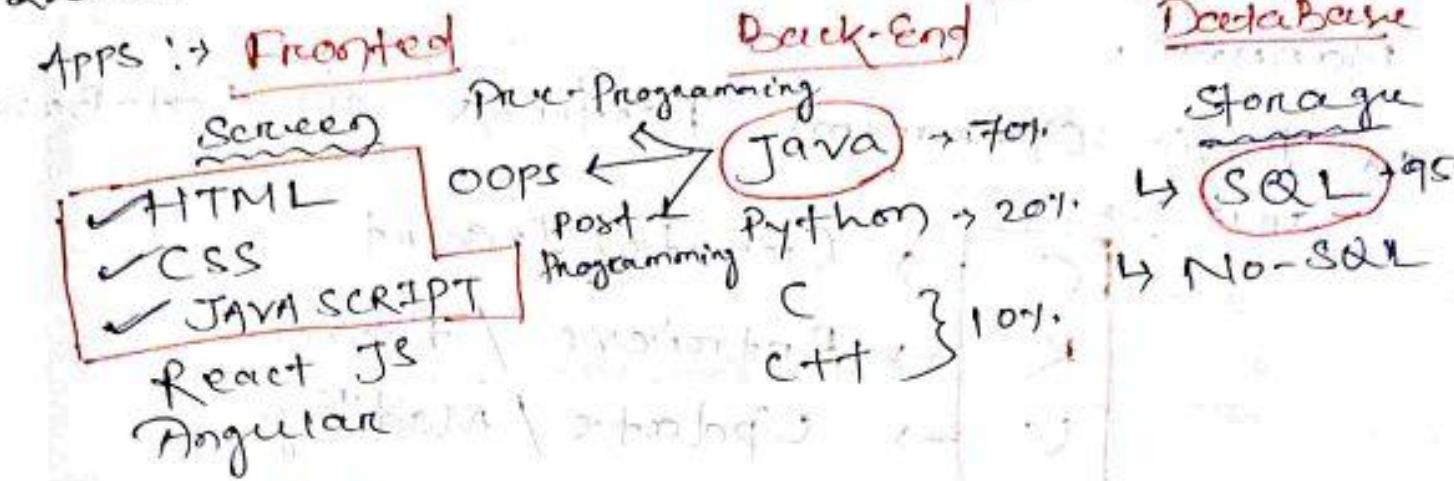


SQL (Structural Query Language)



Frontend :

- * Anything that happened in your screen is called Frontend.
- * Anything that happened behind your screen is called Backend.

Testing

- Manual Testing
- Automation Testing
- ↳ Selenium

SQL

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* Data :

Data is the RawFact, which describes the Attributes of Entity.

Ex

entity,

Attribute

Name

Age

Ht

Wet

Gender

DOB

Email ID

RawFact

Binaurajit,

23

5'6"

L2

M

10/9/199

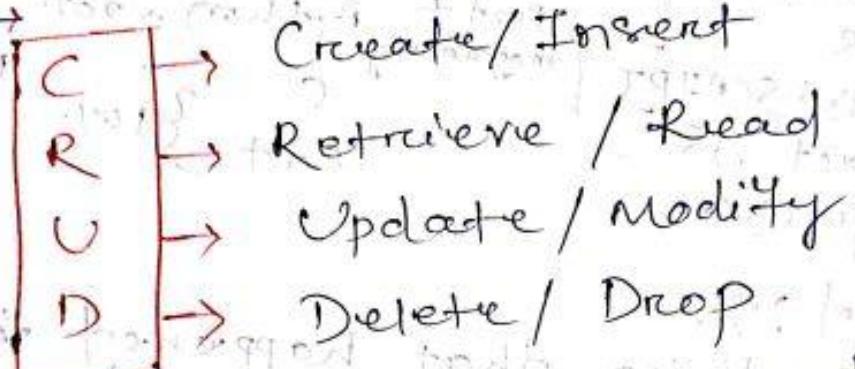
Sakshi binaurajit

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/ DataBase :-

- ↳ It is the place where we can store Data in Systematic and Organised Manner.

- ↳ Basic Operations Performed on DataBase are :-



- ↳ It is also called as Create Operation

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/ DBMS (DataBase Management System)

- ↳ It is the software used to Maintain & Manage the DataBase.

- ↳ It provides 2 factors :-

- (i) Security
- (ii) Authorisation

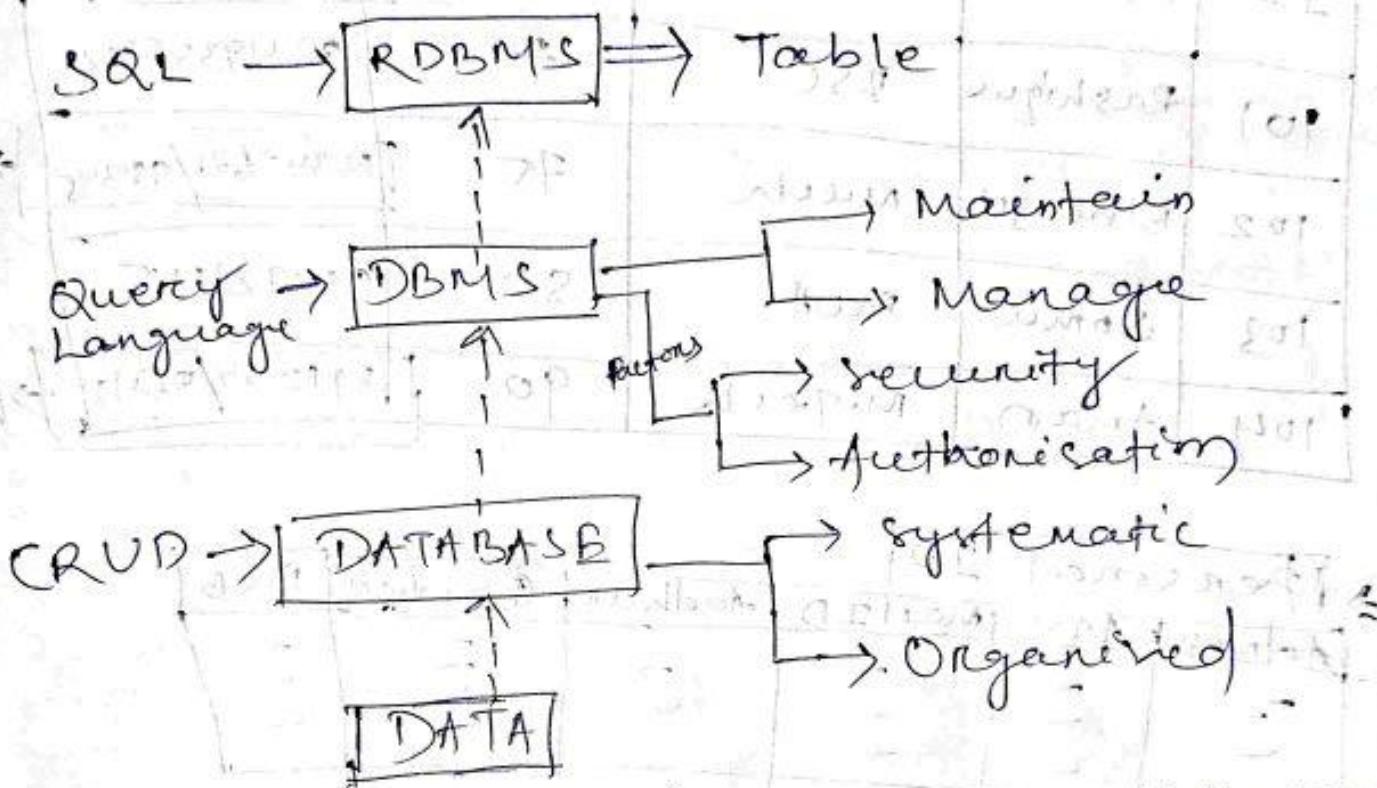
- ↳ Be used Query Language to communicate with DBMS.

Types of DBMS

- * 1) NDBMS :> Network DBMS
- * 2) OODBMS :> Object Oriented DBMS
- * 3) HDBMS :> Hierarchical DBMS
- * 4) RDBMS :> Relational DBMS

RDBMS (Relational DBMS)

- It is the type of DBMS Software, where we store the data in the form of table.
- We used Structured Query Language (SQL) to communicate to RDBMS.



RULES OF B.F. CODE

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1. The Data stored in the cell must be a single value data.
2. In RDBMS we store everything in the form of Tables, including META DATA (The details about the Data is META DATA).
3. According to B.F. Code we can store data in Multiple Tables, if needed we can establish connection b/w two table using key attributes.

4. We can validate the data Entered into the table in two steps:
- By Assigning Data types
 - by Assigning Constraints

~~STUDENT~~

ID	Name	Branch	Perce	Phon. no
101	Rashique	BSC	70	9249355912
102	Brijwajit Meek		75	12345678/98345
103	Somu	MCA	80	98372145
104	Aman	M.Tech	90	891234/92311

Personal ID

Adhaar	Age	mail ID	Aadhar	Gender	DOB
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-

key
Attribute

Percentage

1	2	3	4	5	6
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-

Meta Data :> It is the Details about the Data.

<u>Detail</u>	<u>Meta Data</u>
Size	5 MB
Resolution	240x120
Date	12 March
Time	2.30
Location	Bangalore

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- Table :> It is the Cross-section/combination of Rows & columns.
- ↳ It is used to identify all the attributes of single Entity.
 - ↳ It is used to identify all attributes of all the Entity.

Cell :> It is the smallest, unique in the table where we can write the data.

Entity :> Anything which has physical existence is known as Entity.

Data type :> Data type are used to determine what type or kind of data will be stored in a particular memory location.

Data types in SQL are :-

1) char

2) Varchar/Vnchar

3) Number

4) Date

5) Large Object

Character Large object (CLOB)

Binary Large object (BLOB)

⇒ SQL is not case-sensitive.

Char :-

* Char is the Data-type where we can store the character → A-Z
a-z
0-9

sp-char

(\$, #, !, *, ..)

* In char there is wastage of memory. We can store by character up to the size of 2000.

Char Syntax

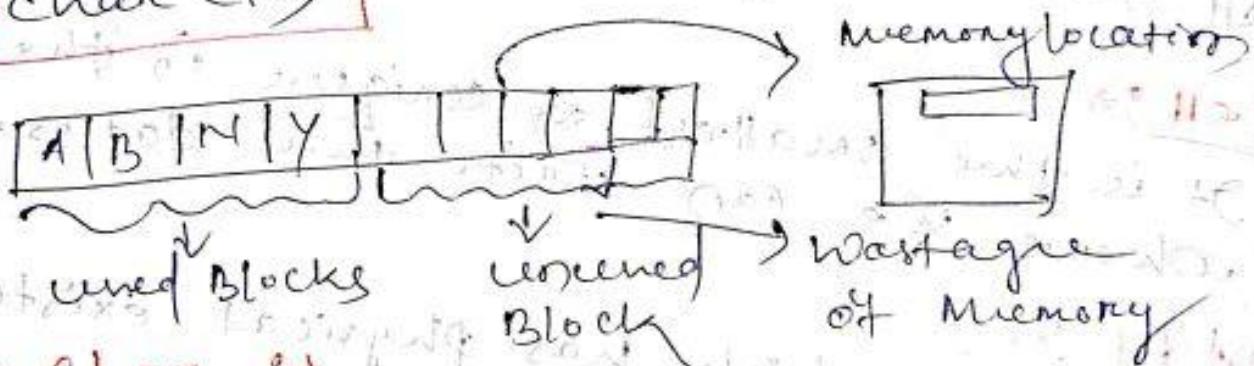
Form/Art of writing

char(size) → 2000

↳ Number of

character we need to store.

