store any this in single cod '—'

- ③ char datatype consist 2000 memory space.

- I.m.P ④ it is also called as fixed length memory allocation.

② varchar :- it is used to store A-Z, a-z, 0-9, special characters ('@', '\$', '#' ---)

Syntax :- varchar (size)



① in varchar datatype unused memory will not go wasted.

Ex :- (8) unused

② it will sent back to RAM for further uses. (2) unused

Ex :- (2,2) unused

③ in varchar datatype we can store any this a single cod '—'

④ it is consist 2000 memory space

Ex :- (2,0,0,0) unused

T.M.P. ⑤ it is also called as variable length memory allocation

Ex :- (1,0,0,0) unused

⑥ unused

Ex :- (2,2) unused

Ex :- (2,2) unused

Ex :- (2,2) unused

Unused storage utilization.

③ Date :- it is used to store data in a date format.

Syntax :- Date

(Note) - 'DD-MON-yy' → Present Date
'DD-MON-yyyy' → Past/future.

④ Number :- It is used to store numeric value

Syntax :- Number (Precision, [Scale])

maximum no of integer values.
maximum no of decimal values.

case (1) of form Number without optional precision or scale

$\text{Number}(9) \rightarrow \pm 999$

$\text{Number}(5) \rightarrow \pm 99999$ MAX of first four digits of 9

$\text{Number}(5.5) \rightarrow \pm 99999$

$\text{Number}(4.2) \rightarrow \pm 9999$ see snapshot earlier at (3)

Case (2)

$\text{Number}(4, 2) \rightarrow \pm 99.99$

$\text{Number}(6, 2) \rightarrow \pm 9999.99$ better order of 6, 2, 9, 9

$\text{Number}(4.2, 3.1) \rightarrow \pm 9.999$

Case (3)

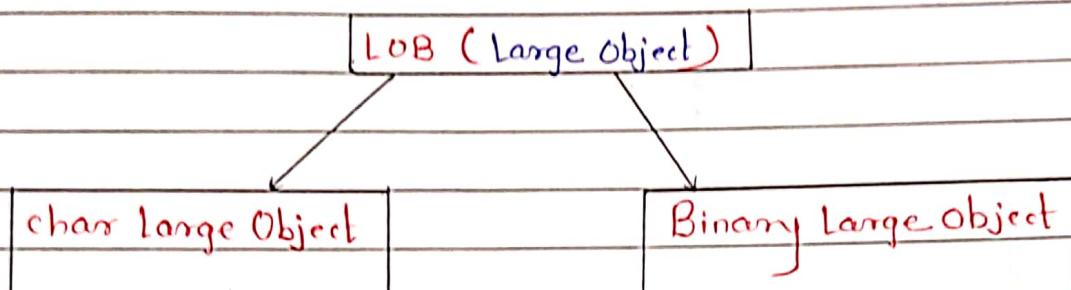
$\text{Number}(2, 3) \rightarrow \pm 0.099$

$\text{Number}(3, 5) \rightarrow \pm 0.00999$

$\text{Number}(0, 5) \rightarrow \pm 0$

precision cannot be zero

- ⑤ Large Object :- It is used to store data in large amount.
There are two types of Large object.



① It is used to store characters in a large volume.

① It is used to store multimedia file Images, video, Audio in Binary format.

② memory space of char large object is 2 GB

② memory space of binary large object is 4 GB

③ Syntax :- (CLOB)

④ Syntax :- (BLOB)

* Constraints (from slide 3)
 → It is condition given to the table.

There 5 types of constraints

1) unique

2) NOT NULL

3) check

4) Primary key

5) Foreign key

① unique :- It is used to Avoid duplicates while entering data to the table.

② NOT NULL :- Not null means some values should be present in a cell.

Note:- NOT NULL (keyword) :- empty

NOT NULL (constraints) → NOT empty

③ check :- It is constraints which is used to give additional condition to the table.

example :- Student

unique

NN NN

check (mark < 100)

ID	Sname	marks
1	yash	50
2	chaitna	60
3	karan	100
4	Aman	70

→ error (value should be less than 100)

④ Primary key

- ① it is used to uniquely identify Reports from the table
- ② to represent the table one column is selected that is known as primary key.

Characteristics of Primary key

- ① it should be unique
- ② it should be not null
- ③ combination of unique and Not null is known as primary key
- ④ there should be only one primary key present in table.
- ⑤ primary key is not mandatory but design wise it is preferable.

examples:

Employee

NN
+
unique

Primary key

NN
unique

→ Datatype

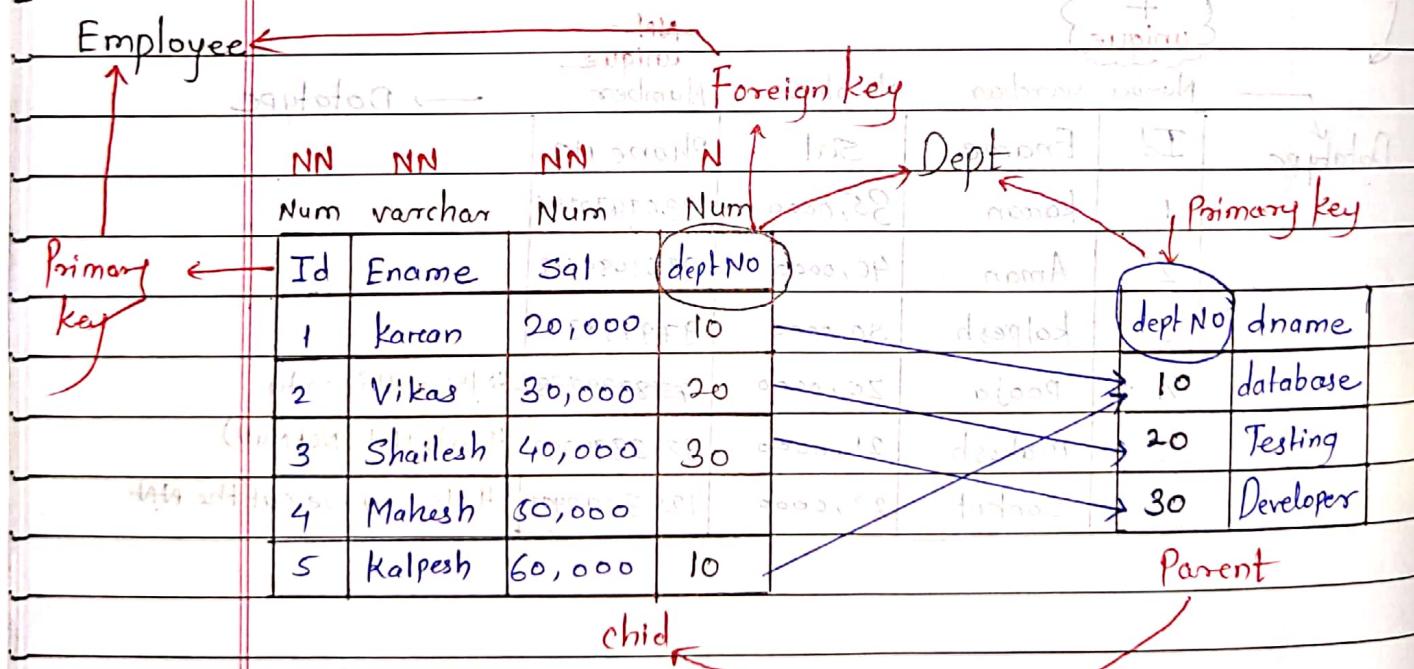
Datatype	ID	Ename	Sal	Phone No.	
	1	Karan	35,000	9967470196	nn nn
	2	Aman	40,000	9867489618	start HF → format
	3	kalpesh	50,000	97979897	format
	4	pooja	20,000	77899778	if the cell is empty
	5	mahesh	21,000	3212899299	then it Not (Not Null)
	6	Sarket	22,000	129329299	that's way we cut the NAT

⑤ **Foreign key** :- it is used to establish the connection between two tables.

Characteristics of Foreign key

- ① it can have duplicate value.
- ② it can have null values
- ③ Combination of unique and NOT NULL is not required.
- ④ Foreign key is not mandatory.
- ⑤ Foreign key belongs to parent table but it staying in child table.
- ⑥ If any column wants become foreign key it should be primary key of its own table.
- ⑦ It is also called as Referential Integrity constraints.

example :-



Note :- NN - NOT NULL

N - NULL

SQL Languages

there are 5 type of Language

DDL → Data Definition Language.

DML → Data Manipulation Language.

DCL → Data Control Language.

TCL → Transaction Control Language

DQL → Data Query Language.

Note:-	DDL	Creation of tables Manipulating rows Managing the table	
	DML		
	DCL		
	TCL		
	DQL	→ managing the table	

* DQL - it stands for Data Query Language. ^{suppose DQL}
there are 4 statements

1) Select :- it is used to retrieve data from table by using database.

2) Projection :- it is used to retrieve data from table by using column name

3) Selection :- it is used to retrieve data from table by using
column name and row name

4) Joins :- it is used to retrieve data from multiple table simultaneously

* Projection :-
1) it is used to retrieve data from table by using column name.
2) it is combination of Select and From clause.

Syntax :- SELECT * / column-name / Expression / [ALIAS NAME] /
[DISTINCT]

FROM TABLENAME ;

Note :- Set pages 100 Lines 100

* → Astarick

* **FROM CLAUSE :-** it always execute first, we can write multiple table name in FROM clause.

• function of from clause :-

- 1) it goes to the database and finds the table.
- 2) Search for the table.
- 3) put the table under execution.

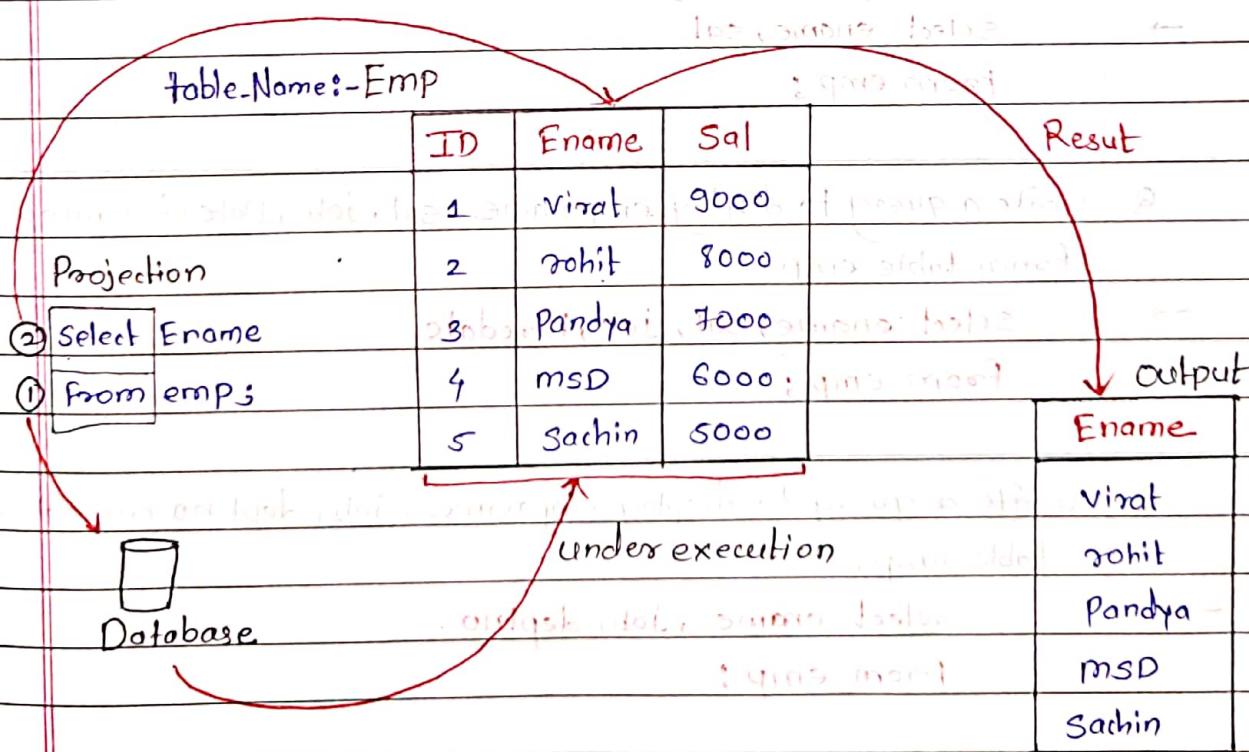
* **SELECT CLAUSE :-** it execute after the execution of from clause.

Select clause is Responsible for displaying the output.

* function of Select clause :-

- 1) it goes to the table which is under execution
- 2) select the column name and do projection group by etc.
- 3) display the output.

example :-



Select :- it is statement as well as clause.
It is used to retrieve data from the table.

Select * from Tab : } if we want to check how many tables present
in Database.

Select * column-name from table-name ; } It is used to display all the records from the
table-name; in the table.

Q. write a query to display job from table emp.
→ Select Job
from emp;

Q. write a query to display emp name with there salary from table emp.
→ Select ename, sal
from emp;

Q. write a query to display emp name ,sal ,job ,Date of Joining
from table emp.

→ Select ename, sal, job, hiredate
from emp;

Q. write a query to display empname , job, dept no from the
table emp.

→ Select ename, job, deptno.
From emp;

Q. write a query to display dept no, dept name, location
from the table.

→ Select * from tab;

Select * from dept;

Select dept no, dname, loc
from dept;

Q. Write a query to display dept no, dept name, location from the table.

→ `Select * from tabs;`

`Select * from dept;`

`Select dept no, dname, loc`

`from dept;`

; query output

Temporary table [dept]

Temporary table [dept]

; answer

* Projection :- It is used to retrieve data from table by using column name
It is combination of select and from clause.

Syntax :- `Select * / column-name / Expression / [ALIAS NAME] / [DISTINCT]
From Table-name;`

Q. Write a program to display Dept no from the table emp.

→ `Select Deptno`

`From emp;`

Output :- Deptno

Q. Write a program to display Deptno without duplicate from the table emp.

→ `Select unique Deptno`

`From emp;`

Output :- Deptno

Output :- Deptno

Q. Difference between unique and Distinct

Unique

1) It is a constraint

2) It is used to Avoid duplicate while entering data to the table.

Distinct

1) It is keyword

2) It is used to Avoid duplicate in resultant table.

Q. Write a Query to display ename, job, monthly sal, from the table.

→ `Select ename, job, sal
from emp;`

Q. Write a Query to Display ename, job, Annual Sal from the table

→ `Select ename, job, sal*12
from emp;`

Q. Write Query to Display ename, job, Addition sal and commision
from table emp.

→ `Select ename, job, sal + comm`

~~From emp~~

~~Select ename, job, sal, comm, sal + comm~~

~~from emp;~~

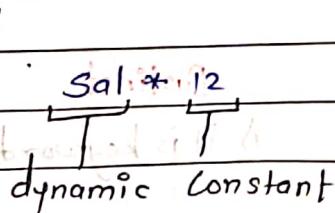
expression :- Any operation which gives output is known as expression.

there are two types of expression.

1) Direct value

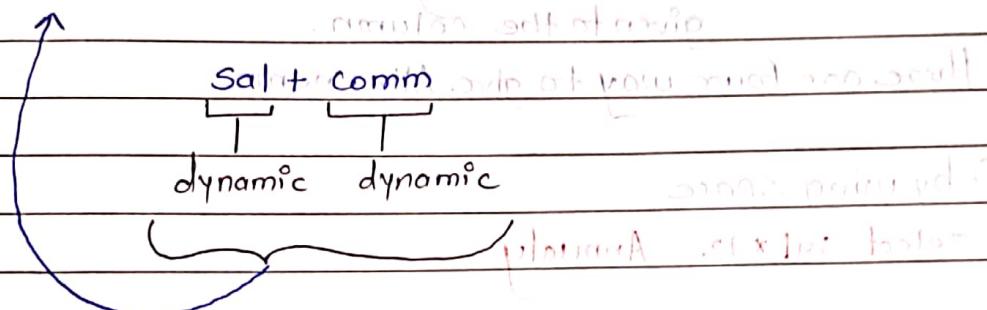
2) immediate value

→ ① Direct value



The operation which have dynamic value and constant value
this operation is known as Direct value expression.

② Immediate value expression



The operation which have both value dynamic then this operation is known as immediate value expression.

Q. write a Query to Display emp name, job, sal, with 15% hike in salary from table.

→ $\text{select ename, job, sal, sal} + \text{sal} * 15 / 100$
 from emp;

~~Select ename, job, sal, ~~sal + sal * 15 / 100~~ $\text{sal} * 1.15$~~
~~from emp;~~

Q. write a Query to display ename, job, Hiredate, with 25% deduction in Annualy salary.

→ $\text{Select ename, job, Hiredate, sal, sal} * 12, \text{sal} * 12 - \text{sal} * 12 * 25 / 100$
 from emp;

Q. write a Query to Display ename, job, Hiredate, monthly sal, Annual sal, mid year sal, color year sal, monthly Comm, Annualy Comm, mid year Comm, color year Comm, Addition of Sal and Comm from the table.

→ $\text{Select ename, job, Hiredate, sal, sal} * 12, \text{sal} * 6, \text{sal} * 4, \text{comm, comm} / 12,$
 $\text{comm} * 5, \text{comm} * 4, \text{Sal} + \text{Comm}$
 from emp;

Alies Name :- it is a temporary name or alternate name given to the column.

there are four way to give Alies name.

① by using Space

→ Select $\text{Sal} * 12$ Annualy

② by using AS keyword

→ Select $\text{Sal} * 12$ AS Annualy

③ by using (-)

→ Select $\text{Sal} * 12$ Annualy_Salary

④ by using " "

→ Select $\text{Sal} * 12$ "Annualy salary"

Q. write a program to display annualy salary along with all the details of employee.

→ Select $\text{Sal} * 12$, emp.*
from emps

Note :-

* → Emp

(Astrick) suffix to table name represent it would a table.

Table name.* →

Emp Sal*12

it is used when extra column needed to be displayed with table details.

ASSIGNMENT ON Expression & Alias

Date _____

Page _____

- 1) write a query to display name of the employee along with their Annual Salary.

→ $\text{Select ename "employee name", sal * 12 as "Annual Salary"}$
From emp;

- 2) write a query to display ename and job for ALL the employee with their Half thrm Salary.

→ $\text{Select ename, job, sal * 6}$
from emp;

- 3) write a query to display all the details of the employees along with an annual bonus of 2000.

→ $\text{Select emp.* , sal * 12 + 2000 as "annual bonus"}$
From emp;

- 4) write a query to display name, salary, And salary with hike of 10%.

→ $\text{Select ename, sal, sal + sal * 10 / 100}$
From emp;

- 5) write a query to display name and salary with deduction of 25%.