Ex. | char(10)|



Var Char :-

↳ Var Char is the datatype where we can store the characters :-

→ A-Z

→ a-z

→ 0-9

→ Sp-char

(\$, #, !, *, ..)

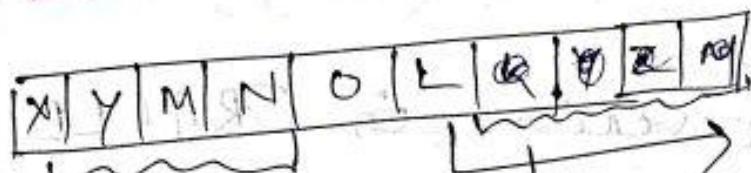
↳ In Var Char there is no-wastage of memory.

↳ We can store up to 2000 characters.

Syntax Var Chan (size) → 2000
Format of writing.

Number of char we need to store.

Ex Var Chan (10)



No waste of memory
used blocks } unused block

Var character

→ It is the obsoleted version of Var Chan & we can store the character up to 4,000.

Syntax

Var char (Size) → 4000

Char

> There is wastage of memory.

> Char is also known as fixed length memory allocation.

> There is no wastage of memory.

> It is also known as variable length memory allocation.

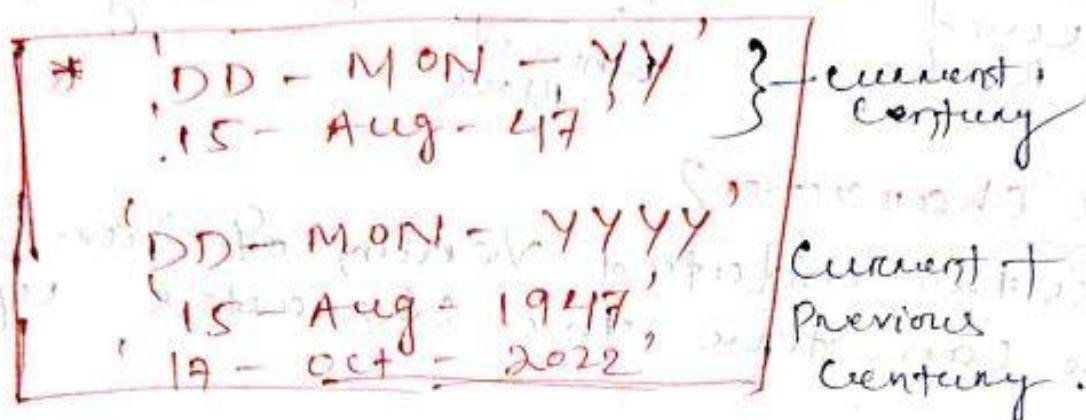
Date :-

- ↳ It is used to store any date in the Date Base.
- ↳ Date should be enclosed within Single quotes ('').

Syntax:

DATE

- ↳ Date format, Prescribable, in ORACLE



Number

- ↳ It is used to store the Numerical values.

↳ We can pass two arguments :-

- (1) Precision
- (2) Scale

Precision :-

- ↳ It is used to store the values in Numerical place.

Scale :-

- ↳ It is used to store the value in Decimal place within the precision.

Syntax

Number(Precision, Scale)

Numerical
Place

Not mandatory

Scale

Decimal
place

[within precision]

* NUMBER (3) \pm 9 9 9

NUMBER (2) \pm 9 9

NUMBER (5,2) \pm 9 9 9. 9 9

NUMBER (9,3) \pm 9 9 9 9. 9 9 9

NUMBER (3,1) \pm 9 9. 9

75236. 33 \rightarrow Number (7,2)

098.21 \rightarrow Number (5,2)

743 \rightarrow Number (3)

8434.1 \rightarrow Number (5,1)

Large Object

Character Large Object (CLOB)

This Data-type is used to store the Character upto 4 GB of size.

Binary Large Object (BLOB)

It is used to store the images, files, Videos, etc. (up to 4 gb of size)

Number(3)	Name(30)	Job(30)	Number(7,2)	Number(10)	
Emp ID	Name	Job	Sal	Mobile No	
101	Rajesh	Test engg	34500.22	9876543210	Repeat
102	Saheli	Test engg	[]	9876543210	Next
103	Ayan	manager	150,000.22	987123123	
103	Disha	Software engg	42347.22	[]	Next

Constraints \Rightarrow (Types)

↳ Unique

↳ Not Null

↳ Check

↳ Primary key

↳ Foreign key

@ Constraints \Rightarrow

↳ Constraints are the conditions that are assigned to a particular column.

↳ to validate the data.

↳ ~~Not Null~~ Assigning constraints are not mandatory but assigning data types are mandatory.

↳ Unique is a constraint we assign that, columns where we can not have the repeated values are duplicate values.

Not Null

↳ We assign this constraint to a column, where we can not have the null values / inserting values are mandatory.

Check

↳ We assign check constraints for extra validation.

Primary key

↳ It is used to identify the records uniquely from the table.

↳ Primary key must be the combination of unique and Not Null.

↳ It is always better to have 1 primary key to a table.

↳ Primary key is not mandatory but it is always better recommended to have one in the table.

SAL ID	Monthly Sal	TAX
101	32	200
102	45	300
103	52	100
104	24	100
105	36	250

Dept No	D Name
10	Sales
20	Account
30	Manager
40	Sales
50	Accounts

Emp ID	Ename	Dept No	SAL ID
1	Smith	10	101
2	Ali	20	101
3	Biswas	10	101
4	Graham	10	103
5	Roy	20	104
6	Sony	40	101
7	Liza	20	105
8	Megha	20	102

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Foreign key

- ↳ Foreign key is used to establish connection between two tables.
- ↳ It need not be unique; it can not be null.
- ↳ We can have any number of foreign keys in a table.
- ↳ Only a primary key can become a foreign key because another table's key becomes a foreign key.
- ↳ It is also known as referential integrity constraints.

Q) Diff b/w Primary key & Foreign key.

Primary key

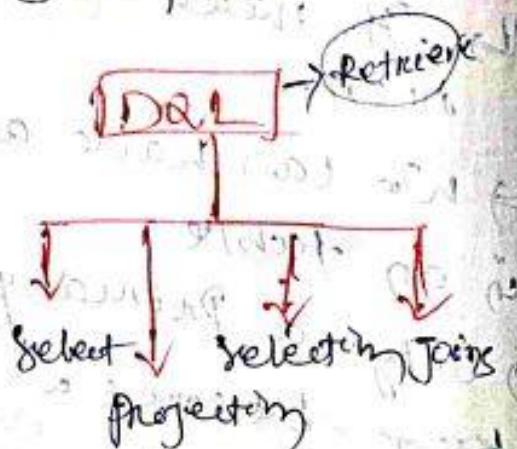
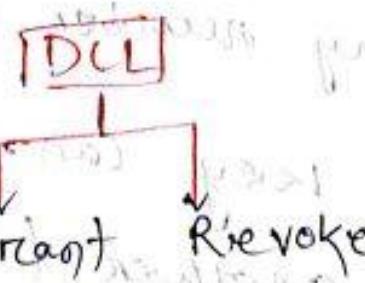
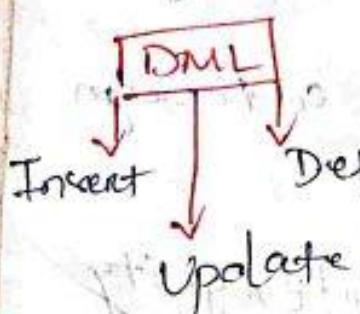
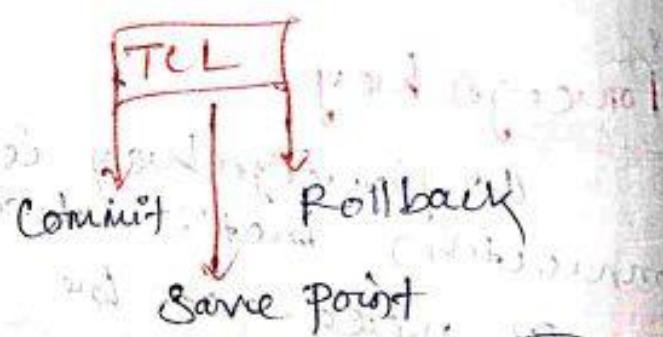
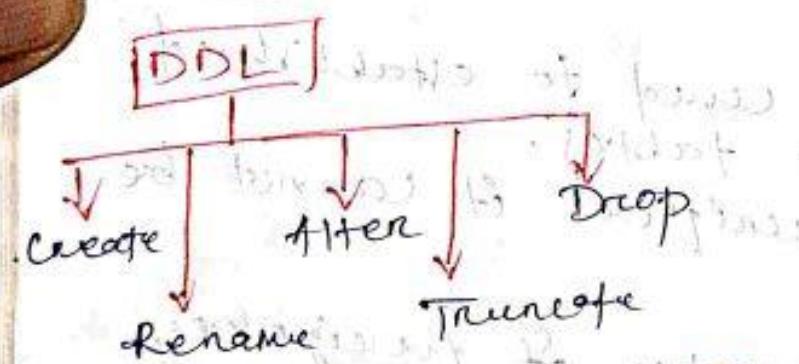
- > It is used to identify the records uniquely from table.
- > It must be unique & can not be null.
- > It is better to have one primary key in a table.

Foreign key

- > It is used to establish connecting b/w two tables.
- > It need not be unique or it can not be null.
- > We can have any number of foreign keys in the table.

Statements in SQL

- (1) DDL - Data Definition Language
- (2) DML - Data Manipulation Language
- (3) TCL - Transaction Control Language
- (4) DCL - Data Control Language
- (5) DQL - Data Query Language



DQL (Data Query Language)

↳ This statement is used to retrieve the Data from Database.

↳ There are 4 statements:-

- ① Select
- ② projection
- ③ selection
- ④ joins

① Select → This Statement is used to Retrieve the Data from DataBase & Display it.

② Projection → This statement is used to Retrieve the Data from DataBase. By selecting only columns. All the values in the columns will be selected by default.

③ Selection → This statement is used to Retrieve the Data from DataBase. By selecting both columns as well as records.

④ Joins → This statement is used to Retrieve the Data from multiple Tables simultaneously.

NOTE

- ① from Clause Starts the Execution.
- ② for from clause we can pass table name as an argument:
- ③ The job of from clause is to go to the DataBase and search for the table and put the table Under execution.
- ④ Select clause executes after the execution of from clause.
- ⑤ for select clause we can pass asterisk (*) , column Name and expression as an argument:
- ⑥ The job of select clause is to go to the table which is Under execution,
- ⑦ Select clause is responsible for the result Table.

STUDENT / Execution

ID	Name	Branch	perc
101	Akash	Mech	75
102	Laxmi	CSE	86
103	Alok	BSC	82

Q2) write a query to display Name of all the students?

Ans { ② Select [name] → Column-name
 { ① from [student]; → Table-name
 ↓ Projection ↓
 Clause

Name
Akash
Laxmi
Alok

Q-2 WAQTD branch of all the students
Ans Select branch
 from Student;

Q-3 WAQTD Name and branch of all the students.
Ans Select Name, branch
 from Student;

Note
 If we want to display more than 1 column
 we have to separate them by
 using comma (,).

Q-4 WAQTD ID, Name, and branch of all the students?

Ans Select ID, Name, branch
 from Student;

Q-5 WAQTD Branch, and Percentage of all the students?

Ans Select Branch, Perc
 from Student;

Note We have to write the same column name of all the column name present in the DataBase.

⑥ WAQTD cell the Details from Student Table ?
Select * → (Asterisk)
from student;

Asterisk (*)

↳ It is used to Determine "To select all the columns".

Semicolon (;)

↳ It is used to Determine "The end of the statement".

Q) WAQTD tables that are present in the Database.

~~Select~~

SELECT *
FROM TAB';

Output

↳ Dept

~~EMP~~

BONUS

SALGRADE

EMP

EMPNO → Employee Number

ENAME → Employee Name

JOB → JOB/Designation

MGR → Reporting Manager

HIREDATE → Hiredate/Joining Date

SAL → Salary

COMM → Commission

DEPTNO → Department No

Dept.

Dept No → Dept Member.

DName → Department Name

Loc → Location

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Q1 WAQTD all the Details of Employee table;

② WAQTD all the Details of Department table.

③ WAQTD Names of all the Employees?

④ WAQTD Designation of all the Comp?

⑤ WAQTD Name & salary of the Comp?

Ans ① Select * from Dept;

③ Select Ename
from Emp;

④ Select Job
from Comp;

⑤ Select Ename, Sal
from Emp;

⑥ WAQTD Name, & Hiredate of the Emp?
Select Ename, Hiredate
from Emp;

⑦ WAQTD Name, Designation, Date up joining
of all the Employees

Select Ename, Job, Hiredate
from Emp;

⑧ WAPTD , Name, and salary of all the employee?

Select Ename, Sal
From Emp;

⑨ WAPTD Name , salary and commission of all the employee?

Select Ename, Sal, Comm
From Emp;

⑩ WAPTD Name, Sal and Annual sal of all the employee?

Select Ename, Sal, Sal * 12
From Emp;

⑪ WAPTD Name and half term salary of all the employees?

Select Ename, Sal * 6
From Emp;

⑫ WAPTD name, salary & sal with 25% percentage hike?

Select Ename, Sal, Sal + Sal * 25/100
From Emp;

$$\text{Hike} \Rightarrow \text{SAL} + \text{SAL} * \text{Perce}/100$$

$$\text{Deduction} \Rightarrow \text{SAL} - \text{SAL} * \text{Perce}/100$$

Q. What is Name, Salary & Salary with 12% deduction?

↳ Select Ename, Sal, Sal - Sal * 12/100
From Emp;

Syntax

Select * / [Distinct] Column-name/
Expression [ALIASES]
From Table-name;

Expression

↳ Any Statement that gives us result is known as Expression.

↳ It is of 2 types

(1) Operand

(2) Operators

Operand are of 2 types

(i) Column-name

(ii) Literals

Literals are of 3 types

(i) Number

(ii) Character

(iii) Date

Operators

There are 4 operators

(i) +

(ii) -

(iii) *

(iv) /

Expression

$\text{min}(\text{SAL}) * 100 \rightarrow 100$

↓
Operand

↓
column-name

↓
Literals

- Number
- Character
- Date

↓
Operators

↓
 +
 -
 *
 /

Ex

$\text{SAL} + \text{SAL} * 25 / 100$

↓ ↓ ↓ ↓ ↓ ↓
CN OP CN OP Num Num

ALIAS :>

~~alias~~ → ~~alternate~~

~~alias~~ → ~~alternate~~
It is the alternate name given to the column or expression.

The alternate name given should be a single word or string and closed with `" "`.

Alias can be achieved by using 'AS' keywords.

Writing 'AS' is not mandatory.

It is highly recommended wherever there is an expression result.

Column-Name

AS

ALIAS

expression

SAL * 12

AS

Annual Sal

} only for
character

SAL * 12

AS

Annual-Sal

SAL * 12

AS

Annual salary

Not mandatory

salary, and also

(1) WAQTD Name, Salary, and also
Salary with 18% Hike? Select "sal with
18% hike" from "emp";

(2) WAQTD Name, Salary and salary with
40% deduction? Select "sal - 40%"
from "emp";

(3) WAQTD, Names, Salary and salary with
7% hike? Select "sal + 7%"
from "emp";

(4) WAQTD Name, salary and, Annual Sal
and salary with 34% hike?
Select "sal", "sal * 12",
"sal + 34%" "sal with 34% hike"
from "emp";

⑤ WAQTD Name, salary, and 100 rupees like in salary?

Select Ename, Sal, Sal + 100 "100 rupees like in Sal"
From Emp;

⑥ WAQTD Name, salary and also salary with 50 rupees penalty?

Select Ename, Sal, Sal - 50 "Sal with 50 rupees Penalty"
From Emp;

⑦ WAQTD Name, Annual Salary, and

Annual Bonus of 3000

Select Ename, Sal * 12, Sal * 12 + 3000
"Annual Bonus of 3000"

⑧ WAQTD Name, salary & Annual deduction of 200?

Select Ename, Sal, Sal * 12 - 200
"Annual Deduction of 200"
From Emp;

⑨ WAQTD Name, salary & Bonus

of 50 rupees in Commission?

Select Ename, Sal, Comm + 50 "Bonus of 50 in Comm"
From Emp;

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- ① WAPTD Name, Sal of the Employee along with their Annual salary?
 Ans Select Ename, sal, sal*12 "Annual sal"
 From emp;
- ② WAPTD Ename and Job for all the employee with their half year salary?
 Ans Select Ename, Job, sal*6 "half year sal"
 From emp;
- ③ ~~WAPTD~~ Details of all the employees along with Annual Sal
 Select ~~emp~~, sal*12 "Annual sal"
 From EMP;
- ④ WAPTD Name, Salary and salary with a hike of 10%?
 Select Ename, sal, sal + sal * 10/100
 "sal with hike 10%"
 From emp;
- ⑤ WAPTD Name salary with deduction of 25%.
 Select Ename, sal, sal - sal * 25/100
 "sal with deduction of 25%"
 From emp;
- ⑥ WAPTD Name, salary with monthly Hike of Rs 50,
 Select Ename, sal, sal + 50
 From emp;

⑦ WATD Name and Homeof Salary
with deduction of 10% sal * 12 + sal * 10
Select Ename, ~~sal * 12~~, ~~sal * 10~~
" " sal with 10% deduc
from Emp;

⑧ WATD Total salary given to each
Employee (sal + com)
Select Ename(sal) ~~from emp, com, sal, comm~~
from Emp
Group by sal;

⑨ WATD all the detail of the
Employee along with an annual
Bonus of 2000
Bonus of 2000 Annual Bonus of 2000
Select *, sal * 12 + 2000 all
from Emp;

⑩ WATD Name and designation
along with 10% penalty salary?
Select Ename, Job, sal - 100 "sal with
10% penalty"
from Emp;

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Distinct

* Distinct is used to remove the
repeated value / Duplicate value
from the Result table.

* Distinct should always be the 1st
argument to the Select clause.

* Distinct will remove the combination
of repeated values.

Distinct

Student :-

Name	Branch	YOP
Paras	CSB	2022
vandana	Mech	2021
Anil	CSB	2020
Roja	EC	2022
sai	Mech	2021

WAQTD diff? Branch in Student table

Q-1

Ans Select distinct branch
from Student;

output

CSB
Mech
EC

WAQTD diff? YOP?

Q-2 WAQTD diff? YOP?
Ans Select distinct YOP
from Student;

output

2022
2021
2022

WAQTD diff? branch & YOP?

Q-3 WAQTD diff? branch, YOP.

Ans Select distinct branch, YOP
from Student;

output

Branch	YOP
CSB	2022
Mech	2021
CSB	2020
EC	2022

- ① WAPTD only diff? salaries given to employees?
- Ans Select distinct Sal from Emp;
- ② WAPTD the diff? Designation that are present in emp table?
- Select distinct Job from Emp;
- ③ WAPTD diff? Deptno as well as salaries that are present in table?
- Select distinct Deptno, Sal from Emp;

Where Clause

③ Selection

It is used to retrieve the Data from the Data by selecting Both Rows & Columns.

* Where Clause

→ It is used to filter the records where clause executes Row by Row → It executes after the execution of from clause.

→ We can pass the filter condition to where clause. we can pass multiple conditions to where clause by using logical operator,

Cricket

<u>Sl.no</u>	<u>Name</u>	<u>Team</u>
1	Vireat	India
2	Babar	Pak
3	Waiver	Eng
4	Sky	India
5	Rizwan	Pak

check

India = India(T)
 pak = India(F)
 Eng = India(F)
 India = India(T)
 Pak = India(F)

Q-1 What is the name of Indian players?

③ Select name

① From Cricket

② Where Team = 'India'

filter condition

output

<u>Sl.no</u>	<u>Name</u>	<u>Team</u>
1	Vireat	India
4	Sky	India

✓ final output

<u>Name</u>
Vireat
Sky

Syntax

SELECT * / DISTINCT COLUMN - NAME /
 EXPRESSION [ALIAS]

FROM TABLE - NAME

WHERE < filter condition >

order of execution

① From

② where

③ select

Q-1 WAQTD all the details of warner ?

Select *
from Cricket 'WARNER';
where Name='Warner'.

Q-2 WAQTD all the Details of Smith ?

Select *
from EMP
where Ename= 'SMITH';

Q-3 WAQTD all the Details of JONES ?

Select *
from EMP
where Ename= 'JONES';

Q-4 WAQTD salary of MARTIN ?

Select Sal
from EMP
where Ename= 'MARTIN';

Q-5 WAQTD DeptNo of MILLER ?

Select DeptNo
From emp
where Ename= 'MILLER';

Q-6 WAQTD TURNER's Designation ?

Select Job
From emp
where Ename= 'TURNER';

Q-7 What Details of employee working
as Salesman ?
Select *
from EMP
where Job = 'SALESMAN';

Q-8 What Names of an employee working
as Manager ?
Select Ename
from EMP
where Job = 'MANAGER';

Q-9 What Salary of President ?
Select Sal
from EMP
where Job = 'PRESIDENT';

Q-10 What Names of an Employee
working in Dept No 20 ?
Select Ename
from EMP
where Deptno = 20;

Q-11 What Names of an Employee
whose ~~Salary~~ 3000 ?
Select Ename
from EMP
where Sal = 3000;

⑫ WAPTD details of an employee
where earning commission of 500 Rupees

Select *

from Emp

where ~~sal~~ comm = 500;

⑬ WAPTD names of an employee
where ~~name~~ salary more than 2000 Rupees

Select Ename

from Emp

where sal > 2000;

3/11/22

① WAPTD Details of an employee
earning less than 3000.

Select *

from Emp

where sal < 3000;

② WAPTD Names of an employee
hired after 1981.

Select Ename

from Emp

where hiredate > '31-dec-81';

OR >= '01-jan-82';

Formula

DD-MON-YY
03-NOV-22

After → hiredate >

before → hiredate <

③ WAPTD Details of an employee hired before 1987 ?

Select *

from emp

where hiredate < '01-Jan-87';
or < ~~31~~ '31-Dec-86';

④ WAPTD all the details of employee along with annual salary if the annual salary is more than 30000

Select emp.* , sal * 12 "Annual sal"

from emp

where sal * 12 > 30000 ;

Note We can not write the alias name in where clause.

⑤ WAPTD Details of an employee working as a clerk & earning less than 1000 ;

Select *

from emp

where job = 'clerk' and sal < 1000

⑥ WAPTD Details of an employee working as Manager in Deptno 20 ?