→ $\text{Select ename, sal - sal * 25 / 100}$
From emp;

- 6) write a query to display name and salary with monthly hike of 50.

→ $\text{Select sal + 50, ename}$
From emp;

SQL Programs No 1

7) write a program/query to display name and Annual salary with deduction of 10%.

→ $\text{Select ename, sal} * 12 - \text{sal} * 12 * 10 / 100$

From emp;

8) write a query to display total salary Given to each employee (Sal+comm)

→ $\text{Select ename, sal, sal+comm}$
From emp;

9) write a query to display details of all employees along with Annual salary.

→ $\text{Select sal} * 12, emp.*$

10) write a query to display name and designation along with 100 penalty in salary.

→ $\text{Select ename, job, sal} - 100 \text{ as "penalty"}$
From emp;

multiple queries can be combined in a single query by using
SELECT statement.

Example: To find the sum of marks of all students in a class.

→ $\text{Select sum(marks)} \text{ from student}$

Sum of marks

Output:

* Selection :- It is used to retrieve the data from the table by using column name and rowname.

Q:- Write a query to display all the details of employee who are getting salary greater than 1200.

ID	Ename	Salary
1	Karan	3000
5	manoj	4000
6	yash	5000

ID	Ename	Salary	Condition
1	Karan	3000	✓
2	Sameer	3000	✗
3	kalpesh	700	✗
4	Aman	1000	✗
5	manoj	4000	✓
6	yash	5000	✓

under execution



Database

Y axis

X axis

* Where :- It is also known as Where clause.
It used to filter the condition.

Characteristics of Where clause

- 1) It is used to filter the condition
- 2) Where clause execute row by row
- 3) In where clause we can write multiple conditions
- 4) In where clause we can not write Alias name.
- 5) It execute after the execution of From clause.

Q. write query to display all the details of employee who are earning Commission greater than 600.

→ Select *

From emp
where comm > 600

Q. write a query to display all the details of employee who are working as salesman.

→ Select *

From emp

where job = 'SALESMAN'

x for e.g. ⑤

→ Note :- SQL is not case Sensitive but entering the data

into the table it is case Sensitive.

Q. write a query to display all details of employee who are hired after year 81

→ Select *

From emp

where Hiredate > '31-Dec-81'

or

where Hiredate >= '1-Jan-82'

modular approach

ASSIGNMENT ON SELECTION

Date _____
Page _____

- 1) write a query to display the Annual salary of the employee whose name is king.

→ Select sal * 12
from emp
where ename = 'king';

- 2) write a query to display name of the employees who are working as clerk.

→ Select ename
from emp
where job = 'CLERK';

- 3) write a query to display salary of the employees who are working as salesman.

→ Select ename, sal
from emp
where job = 'SALESMAN';

- 4) write a query to display Details of the employee who earns more than 2000

→ Select *
from emp
where sal > 2000;

- 5) write a query to display details of the employee whose name is JONES.

→ Select *
from emp
where ENAME = 'JONES';

QUESTION BANK

Date _____

Page _____

6) write a query to display Details of the employee who was Hired after 01-JAN-81

→ Select *

From emp

where ENAME . Hiredate > '1-Jan-81'

7) write a query to display name and sal along with his Annual salary if the Annual salary is more than 12000

→ Select ename, sal, sal*12

From emp

where sal*12 > 12000

8) write a query Display empno of the employees who are working in Dept 30.

→ Select empno

From emp

where deptno = 30;

9) write a query to Display Ename And Hiredate if they are Hired before 1981

→ Select ename, hiredate

From emp

where hiredate < '1-Jan-1981'

10) write a query to display Details of the employee working As manager

→ Select *

From emp

where job = 'MANAGER';

11) Write a query to display name and salary given to an employee if employee earns a commissions of rupees 1400.

→ Select Ename, sal
From emp

where comm = 1400

12) write a query to display details of employees having commissions more than salary.

→ Select *
From emp

where comm > sal

13) write a query to display empno of employees hired before the year 81.

→ Select empno
From emp

where Hiredate < '1-Jan-81' ;

14) write a query to display Details of employee earning more than 2000 rupees per month.

→ Select *
From emp
where sal > 2000.

15) write query to display Details of employees working as an Analyst.

→ Select *
From emp
where Job = 'ANALYST';

* Operators

we have seven types of operators.

① Arithmetic (+, -, *, /)

② Comparison (=, !=, <>)

③ Relational (>, <, >=, <=)

④ Logical (AND, OR, NOT)

⑤ Special (IN, NOT IN, BETWEEN, NOT BETWEEN,

IS, IS NOT, LIKE, NOT LIKE)

⑥ Subquery (ALL, Any; EXISTS; NOT EXISTS)

⑦ Concatenation (||)

U T E R I A M M = dot . b o o k s

UNIT 4) Logical Operators

Date _____
Page _____

④ Logical (AND, OR, NOT) Operators

1) AND → It is used when all conditions needs to be True.

2) OR → It is used when any one condition needs to be True.

3) NOT → It is used to reject the condition.

Q. write query to display ename, job, sal, deptno, if employees are working as clark in department 20.

→ `Select ename, sal, job, deptno from emp`

`where job = 'CLERK' AND DeptNo = 20;`

Q. write a query to display ename, sal, Hiredate, job, if employees are working as Salesman , Analyst

→ `Select ename, sal, Hiredate, job`

`From emp where job = 'SALESMAN' OR job = 'ANALYST';`

Q. write query to display all details of employee who are not working as president .

→ `Select *`

`From emp`

~~`where not job`~~

~~`Where NOT job = 'PRESIDENT';`~~

~~`or`~~

~~`where job != 'PRESIDENT';`~~

~~`or`~~

~~`where job <> 'PRESIDENT';`~~

ASSIGNMENT ON Logical Operators

Date _____
Page _____

- 1) Write a query to display details of the employees working as clerk and earning less than 1500.

→ `Select *
From emp
where job = 'CLERK' AND sal < 1500;`

- 2) Write a query to display name and hiredate of the employees working as manager in dept 30.

→ `Select ename, hiredate
From emp
where job = 'MANAGER' AND DEPTNO = 30;`

- 3) Write a query to display details of the emp along with Annual Salary if they are working in Dept no 30 as Salesman and their Annual salary has to be greater than 14000.

→ `Select emp.* , sal*12 AS ANNUAL_SAL
From emp
where dept no = 30 and job = 'SALESMAN' AND sal*12 > 14000;`

- 4) Write a query to display All the details of the memp working in Dept 30 or as Analyst.

→ `Select *
From emp
where deptno = 30 OR job = 'ANALYST';`

- 5) write query to display names of the employees whose salary is less than 1100 and their designation is CLERK.

→ `Select ename
From emp
where sal < 1100 AND job = 'CLERK';`

Q) Write query to display name and sal, Annual sal and deptno if Deptno is 20 earning more than 1100 and Annual salary exceeds 12000.

→ Select ename, sal, sal*12, Deptno

From emp

Where deptno = 20 AND sal > 1100 AND sal*12 > 12000;

Q) Write query to display empno and names of the employees working As manager in pess Dept 20.

→ Select empno, ename

From emp

Where job = 'MANAGER' AND Deptno = 20;

Q) Write query to display b details of employees working in Dept 20 or 30

→ Select *

From emp

Where deptno = 20 or deptno = 30;

Q) Write query to display details of employees working As analyst in dept 10.

→

Select * From emp

Q) Write query to display Details of employee working as president

with salary of rupees 4000.

→

Select * From emp

11) write query to display names and deptno, job of emps working as
clerk in dept 10 or 20.

→ Select ename, job, Deptno

From emp

where (Job = 'CLERK' AND Deptno = 10) OR (Job = 'CLERK' AND
Deptno = 20);

12) write query to display details of employees working as check
clerk or manager in Dept 10.

→ Select *

From emp

where (Job = 'CLERK' AND DEPTNO = 10) OR (Job = 'MANAGER' AND DeptNo = 10);

13) write a query to display names of employees working in dept 10, 20,
30, 40.

→ Select ename

From emp

where (Deptno = 10) OR (Deptno = 20) OR (Deptno = 30) OR (Deptno = 40);

14) write a query to display details of employees with empno

7902, 7839.

→ Select Emp.* , Empno

From emp

Where Empno = 7902 OR Empno = 7839;

15) write a query to display Details of employee working as
managers or salesman or clerk.

→ Select *

From emp

Where Job = 'MANAGER' OR Job = 'SALESMAN' OR Job = 'CLERK'

Q. 16) write a query to display name of employees hired after 81 and before 87.

→ Select Ename

From emp

where hiredate > '31-Dec-81' AND Hirdate < '1-Jan-87';

Q. 17) write a query to display details of employees earning more than 1250 But less than 3000

→ Select *

From emp

where Sal > 1250 AND Sal < 3000;

Q. 18) write a query to display names of employees hired after 81 into Dept 10 or 30.

→ Select ename

From emp

where (Hiredate > '31-DEC-81' AND DeptNO = 10) OR (Hiredate > '31-Dec-81'
And DeptNo = 30);

Q. 19) write a query to display names of employees along with Annual salary for the employees working as manager or clk. clerk into Dept 10 or 30.

→

Q. 20) write a query to display all the details along with annual salary if sal is between 1000 and 4000 Annual salary more than 15000.

→

Q. Write a query to display all employee who are hired in year 81.

→ Select *

From emp

where Hiredate >= '01-Jan-81' And Hiredate <= '31-Dec-81'

Q. Write a query to display all details of employee who are working as clerk, salesman, earning salary is greater than 1000 working in deptno 20, 30.

→ Select *

From emp

where (Job = 'CLERK' or Job = 'SALESMAN') AND (Sal > 1000)
AND (Deptno = 20 or Deptno = 30);

Q. Write Query to display all details of employee who are working as manager, salesman, clerk in deptno 10, 30, getting sal greater than 1200 less than equal 1400 hired before year 87 earning comm greater than 300 less than equal to 1400.

→ Select *

From emp

where (Job = 'MANAGER' or Job = 'SALESMAN' or Job = 'CLERK')
AND (Deptno = 10 or Deptno = 30)
AND (Sal > 1200 AND Sal <= 1400)
AND (Hiredate < '1-Jan-87')
AND (Comm > 300 AND Comm <= 1400);

5 Special Operators

① In Operator :- It is multivalue operators which consist multiple value at RHS single value at LHS.

Syntax :- column_name/Exp IN (v_1, v_2, \dots, v_n)

example :- dept no IN (10, 20)

Selected
Selected

= or
equal to

Note :- all the value in RHS will be Selected.

Q. write a query to display employee name, hiredate, sal, comm, if employee are working as president, manager and analyst.

→ \rightarrow select ename, hiredate, sal, comm

Select ename, hiredate, sal, comm

From emp where job IN ('President', 'Manager', 'Analyst')

where job IN ('President', 'Manager', 'Analyst')

* fast

spare time

(one query for each job) works

(fast answer) runs

(more time & more memory) works

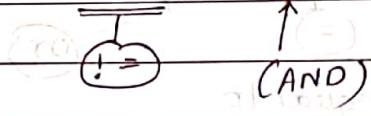
② NOT IN operator

- It is multivalue operator which consist multiple values and RHS and single value LHS.
- all the value in RHS will be rejected.

Syntax :- column_name / Expr NOT IN (v_1, v_2, \dots, v_n)

Rejected.

example :- deptno NOT IN (10, 20)



- 1) write a query to display of employee who are earning salary more than 1300 except those who are working in Dept no 20, 30

→ Select *
From emp
where sal > 1300 AND Dept no NOT IN (20, 30);

- 2) write a query to display all the details of employee who are hired after year 80 Getting Commission more than 400 working as clerk, salesman.

→
Select *
From emp
where (hiredate > '31-Dec-80')
AND (comm > 400)
AND Job IN ('CLERK', 'SALESMAN');

- Q) write a query to display all details of employees along with Annual sal if employee are not working as Salesman, manager, Analyst . in dept no 10, 20 , Hired in year 81 earning sal more than 1250 less than equal to 3000

Select * , sal * 12 | OR (annual salary = > 1250)

From emp

where Job NOT IN ('SALESMAN', 'MANAGER', 'ANALYST')
 AND Deptno NOT IN (10, 20)
 AND (Hiredate >= '1-Jan-81' AND Hiredate <= '31-Dec-81')
 AND (Sal > 1250 AND Sal <= 3000);

- Q. write query to display all the details of employee who are earning salary greater than 1250 less than 5000.

Select * | OR (sal > 1250 AND sal < 5000)

From emp

where sal > 1250 AND sal < 5000

- Q. write query to display all the details of employees who are earning salary less than 1500 greater than 3000.

Select *

From emp

where sal < 1500 OR sal > 3000

- Q. write a query to display all the details of who are getting sal greater than equal to 1600 and less then equal to 4000.

Select *

From emp

where Sal >= 1600 AND Sal <= 4000

for last
 ③ **Between :-** it is used when values are in ranges present.

definition :- ~~returning consecutive numbers from min to max~~
 Note :- ranges of values in Between operator will be part of selected it self.

Syntax :- column-name / exp BETWEEN lower AND Higher
 range start range end

(10000, 14000) between 10000 and 14000

eg. (as, of) NOT BETWEEN 9000

(10000 >= 1200 AND sal <= 4000)

; (10000 >= 1200 AND sal <= 4000) OR

Special Operator → sal Between 1200 AND 4000

parameters are value usually no. of starting value till ending value
 Range of values will be Selected itself.

eg. ① sal > 1400 AND sal <= 3000

↓

Sal between 1401 AND 3000

14000
1401
1402

3000

② Sal >= 1100 AND sal < 5000

↓

Sal between 1100 AND 4999

SQL -> 10000 OR 10000 >= 1100 AND 1100 <= 4999

Q. Write all details of emp who are getting salary greater than 800 less than 2970.

→ **Select * from emp**
From emp
where sal between 801 AND 2969 .

Output: QMA select required from question number -> execute

Q. Write a query to display all the details of emp who are getting salary greater than 800 less than 2975.

→ **Select * from emp**
From emp
where sal between 801 AND 2969 .

Q. Write a query to display employee name , salary , job if employees are earning salary greater than equal to 1300 less than 2450

→ **Select ename, sal, job from emp**
where sal between 1300 and 2449

Q. Write query to display employee name, job, hiredate, commision department no, if employee are earning salary greater than 2800 less than equal to 4500 .

→ **Select ename, job, hiredate, comm, deptno**
From emp
where sal between 2801 and 4500 .

Q. Write Query to Display all the details of employees who are earning salary greater than 1500 less than 3450 .

→ **Select ***
From emp
where sal Between 1501 and 3449 ;

④ NOT Between :- it is used when value are not in range

Note:- range of value in not between operator will not get selected it self.

Syntax :- Column-name/exp NOT Between lower AND higher range range

eg. Logical operator \rightarrow Sal < 1500 OR Sal > 3000

Special Operator \rightarrow Sal not between 1500 And 3000

Range of value will not get selected it self.

eg. ① Sal < 400 Sal > 1000

\rightarrow Sal not between 400 AND 1000

② $\neg (\text{Sal} <= 1200 \text{ AND } \text{Sal} \geq 2000)$

\rightarrow Sal not between 1201 and 1999

Q. write query to display All details of employees who are earning salary less than 1000 greater than equal to 4000

Select *

From emp

where sal not between 1000 And 3999

Q. write query to display employee name, salary, job, hiredate -- if employees ARE getting salary less than qual to 1800 greater than equal to 5000 .

Select ename, sal, job, hiredate

From emp

where not between 1801 And 4999

Q. write a query to display ename,job,salary ,if employees are getting sal greater than 1850 less than equal to 3975.

Select ename, job, sal

From emp

where sal between 1851 And 3975

Q. write a query to display All the details of employees who are working in Department no 10, 20, as Manager, Clerk, Analyst , president getting salary less than 2900 greater than equal to 5000.

Select *

From emp

where Dept-no IN (10, 20)

AND Job IN ('Manager', 'Clerk', 'Analyst', 'President')

AND (Sal Not Between 2900 AND 4999);

① **IS operator** :- it is used to compare with null value

Syntax :- `column_name/exp IS NULL`

Q. write a query to display all the details of emp who are not earning any commision.

→ `Select *
From emp
where comm IS NULL;`

② **IS NOT operator** :- it is used to compare with not null values.

Syntax :- `Column-name / EXP IS NOT NULL`

Q. write a query to display all the details of employee who are earning commision.

→ `Select *
From emp
where comm IS NOT NULL;`

Q. write a query to display all the details of employee who are having manager.

→ `Select *
From emp
where mgr IS NOT NULL;`

(as (1) HE OR HER MGR
(2) WHERE MGR IS NOT NULL
(3) (RECOMMENDS REVERSE ORDER)

⑦ LIKE operator :- It is used to find pattern.

Syntax :- column-name/Exp LIKE pattern_TO_Match.

Note

here we use wildcards.

Percentile (%) → it considers n no. of characters at n no. of times

underscore (-) → it consider Exactly one character at one

Q. write a query to display employee name who's names starts with A.

→ Select ename

From emp

where ename like 'A%'

Q. write a query to display all details of employee who name ends with R.

→ Select *

From emp

where ename like '%R%'

Q. write a query to display all details of emp who name is having Second characters L.

→ Select *

From emp

where ename like '_L%'

Q. write a query to display all the details of employee whose job is having 'man' in it.



Select *

From emp

where job like '%MAN%';

Q. write a query to display all details of employees along with annual salary if employees are having 'A' in their name working as salesman, clerk, president except those who are working in deptno 10,20, earning sal greater than equal to 1200, less than 4000 & they are having manager earning comm less than 700, greater than equal to 1200 hired in year 81



Select emp.* , sal*12 / add annual salary

From emp.

where ename like ('A%')

AND job IN ('SALESMAN', 'CLERK', 'PRESIDENT')

AND NOTIN (10,20)

AND sal Between 1200 AND 3999

AND mgr IS NOT NULL

AND NOT BETWEEN (700 AND 1199)

AND hiredate = '1-Jan-81';

QUESTION BANK

Date _____

Page _____

Q. Write a query to display all details of employees who are not having 'S' in their name.

→ Select *

From emp

where ename NOT like '%.S.%';

Q. Write a query to display all the company employee's whose name is having 'R' as the second last characters.

→ Select *

From emp

where ename like '%.R.%';

Q. List all the employee who are having exactly 5 characters in their jobs.

→ Select *

From emp

where job like '____';

Q. Write a query to display all the employees who are joined in feb.

→ Select * From emp where hiredate like '% FEB %';

From emp

where hiredate like '% FEB %';

Q. Write a program to display all the employee details who are not earning commisions working in department 10, 20 working as clerk, president, analyst. and they are hired after 80 getting salary less than 2000 greater than equal to 5000.

→ Select * From emp

where comm IS NULL AND Deptno IN (10, 20)

AND job IN ('CLERK', 'PRESIDENT', 'ANALYST') AND hiredate > '31-Dec-80'

AND sal not between (2000 AND 4999);

ASSIGNMENT ON Operators

Date _____
Page _____

Q. List All the employees whose Commission is null.

→ Select *
From emp
where Comm IS NULL;

Q. list all the employees who don't have A reporting manager.

→ Select *
From emp
where MGR IS NULL;

Q. list All the salesman in Dept no 30.

→ Select *
From emp
where job like '%SALESMAN%' AND DEPTNO IN 30;

Q. List all the salesman in dept number 30 and having salary greater than 1500.

→ Select *
From Emp
where job like '%SALESMAN%' AND Deptno IN 30
AND sal > 1500;

Q. List all the employees whose name start's with 'S' or 'A'.

→ Select *
From emp
where ename like 'S%' OR Ename Like 'A%';

Q. list all the employees except those who are working in dept 10 & 20.

→ Select *
From emp
where Deptno NOT IN (10, 20);

Q. List the employees whose name does not start with 'S'.

→ Select *

From emp

where ename not like 'S%'

* function

group by

Q. List all the employees who are having reporting manager in Dept 10.

→ Select *

From emp

where MGR IS NOT NULL AND DEPTNO IN 10;

* function

group by

Q. list all the employees whose commision is null and working as clerk.

→ Select *

From emp

where comm IS NULL AND job like '%CLERK%';

* function

group by

Q. List all the employees who don't have a reporting manager in Deptno 10 or 30.

→ Select *

From emp

where & MGR IS NULL and Deptno IN (10,30);

Q. list all the Salesman in Dept 30 with sal more than 2450

→ Select *

From emp

where job like '% SALESMAN%' AND Deptno IN 30 AND
Sal > 2450;

Q. list all the Analyst in Dept number 20 and having salary greater than 2500

→ Select *

From emp

Where job like '% ANALYST%' AND Deptno IN 20 AND Sal > 2500;

Q. list all the employees whose name starts with 'M' or 'J'

→ Select *

from emp

where Ename Like 'M%' OR Ename Like 'J%'

Q. list all the employees with Annual salary except those who are working in Dept 30

→ Select Emp.* , Sal *12

from emp

where Deptno NOT IN (30, 11, 10, 20, 19, 17)

Q. list the employees whose name Does not end with 'ES' OR 'R'.

→ Select *

from emp

where Ename NOT LIKE '%ES%' AND Ename NOT LIKE '%R%'

Q. List all the employees who are having reporting managers in Dept 10 along with 10% Hike in salary.

→

(Ans) 10% hike sum of emp & manager

Dept no & manager id from emp & manager add to find

Q. Display all the employee who are 'SALESMAN's Having 'E' AS the last but one character in Ename but salary having exactly 4 character.

→

Select *

from emp

where job like '%SALESMAN%'

AND Ename Like '%E_3'

AND sal like '1111' (which is all the same)

Q. Display all the employees who are joined in feb.

→ Select *

From emp

Where Hiredate Like '%FEB%'

Q. List the employees who are not working as managers and clerks in Dept 10 AND 20 with a salary in the range of 1000 to 3000.

→ Select *

From emp

Where job NOT IN ('MANAGER', 'CLERK') AND Deptno IN (10, 20) AND Sal Between 1000 AND 3000

Q. List the employees who are not working as managers and whose salary NOT IN the range of 1000 to 2000 and working in Dept 10, 20 OR 30 except all SALESMAN.

→ Select *

From emp

Where Sal NOT between 1000 AND 2000 AND Deptno IN (10, 20, 30)
AND job NOT Like '%SALESMAN%'

Q. List the Department names which are having Letter 'O' in their Locations as well as their Department names.

→ Select *

From Dept

Where DName Like '%O%' AND Loc Like '%O%'

Q. Display all the employees whose job Has Start String 'MAN' IN IT.

→ Select *

From emp

Where job like '%MAN%'

24. List The employees who are hired after 82 And before 87.

→ Select *

From emp

where Hiredate Between '01-Jan-83' AND '31-Dec-87'

25. Write a query to display all the details of employees

Hired in November And December.

→ Select *

From emp

where Hiredate like '%.NOV.'

OR- Hiredate like '%.DEC.'

26. List all the employee name and commission for those employees who earn commission more than their salary.

→ Select Ename, Comm
from emp

where comm > sal;

27. write query to display name and designation for all the employees Having reporting managers and also their names starting with 's'.

→ Select Ename, job
from emp

where MGR IS NOT NULL

AND ENAME like 'S%'

28. write a query to display name and salary of all the employees if their annual salary ends with '0'.

→ Select ename, sal
from emp

where sal*12 like '%0';

29. write query to display name of the employee Having Atleast 2L's IN His name.

→ Select ename

from emp

where ename like '%LL%';

30. write query to display name of the employees who name starts with 'A' vowel.

→ Select ename

from ~~tab~~ Emp

where ename like 'A%';

122 - 19

122

without wild card

without wild card

(Q1)

(Q2)

(Q3)

(Q4)

(Q5)

(Q6)

(Q7)

(Q8)

(Q9)

(Q10)

without wild card

without wild card

(Q1)

(Q2)

(Q3)

(Q4)

(Q5)

(Q6)

(Q7)

(Q8)

(Q9)

(Q10)

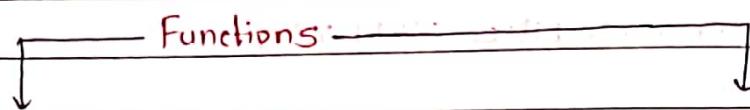
(quasi-join)

Function

Date _____
Page _____

Function :- It is set of code or block of instruction which is used to perform specific task.

There are two type of functions



User Defined

PL - SQL

(Procedural Language)

SQL

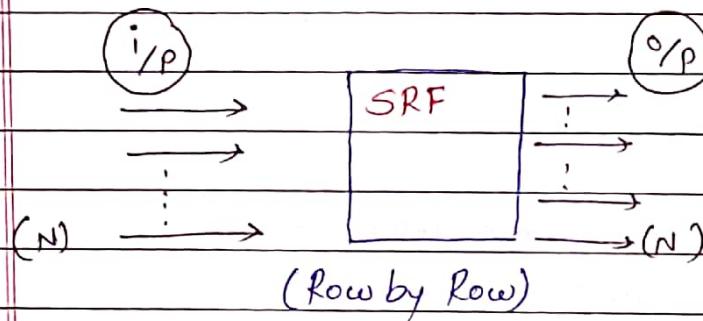
Built-in

* Single Row Function (SRF)

* Multi Row Function (MRF)

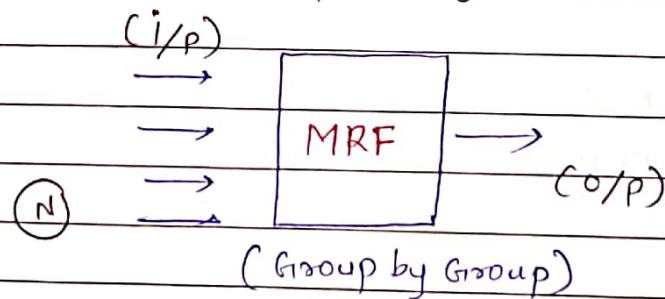
① Single Row function

→ it takes multiple input and gives out multiple output.



② Multi Row function

→ it takes multiple input and gives out single output.



there are 5 types of multi Row function

- ① MAX → it is used to obtain maximum value from the table.

Syntax :- MAX (column-name/exp)

- ② MIN → it is used to obtain minimum value from the table.

Syntax :- MIN (column-name/exp)

- ③ SUM → it is used to obtained total of value or addition of value from the table.

Syntax :- SUM (column-name/exp)

- ④ AVG → it is used to obtain Average of values

Syntax :- AVG (column-name/EXP)

- ⑤ COUNT → it is used to obtain total number of values from the tables

Syntax :- COUNT (* / column-name/EXP)

Q. Write query to display maximum salary from the table.

→ Select Max(sal)

from emp;

~~with~~

(Ans) select max(sal) from emp;

ID	Ename	Sal
1	Karan	3000
2	Sameer	2000
3	Kalpesh	1000
4	Rahul	5000
5	Mahya	7000

② Select MAX(sal)

① From emp;

Max function is applied on all rows of table -> 5000

Max function is applied on all rows of table -> 5000

Max function is applied on all rows of table -> 5000

Max function is applied on all rows of table -> 5000

Database

under execution

Q. Write query to display maximum salary, total salary if employees are working in deptno 30.

→ Select MAX(sal), sum(sal)

From emp;

Where Deptno IN (30);

Q. Write a query to display Total number of employee working as manager

→ Select COUNT(JOB) / COUNT(*)

From emp

Where JOB IN ('MANAGER');

Q. Write query to display maximum sal, minimum sal, average sal, Total of salary, maximum comm, minimum comm, average comm, Total comm from the table.

→ Select MAX(sal), MIN(sal), AVG(sal), SUM(sal),
MAX(comm), MIN(comm), AVG(comm), SUM(comm)

From emp;

Q. Write query to display maximum salary / minimum salary if employees are working as clerk, salesman, manager Hired before year 86 and they are having manager.

→ Select Max(sal), Min(sal)

From emp

where Job IN ('CLERK', 'SALESMAN', 'MANAGER')

AND Hiredate < '01-Jan-1986'

AND MGR IS NOT NULL

Q. Write query to display Average salary, Total salary if employee are having 's' in their name.

→ Select AVG(sal), sum(sal)

From emp

where ename LIKE '%s%';

Q. Write query to display total number of employee with total salary if employee are working in Department no 20, 30 earning salary more than 1250.

→ Select COUNT(ename) / COUNT(*), sum(sal)

From emp

where Deptno IN (20, 30)

AND Sal > 1250;

Q. Write a query to display average commission and maximum commission if employee are working as salesman, president, analyst and they are hired in year 81 getting salary greater than 1200 less than equal to 5000.

→ $(\text{AVG}(\text{comm}), \text{MAX}(\text{comm}))$ value form.

(minid) Select AVG(comm), MAX(comm)

From emp

where job IN ('SALESMAN', 'PRESIDENT', 'ANALYST')

AND HIREDATE LIKE '%.81%'

AND sal Between 1201 AND 5000

* Characteristics of Multi Row function

→

(1) It takes 'N' numbers of input and gives out single output.

(2) multi row function execute group by group.

(3) we can write multiple multi row function in select clause.

(4) In one multi row function we can pass only one argument at one time.

example Max(sal) ✓

Max(sal, comm) ✗

(5) only in count multi row function we can pass A strict (*) as argument.

In strict multi row function we can't use any other argument.

For example if you want to print first 10 rows of table then you have to use strict multi row function.

(first 10 rows, (*'s first), (sum(1)) * 10, first 10)

(or, select first 10 rows)

→ First 10 rows QMA

Assignment Group By

Date _____
Page _____

1) write a query to display number of employees working in each Department except president.

→ Select count (*), Deptno
from emp where job not in 'president'
group by Deptno;

2) write query to display total salary needed to pay all the employees in each job.

→ Select sum (Sal), Deptno
from emp
group by deptno;

3) wQTD number of employee working as manager in each Department.

→ Select count (*), Deptno
from emp where job like '%MANAGER%'
group by Deptno;

4) wAQTD AVG salary needed to pay all the employees in each department excluding the employee of deptno 20.

→ Select avg (Sal) Deptno
from emp
where Deptno not in 20
group by Deptno;

5) wQTD number of employees having character 'A' in their names in each job.

→ Select count (*)
from emp
where Ename like '%A%'
group by job;

(OR) select count (*), job

From emp

where ename like '%A%'
AND job like '%AM%'

group by job;

Q) WAQTD number of employees AND AVG salary needed to pay the employees who salary is Greater than 2000 IN each dept.

→ Select count(*), AVG(sal), Deptno
from emp
where sal > 2000
group by Deptno

Q) WAQTD total salary needed to play AND number of salesmans in each Dept.

→ Select sum(sal), Deptno
from emp
where job like '%.SALESMAN%'
group by Deptno

Q) WAQTD number of employees with their maximum salaries in each job.

→ Select count(*), max(sal), job
from emp
group by job;

Q) WAQTD MAXIMUM Salaries Gives to An employee working in each Dept.

→ Select max(sal), Deptno
from emp
group by Deptno;

Q) WAQTD number of times the salaries present in employee Table.

dot. (*select) count(sal)

from emp;

Rejected
dot. group by sal;
dot. pd group

Q. Write query to display maximum salary in dept no 10



Select max (sal)

from emp

where deptno IN 10 ; / dept no = 10 ;

Q. write a query to display maximum sal in dept no 20



Select max (20sal)

from emp

where deptno IN 20 ;

Q. write a query to display maximum sal in dept no 30



Select max (sal)

from emp

where deptno IN 30 ;

Q. write a query to display maximum sal in each dept

→ Select max (sal), deptno

From emp

group by deptno;

② group by (RBR)

(Group by (gr))

ID	ename	Sal	deptno
1	Karan	5000	10
2	Sujal	7000	30
3	himansu	100	20
4	Rahul	400	10
5	Kartik	3000	30
6	Pooja	2975	20
7	Anita	200	10
8	Ahing	3900	20
9	Kalpesh	5000	30

① From id query

Select ③ subquery

③ Select max (sal)

① From emp

② group by deptno;

under execution

From clause

not a group sub query

Execution of subquery in both stages
group by clause of main query

O/p

max(sal)

5000

7000

3900

Group by clause :- It is used to create group of records

Syntax :-

Select Group-by-function / Group-by-Expression

From Table name

[where < filter-condition >]

Group by Column-name.

Characteristics of group by clause.

- ① It is used to create group.
- ② group by clause always execute Row by Row.
- ③ after execution of group by clause it might be any clause it will always execute group by group.
- ④ we can write multiple column names in group by clause.
- ⑤ we can write group by function and group by expression in select clause.

* Group by clause functions

multirow function used in select clause is known as group by function.

* Group by expression

column name used in group by clause is known as group by expression in select clause.

Q. write a query to display maximum salary , minimum salary in each job

→ select max(sal), min(sal); job
From emp
group by job;

Q. write a query to display maximum salary in each deptno if employee are getting sal > 2850

→ select max(sal), deptno
From emp
where sal > 2850
group by deptno;

Q. write a query to display maximum salary , minimum salary , total salary in each Deptno if employee are Hired in year 87

→ Select max(sal), min(sal), sum(sal), Deptno
From emp
where (Hiredate >= '1-Jan-87' And Hiredate <= '31-Dec-87')
group by Deptno;

Q. write query to Display maximum commission, minimum commission If employee are having manager earning salary Less than 1600 greater than equal to 2000 in each Dept.

→ Select max(comm), min(comm), deptno
From emp
where mgr is not null And sal not between (1600 And 1999)
group by deptno;

Q. write query to Display total number of employees present in each job.



Select count(*) , job
From emp
group by job;

Q. write a query to display maximum sal, min sal with their Department number if employees are having 'A' IN their name Hired Before year 88



Select max(sal), min(sal), Deptno
from emp
where ename like '%.A%.' And hiredate <='1-Jan-88'
group by deptno;

Q. write a query to display maximum salary, minimum salary, Average salary in each department if employee are working As president, manager, Analyst Getting salary greater than 1200 less than equal to 5000 Display with job .

Select max(sal), min(sal), Avg(sal), deptno, job
from emp
where job IN ('President', 'manager', 'Analyst')
And sal between (1201 and 5000)
group by deptno, job;

(1201 and 5000) condition for both the set of query condition
of select pd. query

Q WRTD maximum sal, minimum sal, total sal if employees are working in department 10, 20 and they are getting sal > 2000 hired after year 70, for each Deptno

Select max(sal), min(sal), sum(sal), deptno

From emp

where deptno IN (10, 20)

And sal > 2000

And hiredate > '31-Dec-70' (not before 70)

group by deptno;

Q WRTD max sal in each dept if employee are getting salary > 1500 and getting a max sal in that department, sal > 2850.

filter the condition

	ID	name	sal	deptno
X	1	Kartan	800	10
	2	Yash	2000	30
	3	manoj	3000	20
X	4	Arman	400	10
	5	Sameer	2850	20
	6	Pooja	5000	30
	7	Rahul	1800	30
	8	Sakshi	2600	10
X	9	Ahina	100	20

⑥ Select max(sal), deptno

① from emp

② where sal > 1500

③ group by deptno

④ by having max(sal) > 2850;

output

Max(sal)
5000
3000

under execution

* Having clause :- it is used to filter group condition.

Syntax :- Select Group-by-function/Group-by-Expression
From table.name

or select (in) [] where (<filter-condition>)]

Group by column-name

Having (<Group-filter-condition>)

Characteristics for Having clause

- (1) It is used to filter multi row function condition or group condition.
- (2) having clause execute group by group.
- (3) where clause is optional
- (4) group by clause is mandatory for the execution of having clause.
- (5) in having clause we can write multiple group condition.
- (6) in having clause we can write multiple group by function/multi row function

Q. What is total number of employee present in each department

If there are more than Three emp are working

Select count(*) as deptno from emp

group by deptno

Having count(*) > 3

Count

Deptno

Deptno

Q. What is the total number of employees getting same salary?

Select count(*), sal
From emp
Group by sal
having count(*) > 1;

group by → (RRR)

ID	ename	Sal
1	Rahul	700
2	Karan	800
3	Kalpesh	1250
4	Manoj	3000
5	Sameer	1250
6	Aman	200
7	Yash	3000

- ④ Select count(*),
- ① From emp
- ② group by sal
- ③ having count(*) > 1;

O/P

count(*)	sal
2	3000
2	1250

Under execution



Assignment on Having clause

Date _____
Page _____

- 1) write a query to display total salary needed to pay each job in employee table.

→ $\text{select sum(sal), job from emp group by job;}$

- 2) WQTD The Hiredate on which at Least 3 employees where Hired.

→ $\text{select hiredate from emp group by hiredate having count(*) \geq 3;}$

- 3) WQTD The Department number which has more than 2 employees and the total Amount Required to pay the monthly salary of ALL The employees IN That department should be more than 9000

→ $\text{select deptno, count(*) from emp group by deptno having count(*) > 2 and sum(sal) > 9000;}$

- 4) WQTD number of employees working in each department And Its' Averages salary by excluding All the employee whose Salary is Less than their commision.

→ $\text{select count(x), deptno from emp where sal < comm group by deptno;}$

5) WQTD the salaries which has repetitions in the sal column of employee table.

→ Select Count(*), sal
from emp

Group by sal

Having count(*) > 1

Count most

Controls + dot . select

Cast from int to char

010001 010001

010001 (102) same logic

Count most

6) WQTD the employee name only if more than one person in the employee of the company has same name.

→ Select ename, count(*)

from emp

Group by ename

Having count(*) > 1

Count most

Count most

7) WQTD the department no whose Average salary is between 2500 And 3000.