Select *

from emp

where job = 'Manager' and DEPTNO = 20;

⑦ WHATD the Name of WARD ?
Select * from emp
where jobname = 'WARD';

⑧ WHATD Names of an employee where
earning less than 1000
Select Ename
from emp
where sal < 1000;

⑨ WHATD Names of an employee where
earning more than 3000?
Select Ename
from emp
where sal > 3000;

⑩ WHATD Details of an employee hired
before 1981
Select *
from Emp
where hiredate < '01-Jan-81';
or
≤ '31-Dec-80';

⑪ WHATD Names of an employee
working in DEPTNO 10 ?
Select Ename
from emp
where Deptno = 10;

⑫ WHATD Names of an employee
working as Clerk and earning
more than 1000 ?
Select Ename
from emp
where job = 'Clerk' and sal > 1000;

⑬ WAPTD Names of an employee working
as a Analyst and hired after 1981 ?
Select Ename
From emp
where job = 'Analyst' and ~~hiredate~~
hiredate \geq '01-Jan-82';
or $>$ '31-Dec-81';

⑭ WAPTD Names of an employee working
as manager in Deptno = 10 ?
Select Ename
From emp
where job = 'Manager' and Deptno = 10;

⑮ WAPTD Details of an employee working
as a Salesman & earning the commited
more than 500 ?
Select *
From emp
where job = 'Salesman' and comm $>$ 500

⑯ WAPTD names of an emp ~~earning~~ as
as Salesman earning more than 1250 ?
Select Ename
From emp
where job = 'SALESMAN' and sal $>$ 1250

⑰ WAPTD names of an employee working
as a Clerk & earning more than
1000 & in Dept no 10 ?
Select Ename
From emp
where job = 'Clerk' and sal $>$ 1000
and Deptno = 10 ;

(18) WAPTD Names of an employee working as Analyst & earning 3000 Rupees ?

Select Ename
from Emp
where job = 'Analyst' and sal = 3000;

(19) WAPTD Names of employee working in Dept no 10 & hired before 1982 !

Select Ename

from Emp
where Deptno = 10 and ~~bannedate~~
hiredate < '01-Jan-82';
or <= '31-Dec-81';

(20) WAPTD Details of an employee working as Manager & earning more than 2500 & hired after 1980 ? Select *

from Emp
where job = 'Manager' and
sal > 2500 and hiredate >= '01-Jan-81';
or > '31-Dec-80';

(21) WAPTD Details of an employee ~~hired~~ working as a Clerk & hired before 1987 & earning less than 1250 in Dept no 30 ?

Select *

from Emp
where job = 'Clerk' and hiredate < '01-Jan-87';
or <= '31-Dec-86';
and sal < 1250 and Deptno = 30;

②2) what Details of an employee hired after 1981 & before 1987.

Select *

from emp

where hiredate $>= '01\text{-Jan-82'$ and
 $\leq '31\text{-Dec-81'$; and
hiredate $< '01\text{-Jan-87'$;
 $\leq '31\text{-Dec-86'$;

③) what Details of an employee carry more than ~~2000~~ 2500 & less than 2000.

Select *

from emp

where sal > 2500 and sal < 2000 ;

④) what Details of an employee hired in the year 1982?

Select *

from emp

where hiredate between
 $'01\text{-Jan-82'$ and
 $'31\text{-Dec-82'$;

⑤) what Names of an employee working as the President or Analyst?

Select Ename

from emp

where Job = 'PRESIDENT' or

Job = 'ANALYST';

26) What details of an employee working in Dept 10 or 20 ?

Select *

From emp
where DeptNo = 10 or 20;

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① What names of an employee working in Dept 10 or 20 or 30 or 40 or 50 or 60 ?

Select Ename

From emp
where Deptno IN (10, 20, 30, 40, 50, 60);

Operators

① Arithmetic Operator (+, -, *, /)

② Comparison Operator (=, !=, >=)

③ Relational Operator (<, >, <=, >=)

④ Special Operator (In, Not In, between,
Not between, like, Not like,
Is, IS NOT)

⑤ Logical Operator (And, Or, Not)

⑥ Concatenation Operator (+ ||)

⑦ Subquery Operator : (All, Any)

IN Operator (excluding)

• IN is other Multi-value Operator which can accept Multiple values in R.H.S.

Syntax

Column-name / Expression IN (value v₁, v₂, v₃);

Ex:- Select Ename

From emp

Where Deptno IN (10, 20, 30, 40, 50, 60);

Q-2 WAPTD. Details of an employee working in Dept. 20 or 30?

Select *

From emp

Where Deptno IN (20, 30);

Q-3 WAPTD Names of an employee working as 'PRESIDENT' OR 'ANALYST'

Select Ename

From emp

Where Job IN ('PRESIDENT', 'ANALYST');

Q-4 WAPTD Details of an employee working as the Clerk or Manager in Deptno 10 OR 20?

Select *

From emp

Where Job IN ('CLERK', 'MANAGER');

and DBPTNO IN (10, 20);

Q) WAPTD all the details of employee excluding the employees working in Deptno 20 or 30 ?

→ Select *

From Emp
where Deptno NOTIN (20, 30);

NOT IN (excluding)

→ It is used to exclude the values.

Q2) WAPTD Names, Deptno and designation of employees working in Dept. 10 or 20 except Manager, Clerk.

Select Name, Deptno, Job

From Emp

where Deptno IN (10, 20) and

Job NOTIN ('Manager', 'Clerk');

Q3) WAPTD Details of an employee hired after 81. & before 87.

Select *

From Emp

where hirdate \geq '01-Jan-82'

and hirdate \leq '31-Dec-86';

BETWEEN Operator

- * We can't Between Operator whenever we have Ranges.
- * We can not Interchange the Range.
- * Between Operator includes the starting range & the ending range.

Syntax

① Column-name /

Between Starting range And Ending range

expression:

Hiredate between '01-jan-82' And '31-Dec-82'

① What Details of an employee hired in the year 81?

Select *

from Emp

wherein hiredate between '01-Jan-81'
And '31-Dec-81';

② What all the Details of employee excluding the Employee hired in the year 82?

Select *

from Emp

wherein hiredate Not Between '01-Jan-82'
And '31-Dec-82';

NOT Between

* It is used to exclude the ranges.

Q-1. WATD Details of all employee working as Clerk or Analyst in Dept 10 or 20 and hired after 1980 and before 1987 excluding the employee hired in the year 82.

Select *

from Emp IN ('Clerk', 'ANALYST')
where job = 'Clerk' or job = 'Analyst'
and deptno IN (10, 20) and
hiredate >= '01-Jan-81' and
hiredate <= '31-Dec-86' and hiredate
not between '01-Jan-82' and '31-Dec-82'.

Q-2 WATD. Details of all Employee working as President, Manager or Analyst exceeding the employee working in dept. 30 or 40, and hired in the year 81.

Select *

from Emp
where job IN ('PRESIDENT', 'MANAGER', 'ANALYST')
or job = 'Analyst' and
Deptno NOT IN (30, 40) and
hiredate between '01-Jan-81' and
'31-Dec-81'.

LIKE Operator.

5/11/24

It is used to Match the pattern

Syntax

Column-name/Expression LIKE 'Pattern-to-match';

To Achieve the Pattern Matching we use special characters such as :

(1) Percentile (%) : It can accept any character; Any no. of times or no character.

(2) Underscore (_): It can only accept character but only 1 character at a time.

- Important
- (1) Starts with character 'A' \Rightarrow '%A'
 - (2) Starts with character 'S' \Rightarrow 'S%
 - (3) Ends with character 'A' \Rightarrow 'A%
 - (4) Ends with character 'S' \Rightarrow '%S'
 - (5) Having character 'A' \Rightarrow '%A%
 - (6) Having character 'T' Prevent Twice - %A%A%
 - (7) Having two consecutive 'T' \Rightarrow %TT%

1) Having 2nd character as 'A' $\Rightarrow A\% -$

2) Having 2nd character as 'V' $\Rightarrow V\% -$

3) 2nd last character 'D' $\Rightarrow \% D -$

4) 3rd last character 'L' $\Rightarrow \% L - -$

5) 2nd character 'T' and end with
'T' $\Rightarrow - T\% T - -$

6) 3rd character 'M' and end with
'A' $\Rightarrow - M\% A - -$

7) Starts with 'I' and ends with last character,
'I' $\Rightarrow I\% I - -$

8) Starts with 'R' and 3rd last character
'L' $\Rightarrow R\% L - -$

9) Starts with 'V' and ends with
'T' $\Rightarrow V\% T - -$

10) having 4 characters $\rightarrow - - -$

* Having 4 digits $\rightarrow - - -$

- Q1 WHATD Details of an empty character names starts with character A ?
Select *
from emp
where Ename like 'A%' ;
- (2) WHATD Details of an empty who are having character A in their name : Select *
from emp
where Ename like '%A%' ;
- (3) WHATD Details of an empty whose designation ends with character R
Select *
from emp
where Job like '%R' ;
- (4) WHATD Ename if the empty is having character 'A' in the 2nd place.
Select Ename
from emp
where Ename like 'A%' ;
- (5) WHATD Details of emps having 'A' in 2nd last place.
Select *
from emp
where Ename like '%A-' ;

⑥ WAPTD 'Details of Emp's having 'S' in the last place ?'

Select *

from emp

where Ename like '%S'

⑦ WAPTD Enames of Empty having 'S' in the 4th place.

Select Ename

from emp

where Ename like '___-S'

⑧ WAPTD Ename who have having character 'A' in 1st place and 'S' in the last place.

Select Ename

from emp

where Ename like 'A-%S'

⑨ WAPTD Enames, Sal; if they are earning 3 digits salary

Select Ename, sal

from emp

where Sal like '____-'

- (10) WAPTD ~~Details of~~ Ename, if they were hired in the year 82
Select Ename, hiredate
from EMP
where hiredate like '82%';
where ever they are having
- (11) WAPTD ~~Details of~~ EMP who are having character 'A' in 1st place or EMP's character 'S' in last place.
Select *
from EMP
where Ename like 'A%.S';
- (12) WAPTD Ename, if they are having 'A'
in 1st place and working in Dept no 10 or
Select Ename
from EMP
where Ename like 'A%' and
Deptno IN (10, 20);

~~WAPTD~~ Ename, Sal if they are carrying
4 digit sal.
Select Ename, Sal
from EMP
where Sal like '_____';

(14) What Enames hired date if they
are hired in the year 81 and
earning sal more than 2000;
Select Ename; hiredate
from emp
where hiredate like '81%' and
sal > 2000;

(15) What Details of Emp's if they
having string man in their Job
Select *
from emp
where job like '%.MAN'

(16) What Details of Emp's if they
are having 'A' in 1st place 'D' is
2nd place and 'S' is last place,
Select *
from emp
where ename like 'A%.D%.S';

IS Operator

'IS' operator is used to compare with 'NULL' value.

ename	sal	comm
smith	800	0
kenya	1500	0
ward	1250	500

Q) What names of employee who are not earning any comm?

Select ename

from Emp

where comm IS NULL;

→ IS Operator

Syntax: Column-name/ expression IS NULL;

Column-name/ expression Doesn't get any

① What Ename who doesn't get any salary.

Select ename

from Emp

where sal IS NULL;

ename and comm of employees

② What if they are earning comm?

Select ename, comm

from Emp

where comm IS NOT NULL;

→ IS NOT Operator

IS NOT Operator

It is used to compare with the
null values.

Q-1

WATD no. of employ. getting salary,
less than 2000 in Dept no 10

↳ Select count (*)

from emp

where sal < 2000 and
deptno = 10;

Q-2 WATD total salary needed to
pay employees working as Clerk

Select sum(sal)

from emp

where job = 'CLERK';

Q-3 WATD Avg salary needed to pay
all employees,

Select avg(sal)

from emp;

Q-4 WATD no. of employee having
'A' as the 1st character.

Select count (*)

from emp

where ename like 'A%';

Q-5

Q-5 ~~WATD~~ no. of employees working as clerk or manager.

Select Count(*)

From EMP

Where Job IN ('CLERK', 'MANAGER')

Q-6 ~~WATD~~ no. of employees reporting to 7839 (MGR)

Select Count(*)

From EMP

Where MGR = '7839';

Q-7 ~~WATD~~ no. of employees getting promotion in Deptno 30.