→ Select dept_no

from emp

group by sal

having sal between 2500 and 3000

0 - mfgsG . number

8) WQTD the number of employees only if they are working as manager or Analyst And their Annual sal should end with a zero In each Department.

→ Select count(*) from emp

from emp

where job in ('MANAGER', 'ANALYST')

Group by dept_no having

having sal % 12 like '%0'

9) WQTD no of clerks working in each department.

→ Select count (Job), Deptno
from emp

where Job = 'clerk'

Group by Deptno;

(*) found for sel

group first

for pd group

10) WQTD highest salary given to a manager in each department

→ select max(sal), Deptno
from emp

where Job = 'manager'

Group by Deptno;

(*) found for sel

11) WQTD no of times the salary have repeated in the emp table.

→ Select count (*), sal
from emp

Group by sal;

Having count (*) > 1;

count pd group

(*) found for sel

12) WQTD Deptno and number of employees working in each Department except for those working Dept 10.

→ Select Deptno, count(*)
from emp
where Deptno = 0

Group by Deptno, comm;

13) WQTD numbers of employees getting commision in each Department.

→ Select count (*), Deptno, comm
from emp

where comm is not null;

Group by Deptno, comm;

14) WAQTD number of employee Getting salary more than 1600 excluding all the managers in each Department.

→ Select count (Empno), Deptno
From emp

where sal > 1600 And job != 'manager'
Group by Deptno;

15) WAQTD Average salary needed to pay all the employees who Are having Reporting manager in each job.

→ Select AVG (sal), job

From emp

where mgr is not null

Group by job;

16) WAQTD number of employees Hired into the same Department

on the same Day.

→ Select count(*), Hiredate

From emp

Group by hiredate

Having count (Hiredate) > 1;

17) WAQTD number of employee Getting The sal same salary, working in the same Department.

→ Select count(*), Deptno, sal

From emp

Group by Deptno, sal

Having count (*) > 1;

18) WAQTD maximum salary given in each Designation except
excluding those whose name starts with 'K'.

→ Select max(sal), job

from emp

where Ename not like 'K%'

Group by job;

19) WAQTD Number of employees Reporting to 7839.

→ Select count(*)

from emp

where mgr = 7839

20) WAQTD number of employee name starting with an vowel in
each department.

→ Select count(*), Dept no

from emp

where Ename like 'A%' or Ename like 'E%'

or Ename like 'I%' or Ename like 'O%' or

Ename like 'U%'

Group by Dept no;

Telangana
13/04/

* Order by

→ It is used to order records in ascending and desending order.

Syntax :- * / [column_name / Expression / [Group_by_Function] /
[Group_by_Expression]]

From Table_name

[Where <Filter-condition>]

[Group by column_name]

[Having <Group_Filter-Condition>]

Order by column_name / Expression / Number / [ALIAS NAME] /
[ASC] / DESC

Characteristics of Order by clause

- ① It is used to order Records in ASC and DESC manner
- ② It is last executable clause
- ③ In order by clause we can use Alies name
- ④ In order by clause we can pass number as argument.
- ⑤ By default order by clause order the Records in ASC order.
- ⑥ All the Records are arrange in asc order with respect to primary key of the table.

① by using column name →

Select sal

From emp

order by sal Asc ;

② by using Expression →

Select sal * 12

From emp

order by sal * 12 DESC ;

③ by using Number →

Select *

From emp

order by 2 ASC;

④ by using Alias Name →

Select sal * 12 Annual

From emp

order by Annual ASC;

⑤

group by department

to show department wise sum of the all values of basic salary

group by department

sum of basic salary of each department

group by department

sum of basic salary of each department

group by department

sum of basic salary of each department

group by department

sum of basic salary of each department

group by department

sum of basic salary of each department

group by department

sum of basic salary of each department

group by department

sum of basic salary of each department

group by department

sum of basic salary of each department

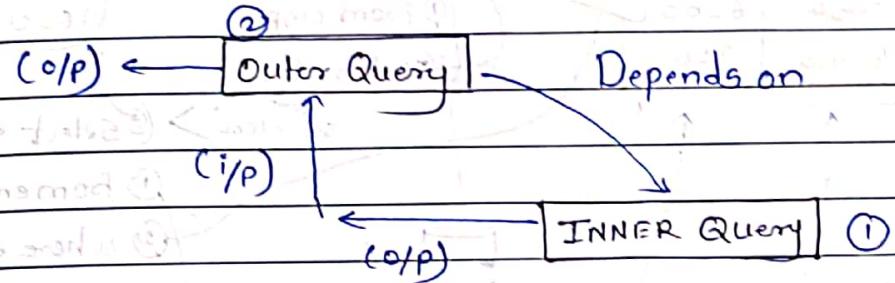
group by department

sum of basic salary of each department

Subquery

Query written inside another Query is known as Sub Query.

Working Principle of Sub Query



① there are two Querys

① Inner Query

② outer Query

③ Inner Query execute first , it will execute completely

④ output of the Inner Query will be given to Outer Query

⑤ Outer Query will execute Second , it will execute completely

⑥ From this we can say Outer Query is depends on Inner Query

This is known as Sub Query.

Case ① when data is Unknown , we use SubQuery.

Q. What employee names who are getting salary greater than Allen.

→ Select ename from emp

where sal > (Select sal from emp where ename = 'Allen')

filter the condition (Row by Row)

ID	ename	Sal
1	Kanur	5000
2	Valpesh	1000
3	Rahul	1600
4	Priya	5000
5	Pooja	6000
6	Ahima	2000

filter the condition (Row by Row)

ename
Kanur
Pooja
Ahima

Display output

Select ename

① from emp

② where sal

Sal > 1600

>

③ Select ename

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

1600

Q. WGTD all details of employees who are getting salary more than BLAKE less than SCOTT

→ Select *

from emp

where sal > (select sal from emp where ename='BLAKE') AND
Sal < (select sal from emp where ename='SCOTT');

Q. WGTD all details of employees who are working as Salesman, clerk, manager getting salary more than clark in department 10, 20.

→ Select *

From emp

where job IN ('SALESMAN',
'CLERK', 'MANAGER')

From emp

where ename = 'clark' And deptno
IN (10, 20);

Q. WGTD employee name, salary, job, Hiredate, if employees are hired after smith before miller.

→ Select ename, sal, job, Hiredate

from emp

hier where Hiredate > (select Hiredate from emp

where ename = 'SMITH')

And Hiredate < (select Hiredate from emp

where ename = 'MILLER');

Q. WAQTD all details of emp who are having manager hired before year 87- getting salary less than 1kng working in dept 20,30 ,

Select *

QNA (from emp and department table) of last question
where MGR is NOT null
AND Hiredate < '01-Jan-87'
AND sal < (Select sal
from Emp
where Ename = 'King')
And DeptNo IN (20,30)

too little \leq (maximal) but does not
work since $(\text{minimal}) \neq (\text{maximal})$

Stabzell-Zellen mit Stabzell-Zellen → Stabzell-Zellen mit Stabzell-Zellen

~~Spuratus~~ ~~stroblii~~ ~~l. l. l.~~ > ~~stroblii~~ ~~l. l. l.~~

Assignment SubQuery Case 1

Date _____
Page _____

1 Q. Query to display the emp names who are earning more than smith

→ `Select ename`

`from emp`

`where Sal > (Select sal from emp where ename = 'SMITH');`

2 Q. Query to Display all the emp who's dept no is same as scott.

→ `Select ename`

`from emp`

`where deptno = (Select deptno from emp`

`where ename = 'SCOTT');`

3 Q. WQRD List the emp who has salary greater than miller

→ `Select ename`

`from emp`

`where Sal > (Select sal from emp`

`where ename = 'MILLER');`

WQRD all the emp whose job NOT same as Allen & salary is greater than martin.

→ `Select ename`

`from emp`

`where Job NOT like (Select Job From emp where ename = 'ALLEN')`

`And sal > (Select sal from emp where ename = 'MARTIN');`

5 Q. List all the employees whose job is same as Jones & their salary lesser than scott.

→ `Select ename`

`from emp`

`where job = (Select job`

`from emp`

`where ename = 'JONES') And`

`Sal < (select sal`

`from emp`

`where ename = 'SCOTT');`

Q) Display all the emp who are joined after blake.

Select ename

from emp

where hiredate > (Select hiredate from emp

from emp

where ename = 'BLAKE');

Q) Display the employee information who is not taking comm & join company after allen.



Select * from emp

from emp

where comm is NULL And hiredate > (Select hiredate

from emp

where ename = 'allen');

Q) Display details of employee along with hike of 35% in salary working as president and earning more than smith.



Select * , empno, sal + sal * 0.35

from emp

where sal > (select sal from emp where ename like '%smith%')

And (job like ('%', 'president', '%'));

Q) Display names of employee whose comm is more than sal & hired before king.



Select ename

from emp

where comm > sal And hiredate < (Select hiredate

from emp

where ename = 'king');

Q) list the employee whose daily salary is greater than allen and who are joined before miller only.



Select ename

from emp

where sal/30 > (select sal/30 from emp where ename

like ('%', 'ALLEN%', '%')) AND

Hiredate < (Select hiredate from emp

where ename like ('%', 'miller%', '%'));

iii) Display no. of employees whose comm is more than salary &

earning more than smith's plus a query with additional clause.

→ Select count(*) from emp

where comm > sal And sal > (Select sal from emp

where where ename = 'Smith')

(Additional condition) + additional clause

(Additional condition)

iv) Display all the employee whose name start with 'S' &

Having sal > allen & sal > Ford,

Select ename from emp

where name like '%.S%' And sal > (select sal from emp

where name like '%.Allen%')

And sal < (select sal from emp

where name like '%.Ford%')

v) Display the dept names that are having atleast one L in it

→ Select deptname

from dpt

where dname like '%.L.%'

vi) Display the manager reporting job & deptno for whose who don't have comm.

→ Select mgr, deptno from emp

where comm is null.

Tgashog
14-10F

Q) WQTID all details of employee who are getting sal ≥ 1200 and less than 1000 working in same deptno as a MARTIN

→ Select *

from emp

where sal ≥ 1200 and sal < 1000

And deptno = (Select deptno from emp

where ename = 'MARTIN') ;

Q) WQTID all details of employee who are working in Department Accounting

→ Select * from emp where deptno = (Select Deptno

from emp

where deptno = (Select Deptno

from Deptno where Dname = 'ACCOUNTING' ;

where Dname = 'ACCOUNTING') ;

for next

next question

next question

and next question

Emp Table

ID	ename	deptno
1	Karan	10 ✓
2	Manoj	30
3	Ponja	20
4	Ahina	10 ✓
5	Alia	10 ✓
6	Aman	20

filter the condition

ID	ename	deptno
1	Karan	10
4	Ahina	10
5	Alia	10

Display

filter the condition
row by row

Dept Table

deptno	dname
10	Accounting
20	Research
30	Sales

② Select * from emp
① From emp
③ where deptno = (Select Deptno
 From Dept
 ④ where Dname = 'Accounting')

under execution

Database

Database

⑤ prints similar query like ② but it's faster
⑥ different output display for each row

Case 2 : Data to be displayed is present in one table but condition present in another table.

1) wQTD employee name, job, salary if employees are working in dept research.

→ ~~Select ename, job, salary From emp
where deptno = (Select deptno from dept
where dname = 'RESEARCH');~~

2) wQTD all details of employees who are working at location chicago.

→ ~~Select * from emp where deptno = (Select deptno from dept where loc = 'chicago');~~

3) wQTD all details of employee who are getting salary greater than allen working in department research, sales.

→ ~~Select * from emp
where sal > (Select sal from emp where ename = 'Allan')
AND Deptno IN (Select deptno From Dept
where Dname IN ('Research', 'Sales'))~~

4) WQTD all details of employee department if employees are working president, manager, analyst hired in year 81.

→ Select * from dept
where deptno IN (select deptno from emp
where job IN ('President', 'manager',
'analyst')) And
Hiredate >= '1-Jan-81' And Hiredate <= '31-Jan-81');

5) WQTD all details of employee if employees are working at location newyork, chicago getting salary more than smith and earning commission.

→ Select * from emp
From emp
where deptno IN (select deptno from dept
where loc IN ('newyork', 'chicago'))
And sal > (select sal from emp
where ename = 'smith')
And (Commission IS NOT NULL);

Assignment On SubQuery Case 2

Date _____
Page _____

1) Display All the employees whose Department names Ending 's'

→ Select ename from emp
where deptno IN (Select deptno
from Dept
where Dname like '%.S') ;

2) Query to Display all the employees IN 'operations' Operation

And Accounting Dept.

→ Select ename
from emp
where Deptno IN (select Deptno
from Dept
where Dname IN ('Operation',
'Accounting')) ;

3) List employee who located in chicago and their Commision IS zero .

→ Select ename
from emp
where Deptno IN (select Deptno
from Dept
where Loc IN ('chicago'))
And Comm IN (0) ;

4) List employees who are working in RESEARCH Department And they Are manager.

→ Select ename from emp
where deptno IN (select deptno from dept
where dname IN ('RESEARCH'))
And job IN ('manager');

5) Display Department name of the employees who earn commition.

→ Select dname from dept
where deptno IN (select deptno from emp where
comm is NOT null);

6) Display the Department number who working in sales Department
And they are manager.

→ Select deptno from dept
where deptno IN (select deptno from emp
where job IN ('manager'))
And dname IN ('SALES');

7) Display Hiredate and job of all the employees working for sales



Select hiredate, job from emp
where deptno IN (select deptno from dept
(select dname from dept where dname IN ('Sales')));
and ('Sales') in job function

8) Display Location And name of employee who working As president.



Select loc, dname from dept
where deptno IN (select deptno from emp where job IN
('President'));

g) Display the Dname that are having clerk IN IT



Select dname from dept
where deptno IN (select deptno from dept where dname
like '%E%E%');
(('clerk')) from emp
where job IN ('clerk'));

10) Select the employees whose dname is having At Least Two 'E' IN IT.

→ Select ename from emp
where deptno IN (select deptno from dept
where loc like '%E% E% E%');

11) Select All the employees who are working for CHICAGO

→ Select ename from emp
where deptno IN (select deptno from dept
where loc IN ('chicago'));

12) List the Department names that are having salesman.

Select dname from dept
where deptno IN (Select deptno from emp
where job IN ('Salesman'));

(After executing this query you will get the answer)

i) ('Somerset') in dept name

13) Display the location of all the Departments which have employee joined in the year 81.

→ Select loc from dept

where deptno IN (Select dname from emp

where hiredate like '%.81') ;

14) Display all the employee information who are living in location which is having at least 2 '0' in it.

→

Select * from emp

where deptno IN (select deptno from dept

where loc like '%.0%.0%') ;

15) List the number of employees whose job is salesman working for Newyork and chicago.

→

Select count from emp

where deptno IN (select deptno from dept

where loc IN ('Newyork', 'chicago')

And job IN ('Salesman')) ;

16) List the Department names in which the employees are Hired between 1st of Jan 1981 and 31st Dec 1982 with salary more than 1800.

→ select dname from dept
where deptno IN (select deptno from emp where

(hiredate between '01-Jan-1981'

And ('31-Dec-1982') And sal > 18000);

17) Display Location of the employee who earn commision.

→ select loc from dept

where deptno IN (select deptno from emp where

(jobname like 'SA%') AND comm IS NOT NULL);

((('SALES')) OR ('STAFF'))

18) Display employees location who has some commision.

→ Select loc from dept

where deptno IN (select deptno from emp where

((('PRESIDENT')) OR ('MANAGER')) AND comm IS NOT NULL);

19) Display all the employees whose job same as 'smith' And Department same As 'JONES' And salary more than 'TURNER'.

→ Select ename from emp
where deptno IN (select deptno from dept where dname
= 'JONES') And job IN ('Smith') =
'Turner' And (Select sal from emp where ename
= 'Turner') < sal

20) Select all the employees working for Dallas.

→ Select ename from emp
where deptno IN (select deptno from dept
where loc IN ('DALLAS'));

21) Display the location of an employee in Accounting Department.

→ Select loc from dept
where deptno dname IN ('Accounting');

22) Display the Department information of employee who is working for newyork location.

Select * from emp

where deptno IN (select deptno from dept

where loc IN ('newyork'));

23) Display the clerk and Analyst who are not working for 'DALLAS'

Select job from emp

where deptno IN (select deptno from dept

where loc NOT IN ('DALLAS'))

And job IN ('clerk', 'Analyst');

Nested Subquery

→ sub query written in another sub query is known as Nested subquery

Q: WQTD max sal from the table.

→

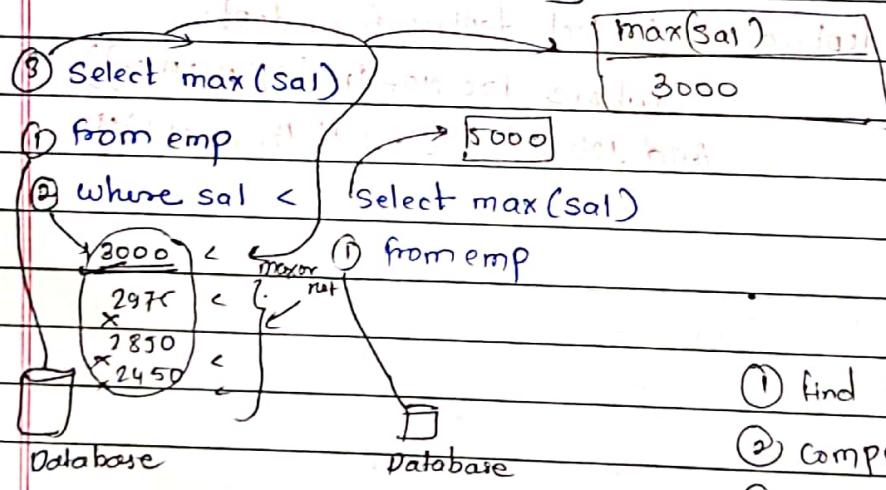
```
Select max(sal)
from emp;
```

Q. WQTD first maximum salary

→ Select max(sal) from emp;

I.m.p. Q. WQTD Second maximum salary

→



① Find 1st max sal

② compare

③ display o/p;

Q. WQTD: 3rd minimum salary



Select min(sal)
from emp

where sal

→ > (Select min(sal) from emp)

where sal > (Select min(sal))

(Select min(sal) from emp);

Q. WQTD: all details of employee who are getting 3rd max(sal)

Select max(sal), emp.*

from emp (Select * ~~sal~~ max(sal))

where sal IN from emp

where sal <

(Select max(sal))

from emp

where sal < (Select max(sal))

((Select max(sal)) ~~from emp~~));

~~max(sal)~~

(Select max(sal)) ~~from emp~~



Select *

from emp

where sal IN (Select max(sal))

from emp

where sal < (select max(sal))

from emp

where sal < (select max(sal))
from emp));

Q. List Dept name of the employee who are getting second minimum sal.



Select Dname

From Dept

group by Deptno (Select Dept Dname Dept no

from Dept group by Deptno) < <

(Select min(sal)) < the result

↓ department Select min(sal) from emp

where sal > Select min(sal)

(the) combination will be second minimum with from emp (Deptno)

→ 3. min (sal) from emp

(Select min(sal)) from emp

Select Dname

From Dept

where Deptno IN (Select Deptno from

Deptno where sal = from emp)

is (department where sal IN (Select min(sal)

from emp

where sal > (Select min(sal))

from emp

From emp))) ;

Where

(the) combination will get result

↓ result

(the) combination will get result

↓ result

Q. write all details of employees who are hired in year 81
getting salary greater than Alin less than king working in Dept-
Accounting, Research, Sales and earning Sal second maximum
comm.

Select *
from emp

and

where hiredate like '%81' and sal > (select sal from emp
where ename = 'Alain')

AND

sal < (select sal from emp
where ename = 'king')

And dept no IN (select Deptno
from DEPT

where Dname IN

('Accounting', 'Research', 'Sales')

And comm IN

(Select max(comm))

from emp

where comm < (Select max(comm))

from emp))) ;

Employee Manager Subqueries

Date _____

Page _____

Q. wQTD all the details of emp who are having manager



Select *

From emp

where MGR IS NOT NULL ;

Q. wQTD name of Smits manager



Select ename

From emp

where empno IN (Select mgr

(Select) from emp

from emp

where ename = 'jones') ;



Q. wQTD all the details of Jons manager.

Select *

from emp where mgr

where empno IN (Select mgr

(Select) from emp

from emp
where ename = 'JONES') ;

Q. Ward Department details of miller manager

Select *

from Dept

~~from Dept
where Deptno IN (Select Deptno
from emp)~~

from emp

where empno IN (Select mgr

From emp

where ename = 'miller')

Q. WQTD all the details of ALLEN'S manager's manager.

Select *

from emp

where empno IN (Select mgr from emp) OR
from emp
where empno IN (Select mgr from emp)
From emp
where ename = 'ALLEN')

Q. WQTD all the details of Employees who are Reporting to king



Select *

from emp

where mgr IN (Select empno

from emp

where ename = 'king')

① king to find empno of king

② mgr = empno

③ display o/p

Q. WQTD Department Details of employees who are Reporting to blake.



Select * from dept

from emp

where Deptno IN (select empno

from emp

where ename = 'BLAKE');

Assignment ON MAX & MIN

Date _____
Page _____

1) WQTD name of the employee earning maximum salary.

→ Select ename

From emp

where sal IN (select max(sal) from emp);

2) WQTD name of the employee earning minimum salary.

→ Select ename from emp

where sal IN (select min(sal)

from emp);

3) WQTD name and Hiredate of the employee Hired Before all
the employees (First emp)

→ Select ename, Hiredate from emp

where hiredate IN (select min(hiredate)

from emp);

4) w_{QTD} name and Hiredate of the employees Hired At the last.

→ select ename , hiredate from emp

where hiredate IN (select max(hiredate)
from emp);

(question (1c) & part b) for the answer

4s) w_{QTD} name , comm of the employee who earning min Commission

→ select ename , comm from emp

where comm IN (select min(comm)
(from emp));

(question)

5) w_{QTD} name , sal And comm of the employee earning maximum
Commission .

→ select ename , sal , comm from emp

where comm IN (select max(comm)

(from emp));

7) WAPTD Details of the employee who has Greatest empno.

→ Select * from emp
where empno IN (select max(empno)
from emp);

8) WAPTD Details of the employees having the Least Hiredate.

→ Select * from emp
where hiredate IN (select min(hiredate)
from emp);

9) WAPTD Details of the employees EARNING Least Annual
Salary

→ Select * from emp where sal IN (select min(sal*12)
from emp);

10) WQTD name, Annual salary of the employees if their Annual salary is more than all the Salesman:



→ Select ename, sal * 12 from emp

where sal > (select sal * 12 from emp

where job = 'Salesman') ;

→ Select ename, sal * 12 from emp

where sal * 12 > All (select sal * 12 from emp

where job = 'Salesman') from emp

: (query) where ename = 'SALESMAN') ;

→ Small trick: print all the update will be inserted into table

use select

Like this

Final query: (select) (from emp where job = 'Salesman')

: (query result)

Assignment on NESTED Sub Query

Date _____
Page _____

Q1) WQTD 2ND minimum salary.

Statement 1 (outer) is Select min(sal)
 $\text{min(sal)} \times \text{condition}$ from emp
Statement 2 (inner) is $\text{where sal} > (\text{Select min(sal)}$
from emp)

Q2) WQTD 5TH maximum salary.

Statement 1 (outer) is Select max(sal)
 $\text{max(sal)} \times \text{condition}$ from emp
Statement 2 (inner) is $\text{where sal} < (\text{Select max(sal)}$
from emp)
Statement 3 (inner) is $\text{where sal} < (\text{Select max(sal)}$
from emp)
Statement 4 (inner) is $\text{where sal} < (\text{Select max(sal)}$
from emp)
Statement 5 (inner) is $\text{where sal} < (\text{Select max(sal)}$
from emp))
Statement 6 (inner) is $\text{where sal} < (\text{Select max(sal)}$
from emp));

3) wQTD name of the employee earning 3RD maximum salary



Select ename

From emp

where comm < (select max(comm) From emp)

where comm < (select max(comm) from emp)

where comm < (select max(comm))
From emp))) ;

wQTD

Select * from emp
where hiredate IN

4) wQTD empno of the employee earning 2D maximum salary.

Select empno From emp

where sal < (select max(sal) from emp)

where sal < (select max(sal))
from emp))) ;

wQTD loc of the empl

Select loc from
where deptno IN

5) wQTD Department name of An employee Getting 4th max sal

Select Dname from Dept

where Deptno IN (select Deptno from emp

where sal < (select max(sal) from emp)

where sal < (select max(sal))

from emp

where sal < (select max(sal))
from emp))))))

6) WQTD Details of the employee who was hired 2nd

→ Select * from emp

where hiredate IN (Select min(hiredate) from emp

where hiredate > (select min(hiredate)
from emp));

7) WQTD name of the employee Hired Before the last
employee.

→ select ename from emp

where hiredate IN (select max(hiredate) from emp

where sal < (select max(hiredate)
from emp));

8) WQTD loc of the employee who was hired first

→ Select loc from dept

where deptno IN (select deptno where from emp

where hiredate IN (select min(hiredate)
from emp));

emp min(hiredate) first 1 loc first 1

max(sal) max(sal) last 1

emp max(hiredate) last 1

sal < (select max(sal)
from emp)))))

g) WQTQD Details of employee earning 7th minimum sal

→

Select * from emp

where $\text{Sal IN} = \{1, 2, 3, 4, 5\}$ is the set of values

(select min(sal) from emp)

where $\text{sal} > \text{?}$

(Select min(sal) from emp)

where $\text{Sal} >$

(Select min(sal) from emp) all in one query

where $\sin >$

(Select min(Sal) from emp)

where sal >

(select min(sal) from emp

where $5a > 1$

select min(sal) from emp

where $s > 1$

(select min(sal) from emp))))))))

from emp))))))))))

Q10) WQTD Dname of emp getting 2nd maximum salary .

→

Select Dname from Dept

where Deptno IN (select deptno from emp)

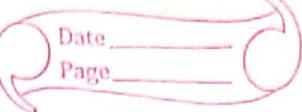
where sal IN (select max(sal) from emp)

where $\text{sal} < (\text{select max}(\text{sal}))$

F from emp))));

SubQuery

↳ Nested Queries



1) find 3rd minimum salary in the emp table

→ select min(sal) from emp

where sal >

(select min(sal) from emp)

where sal >

(select min(sal) from emp))

where sal

2) Display the 2nd maximum salary

→ select max(sal) from emp where sal <

(select max(sal) from emp);

3) Display the dept name of the emp who get 3rd
maximum salary.

→

Select dname from dept where

Deptno IN

(Select Deptno from emp where sal IN

(Select max(sal) from emp where sal <

(Select max(sal) from emp where sal <

(Select max(sal) from emp))));

4) 3rd maximum sal



Select max(sal) from emp

where sal < (Select max(sal) from emp)

where sal < (Select max(sal) from emp)

5) nth max sal



Select max(sal) from emp

where sal < (Select max(sal) from emp)

~~sal <~~ (Select max(sal) from emp)

where sal < (Select max(sal) from emp)

(Select max(sal) from emp)

where sal <

(Select max(sal) from emp)

where sal <

(Select max(sal) from emp)

From emp)))));

⑥

7th maximum salary

→ select max(sal) from emp where sal <

(Select max(sal) from emp where sal < (Select max(sal) from emp))

(Select max(sal) from emp where sal <

(Select max(sal) from emp))))));

7) 10th minimum salary.

→ select min(sal) from emp where sal >

(select min(sal) from emp where sal >

From emp))))))))));

8) Select ename of employee who earn 2nd max salary
and works for location Dallas.

→

(select ename from emp where sal IN (

(Select max(sal) from emp where sal <

(select max(sal) from emp)))

And (select deptno

From Dept

to where loc = Dallas);

((select emp)) - Shows nested query operation)

Assignment on EMP AND MANAGER RELATION

Q1) WQTD SMITHS Reporting manager's name .



→ The manager of Smiths (Select mgr from emp where)

→ The manager of Smiths (Select mgr from emp where)

Select ename from emp where empno IN

(Select mgr from emp where ename = 'SMITHS'));

Q2) WQTD ADAMS Manager's manager's name.



→ The manager of Adams (Select mgr from emp where)

(Select mgr from emp where Deptno IN -)

(Select mgr from emp where ename = 'ADAMS'));

Q3) WQTD Dname of Jones manager.



Select Dname from emp where Deptno IN

(Select Deptno from emp where empno IN

(Select mgr from emp where Ename = 'JONES'));

Q4) WQTD MILLER'S Manager's Salary.



Select Sal from emp where empno IN

(Select mgr from emp where ename = 'MILLER'));

5) WQRD loc of smith's manager's manager.

→ Select loc from Dept where Deptno IN

(Select Deptno from emp where empno IN

(Select mgr from emp where empno IN

(Select mgr from emp where ename = 'SMITH'));

6) WQRD name of the employees Reporting to blake

→ Select ename from emp where mgr IN

(Select ~~empno~~ empno from emp where ename = 'blake');

7) WQRD numbers of employee Reporting to king .

→ Select count(ename) from emp where mgr IN

(Select empno from emp where ename = 'king');

8) WQRD Details of the employees Reporting to jones .

→ Select * from emp where mgr IN

(Select empno from emp where ename = 'JONES');

9) WQRD Enames of the employees Reporting to blake's manager .

→ Select ename from emp where mgr IN

(Select empno from emp where empno IN

(Select mgr from emp where ename = 'BLAKE'));

10) What number of employees Reporting to FORD's manager.



↳ ~~select count(ename) from emp where mgr = 101~~

~~Select (Count(ename)) from emp where mgr IN
(select empno from emp where empno IN
((Select mgr from emp where ename='FORD')));~~

~~↳ (select count(ename) from emp where mgr = 101)~~

~~↳ (select count(ename) from emp where mgr = 101)~~

~~↳ (select count(ename) from emp where mgr = 101)~~

↳ (select count(ename) from emp where mgr = 101)
~~((select count(ename) from emp where mgr = 101))~~

↳ (select count(ename) from emp where mgr = 101)

~~((select count(ename) from emp where mgr = 101))~~

↳ (select count(ename) from emp where mgr = 101)

~~↳ (select count(ename) from emp where mgr = 101)~~

~~↳ (select count(ename) from emp where mgr = 101)~~

↳ (select count(ename) from emp where mgr = 101)

~~((select count(ename) from emp where mgr = 101))~~

~~((select count(ename) from emp where mgr = 101))~~

* Types Of SubQuery

1) Single Row SubQuery

→ when inner query returns single output to outer query with the help of relational operator then it is known as Single Row Subquery.

Select *

From emp

where deptno = (Select deptno

relational
operator

from emp dept

where dname = 'accounting')

2) Multi Row SubQuery

→ when inner query returns multiple output to outer query with the help of special operator i.e (IN, NOT IN etc) then it is known as multi Row Subquery.

Select *

From emp

where deptno IN (Select deptno

Special operator

From emp dept

where dname in ('research', 'sales');

* SubQuery

① All Operator :- ① it is multi value operator which has to be used with comparison operator

② it returns true when all values in RHS needs to be true.

Q. WAPTD all details of employees who are getting sal > all salesman

→

Select *

from emp

where sal > All (Select sal)

① ② ③ ④
1600, 1250, 1250, 1500

Q

① from emp

② where job = 'Salesman'

Sundar

1250 > 1000 ✓

1250 > 1250 ✓

1250 > 1250 ✓

1250 > 1500 ✗

Sundar ➤ 1250

3500 > 1250 ✓

3500 > 1250 ✓

3500 > 1000 ✓

3500 > 1500 ✓

✓

✓ for 3500

group by

antakshari) [for output antakshari

-tqdb query result

if there is difference in output ans

reference language

Q. WQT all details of employee who are getting sal Allen and
WARD

Select *

from emp

where sal > (Select sal

from emp

where ename = 'Allen') And

(select sal

from emp

where ename = 'WARD')

Select *

from emp

where sal > All (select sal

from emp

where ename IN ('ALLEN', 'WARD'));

*> Any Operator : ① It is a multi value operator which has to be used with comparison operator.

② It returns true when any one value needs to be true.

Q. Write all details of employees who are hired after smith, martin, and clark.

Select * from emp

From emp

where hiredate > ANY (select hiredate

(Select * from emp)

From emp

where ename IN ('SMITH', 'MARTIN', 'CLARK')

(Select * from emp)

From emp

where ename = 'MARTIN'

From emp

where ename = 'CLARK'

From emp

where ename = 'SMITH'

Assignment All and Any

Date _____
Page _____

Q. WAPTD name of the employees earning salary more than the salesman.

Select ename
from emp
where sal > Any (Select sal from emp
where job = 'SALESMAN') ;

Q. WQTD Details of the employees hired After All the clerks.

Select *
From emp
where hiredate > All (Select hiredate from emp
where job = 'clerk') ;

Q. WAPTD name And salary for All the employees if they Are earning Less than Atlest A manager.

if (Any (Select ename, sal

from emp

where sal < Any (Select sal
from emp
where job = '\$MANAGER') ;

Statement false) with \$statement true ('\$false' = do something)

else (true)

end if

Q1) WQTD NAME and hiredate of employee hired before All the managers.

Select ename, hiredate

From emp

where hiredate < All (Select hiredate from emp

where ename = 'MANAGER')

where ename = 'MANAGER');

5) WQTD names of the employee Hired after all the managers
And earning salary more than All the clerks.

Select ename, hiredate

From emp

where hiredate > All (Select hiredate from emp

where job = 'MANAGER')

And salary more than

Sal > All (Select sal from emp

where job = 'clerk');

6) WQTD Details of the employees working As clerk And Hired Before At least A Salesman.

Select * from emp

where job = 'clerk' And hiredate < Any (Select hiredate

from emp

where job = 'SALESMAN');

7) WQTD Details of employees who working in Accounting or Sales Dept.

Select *

From emp

where emp Deptno IN (select Deptno

= Any or From emp Dept

= Any where Dname IN

('Accounting', 'Sales'))

8) WQTD Department names of the employee with name smith, king And miller.

Select Dname from Dept

where Deptno IN (select Deptno

= Any or From emp

where ename IN ('smith', 'king',
'Miller'))

9) WQTD Details of employees working Newyork or chicago

Select *

From emp

where Deptno IN (select Deptno from Dept

= Any or where loc IN ('Newyork', 'Chicago'))

10) WQTD emp enames if employees are hiredate after all the employees of Dept 10.

Select ename from emp

where hiredate > ALL (select hiredate

from emp), PLD from emp where deptno = 10

group by ename where deptno ≠ 10)

bit operator < > =

(Count, group by)

Ans: 10) a) what are the names having all records

of all the department

Find all employee details

where hiredate > ALL (select hiredate

from emp),

group by ename) the answer is

elastica

b) answer is all the employees having all the department

records in all the departments and no employee has record in

any department

WQTD all the department of all the employees

group by ename) the answer is

Assignment Complete SubQuery

Date _____
Page _____

- 1) Display Department name of the employee who earn maximum salary And Have no Reporting manager.

→

Select Dname from Dept
where Deptno IN (select Deptno from emp
(select max(sal) from emp))
where MGR IS NULL
order by sal desc;

- 2) Display employee Details who are Reporting to blake and Have commision without using Null or Not null.

→

Select * from emp

where mgr IN (select empno from emp

where ename = 'BLAKE')

And comm >= 0)

order by comm desc;

CC ('Comm' is summa total amount spent)

- 3) List All the Department name and loc of all the salesman manager-managers

→

Select Dname, Loc from Dept
where Deptno IN (select Deptno from emp
where empno IN (select mgr from emp
where empno IN (select mgr from emp
where job = 'SALESMAN')));

4) List all the employee Deptname and loc of all the employee who are clerk, Reporting to blake And salary is lesser than martin salary .

→ select Dname , loc from Dept where Deptno IN
 (select Deptno from emp where Job = 'CLERK' And
 sal < (select sal from emp where ename = 'MARTIN'))
 And mgr IN (select sal from emp where ename = 'MARTIN')

5) Display All other Department names for WARD's manager's manager .

→ Select Dname from pppt where Deptno IN
 (Select Deptno from emp where empno IN
 (Select mgr from emp where empno
 (Select mgr from emp where ename = 'WARD'))))

c) Display Department names of the employee who earn minimum salary And have Reporting manager .

→ Select Dname from Dept where Deptno IN
 (Select empno Deptno from emp where sal IN
 (Select min(sal) from emp where mgr IS NOT NULL));
 (Select empno from emp where job = 'MANAGER'))

7) Write a query to Display employee name, job of all employee who are working As manager And works At CHICAGO.

→

Select ename, job from emp where emp Deptno IN
where job = 'MANAGER' And Deptno IN (Select loc Deptno
From Dept where loc = 'CHICAGO');

8) List employee who have commission Greater than maximum salary of all the salesmen And who DO NOT Report to king Directly.

→

Select * from emp where comm IS NOT null > All (Select Max(sal)
From emp where job = 'SALESMAN') And mgr IS NOT IN
(Select empno From emp where ename = 'king');

→

no Row Selected.

9) List the employee Department name And Loc of all the employees who are clerk, reporting to blake and Salary is Lesser than martin salary.