Select Count(*)

From EMP

Where Job IS NOT NULL and

Deptno = 30;

Q-8 ~~WATD~~ Avg sal, total sal, number of emps and maximum salary given to employee working as president.

Select AVG(SAL), SUM(SAL), COUNT(*), MAX(SAL)

From EMP

Where Job = 'PRESIDENT';

Q9) WHATD no. of employees having
'A' in their Name.
Select count(*)
from EMP like '%A%';
where Ename

Q10) WHATD no. of employees and total salary
Owed to pay the EMP who have
a consecutive L's in their names?
Select count(*), sum(sal)
from EMP
where Ename like '%LL%';

Q11) WHATD no. of employees present in
EMP table.
Select count(*)
from EMP;

Q12) WHATD no. of employees working in
Dept 10?
Select count(*)
from EMP
where Deptno=10;

Q13) WHATD no. of employees working
in Dept 30?
Select count(*)
from EMP
where Deptno=30;

Q14) WHATD no. of employees working
in each Dept?
Select count(*), deptno
from EMP
Group by Deptno;

Functions

It is a set of instruction that are written to reduce the fax.

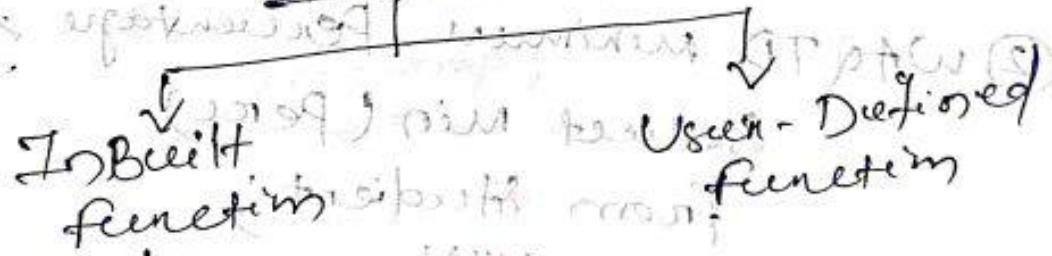
Single Row Function

- * It executes row by row . It takes 1 input executes & generates 1 output . Then goes to next input .
- * If you pass 'n' number of input it will return 'n' number of output .

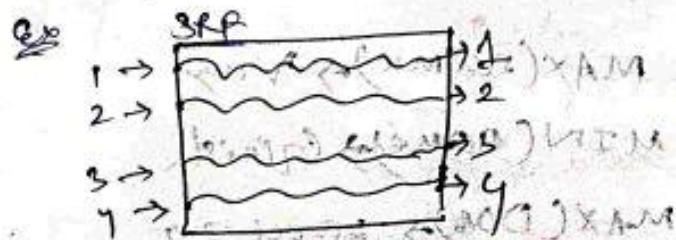
Multi-Row Function

- * Multi-Row Fun. is also known as group function or Aggregate function .
- * It executes group by group & takes all the input as 1 time .
- * It takes all the generated 1 output .
- * If we pass 'n' number of input it aggregate only 1 output .
- * It will generate only 1 output .

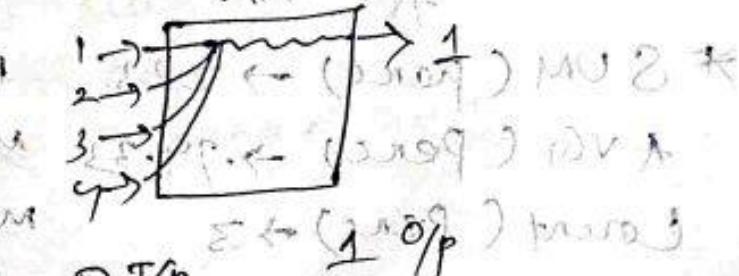
Function



Single-Row fun.



Multi-Row fun.



List of Multi-Row Function

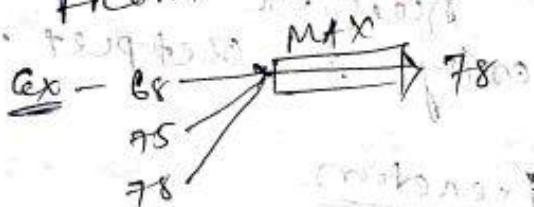
- ① MAX()
- ② MIN()
- ③ SUM()
- ④ AVG()
- ⑤ COUNT()

Ex: Student

name	DOB	perc
Vinay	20-Sep-2000	68
Girish	25-Oct-2001	75
Prajeet	16-Jun-1999	78

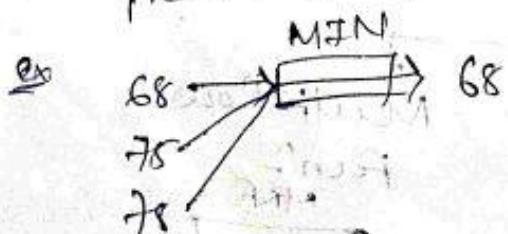
Q1. WATD. Maximum Percentage?

Select MAX(perc)
from Student;



Q2. WATD. Minimum Percentage?

Select MIN(perc)
from Student;



* SUM(perc) → 223

* AVG(perc) → 74.33

COUNT(perc) → 3

MAX(name) → Vinay

MIN(name) → Girish

MAX(DOB) → 25-Oct-2001

MIN(DOB) → 16-Jun-1999

Note

1 * M
wh

2 * N
me

Ex Q1

R

Q1

Q2

Q3

Q4

Note

- 1 * We can not use Multi Row Function where clause.
- 2 * We can not use any column-name with multi-row function in where clause.
- Ex ① column row by row M.R.P groupby(X) group ex-3 max(sal), count(*) name, (X)

Q1 WHATD maximum salary in emp-table ? Select Max(sal)
From Emp;

Q2 WHATD minimum salary in emp-table ? Select Min(sal)
From Emp;

Q3 WHATD no. of employees in emp-table ? Select Count(*)
From Emp;

Q4 WHATD max-salary in Deptno 20 ?
Select Max(sal)
From Emp
Where Deptno = 20;

Q-1 WHATD no. of employ whose names start with character M & select count (*)

from emp

where name like 'M%'

Q-2 WHATD maxi. salary given to a Manager

select max(sal)

from emp

where job = 'MANAGER'

Q-3 WHATD no. of employees who are not getting any comm?

select count (*)

from emp

where comm IS Null;
IS [IS operator]

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① WHATD no. of employees earning zero rupees?

select count (*)

from emp

where sal = 3000;

② WHATD no. of employees hired after 1981?

select count (*)

from emp

where hiredate > '31-Dec-81';

③ WATD no. of employees hired in the year 1982
Select Count (*)
from emp
where hiredate like '%82%';

④ WATD no. of employees working in Dept no 10
Select Count (*)
from emp
where Dept no = 10;

⑤ WATD no. of employees working as the President or Analyst
Select Count (*)
from emp
where Job IN ('PRESIDENT', 'ANALYST');

⑥ WATD maximum salary given to the Clerk
Select max(sal)
from emp
where job = 'CLERK';

⑦ WATD no. of employees earning more than ~~2500~~ 2500 and working as the manager
Select Count (*)
from emp
where Sal > 2500 and
Job = 'MANAGER';

⑥ w3QTD Avg salary given to those working in Dept no 20 ?
Select AVG(SAL)
From EMP
Where job = 'ANALYST' and
Deptno = 20;

⑦ w3QTD no. of employees working as a clerk or salesman, in Dept. 10 or 30
Select Count(*)
From EMP
Where job IN ('CLERK', 'SALESMAN')
and Deptno IN (10, 30);

⑧ w3QTD no. of employees working as the President, Manager or Analyst in Dept no 10 or 20 ?
Select Count(*)
From EMP
Where job IN ('PRESIDENT', 'MANAGER',
'ANALYST') and
Deptno IN (10, 20);

⑨ w3QTD maxi - salary goes to the employee whose name starts with character A ?
Select MAX(SAL)
From EMP
Where Name like 'A%';

⑩ WATTD maximum salary given to
the employ who earning commision &
select max(SAL)
from emp
where Comm is NOT NULL;

⑪ WATTD no. of employees having charac-
ter A is 2nd place.
A is and place.
Select count(*)
from emp
where Ename like '_A%';

⑫ WATTD maximum salary given to the
employ whose names ends with
character S ? (S,SU) at output is no
Select MAX(SAL)
from emp
where Ename like '%.S';

⑬ WATTD no. of employees hired after
1981 and earning less than 3000
Select count(*)
from emp
where hiredate > '31-Dec-81' and
Sal < 3000

⑯ WATD no. of employees whom designation has starting 'MAN'.

Select Count(*)

from emp

where job like 'MAN%'

coarse job like '%.MAN.%';

⑰ WATD Details of an employ working as the manager, president or Analyst. in Dept 10 or 20 and earning more than 2500 and hired since year 81 and his name meet end with character D ?

Select *

from emp

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

and deptno in (10, 20) and

sal > 2500 and

hiredate like '81' and

ename like '%.D' ;

(S) What is no. of employees hired in the Month of Dec?

Select Count(*)

From Emp

where hiredate like '%.Dec%';

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Group by clause

↳ It is used to group the records
↳ Group by clause executes row by row.

↳ For group by clause we can pass column - name / expression as an argument
↳ We can write group-by expression along with next-row function in group - clause.

Select - clause :

Group-By Expression

→ Any column / expression written in group by clause is known as group by expression.
→ After the execution of groupby clause it creates a group and if any clause that executes after group by clause will execute groupby group.

Sl.no	name	Language
1	KGF	Kanada
2	pushpa	Telugu
3	kantara	Kanada
4	Bhramana	Hindi
5	RRR	Telugu

Q What no. of movies is each language ?
Select count(*), Language from movie

Group by language;

Output

Count(*)	Language
3	Kannada
2	Telugu
1	Hindi

① What Max sal in each Dept?

Select max(SAL), Deptno
From Emp

Group by Deptno;

② What Average salary of emp's
in each job

Select AVG(SAL), Job
From Emp

Group by Job;

③ What no. of emp's in each dept
the emp's are earning more than 2000

Select count(*), deptno

From emp

where sal > 2000

Group by deptno and ~~> 2000~~;

④ WATD no. of employ having character 'A' in each job

Select Count(*), Job

from emp

wheree Ename like '%A'

Group by Job;

⑤ WATD no. of employees hired in the year 81 in each dept

Select Count(*), deptno

from emp

wheree hiredate like '%81%

Group by deptno;

⑥ WATD no. of employees working all the manager in each dept

Select Count(*), deptno

from emp

wheree Job = 'MANAGER'

Group by (deptno);

⑦ WATD no. of employees hired in the month of decembe in each job?

Select count(*), Job

from emp

wheree hiredate like '%Dec%

Group by Job;

Group by

Syntax

```

SELECT group_by- expression/group function
FROM table-name
[where & filter conditions]
GROUP BY column-name/expression
    
```

Order of Execution

- 1 - from
- 2 - where (if given) [Row by row]
- 3 - Group by [Row by Row]
- 4 - select [Group by group]

① What's no. of employees working in each dept if there are at least 2 employee in each dept?

Select Count(*), deptno
from emp

~~where~~ Group by deptno

~~Having Count(*)~~ >= 1
~~(deptno)~~

~~Having Count(*) >= 2~~ ;

Having Clause

We can have clause for filtering the group.

↳ Having clause executes group by group.

↳ Having clause executes after the execution of group by clause.

↳ We can use Multi-level filtering to having clause.

Having clause -

Q What's no. of movies in each language
of these at least 2 movies in each language?

SELECT Count(*), Language

FROM movies

Group by Language

Having Count(*) >= 2;

Output -

Count (*)	Language
2	Kannada

Telugu

'KANNADA' = 2 movies
in query

11/11/22

- ① WHATD. no. of employees working
in each Department Except President
Select Count(*), Deptno
From EMP
Where job NOT IN ('PRES', 'DBA')
Group by Deptno;

- ② WHATD Avg salary Needed to Pay
all the employee in each Department
excluding the employees of Deptno 20
Select AVG(SAL), Deptno
From EMP
Where Deptno NOT IN 20
Group by Deptno;

- ③ WHATD no. of employees and total
salary given to all the Salesman
in each Dept:
Select Count(*), SUM(SAL), Deptno
From EMP
Where job = 'SALESMAN'
Group by Deptno;

(4) COUNT no. of employee with their maximum salary in each job ?
Select Count(*), Max(SAL), Job
from EMP

~~where~~ Group by 'Job';

(5) COUNT max-salary given to an employee working in each Dept.

Select Max(SAL), Deptno
from EMP

~~where~~ Group by Deptno;

(6) COUNT no. of times the salary are present in Employee table.

Select Count(*); SAL

from EMP

Group by SAL;

⑦ whatD no. of Emply working in
Each Dept. having at least 2 emp's
in each Dept?
Select Count(*), Deptno
from EMP
Group by Deptno
having Count(*) >= 2;

⑧ whatD no. of Emp earning less
than 1200, in Each Job and
the total sal over due to pay
EMP of Each Job must exceed 3800
Select Count(*), ~~Total~~ sum(SAL), Job
from EMP

where Sal > 1200 ~~and~~

~~sum(SAL) > 3800~~

Group by Job

Having sum(SAL) > 3800;

⑨ whatD Deptno and no. of Employees only
if there are 2 employee working
in Each Dept As Manager ?
Select Deptno, ~~Count(*)~~
from EMP

where Job = 'MANAGER'

Group by Deptno

Having Count(*) = 2 ;

10) WAP TO job and max sal of Emp in each job if the max. sal exceeds 2600.
Select job, max(SAL), job
from emp
where max(SAL) > 2600
group by job
Having max(SAL) > 2600;

11) WAP TO avg salary of each Dept if avg sal is less than 3000.
Avg sal is less than 3000
Select AVG(SAL), Deptno
from emp
where AVG(SAL) < 3000
group by Deptno
Having AVG(SAL) < 3000;

12) WAP TO Deptno of those who have at least 3 EMP in each Dept whose name has char 'A' or 'S'
Select Deptno, ~~Count(*)~~
from emp
where ename like '%A%' OR
ename like '%S%'
group by Deptno
Having count(*) >= 3;

(13) What are salaries that are repeated in emp table?

Select sal

from emp

order by sal;

Order By Clause

We use Order by clause to sort the records Ascending or descending the records.

(i) Order by clause of the last clause to be written in the statement.

(ii) Order by clause executes after the execution of select clause

(iii) By Default Order by clause will give the records in Ascending Order. We can pass

Column name or

(iv) We can pass expression to Order

(v) We can pass the alias name to Order by clause.

syntax

Select - ⑤	Select group by expression / group function
from - ①	from table-name
where - ②	where < filter condition>
Group by - ③	[Group by column-name]
Having - ④	[Having < group filter condition>]
Order by - ⑥	order by column-name [ASC / DESC];

Q-1 what Ename in ASC order

```
select Ename
  from emp
 order by Ename ASC;
```

Q-2 what sal in Desc order

```
select sal
  from emp
 order by sal DESC;
```

Q-3 what sal in Ascending Order

```
select sal
  from emp
 order by sal ASC;
```

Q-4 what Ename in Desc order

```
select Ename
  from emp
 order by Ename DESC;
```

Q-5 what Ancelet sal in Desc order,
Sal #12
Ancelet Sal

```
select Ancelet Sal
  from emp
 order by Ancelet Sal DESC;
```

① What are names of the employ who
are earning more than 2000.
14/11/21

Select Ename

From EMP

where sal > 2000;

② What is the salary of Smith.

Select Sal

From EMP

where Ename = 'SMITH'

③ What are names of other employ
who are earning more than Smith.

Select Ename

From EMP

where sal > (select sal

from EMP

where Ename = 'SMITH');

Sub-Query

* A query written inside another
query is known as Sub-Query.
Here we will be having two types
of a query:-

(1) Outer-Query

(2) Inner-Query

↳ Inner Query will execute 1st
and generate the output
the output generated by the
inner-Query will be take and
as input the outer query.

↳ The outer Query will execute
and generate the output.

→ This aspect will be the Final Result.
Q Why do we go for sub-Query?

Cause - Whenever we have the unknown values we go for - sub-Query

Q What names of Employee earning more than Smith?

① Select Ename → **Outer Query**
② from EMP
③ where Ename = 'Smith';
output

Ename	Sal
SMITH	2000

④ Select SAL
⑤ from EMP
⑥ where Ename = 'Smith';
↳ **Inner-Query**

Q What names of Employee earning less than Ford?

Select Ename
from EMP
where Sal < (Select Sal
from EMP
where Ename = 'FORD');

Q What Details of an employee who are hired before James?

Select *
from EMP
where hiredate < (select hiredate
from EMP
where Ename = 'JAMES');

③ What retrieves all employee details whose designation is that of Smith?

Select *
from EMP
where job ^{IN} (select job
from emp
where Ename = 'SMITH');

④ What Details of an employee who are working in same department as that of KING?

Select *
from emp
where deptno IN (select deptno
from emp
where Ename = 'KING');

⑤ What Details of an employee who are working the Manager in Allen's department.

Select *
from emp
where job = IN (select job
from emp
where Ename = 'M'
and job = 'Manager' and
deptno IN (select deptno
from emp
where Ename = 'ALLEN');

⑥ WAPTD details of all employ who are
earning more than 1000 in Miller's organization.
Select *
from EMP
where sal > 1000 and
job IN (select job
from EMP
where ename = 'MILLER');

⑦ WAPTD details of all employ earning
more than 1000 but less than Black;
Select *
from EMP
where sal > 1000 and
sal < (select sal
from EMP
where ename = 'BLACK');

⑧ WAPTD details of all employee who
are earning more than James but
less than TURNER?
Select *
from EMP
where sal > (select sal
from EMP
where ename = 'JAMES') and
sal < (select sal
from EMP
where ename = 'TURNER');

Q9) WHATD No. of employees hired after Smith before Jan 1981?

Select Count (*)

From EMP

Where hiredate > (Select hire_date

From EMP

Where Ename = 'SMITH'

and, hiredate < (Select hiredate
From EMP

Where Ename = 'KING');

Q10) WHATD Name of the Employees earning more than Adams?

Select Ename

From EMP

Where Sal > (Select Sal

From EMP

Where Ename = 'ADAMS');

Q11) WHATD Name and salary of the Employees earning less than King?

Select Ename

From EMP

Where Sal < (Select Sal

From EMP

Where Ename = 'KING');

Q12) WHATD Name and deptno of the Employee if they are working in the same Dept as Jones?

Select Ename, Deptno
From EMP

whence Deptno IN (select Deptno

from Emp

whence Ename = 'JONES');

- (4) WATD Name and Job of all the Employee
working in the same Designation as
James.

Select Ename, Job

from Emp

whence job IN (select Job

from Emp

whence Ename = 'JAMES');

- (5) WATD Empno and Ename along with
Annual salary of all the employee if
their Annual salary is greater than
Ward's Annual salary?

Select Empno, Ename, Sal * 12 "Annualsal"

from Emp

where Sal * 12 > (select Sal * 12

from Emp

whence Ename = "WARDS");

- (6) WATD Name and hiredate of the
employee if they are hired before
TURNER?

Select Ename, hiredate

from Emp

where hiredate < (select hiredate

from Emp

whence Ename = 'TURNER');

⑦ WHATD name & hiredate of the employee
if they are hired after the President?
Select ename, hiredate

from emp
where hiredate > (Select hiredate,

from emp
where ~~ename~~^{Job} = "PRESIDENT";

⑧ WHATD Name and sal of the employee
if they are earning sal less than the
employee whos empno is 7839?

Select ename, sal

from emp
where sal < (Select sal

from emp
where empno = 7839);

⑨ WHATD All the details of the employees
if the employees are hired Before Miller.

Select *

from emp
where hiredate < (Select hiredate
from emp
where ename = "MILLER");

⑩ WHATD ename and empno of the
employees if employees are earning more
than Allen

Select ename, empno

from emp

where sal > (Select sal

from emp

where ename = "ALLEN");

- (11) WAQT'D no. of employees hired after king selected Count (*)
from emp
where hiredate > (select hiredate
from emp
where ename = 'KING');
- (12) WAQT'D total salary given to the employee working in the same Dept. as WARD.
Select sum(SAL)
from emp
where Deptno IN (select Deptno
from emp
where Ename = 'WARD'));
- (13) WAQT'D call the details of the employees working as Manager in the same Dept as TURNER.
Select *
from emp
where job = 'MANAGER' and
Deptno IN (select Deptno
from emp
where Ename = 'TURNER'));
- (14) WAQT'D name and hiredate of the employees hired after 1980 and before king.
Select ename, hiredate
from emp
where hiredate > '31-Dec-80' and
hiredate < (select hiredate
from emp
where ename = 'KING'));

(15) WATQTD name and sal along with
Annual sal for all employees whose sal
is less than Blakie or Emp's earning
more than 3500.

Select Ename, sal, sal * 12 "Annual sal"

from Emp

where sal < (Select sal)

from Emp

where Ename = 'BLAKE'

or sal > 3500;

(16) COQTD All the Details of Employees
who earn More than SCOTT But less than
KING.

Select *

from Emp

where sal > (Select sal)

from Emp

where Ename = 'SCOTT') and

sal < (Select sal)

from Emp

where Ename = 'KING');

(17) WATQTD Name of the Employees whose Name
Start with 'A' and Works in the same
Dept as Blakie.

Select Ename

from Emp

where Ename like 'A%', and

Deptno

Deptno IN (Select Deptno

from Emp

where Ename = 'BLAKE');

say
ing
18/13
KB)
ees
They

⑧ what Name and Commitment Employees earn Commitment work in the same designation as Smith:
Select Ename, Comm
from Emp
where Comm is not NULL and
Job IN (Select Job
from Emp
where Ename = 'SMITH');

⑨ what Details of all the Employees working as Clerk in the same Dept as TURNER.
Select *
from Emp
where Job = 'CLERK' and
Deptno IN (Select Deptno
from Emp
where Ename = 'TURNER');

⑩ what Ename, Sal and Designation of the Employees whose Annual sal is More than Smith And less than KING.
Select Ename, Sal, Job
from Emp
where Sal * 12 > (Select Sal * 12
from Emp
where Ename = 'SMITH')
and Sal * 12 < (Select Sal * 12
from Emp
where Ename = 'KING');

Cane-2 Sub-Query

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Whenever the Data will be found and the Condition will be execute
the data with ~~the~~ different table we go for sub-Query.

Ename	Deptno
Smith	10
Alden	20
Ward	10
Miller	30

Deptno	Dname
10	D ₁
20	D ₂
30	D ₃

Q) What Dname of Alden?

④ Select Dname
④ From Dept
⑤ Where Deptno = (Select Deptno
From Emp
Where Ename = 'ALLEN');

Final output	
Deptno	Dname
20	D ₂

Inner output	
Ename	Deptno
Allen	20

① What Deptname of King?
Select Dname.

From Dept
Where Deptno = (Select Deptno
From Emp
Where Ename = 'KING');

- ② what location of SCOTT ?
- Select LOC
from dept
where deptno = (Select Deptno
from Emp
where Ename = 'SCOTT');
- ③ what names of the employee working
in Accounting ?
- Select Ename
from Emp
where deptno = (Select deptno
from Empdept
where Dname = 'ACCOUNTING');
- ④ what details of an emp working in
Dallas ?
- Select *
from Emp
where deptno = (Select deptno
from Dept
where Loc = 'DALLAS');
- ⑤ what Max - salary zones in Research
Department ?
- Select MAX(SAL)
from Emp
where Deptno = (Select Deptno
from Dept
where Dname = 'RESEARCH');

⑥ WATD name of an employee working as clerk in Newyork?