→

Select Dname, loc from Dept where Deptno IN
(Select Deptno from emp where job = 'CLERK' AND
MGR IN (Select Empno from emp where ename = 'BLAKE')
And sal < (Select sal from emp where ename = 'MARTIN'));

→

no row selected.

- 10) Display the names of employee from Department number 10 with salary Greater than that of All employee working in other Department .

→ $\text{Select ename from emp where deptno = 10 And Sal} > \text{All} (\text{select Deptno from emp})$

- 11) Display All the employee whose Department is sales And who is earning some commision (i.e Commision is Not null or zero) And who is hired Before the last person hired .

→ $\text{Select * from emp where comm is NOT null AND Hiredate} < (\text{Select max (Hiredate) from emp}) \text{ And Deptno IN} (\text{select Deptno from Dept where Dname = 'SALES'})$

- 12) Display ename , sal of employees who are earning more than Any of The Analyst .

→ $\text{Select ename, sal from emp where sal} > \text{Any} (\text{select sal from emp where job = 'Analyst')}$

18) Display All the employees who are earn less than Any of the salesman .

→ $\text{Select } * \text{ from emp where sal} < \text{Any } (\text{select sal from emp where job = 'SALESMAN'})$

19) List the employees who joined After 2 years of first employee of the company And more than blake salary .

→ $\text{Select } * \text{ from emp where Hiredate} > \text{All } (\text{select min(Hiredate)} + (365 * 2) \text{ from emp}) \text{ And } \text{sal} > (\text{select sal from emp where ename = 'BLAKE'})$

15) Display last employee Record Accounting to empno .

→

16) Display All the employee whose salary is greater than Average salary of Department 30

→ ~~Select * from emp where sal > (select AVG(sal)~~

~~from emp~~

~~where Deptno = 30);~~

17) ~~Display Department wise minimum salary which is less than Average salary of employee.~~

→ ~~Select Dname * from emp where Deptno IN (select DeptNo~~

~~from Dept~~

~~Select * group by Deptno having min(sal) < Avg(sal)~~

~~from emp where Deptno IN (select Deptno~~

~~from Dept group by Dname);~~

✓ 18) ~~Display Department wise minimum salary which is less than Average salary of employee.~~

→ ~~Select min * from emp group by Deptno~~

~~having min(sal) < Avg(sal)~~

~~order by Deptno .~~

Q) Display All the employees whose salary is greater than Avg sal of Department 20.

→ Select * from emp where sal > (Select AVG(sal) from emp group by Deptno having Deptno = 20);
 i.e. $\text{select } * \text{ from emp where sal} > (\text{select } \text{avg}(\text{sal}) \text{ from emp group by Deptno having Deptno} = 20)$;

→ Product of sal & Deptno has been removed from final output (for Deptno 20).

→ Q) Display the Department location that is having greater than Four employee IN IT.

→

Select Loc from Dept where Deptno IN (Select Deptno from emp group by Deptno)

→ Product of Deptno and count has been removed from final output (having count(*) > 4);
 i.e. $\text{select Loc from Dept where Deptno} \in (\text{select Deptno from emp group by Deptno having count(*)} > 4)$

→ Q) List the Department names that Avg Having At least 3 employee IN IT.

→

Select Dname

from Dept where Deptno IN (select Deptno from emp group by Deptno having Avg(*) >= 3);

24) List Department name having Atleast 3 salesman.



(Select Dname from dept where Deptno IN (select Deptno

From emp where Job = 'SALESMAN'

group by Deptno

Having Count(*) >= 3);

25) Display the last employee record with 25% hike in salary .



Select * from emp where hiredate IN (Select max(Hiredate)

From emp where (Sal + Sal * 25 / 100) = (Select max(Sal) + Sal * 25 / 100 From emp);

From emp);

26) Display the names of employees who earn Highest salary in their Respective jobs.



Select ename from emp where sal = (select max(sal)

From emp and Job = (Select Job From emp Where sal = (Select max(sal) From emp))

Group by Job);

27) Display all the employees who gets maximum salary.



Select * from emp where sal IN (select max(sal) from emp);

(select max(sal) from emp);

(select max(sal) from emp);

28) Display first employee Record based on hiredate.

→ Select * from emp where hiredate = (select min(hiredate) from emp);

Select * from emp
where hiredate = (select min(hiredate) from emp);

29) Display Location of employee whose salary is near minimum

salary But salary is Greater than 2000.

→ Select loc from Dept where Deptno IN

(select Deptno from Emp where sal IN

(select MIN(sal) from emp where sal > 2000));

(Deptno IN (select Deptno from emp where sal > 2000));

(Deptno IN (select Deptno from emp where sal > 2000));

(Deptno IN (select Deptno from emp where sal > 2000));

(Deptno IN (select Deptno from emp where sal > 2000));

30) Display All the employees who are earning more than Any of the manager.

→ ~~Select * from emp where job = 'MANAGER' & sal >~~

~~where sal > Any (Select sal~~

~~from emp~~

~~where ejob = 'MANAGER')~~

31) Display empno, ename, job, whose job has 'E' IN IT And

Display empno In Descending Order.

→ ~~(select * from emp where job like '%E%') order by empno desc~~

~~Select empno,ename,job from emp where job like '%.E%'~~

~~order by empno desc.~~

32) List employees who work for sales Department and their salary Greater than Average Salary of their Department.

→ ~~Select * from emp where (Deptno) in (select Deptno from Dept~~

~~where Dname = 'SALES')~~

~~where Deptno = (select Deptno from Dept~~

~~where Dname = 'SALES')~~

~~And sal > Any (select Avg(sal)~~

~~from emp~~

~~Group by Deptno)~~

33) Display the Dname of employees whose salary is maximum.

Salary but lesser than 3000.

Select Dname from Dept where Deptno IN

(Select Deptno from emp where sal = (select max(sal))

(from emp where sal < 3000));

34) Display Department names of employee whose salary is

greater than Average salary of All the Clerk's.

Select Dname from Dept where Deptno IN

(Select Deptno from emp where sal > All (Select Avg(sal)

from emp

where job = 'CLERK');

where job = 'CLERK');

35) List the Dept name that are having at least 3 employees but

Not more than 5 employees IN SF.

Select Dname from Dept where Deptno IN

(Select Deptno from emp group by Deptno having count(*) >= 3 and count(*) <= 5);

Ques 37) List employee who works for Accounting Department And their Salary Greater than Average Salary of their Department.

→ ~~Select * from emp where sal > (Select AVG(sal) from emp where Deptno = (Select Deptno from Dept where Dname = 'ACCOUNTING'))~~

~~Select * from emp where Deptno IN (Select Deptno from Dept where Dname = 'ACCOUNTING') And sal > Select AVG(sal) from emp where Any group by Deptno ;~~

Ques 38) Display Avg Salary of All employees whose Dept Name is Accounting.

→ ~~Select AVG(sal) from emp where Deptno = All (Select Deptno from Dept where Dname = 'ACCOUNTING')~~

~~And~~

~~Select AVG(sal) from emp where Deptno IN (select Deptno from Dept where Dname = 'ACCOUNTING');~~

Ques 39) Select empno, Job and Salary of All the Analyst who are earning more than Any of the manager (Job).

→ ~~Select empno, job, salary from emp where job = 'Analyst' And = All (Select job from emp where sal > Any (Select sal from emp where job = 'MANAGER'))~~

40) Display All employees who Do not have Any Reporter.

→ $\exists \text{ employee } e \in \text{emp} \text{ such that } \text{reporter}(e) = \text{null}$

($\exists \text{ employee } e \in \text{emp}$)

$\text{reporter}(e) = \text{null}$

$\text{reporter}(e) = \text{null} \rightarrow \text{not reporter}(e)$

$\neg \text{reporter}(e)$

$\neg \text{reporter}(e) \rightarrow \text{not existing reporter}$

exists exactly one

41) Display the Job of employees who is working for Jones .

→

Select job

From emp

where mgr = (Select empno

From emp

where ename = 'Jones');

42) Display the employee names , higher Date , commision of
FORD's manager

→

Select ename , hiredate , comm

From emp

where empno = (Select mgr From emp

where ename = 'FORD');

43) Display the number of employees who are getting salary less than the BLAKE's manager.



Select count (*)

From emp

where sal < (Select sal

From emp

where empno IN (Select mgr

From emp

→ SQL ने प्रदर्शन की अनुसंधानगति In where ename = 'BLAKE');

dot दृष्टिकोण

ग्रा. वार्ता

→ इसका उपयोग एक संकेत

ग्रा. वार्ता

: (empno) = ename सही

इसका उपयोग एक संकेत

इसका उपयोग एक संकेत

→ अनियमित अवलोकन करने का संकेत

43) Select count(*) from emp where sal < (Select sal

From emp where empno IN (Select mgr

ग्रा. वार्ता

Select count(*) from emp where sal < (Select sal

From emp where empno IN (Select mgr

JOINS

* Retire the Data from multiple table simultaneously is known as Joins.
there are 5 types of Joins.

① Cartesian Join / cross join

② inner Join / equi Join

③ Natural Join

④ Outer Join → ① left outer join

→ ② Right outer join

→ ③ full outer join

⑤ Self join

▷ CartesianJoin :- table1 records merge with table2 records
in the output we get error records.

Syntax :-

* ORACLE :- Select col names

From T₁, T₂ ;

→ Select col names

From T₁ Cross JOIN T₂ ;

* ANSI :-

(American National
Standard Institute)

Example :- Cartesian Join

Select *

from Boys, Girls

Boys

Boys

Girls

BID	Bname	GID		BID	Gname
1	Progra	10		10	Porgi
2	Babu	20		20	Baby
3	Sona	30		30	Soni

BID	Bname	GID	GID	Gname
1	Progra	10	10	Porgi
1	Porga	10	20	Baby
1	Porga	10	30	Soni
2	Babu	20	10	Porgi
2	Babu	20	20	Baby
2	Babu	20	30	Soni
3	Sona	30	10	Porgi
3	Sona	30	20	Baby
3	Sona	30	30	Soni

2) **Inner Joins :-** It is used to display all matching records from both tables.

Syntax :-

ORACLE :- Select <col names>

From T₁, T₂

where <join-condition>;

ANSI :- Select <col-name>

<column> from T₁ **InnerJoin** T₂

ON <join-condition>;

Note :- Join-condition ,

T₁.colname = T₂.col-name

It is condition on which two tables are merged.

Best method for joining two tables in database

joining two tables based on common column

long name avoid

multiple table - a single condition

(common field, same field, same condition)

multiple table - ORA

multiple table - using function

function result true, false

multiple table - percentage > 100

i) (joining 2 tables) not in same field - ORA

Boys & Girls

	BID	Bname	GID		GID	Gname
	1	Porga	10		10	Porgi
	2	Mulga	20		20	Mulgi
	3	Sundra	30		30	Sundri

Left outer join

result of left outer join

BID	Bname	GID	GID	Gname
1	Porga	10	10	Porgi
2	Mulga	20	20	Mulgi
3	Sundra	30	30	Sundri

right outer join

result of right outer join

Q. What employee name, job, sal, Dept name of employees are working as clerk, salesman - getting sal greater than 1200.



Oracle:- Select ename, job, sal, Dname
from emp, Dept
where Emp.deptno = Dept.deptno
And Job IN ('CLERK', 'SALESMAN')
AND Sal > 1200;

SQL:- Select ename, job, sal, Dname
from emp, Dept Inner join Dept
ON emp.Deptno = Dept.Deptno
where sal > 1200 And job IN ('clerk', 'salesman');

Q. wqfD employee name, job, Department name, location of employee who Are hired in year 87.

oracle :- Select ename, Job, Dname, Loc

from emp, Dept
where emp.Deptno = Dept.Deptno
and hiredate like '%.87.%'

Ansi :- Select ename, Job, Dname, Loc

from emp inner join Dept
on emp.Deptno = Dept.Deptno

where hiredate like '%.87.%'

Q. wqfD employee name, job, salary, commission of employees who are working As ~~as~~ Salesman at location "chicago".

oracle :- Select ename, job, sal, comm
from emp, Dept

where emp.Deptno = Dept.Deptno
and job = 'SALESMAN' and loc = 'CHICAGO'

Ansi :- Select ename, job, sal, comm

from emp inner join Dept

ON emp.Deptno = Dept.Deptno

where job = 'SALESMAN'

and loc = 'CHICAGO'

Q. What employee name, hiredate, salary, job, location of employee are having manager getting salary greater than equal to 1300 less than 5000 working in department Research, Sales.

→ Oracle :- Select ename, hiredate, sal, job, loc
 from emp, Dept
 where emp.deptno = Dept.deptno
 and mgr IS NOT NULL
 and sal between 1300 and 4999
 and Dname IN ('RESEARCH', 'SALES')

Ansi :- Select ename, hiredate, sal, job, loc
 from emp inner join Dept
 where emp.deptno = Dept.deptno
 and mgr IS NOT NULL
 and sal between 1300 and 4999
 and Dname IN ('RESEARCH', 'SALES')

Q. What Department name, Job, salary, Annual salary if employee are reporting to king

→ Oracle :- Select Dname, Job, Sal, Sal*12
 from emp, Dept

where emp.deptno = Dept.deptno
 And mgr = 'KING'; (Select empno from emp
 where ename = 'KING')

Q. WQRD employee name, job, Department name, location of employee who are getting 2nd maximum salary.

Oracle:-

Select ename, job, Department name, loc

From emp, Dept

where emp.empDeptNo = Dept.DeptNo

And sal = (Select max(sal) from emp where

from emp select max(sal) where

where sal < (select max(sal)

(Select max(sal) from emp))

Q. WQTD employee name, job, hiredate, location if employee are having 'A' in their name AND they are getting salary less than 1500 & greater than 2800.

Oracle:-

Select ename, job, hiredate, Loc

From emp, Dept

where emp.DeptNo = Dept.DeptNo

And ename like '%A%'

And sal Not between 1500 and 2800

Q. WQTQD employee name, job, Department number, loc
of employees who are working in Department 10, 20
working At location new york, Dallas

Select ename, job, Dname Deptno ,loc
From emp, Dept
Where empDeptno = DeptDeptno
And Deptno IN (10, 20)
And Loc = 'Newyork';
And Loc IN ('Newyork', 'Dallas');

Inner Join Assignment .

Date _____
Page _____

- 1) Name of the employee and His Location of all the employee.



Select ename, loc

From emp, Dept

Where emp.Deptno = Dept.Deptno;

;

- 2) WAQTD Dname and salary for All the employee working
in Accounting



Select Dname, sal

From emp, Dept

Where emp.Deptno = Dept.Deptno;

And Dname = 'Accounting';

- 3) WAQTD Dname and Annual salary for All employees whose
salary is more than 2340

→ Select Dname, Sal*12 As Annual Salary

From emp, Dept

Where emp.Deptno = Dept.Deptno;

And sal > 2340;

- 4) WQTD ename and Dname for employee Having characters 'A'

In their Dname.



Select ename, Dname

From emp, Dept

Where emp.Deptno = Dept.Deptno

And Dname like '%A%' ;

5) WQTD ename and Dname for all the employees working as Salesman.

Select ename, Dname
from emp, Dept
where emp.Deptno = Dept.Deptno
And Job = 'SALESMAN'

6) WQTD Dname And Job for all the employees whose job And Dname starts with characters 'S'

Select Dname, Job
from emp, Dept
where emp.Deptno = Dept.Deptno
And Job like 'S%'

7) WQTD Dname And MGR No for employees Reporting to 7839.

Select Dname, MGR
from emp, Dept
where emp.Deptno = Dept.Deptno
And empno = (Select mg.empno
MGR
from emp
where empno = 7839)

g) WAQTD Dname And hiredate for employees hired After 83 IN TO Accounting or Research Dept

Select Dname , hiredate
from emp, Dept
where Emp.Deptno = Dept.Deptno
and hiredate > '1-Jan-83'
and hiredate > '31-Dec-83'
and Dname IN ('Accounting' , 'Research') ;

g) WAQTD ename and Dname of the employees who are Getting comm in Dept 10 OR 30 .

Select ename , Dname
from emp, Dept
where emp.Deptno = Dept.Deptno
and Comm IS NOT NULL
and Deptno IN (10,30);

10) WAQTD Dname And empno for All the employees who's empr ARE (7839, 7902) And Are working in loc new york.

Select Dname , empno

from emp, Dept
where emp.Deptno = Dept.Deptno
And empno IN (7839, 7902)
And Loc = 'Newyork';

* **Natural Joins** :- It is used where we don't know table structure.

Syntax

Ansi :- `SELECT COLUMN-NAME
FROM T1 NATURAL JOIN T2;`

Case 1 :- If we apply Natural join on two tables
 :- If we are getting match records
 means those two table are sharing primary key foreign key connection.

Q) Select *

from emp Natural join Dept;

PK - FK

All matched Records

emp	Dept
(08191) HR	IT

All matched Records

[Inner Join]

Primary Key

Foreign Key

Common Column

Extra column



Case 2: If we apply Natural join on two tables

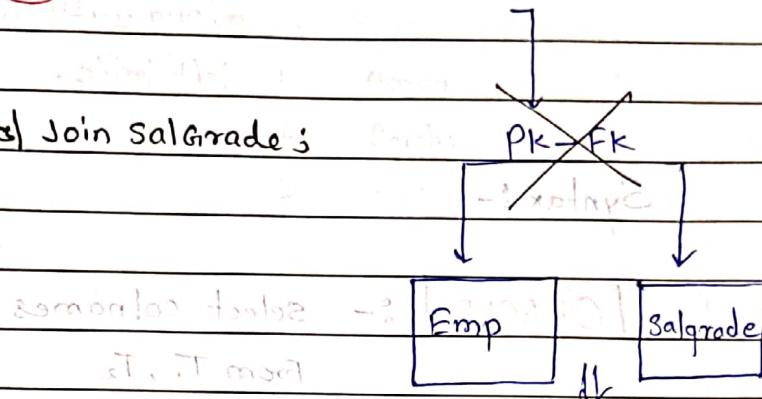
If we are getting error records

means those two tables are not sharing

Primary key Foreign key connection

Q) Select *

from emp Natural Join salgrade;



(+) Simonida, ST = Simon_maula, IT Saadiv

Simon_maula table -> [Janat]

ST MOL [AATUO] T4B3 IT mola

Simonida, ST = Simonida, IT lu

IT lu

Outer join :- It is used to display unmatched records from the table.

* **LEFT Outer join :-** It is used to display all match records along with unmatched records from left table.