Select Ename

From Emp

where job = 'CLERK' and

deptno in (Select Deptno

From Dept

where Loc = 'NEWYORK');

⑦ WATD no. of employees earning less than 2000 in Chicago.

Select Count (*)

From Emp

where Sal < 2000 and

deptno in (Select Deptno

From Dept

where Loc = 'CHICAGO');

⑧ WATD Details of an employee earning more than Miller is Bakes Dept?

Select (*)

From Emp

where Sal > (Select Sal

From Emp

where Ename = 'MILLER')

and deptno in (Select Deptno

From Dept

where Ename = 'SALES');

⑨ WQTD Details of an employee higher
after Smith and working in same
designation as that of Miller and is
Dallas?

Select *

from comp
where hiredate > (select hiredate
from comp

where ename = 'SMITH') and

Job IN (select Job

from comp

where ename = 'MILLER') and

deptno IN (select Deptno

from dept

where loc = 'DALLAS');

WQTD names of the employee earning
maximum salary?

Select ename

from comp

where sal > (select max(sal)
from comp);

WQTD Details of employee earning the
minimum salary?

Select *

from comp

where sal IN (select min(sal)
from comp);

Q1) wAQT D. name of an employee
who has hired 1st
Select Ename
from Emp
where hiredate IN (select MAX(hire
date)
from emp);

Task-1

Q2) wAQT Dname of the employee
whose name is Smith?
Select Dname
from Dept
where Deptno IN (select Deptno
from Emp
where Ename = 'SMITH');

Q3) wAQT Dname and Loc of
the employee whose Ename is King
Select Dname, LOC
from Dept
where Deptno IN (select Deptno
from Emp
where Ename = 'KING');

Q4) wAQT Loc of the Emp whose Employee
number is 7902
Select LOC
from Dept
where Deptno IN (select Deptno
from Emp
where Empno = 7902);

(iv) w/ & TD Name and Loc along with Deptno of the Employee who's name ends with 'R'.
Select Name, Loc ~~Deptno~~
from Dept
where Deptno IN (select Deptno
from Emp
where Ename like '%.R');

(v) w/ & TD Name of the Employee whose Designation is President.

Select Name
from ~~Dept~~
where Deptno IN (Select Deptno
from Emp
where Job = 'PRESIDENT');

(vi) w/ & TD Names of the Employee working in Accounting Department.

Select Name
from Emp
where Deptno IN (Select Deptno
from Dept
where Ename = 'ACCOUNTING');

(vii) w/ & TD Name and Salaries of the Employees who are working in the location 'Chicago'.

Select Name, Sal
from Emp
where Deptno IN (Select Deptno
from Dept
where Loc = 'CHICAGO');

(28) Q1) What details of the employee working in sales?

Select *
From EMP
where Deptno IN (Select Deptno
from Dept
where Dname = 'SALES');

(29) Q2) What details of the employee along with annual salary if employees are working in new york.

Select *; Sal > 12 "Annualsal"
From EMP
where Deptno IN (Select Deptno
from Dept
where LOC = 'New York');

(30) Q3) What names of employee working in operations department?

Select Ename
From EMP
where Deptno IN (Select Deptno
from Dept
where Dname = 'OPERATIONS');

(31) Q4) What names of the employee earning more than SCOTT in Accounting Dept?

Select Ename
From EMP
where Sal > (Select Sal
from EMP
where Ename = 'SCOTT') and
Deptno IN (Select Deptno
from Dept
where Dname = 'ACCOUNTING');

(32) WAQTD Details of the employee working
as manager in the location Chicago?

Select *
From Emp
Where Job = 'MANAGER' and
DeptNo In (Select DeptNo
From Dept
Where Loc = 'CHICAGO'))

(33) WAQTD Name and Sal of the employees
working as manager in the dept
carrying more than King in the dept
Accounting?

Select Name, Sal
From Emp > (Select Sal
From Emp
Where Name = 'KING') and
DeptNo In (Select DeptNo
From Dept
Where Dname = 'ACCOUNTING'))

(34) WAQTD Details of the employee working
as salesman in the department sales.

Select *
From Emp
Where Job = 'SALESMAN' and
DeptNo In (Select DeptNo
From Dept
Where Dname = 'SALES'))

(35) Display all the employees whose department
names ending 'S'?

Select *
From Emp
Where Dname like '%S'
Where DeptNo In (Select DeptNo
From Dept
Where Dname like '%S'))

- (36) Display All the employees whose Dept names end in
Dept names endin
- (35) what Name, sal, Job, hiredate of
The employees working in Operation
Department and hired Before King;
→ Select Name, sal, job, hiredate
From Emp
where Deptno In (Select Deptno
From Dept
where Dname = 'OPERATION')
and hiredate < (Select hiredate
From Emp
where Ename = 'KING');
- (37) what Dname of the employee whose
names has character 'A' in IT.
Select Dname
From Dept
where Deptno In (Select Deptno
From emp
where Ename like 'Y.A.Y.');
- (38) what Dname and Loc of the employee
whose salary is Rupees 800.
Select Dname, Loc
From Dept
where Deptno In (Select Deptno
From emp
where Sal = 800);

- (37) What is the name of the employee who earns commission? Select Name from Dept where Deptno is (select Deptno from Emp where Comm is not NULL);
- (38) What is the location of the employee if they earn commission in Dept 40. Select Loc from Dept where Deptno is (select Deptno from Emp where Comm is NOT NULL) and Deptno = 40;
- (39) // what is the name and hiredate of the employee hired at the last place hired, hiredate from Emp where hiredate is (select MIN(hire date) from Emp);
- (40) what is the name, comm of the employee who earns min commission. Select Ename, Comm from Emp where Comm is (select MIN(comm) from Emp);

Q3) WHAT Name, sal and comm of the employee earning maximum commission.
Select Ename, Sal, Comm
From Emp
Where Comm IN (Select MAX(Comm)
Where Ename IN (Select Empno
From Emp);

Q4) WHAT Details of the employee, who has greatest empno.
Select *
From Emp
Where Empno IN (Select MAX(Empno)
From Emp);

—x— —x— —x—
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Q5) WHAT no. of employee earning more than Blake less than king.
Select Count(*)
From Emp
Where Sal > (Select Sal
From Emp
Where Ename = 'BLAKE') and
Sal < (Select Sal
From Emp
Where Ename = 'KING'));

Q6) WHAT names of an employ working in same designation as that of Jones in Miller's Department?
Select Ename
From Emp
Where Job IN (Select Job
From Emp
Where Ename = 'JONES') and
Deptno IN (Select Deptno
From Emp
Where Ename = 'MILLER'));

③ ~~WATD~~ names of all employee carry more than Smith and hired before Adams co Miller's Designation.

Select Ename

from emp

converge sat & (select sal

from emp

where Ename = 'SMITH') and

hiredate < (select hiredate

from emp

converge Ename = 'ADAMS') and

Job IN (select Job

from emp

where Ename = 'MILLER');

④ ~~WATD~~ maxi-Salary goes to the empty working in Scott Department and working in Miller's Designation.

Select MAX(SAL)

from emp

where Ename = 'SCOTT' and

Job IN (select Job

from emp

where Ename = 'MILLER');

⑤ ~~WATD~~ no. of employees having character 'A' in their name and hired in the Month of February in Allen's designation.

Select Count(*)

from emp

where Ename like 'Y.A.Y.' and

hiredate like 'Y. FEBY.' and

Job IN (select Job

from emp

where Ename = 'ALLEN');

(6) WATD names of an employee
working in same designation as
that of ~~Wancy~~ ^{BLAKE} is called.

Select name
from emp
where job is (Select job
from emp where name = 'BLAKE') and
deptno is (select deptno
from dept
where loc = 'DALLAS');

(7) WATD names of an employee
who are not having character
like 'A' in their name and whose address
CLARK in newyork?

Select name
from emp
where name not like '%A%' and
hiredate > (Select hiredate
from emp
where name = 'CLARK') and
deptno is (select deptno
from dept
where loc = 'NEW YORK');

⑧ LISTD names of an employee working
as the 'Manager' or 'President' or
'Analyst' and hired before SCOTT
and earning more than CLARK in
newyork or chicago.

Select Ename
from emp ('MANAGER', 'PRESIDENT', 'ANALYST')
where Job IN ('MANAGER', 'PRESIDENT', 'ANALYST')
and hiredate < (Select hiredate
from emp where Ename = 'SCOTT') and
where Ename
Sal > (Select Sal
from emp where Ename = 'CLARK') and
where Ename = 'CLARK'
Deptno IN (Select Deptno
from Dept
where Loc IN ('Newyork', 'Chicago'));

⑨ LISTD names of an employee hired
after SMITH before MILLER and
earning more than JAMES and his
name must have character 'A' in
Sales or Accounting?

Select Ename
from emp
where hiredate > (Select hiredate
from emp where Ename = 'SMITH')
and hiredate < (Select hiredate
from emp where Ename = 'MILLER')

and Sal > (Select Sal
from emp where Ename = 'JAMES') and
where Ename like 'A%' and
Deptno IN (Select Deptno
from Dept
where Dname IN ('SALES', 'ACCOUNTING'))

Q) What D. Details of an employee working as ~~the~~ Manager or Analyst and hired before Scott and the employee must not be hired in the month Jun and earning more than CLARK in Dallas or New York

Select *
from emp
where job IN ('MANAGER', 'ANALYST') and
hiredate < (select hiredate

from emp
where ename = 'SCOTT') and
hiredate NOT like '%.JUN%' and
sal > (select sal

from emp
where ename = 'CLARK') and
deptno IN (Select Deptno

from Dept
where loc IN ('DALLAS', 'NEW YORK'));

Q) What D. and minimum salary

in employ ~~is feasible~~

Select ~~MIN(SAL)~~

Select MIN(SAL)

from emp

(where sal < (Select MIN(SAL))

from emp

(where sal > (Select MIN(SAL))

from emp));

② what's name of an employee earning
and maximum salary?

select Ename

from Corp

where sal > (select max(sal)

from Corp)

where sal < (select max(sal)

from Emp))

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① what's maximum salary in employee
table?

Select MAX(SAL)

from Corp;

② what's name of an employee earning
the maximum salary?

select Ename

from Corp

where sal > (select max(sal)

from Corp);

③ what's 2nd maximum salary?

Select MAX(SAL)

from Emp

where sal < (select max(sal)

from Emp);

④ What are names of all employees earning 2nd maximum salary.

Select Employee

from Emp

~~Select Sal~~ where sal = (select max(sal))

where sal < (select max(sal)

from Emp);

where sal < (select max(sal))

from Emp);

Nested Sub-Query :

A sub-query written inside another subquery is known as Nested Sub-Query.

⑤ What is name of an employee having 2nd minimum salary?