Syntax :-

ORACLE :- Select column names

From T_1, T_2

where $T_1.\text{column-name} = T_2.\text{column-name}$ (+);

ANSI :- Select column-name

From T_1 LEFT [OUTER] JOIN T_2

ON $T_1.\text{col-name} = T_2.\text{col-name}$

Select * from Boys, Girls
from Boys, Girls
where Boys.id = Girls.id (+) ;

	Boys	Girls		
Bid	Bname	GID	GID	Gname
1	Porga	10	10	Porgi
2	Baccha	20	20	Bacchi
3	Mulga	30	30	Mulgi
4	Babu			

BID	Bname	GID	GID	Gname
1	Porga	10	10	Porgi
2	Baccha	20	20	Bacchi
3	Mulga	30	30	Mulgi
4	Babu	Null	Null	Null

Q. WAPTD only unmatched Records from left table.

→ Insert into emp (empno,ename) values(1,'Porga');

Select *

From emp, Dept

where emp.Deptno = Dept.Deptno (+)

And emp.Deptno IS NULL;

* 2) Right Outer Join :- It is used to display match records along with unmatch Records from Right Table.

Syntax :-

Select colnames
from T1, T2
where T1.column-name = T2.column-name;

ORACLE :- Select colnames

from T1, T2

where T1.column-name (+) = T2.column-name;

ANSI :- Select colnames

from T1 RIGHT [OUTER] join T2 on

T1.col-name = T2.col-name;

ORACLE :-

SELECT * FROM T1, T2

WHERE T1.col-name (+) = T2.col-name;

Left Outer Join :-

SELECT * FROM T1, T2

WHERE T1.col-name = T2.col-name

ORACLE :-

SELECT * FROM T1, T2

WHERE T1.col-name = T2.col-name

Left Outer Join :-



Select * from Boys, Girls
from Boys, Girls
where Boys.Gid (+) = Girls.Gid ;

Boys

Girls

BID	Bname	GID		GID	Gname
1	Mulga	10		10	Mulgi
2	Porga	20		20	Porgi
3	Baby	30		30	Babu

Pillu

BID	Bname	GID	GID	Gname
1	Mulga	10	10	Mulgi
2	Porga	20	20	Porgi
3	Baby	30	30	Babu
Null	Null	Null	40	Pillu

Note: Select * from Boys, Girls
From emp, Dept

where emp.Deptno (+) = Dept.Deptno ;

Empno	Ename	Deptno	Deptno	Dname	Loc
101	John	10	10	Marketing	100
102	David	20	20	Sales	200
103	Mark	30	30	HR	300
104	Mike	40	40	IT	400
105	Tom	50	50	Finance	500
106	John	60	60	Production	600
107	Mike	70	70	Marketing	700
108	David	80	80	Sales	800
109	Tom	90	90	HR	900
110	Mark	100	100	IT	1000

* **FULL OUTER JOIN :-** it is used to display match Records and unmatch Records from both the tables.

Syntax :-

~~ANSI~~ **ANSI :-** select col-names

From T₁ FULL [Outer] JOIN T₂

ON T₁. col-name = T₂. col-name;

Q. Select *

From Boys Full OUTER JOIN Girls

ON Boys. Grid = Girls. Grid;

BID	Bname	GID	Grid	GID	Gname
1	Sonu	10	10	10	Soni
2	Baccha	20	20	20	Bacchi
3	Porga	30	30	30	Porgi
4	Sundra	40	Null	Null	Pillu

Condition HasQ = (+) on grid . gms match

	BID	Bname	GID	Grid	Gname	
	1	Sonu	10	10	Soni	All matched records
	2	Baccha	20	20	Bacchi	from Both table.
unmatched Records →	3	Porga	30	30	Porgi	
from left table	4	Sundra	40	Null	Null	→ unmatched records from Right table.

* Self Join :- table joining it self is known as self join

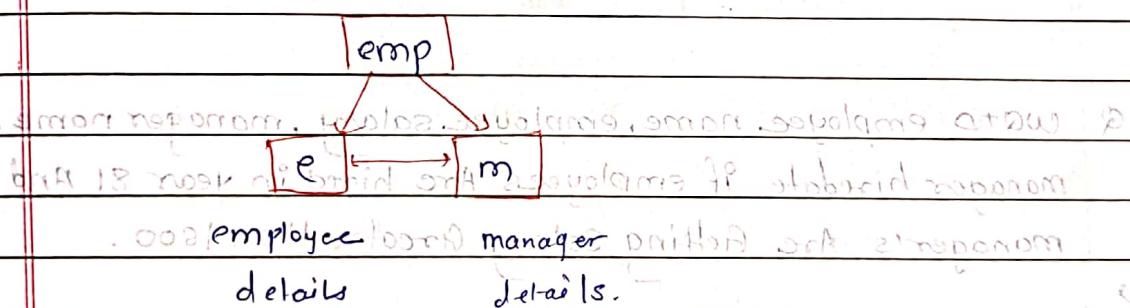
it is used when data to be displayed is present in same table but different rows

here we make copy copies of the tables

ORACLE :- Select col-names
From Tablename1 T₁, Tablename2 T₂
Where T₁. col-name = T₂. col-name;

ANSI :- Select col-names
From Tablename1 T₁ JOIN Tablename2 T₂
ON T₁. colname = T₂. colname;

Q. write a QFD ename, manager name of Smith



Select e.ename, M.ename

From emp.e, emp.m

Where e.mgr = m.empno

And e.ename = 'SMITH'

Q. write a query to display ename, mname, manager name, managersalary from the table.

Select ~~emp~~ e, ~~mgr~~ m where m.mgr = e.empno

select e.ename, e.sal, m.ename, m.sal
from emp~~e~~, emp~~m~~
where e.mgr = m.empno;

Q. WQTD employee name, employee job, manager name, manager salary if employees are working in Department 20,30

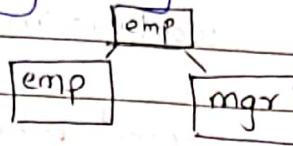
Select e.ename, e.job, m.ename, m.sal
from emp~~e~~, emp~~m~~
where e.mgr = m.empno
And e.Deptno IN (20,30)

Q. WQTD employee name, employee salary, manager name, manager hiredate if employees Are hired in year 81 And manager's Are getting salary Greater than 1600.

Select e.ename, e.sal, m.ename, m.hiredate

from emp~~e~~, emp~~m~~, M, L where m.empno = e.empno
and m.hiredate >= '01-Jan-81' And m.hiredate <= '31-Jan-81'
m.sal > 1600

Q. WAPTD employee name, manager name, manager salary if employees are getting commission and earning salary greater than 1250 and manager are earning salary less than 6000.



Select e.ename, m.ename, m.sal

From emp e, emp m

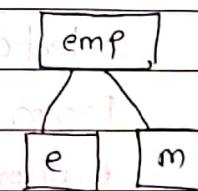
Where e.mgr = m.empno

And e.comm IS NOT NULL

And e.sal > 1250

And m.sal < 6000;

Q. WAPTD employee name, manager name, employee job if employee are hired after year 80. And managers are working as president, salesman, analyst.



Select e.ename, m.ename, e.job

From emp e, emp m

Where e.mgr = m.empno

And e.hiredate > '31-Dec-80'

And m.job IN ('President', 'Salesman', 'Analyst');

Q. WQTD employee name, employee job, manager name, manager job, manager hiredate if employees are working As clerk, salesman And manager's Are working in Department 10,30

→ *join 1st*

Select e.ename, e.job, m.ename,

m.job, m.hiredate

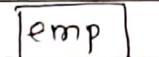
from emp e, emp m

where e.mgr = m.empno

And e.hiredate

e.job IN ('clerk', 'Salesman')

e.mDeptno IN (10,30);



Q. WQTD employee name, manager name, manager's manager name. as map with bridg to database if

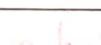
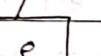
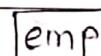
→ *join 2nd*

Select e.ename, m.ename, mm.ename

From emp e, emp m, emp mm

where e.mgr = m.empno

And m.mgr = mm.empno;



Q. WQRD employee name, employee's Department name, manager name, manager's Department Name.

$ed \cdot deptno = e \cdot deptno$

$m \cdot deptno = md \cdot Deptno$

$emp \cdot Deptno = Dept \cdot Deptno$

$e \cdot mgr = m \cdot empno$

$e \cdot D$ $(e \cdot e)$ $m \cdot m$ $m \cdot D$

emp. Department employee to manager manager. Department

Details details details Details.

Select $e \cdot ename$, $ed \cdot dname$, $m \cdot ename$, $md \cdot dname$.

From $empe$, $empm$, $depted$, $dept md$

where $ed \cdot deptno = e \cdot deptno$

And

$e \cdot mgr = m \cdot empno$

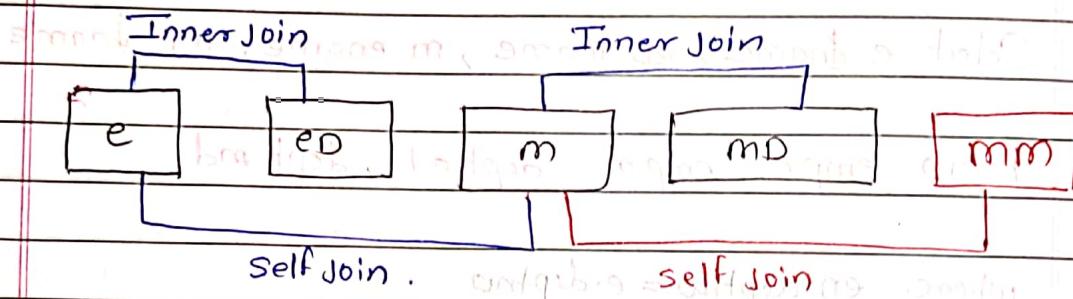
And

$m \cdot deptno = md \cdot Deptno$

2300 - 5000
2300 - 5000

Date _____
Page _____

Q. WQTD employee name, employee's Department names
manager name, employee hiredate, manager job,
manager hiredate, manager's manager name,
manager's Department names, if employee are
working 'SALESMAN', 'CLERK', 'ANALYST' and
working in Department no (10, 20, 30)
and Department Name starts with characters 'A'
and manager sal is greater than 2300 and less than
equal to 5000.



Select e.ename, ed.dname, m.ename, e.hiredate, m.job,
m.hiredate, mm.ename, md.dname, m.

From emp e, Dept ed, emp m, Dept md, emp mm

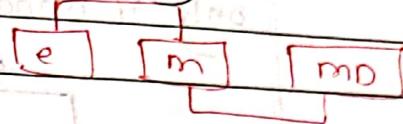
where e.Deptno = ed.Deptno And
e.mgr = m.empno And
m.Deptno = md.Deptno And
m.mgr = mm.empno And
e.Job IN ('SALESMAN', 'CLERK', 'ANALYST')
And e.Deptno (10, 20, 30)

And ~~e.mgr~~

ed.Dname like '%A%' And

m.Sal between (230 AND 5000);

1) What is the name of the employee along with his manager only if manager working in sales department.



Select e.ename, m.ename, ~~ma~~

From emp e, emp m, ~~ma~~ emp mo

where e.mgr = m.empno

And m.Ddeptno = mo.Ddeptno And m.job

~~m.job~~ ~~m.Dname~~ = 'SALES'

m.job = 'SALES'

'SALES' = ~~emp~~.job

sales

2) Which department has

maximum number of employees?

maximum

Dept Table

(1) max no. of employees

(2) max no. of employees in each department

max no. of employees

(3) max no. of employees in each department

Dept Table

(1) max no. of employees

(2) max no. of employees in each department

(3) max no. of employees in each department

Dept Table

(1) max no. of employees

(2) max no. of employees in each department

(3) max no. of employees in each department

Dept Table

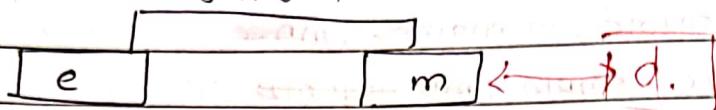
(1) max no. of employees

(2) max no. of employees in each department

(3) max no. of employees in each department

Q) WAP TO Name of the employee Along with his manager
only if manager working in sales Department

self join



Select e.ename, m.ename

from emp e, empm, dept d

where e.mgr = m.~~deptno~~ m.empno

And m.~~deptno~~ = 'SALES';

Dname

m.deptno=d.deptno

2) WAP TO Dname And Average salary for each Department
excluding Dept 20

→



Select Dname, Avg(sal)

④ Select Dname, Avg(sal), Deptno

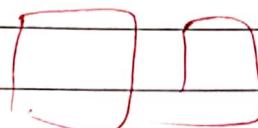
① From Dept, emp

② where emp.Deptno = Dept.Deptno

And Deptno NOT IN (10)

③ group by Deptno;

Dname



3) Display Name of the employees Reporting to clark's manager's manager.

Select ename

from emp

where mgr IN (select mgr

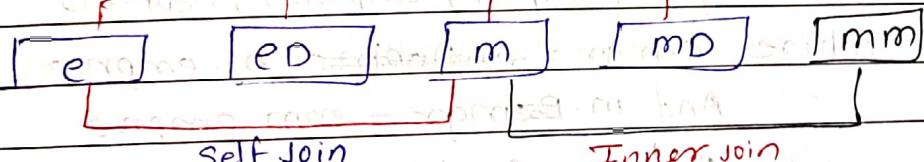
from emp

: IN where empno IN (select mgr

from emp

where ename = 'CLARK'

4) WQTD Name of emp, his Dname, His manager name, His Dname only if employee managers manager working In Accounting Department



Select e.ename, ed.Dname, m.ename, md.Dname

~~from emp = em Deptno~~

From emp, empD, Dept ed, Dept MD, Empmm

Where e.mgr = m.empno And m.mgr = mm.mgr

And e.Deptno = ed.Deptno

And m.Deptno = MD.Deptno

And m.~~mgr~~.Deptno = mm.Deptno

And ~~mgr~~ mm.Dname = 'Accounting'

5) WQTD Department name in which There are no employees.

Select Dname

from Dept, emp

where Deptno IN (Select

where emp. Deptno = Dept. Deptno)

And Deptname IS NULL

Emp. Deptno IS NULL;



6) WQTD name of employee and his manager with His manager Along with their Department names if employee Gets less salary than manager's manager.

Select e.ename, m.ename, mm.ename, MD.Dname

from emp e, emp m, emp mm, Dept MD

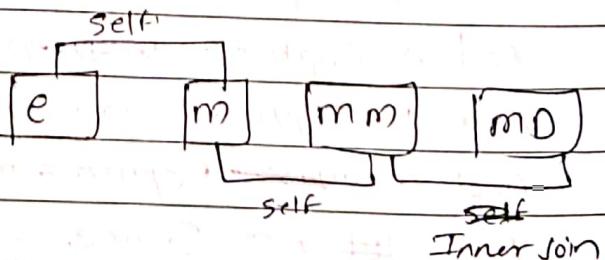
where e.mgr = m.Deptno AND m.empno

And m.mngr = mm.empno

And mm.Deptno = MD.Deptno

And e.sal < mm.sal;

6 tables



7) WQT'D name of employees Indirectly Reporting to king

Select ename

from emp
where mgr IN (Select empno
from emp
where ename = 'king'))

✓ 8) WQT'D name of the employee of Getting 8th min Salary.

Select (ename from emp where sal >
(select min(sal) from emp)))))) ;

9) WQTD Dname, Ename of the employee Reporting to martin . only employee works in accounting or sales Dept.



Select D.Dname, E.Ename from Dept, emp e
where ~~for~~ Dept.Deptno = emp.Deptno.

And e.ename = e.mgr IN (Select e.empno

: ('PRES') = e.empno
from emp
where e.eName = 'MARTIN')

And e.ename

e.Deptno IN (select D.Deptno

from Dept where D.Dname = ('Accounting')

or e.Deptno IN (select D.Deptno
from Dept where D.Dname = ('Sales'))

or e.Deptno IN (select D.Deptno
from Dept where D.Dname = ('Marketing'))

or e.Deptno IN (select D.Deptno
from Dept where D.Dname = ('Research'))

10) Display Employees who are getting same salary

or e.Deptno IN (select D.Deptno
from Dept where D.Dname = ('Customer Service'))

Select sal (Select * from emp --)

where sal IN (select sal

from emp
group by sal
having count(*) > 1)

SELF JOIN ASSIGNMENT

Date _____
Page _____

1. What name of the employee And his manager's name
If employee is working As clerk.

Self Join → same table but different row reading

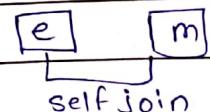
And e.mgr = m.empno

Select e.ename , m.cname

From emp, emp

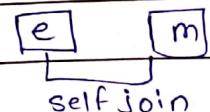
Where e.mgr = m.empno

And e.job = 'clerk'



- 2) What name of the employee And manager's Designation

If manager works in Dept 10 or 20



Select e.ename, m.job

From emp, emp

Where e.mgr = m.Deptno

And m.Deptno IN(10, 20)

- 3) What name of the emp And managers salary if employee

And manager Both earn more than 2300

Select e.ename, m.sal

From emp, emp

Where e.mgr = m.Deptno

And e.sal > 2300

And m.sal > 2300

4) WAQTD emp name And manager's hiredate if employee was Hired Before 1982.

Select e.ename, m.hiredate

From empe, empmp

where e.mgr = m.empno

And e.hiredate < '1-jan-1982';

5) WAQTD emp name And manager's comm if employee

works As Salesman And manager works in Dept 30.

Select e.ename, m.comm

From empe, empmp

where e.mgr = m.empno

And e.job = 'SALESMAN'

And m.Deptno = 30;

6) WAQTD ename Dname And job for All the employees

whos Job And Dname Starts with characters

Select D.Dname, e.job

From empe, DeptD

Where

Q. WAQTD emp name and mgr name and their salaries if emp earn more than manager.

Select e.ename, m.ename, e.sal, m.sal

From empe, empmp

Where e.mgr = m.Deptno

And e.sal > m.sal;

e.sal > m.sal

e.sal < m.sal

7) What is ename and hiredate, manager name and hiredate if manager was hired before employee.

Select e.ename, e.hiredate, m.ename, m.hiredate
from emp e, emp m
where e.mgr = m.empno
and m.hiredate < e.hiredate

8) What is ename and manager name if both are working in same job.

Select e.ename, m.ename
from emp e, emp m
where e.mgr = m.empno
And e.job = m.job

9) WAP TO emp name and manager name if manager is working
As Actual manager.



Select e.ename, m.ename

From emp e, emp m

whose e.mgr = m.empno

And m.job = 'MANAGER';

10) WAP TO emp name and manager name along with their
Annual salaries if employee works in Dept 10, 20 And
Manager's sal is Greater than employee's salary.



Select e.ename, e.sal*12, m.ename

From emp e & emp m

Where e.mgr = m.empno

And e.Deptno IN (10, 20)

And m.sal > e.sal

11) WAP TO employee's name And manager's Designation
for All the employees.

Select e.ename, m.job

from emp e, emp m

where e.mgr = m.empno

12) WAP TO employee's name And manager's salary for All
the employees if manager's salary ends with 50.

Select e.ename, m.sal

from emp e, emp m

where e.mgr = m.empno

And m.sal like '%50'

Pseudo columns

Date _____

Page _____

Pseudo columns :- This are the false column and hidden column which are present in every table.

there are 2 type of pseudo columns

① Rowid

② Rownum

to display Pseudo column we have to call them explicitly

→ Row ID :- it is unique
it is not null

Combination of unique and not null is known as primary key but we cannot consider Row Id as primary key because it is generated at the time of inserting records.

Row Id consist 18th characters.

Row Id is static in nature.

→ Rownum :- it is unique
it is not null

Combination of unique and not null is known as primary key but we can not consider Row num as primary key because it is Generated at the time of execution.

Row Num are Nothing but Serial number which always starts from One.

Row Num are dynamic in nature.

Q. WAGTD

Note Query to display rowID and rownum.

→ Select RowID, RowNum, emp.*

From emp;

Q. WAGTD Top 7th Records from the table.

→

Select RowNum, emp.*

From emp

Where RowNum < 8;

Select *

From emp

Where RowNum < 8;

Q. WAGTD To 5th records from the table.

→

Select RowNum, emp.*

From emp; left join of emp and emp which

where RowNum < 6;

Q.

WAGTD first Records from the table.

→

Select RowNum, emp.*

From emp

Where RowNum = 1;

Q. Write 2nd Records from the table

→ Select Rownum, emp.*

① From emp

② where Rownum <= 2 ; X

check and filter the condition

	Rownum	ename	sal
Database 1=2	1	Baby	200
	2	Babu	800
	3	Pilu	900
	4	Shona	1000

under execution

Note :- Here we have to change the name of rownum, because once the condition is Rejected rownum will not check next records.

Slno

Rownum	ename	sal
1	Baby	200
2	Babu	800
3	Pilu	300

Select Rownum -

③ Select *

④ From

⑤ select rounum Slno
⑥ From emp) Inner query

⑦ where Slno = 2 ;

Put the table under execution

Slno	ename	sal
1	Baby	200
2	Babu	300
3	Pillu	400

Q. WAP TO 3rd 5th 7th 10th from the table

Select *
 from (select rownum sno , emp.*)
 from emp
 where sno IN (3, 5, 7, 10)

Q. WAP TO 2nd Record from bottom

Select *
 from (select rownum sno , emp.*)
 from emp
 where sno IN (select max(sal) max(sno)
 from emp
 where sno IN (select max(sno)
 from emp));
 use

Select *

from (Select rownum sno , emp.* from emp
 Orderby empno Desc)

where sno = 2;

emp.*

(emp), sno desc
 , 2 all record

* Single Row Function

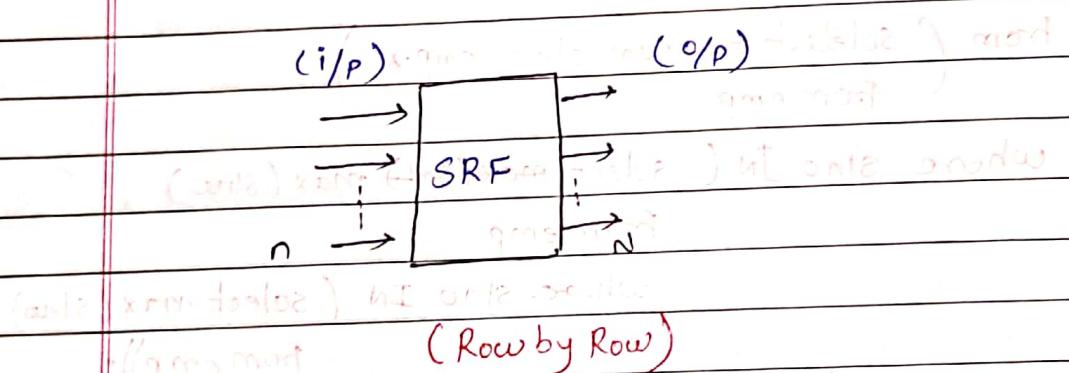
→ Single row function takes n numbers of input and gives out n number of output.

single row function execute row by row.

we can write single row function in select clause as well as where clause.

here we use dual table that is dual.

dummy collect and having logic present



① Upper :- it is used to convert characters in upper case

Syntax :- `UPPER ('String')`

eg. `Select upper('kgf')`
from Dual;

Output :- upp
KGF

② LOWER :- It is used to convert string in lower case

Syntax :- `LOWER ('string')`

eg : - `KGF` (Output will be) `kgf`

`Select LOWER ('KGF')`

`From Dual;`

(Upper) (Lower)

cl

Output :- Low
`kgf`

③ INITCAP :- It is used to convert first characters of string in capitals. (Initial capital)

Syntax :- `INITCAP ('string')`

eg : - `Select INITCAP ('APNA BANA LE')`

`From Dual;` (Output will be) `Apna Bana Le`

Output :- `cap`

`Apna Bana Le`

④ REVERSE :- It is used to reverse the string

Syntax :- `REVERSE ('string')`

eg . `Select REVERSE ('THANE')`
`From Dual;`

Output :- `Reverse`

~~enat~~
`ENAHTE`

⑤ LENGTH :- It is used to calculate no of characters present in string

Syntax :- LENGTH ('string')

eg :- Select Length ('TATA BYE BYE')
From Dual ;

Output :- Length

12

Q. What name of the emp who are having 4 characters
in there name. without using like operator.

→ To overcome this we can use LENGTH function

Select ename

from emp

where Length(ename) = 4

⑥ NVL (Null Value Logic) :- It is used to overcome the problem occurred by Null value.

NVL (arg1, arg2)

arg1 :- Column_name which consists Null values.

arg2 :- Any value which is to be considered at the place of Null.

Example :- `Select ename, sal, comm, sal+NVL(comm, 0)
From emp;`

(7) Sysdate :- It is used to display system date.

Example :- `Select sysdate
From Dual;`

Sysdate

29-APR-23

(8) Systimestamp :- It is used to display Date, time, and time zone

Example :- `Select systimestamp
From Dual;`

Systimestamp

29-APR-23 01.32.07. 824000 PM +05:30

(9) Replace :- In replace substring is replaced with new string.
From Original String

Syntax :-

`Replace ('Original-Str', 'sub-str', [new-str])`

(Note :- new string is optional if it is not mentioned
consider as null)

Eg. Qspider → Replace ('Qspider', 'Q', 'J') → Jspiders
 Replace ('Qspider', 'P', '#') → Q\$#ider
 Replace ('Qspider', 'S', '\$') → Q\$Piders\$
 Replace ('Qspider', 'F') → Qspidors

⑩ SUBSTR :- It is used to extract part of string from original string.

Syntax :- `SUBSTR ('Original-Str', Position, [length])`

Note :- length is not mentioned. if it is not mentioned consider the complete string.

example :- MAHARASHTRA

1 2 3 4 5 6 7 8 9 10 11

`Substr (Maharashtra, 4, 2)` \Rightarrow AR

`Substr (maharashtra, 2, 4)` \Rightarrow AHAR

`Substr (maharashtra, 5, 3)` \Rightarrow RAS

`Substr (maharashtra, -6, 2)` \Rightarrow AS

`Substr (maharashtra, 5, 10)` \Rightarrow RASHTRA

Data Definition Language (DDL)

this language is used to construct, modify and remove an object from the database.

It has 5 statements

- * CREATE
- * RENAME
- * ALTER
- * TRUNCATE
- * DROP

Note :- this statement are Autocommit statement (it means it will automatically get save in the database)

CREATE :- this statement is used to construct or build an object in the database.
object refers to a table

To create a table

Syntax :-

CREATE TABLE TABLENAME

(

 columnname1 Datatypes Constraints,

 columnname2 Datatypes Constraints,

 ;

 ;

 columnnamen Datatypes Constraints

) ;

example :-

Create table product

6

fid Number (10) Primary key,

Pname varchar(20) Not Null,

Price Number(7,2) Not Null;

Discount Number(7,2) Null

ج) ۹۰

13

for individuals

13 of 13

Product

Unit 10

Continued

smells - 2 blocks

三七

卷之三

100

Column_name \Rightarrow	PID	PName	Price	Discount
Datatypes \Rightarrow	Number	Varchar	Number	Number
Constraints \Rightarrow	(10)	(20)	(7,2)	(7,2)
{ unique }	—			
{ Not Null }	Not Null	Not Null	Not Null	Null
check	PK		(check price)	
Primary	(P)	PK	(P)	
Foreign	(w)	Foreign	on update	

Not mandatory

(034) medium front (0-011 to extend) fine

(429) 710-0049 208383138

If we don't know how many column present in table
that time



DESC → (Describe product)

It will show all the columns.

Query :- DESC Product

Note: (Customer) table

Output :-

Name	Null	Type
PID	Not Null	Number(10)
PName	Not Null	Number(20)
Price	Not Null	Number(10)
Discount		Number(10)

Customer

Customer



Create Table (Customer)

(01)

Query :- Create Table Customer

(Customer)

CID Number(10) Primary Key,

CNAME Varchar(20) Not Null,

Phno Number(70) Unique Not Null Check(Length(phno))

Loc Varchar(20) Not Null,

PIO Number(10),

CONSTRAINT PID-FK FOREIGN KEY (PIO)
REFERENCES PRODUCT (PID)

) ;

Customer

Column name \Rightarrow	CID	CName	PHNO	LOC	PID	
Datatypes \Rightarrow	Num	Varchar	Number	Varchar	Number	
constraints \Rightarrow		(20)	(10)	(20)	(10)	
unique	✓		✓			
NotNull	✓	✓	✓	✓		
check	check		check			
Primary	PK					
foreign.						FK

Syntax :- Create table table-name

```

    Column name 1 Datatype Constraints ,
    Column name 2 Datatype Constraints ,
    :
    Column name n Datatype ,
    Constraint Foreign key References Parent tablename
                                (column name)
  
```

= 10) ;

* **Rename :-** it is used to Rename the table from the Database.

Syntax :-

RENAME TABLENAME To NewTableName;

example :-

(1) RENAME STUDENT TO STU;

(2) RENAME PRODUCT TO DRO;

* **ALTER :-** it is used to modify the column from the table.

Syntax :- ALTER TABLE TABLENAME

ADD COLUMN DATATYPE Constraints;

example :-

Alter table product/STU Add Aphonos Number(10) check (length(Aphonos) = 10)

* **DROP A COLUMN**

Syntax :- ALTER TABLE TABLENAME

DROP COLUMN COLUMNNAME;

example :- Alter table STU

Drop column Aphonos;

* **RENAME A COLUMN**

Syntax :- ALTER TABLE TABLENAME

RENAME COLUMN COLUMNNAME TO NEWCOLUMNNAME;

example :-

Alter table STU

Rename column AGE TO DOB;



* MODIFY A COLUMN

Syntax :- ALTER TABLE TABLENAME

MODIFY COLUMN Name DATATYPE;

Example :- Alter Table STU

modify sname char(25);

TRUNCATE :- It is used to remove all the records permanently from the table.

It is used to empty the table.

It will not disturb the table structure.

Syntax :- TRUNCATE TABLE TABLENAME;

Example :- TRUNCATE TABLE PRODUCT;

Drop :- This statement is used to remove the table from the Database.

Syntax :- Drop TABLE TABLENAME;

Example :- DROP TABLE .PRODUCT;

* TO Recover the table.

FlashBack :- This statement is used to recover the table from the recyclebin.

Recyclebin Syntax :- FlashBack Table Tablename TO BeforeDrop;

example :- FlashBack Table customer TO ~~BeforeDrop~~ BeforeDrop;

(PermanentDelete the Recycle bin)

- * PURGE :- this statement is used to remove the table from the Recyclebin

Syntax :- PURGE TABLE TABLENAME;

example :- PURGE TABLE customer;

* Data Manipulation Language (DML)

- this language is used to add, modify and Remove the records from the table

it has 3 statement

1) Insert

2) update

3) Delete.

Insert :- this statement used to add the records into the given table.

Syntax :- Insert into tableName values (v₁, v₂, ..., v_n);

example :- Insert into Product values (1, 'Bottle', 1000, Null);

update :- this statement is used to modify the existing values present in the table.

Syntax : Update Table-name set column = values

[where < filter condition>];

example :- Update Product set price = 198

where pname = 'Bear';

Delete :- this statement is used to remove a particular records from a given table.

Syntax :- Delete from Table-name [where < filter condition>];

example :- Delete from Product

where pname = 'laptop';

TCL :- Transaction Control Language

This language is used to control transaction such as insert, update and delete on the Database.

It has 3 statement

- 1) Commit
- 2) Rollback
- 3) Save point

1) commit :- this statement is used to save the transaction into the Database.

Syntax :- COMMIT;

2) rollback :- this statement is used to go back to the latest committed point

Syntax :- ROLLBACK TO SAVEPOINT NAME;

3) Save point :- this statement is used to mark the position on the Database.

Syntax :- SAVEPOINT SAVEPOINT NAME;

Note :- Rollback only gives as what is save in database.

DCL :- Data Control Language.

this language is used to indirectly control the flow of data between the users.

it has two statement

* GRANT

* REVOKE

GRANT :- this statement is used to give permission to the user.

Syntax :- GRANT SQL Statement ON Tablename
To User.name;

Sql statement :- Select, insert, update, delete, etc.

REVOKE :- this statement is used to take back the permission from the user.

Syntax :- REVOKE select on Sql Statement ON
Tablename To User from HR User.name;

Grant select on product to HR;

Revoke select on tab product from SCOTT;

How to connect or login as user.

COMMANDS:-

Connect;

Enter Username :- SCOTT

Enter Password :- tiger

Connected

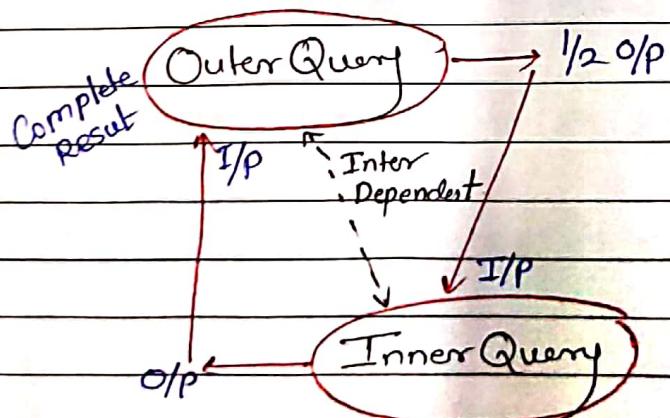
CO-RELATED SUBQUERY

Date _____
Page _____

Co-Related Subquery :- ~~task~~ Query written inside another Query and Inner Query, Outer Query or Interdependent on each other is known as co-Related Subquery.

working process of co-related Sub Query

- 1) Outer Query will execute first and produce the partial output.
- 2) the output of Outer Query will be passed as an input to the Inner Query and Inner Query will execute and produce the output.
- 3) the output of an Inner Query ~~it's~~ will be passed as input to the Outer Query
- 4) and then Outer Query will be execute and produce complete result.
- 5) these for the Outer Query and Inner Query or Interdependent on each other.



Note :- Co-related Subquery is working with the principle of both subquery as well as joins

whenever we are using co-related Subquery we should write Join condition

the join condition should be written inside the ~~another~~ query.

example :-

Q. Write a query to display Dname of employee in which employees are working

→ $\begin{array}{l} D_1 \\ D_2 \\ D_3 \end{array}$

Select Dname (10)

① From Dept (10)

② where Deptno IN (Select Deptno

from emp
where emp.Deptno = Dept.Deptno)

Deptno Dname

10 S-A

20, 30 C-E

30 P-H

40 M-F

(10) ✓

(20) ✓

(30) ✓

40 X

from emp

where emp.Deptno = Dept.Deptno

10 S-A

20 C-E

30 P-H

40 M-F

Enemp	Deptno	Dname	Deptno
A	10	D ₁	10
B	20	D ₂	20
C	30	D ₃	30
D	20	D ₄	40

exists :- exist operator returns true if subquery returns any value.

example :- wQTD Dname in which employee are working

Select Dname

from Dept

where EXISTS (Select Deptno from emp

where emp.Deptno = Dept.Deptno);

Not exists :- Not exists operator is similar to exist operator instead of selected values will be rejected.

example :- wQTD Dname which employee are not working

Select Dname

From Dept

where Not Exists (Select Deptno

From emp

where emp.Deptno = Dept.Deptno)

Normalization

Date _____
Page _____

Types of Attributes :-

- * Key Attribute
- * Non-key Attribute
- * Prime key Attribute
- * Non-prime key Attribute
- * Composite key Attribute
- * Super key Attribute
- * Foreign key Attribute

Key Attribute :- an attribute which is used to identify records uniquely from the table is known as key Attribute.

Non-key Attribute :- all the attribute other than key attribute is known as non-key Attribute.

prime key Attribute :- Among the key Attributes an attribute is chosen to be main to identify a record uniquely from the table is known as prime key attribute.

non-prime key Attribute :- All the key Attributes other than prime key Attribute is known as non-prime key Attributes.

Composite key Attribute :- this is a combination of two or more not key Attribute which is used to identify the records uniquely from the table is known as Composite key Attribute.

Super key Attribute :- It is a set of all key attribute is known as Super key Attribute.

Foreign key Attribute :- it is an attribute which behaves as an attribute of other entity to represent the relationship.

* Functional dependency

there exists a dependency such that an attribute in a relation determine other attribute

Types of functional dependencies

① Total functional dependency

② Partial functional dependency

③ Transitive functional dependency

→ Total functional dependency :- If an attribute in a relation determines all the other Attributes it is known as Total functional dependency.

Or

if all the attributes are dependent on a single attribute then it is known as total functional dependency.

→ Partial functional dependency :- there exists a dependency such that a part of Composite key Attributes determining another Attribute uniquely is known as partial functional dependency.

→ Transitive functional dependency :- there exists a dependency such that an attribute is determined by a non-key Attribute which is internally determined by a key Attribute is known as Transitive functional dependency.

- * Redundancy :- the Repetition of unwanted data is known as Redundancy.
- * ANOMACY :- the sideeffects caused during DML operation is known as Anomacy.
- * NORMALIZATION :- this is process of reducing a large table into smaller table in order to remove redundancy and anomacy by identifying functional dependency. It is known as Normalization.
or
the process of decomposing a large table into smaller table is known as normalization.
or
reducing the table to its normal form is known Normalization.
- * What is Normal form?
 - set a table without Redundancy and Anomacy or set are set to be normal form.

→ principle of decomposition of functional dependencies

* Levels of Normal forms

- 1) First Normal form → no repeating items present
- 2) Second Normal form → no partial dependencies
- 3) Third Normal form.

YD

→ after establishing functional dependency with
no transitive dependencies all fields

YD

functionally depend on all other fields
→ no partial dependencies

→ third normal form

→ no transitive dependencies
→ no partial dependencies

YD

YD

YD

YD

YD

YD

YD

YD

YD

YD