Select Employee

from Emp

where sal in (select min(sal)

from Emp)

where sal > (select min(sal))

from Emp);

OR

Select Employee

from Emp

where sal > (select min(sal)

from Emp);

② ~~WATD~~ 3rd maximum salary
select max(sal)
from emp

~~where sal > (select max(sal))~~
~~from emp~~

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

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

③ ~~WATD~~ Location of Emp who is
earning maximum salary?

select loc

from Dept

~~where sal > (select max(sal))~~
~~from emp~~;

~~where Deptno > (select Deptno~~
~~from emp~~

~~where sal > (select max(sal))~~
~~from emp~~);

④ ~~WATD~~ Dept name of an employee
who is earning 2nd maximum salary?

select Dname

from Dept

~~where Deptno > (select Deptno~~
~~from emp~~

~~where sal > (select ~~sal~~ max(sal))~~
~~from emp~~);

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

⑤ ~~Q~~ W&TD Location of an employee
earning 2nd minimum salary.
Select Loc
from Dept
where Deptno IN (Select Deptno
from emp
where sal > (select min(sal)
from emp
) where sal > (select min(sal)
from emp));

⑥ ~~Q~~ W&TD name of an employee
hired and summary
Select Ename
from emp
where hiredate IN (Select
min(hiredate)
from emp
where < hiredate) (Select
max(hiredate)
from emp));

⑦ ~~Q~~ W&TD Location of an employee
hired 3rd last employee? ^{newyear}
^(lastago) ^(newyear)
Select Loc
from Dept
where Deptno IN (Select Deptno
from emp
where hiredate ^{IN} (Select ^{MAX} hiredate
from emp
where hiredate [<] (select ^{MAX} hiredate
from emp
where hiredate [<] (Select ^{MAX} hiredate
from emp))))

Q) OA&TD names of an employee
who are earning more than
all three ~~set~~ Manager?

Select ename
from emp

where sal > ALL (select sal

from emp

where Job = 'MANAGER');

Note
along \Rightarrow Any , $All \rightarrow All$

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Employee Manager Relationship

- * The Employee & Manager Relationship
is executed by the condition of
MGR should be equal to EmpNo.
is $MGR = EMPNO$

Empno	ename	MGR
1	Rohit	2
2	Pant	3
3	Jadeja	5
4	Dhoni	5
5	Virat	

formula

Reporting

~~MGR \rightarrow Empno~~
 $MGR \rightarrow Empno$
Manager
 $Empno \rightarrow MGR$

Q) OA&TD names of Jadeja's Manager
Select ename

From emp

where Empno In (Select MGR
from emp

where ename = 'JADEJA');

① ~~WAT&TD~~ Select Manager's Name
where Ename = 'SMITH';
from Emp
where Empno In (Select MGR
from Emp
where Ename = 'SMITH');

② ~~WAT&TD~~ Miller's Manager's Salary

Select Sal
from Emp
where Empno In (Select MGR
from Emp
where Ename = 'MILLER');

③ ~~WAT&TD~~ Allen manager name

Select Ename
from Emp
where Empno In (Select MGR
from Emp
where Ename = 'ALLEN');

④ ~~WAT&TD~~ Sal of Adams manager

Select Sal
from Emp
where Empno In (Select MGR
from Emp
where Ename = 'ADAMS');

④ Q.TD names of Adams' Manager
Manager

Select Ename
from Emp

where Empno Is (Select MGR
from Emp

where Empno Is (Select MGR
from Emp

where Ename = 'Adams'));

⑤ Q.TD the location of Miller's manager

Select LOC

from Dept

where Deptno Is (Select Deptno
from Emp

where Empno Is (Select MGR
from Emp

where Ename = 'MILLER'));

⑥ Q.TD Deptname of Smith's manager's
manager?

Select Dname

from Dept

where Deptno Is (Select Deptno
from Emp

where Empno Is (Select MGR
from Emp

where Empno Is (Select MGR
from Emp

where Ename = 'SMITH'));

Q7) no. of employee reporting to virat?

Select Count (*)

From Emp
where empno is (Select empno
from Emp
where ename = 'VIRAT');

Q8) no. of employee reporting to
BLAKE?

Select Count (*)

From Emp
where MGR is (Select empno
from Emp
where ename = 'BLAKE');

Q9) names of employee reporting
to FORD

Select Ename

From Emp
where MGR is (Select empno
from Emp
where ename = 'FORD');

Q10) names of employee reporting
to JONES.

Select Ename

From Emp

where MGR is (Select empno
from Emp
where ename = 'JONES');

Q) ~~Q1~~ names of the employee 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');

a) Select ename

from emp

where mgr IN (Select mgr

from emp

where ename = 'BLAKE');

Q2 ~~Q1~~ names of all employee earning
more than Miller's manager.

Select ename

from emp

where sal > (Select sal

from emp

where empno IN (Select mgr

from emp

where ename = 'MILLER');

Q) What names of an employee hired after all the CLARK?
Select ename

from emp
where雇佣日期 > All (Select hiredate
from emp
where ename = 'CLARK');

Q) What details of an employee earning less than any of the Salesman?

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

Q) What details of an employee hired any of the Clerk and earning less than all the manager.

Select *
from emp
where雇佣日期 > Any (Select hiredate
from emp

where ename = 'CLERK') and

sal < All (Select sal
from emp
where ename = 'MANAGER');

~~Ques~~ ~~Interview~~

Types of Sub-Query?

- ① Single Row Sub-Query
- ② Multi-Row Sub-Query

single Row Sub-Query

* If the inner query written one output to the outer query it is known as single Row sub-Query.

multi-Row Sub-Query

* If the inner query written more than 1 output to the outer query it is known as multi Row sub-Query.

* It can be achieved by using All or Any operator.

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①

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① WAQTD no. of employees working as
President or Manager or Analyst in
Deptno 10 or 20 and hired after 1980
in 1980 before 1987 and his name
must have character 'Y' in it.

Ans → Select count(*)

from emp
where job in ('PRESIDENT', 'MANAGER', 'ANALYST')
and deptno in (10, 20) and
hiredate > '31-DEC-80' and
hiredate < '31-DEC-87' and
ename like 'Y.%';

V.V

Q2. WAQTD The hiredate that is repeated
in employee table. [03-Dec-81]

Select hiredate

from emp

group by hiredate *

Having count(hiredate) = 2;

~~doubt~~ WAQTD and maximum salary in each
department.
Select max(sal). Deptno

10	2480
20	2975
30	1600

Q) WHTD. Details of an employee earning
more than James. and hired before
Miller and working in same Designation
as that of BLAKE in new ~~YORk~~ ^[CINN] YORK?

Select *

from emp
where sal > (select sal

from emp
where ename = ('JAMES') and

hiredate < (select hiredate

from emp
where ename = ('MILLER') and

job IN (select job

from emp
where ename = ('BLAKE') and

where deptno IN (select deptno

from dept
where loc = ('NEW YORK'));

where ename = ('JAMES');

Q) WHTD. Details of an employe working
in same Designation as that of
James and ~~be should not be earning~~ ^{exactly}
less than Miller and hired in the
month of December. in DALLAS?

Select *

from emp

Job IN (select job

where deptno IN (select deptno
from emp

where ename = ('JAMES') and

sal < (select sal

from emp

where ename = ('MILLER') and

hiredate like '%.DEC%' and

deptno IN (select deptno

from dept

where loc = ('DALLAS'));

④ What is location of an employee earning 3rd minimum salary?

Select Loc

[CITIES]

From Dept
where Dept_no IN (Select Dept_no
from emp
where sal <= (Select min(sal)
from emp
where sal > (Select min(sal)
from emp
where sal > (Select min(sal)
from emp))));

~~Q4~~

⑤ What is Dept name of an employ hired 2nd?

[SALES]

Select Division

From Dept
where Dept_no IN (Select Dept_no
from emp
where hiredate IN (Select min(Hiredate)
from emp
where hiredate > (Select min(Hiredate)
from emp))));

~~Q5~~

⑥ What are first five records from Empno?

Select *

From emp

where ROWNUM <= 5;

Pseudo Columns

21/2/23

There are 2 ~~Pseudo~~ Columns that is present in each and every table. We have to call it ~~explicitly~~.

There are 2 type explicitly

① Row ID

② Row Num

Row ID

- * It is the 18 digit address that is present in each and every record.
- * Row ID is unique. It is static in nature.
- * It can be used to filter the Data.

Row Num

- * It is the Serial Number that is present for each and every object.
- * Row Num is unique. It always starts with 1.
- * It gets incremented once it is assigned.

Ex- Select RowNum, RowID, Emp.*
from emp;

- ① ~~WATD~~ the 1st record from
 Emp table.
 Select *
 from Emp
 where ROWNUM <= 1;
- ② ~~WATD~~ the 1st three records from
 Emp table.
 Select *
 from Emp
 where ROWNUM <= 3;
- ③ ~~WATD~~ the 1st record from Emp table.
 Select *
 from Emp
 where ROWNUM = 1;
- ④ ~~WATD~~ the 1st four records from
 Emp table.
 Select *
 from Emp
 where ROWNUM <= 4;
- ~~WATD~~ the 3rd record from Emp
 table?
 Select *
 from Emp
 where ROWNUM = 3;
- Select *
 from (Select Rownum, sno, Emp.*
 from Emp)
 where sno = 3;

Output 3 / WATD 1101

To find 5'th Record from a table

Step 1

- Take a table and apply rownum
- for that particular table
- Change the name from rownum to
- other name using "ALLTS".

Step 2 Use this as WebQuery Sub-Query

In From clause of outer-Query

Step 3 In outer-Query use the ALLTS
Name is the Condition.

Step 1

Select rownum, emp.*
from emp;

rownum	ename	DNO
1	S	10
2	A	20
3	W	10
4	K	30
5	M	20

Step 2

Select rownum & no, emp.*

From emp;

sno	ename	Deptno
1	S	10
2	A	20
3	W	10
4	K	30
5	M	20

Step - 3

Select *

from (Select Rownum & sno, Emp.*
from emp);

Sno	ename	Deptno
1	S	10
2	A	20
3	W	10
4	K	30
5	M	20

~~group by~~
Step 4

Select *
from (Select Rownum sno, Emp.*
from emp)
where sno = 3;

Output

3	WARD	10
---	------	----

① Q&A T1 5th record from the emp table

Select *
from (Select Rownum sno, Emp.*
from emp)

where sno = 5;

② ~~WAQTD~~ 1st four record from emp table
select *
from emp
where Rownum <= 4;

③ ~~WAQTD~~ .ename, sal from 7th record
select ename, sal
from (select Rownum sno, emp.*
from emp)
where sno = 7;

④ WAQTD of 1st, 3rd, 5th and 8th record.

Select *
from emp (select Rownum sno, emp.*
from emp)

where sno In (1, 3, 5, 8);

⑤ WAQTD ename of 8th, 7th and 6th record?

Select ename
from (select Rownum sno, emp.*
from emp)

where sno In (8, 7, 6);

① W.H.Q.T.D and maximum salary.

Select max(sal)

from Emp

where sal > (select max(sal)

from Emp

where sal < (select max(sal)

from Emp);

② W.H.Q.T.D 1st maximum salary

Select

To find 1st maximum salary?

③ W.H.Q.T.D 3rd maximum salary?

① select sal

from Emp

order by sal Desc;

Sal
2000
5000
3000
2975
3000

Sal
5000
3000
3000
2975
2000

② select Distinct + sal
from Emp
order by sal Desc;

Sal
5000
3000
2975
2000

③ Select Rownum, Slno, Sal
From (Select Distinct. Sal
From Emp
Order by Sal Desc);

Slno	Sal
1	5000
2	3000
3	2975
4	2000

Q3 3rd maximum salary?

④ Select Sal
From (Select Rownum Slno, Sal
From (Select Distinct. Sal
From Emp
Order by Sal Desc));
Where Slno = 3;

Syntax for nth Min

Select Sal
From (Select Rownum Slno, Sal
From (Select Distinct Sal
From Emp
Order by Sal Desc));
Where Slno = 3;

Maximum = Desc
Minimum = Asc

~~Q~~ WAPTD 7th maximum salary?
Select Sal
from (Select Rownum & Slno, Sal
from (Select Distinct Sal
from Emp
order by Sal Desc
where Slno = 7))

~~Q~~ WAPTD name of an employee
4th maximum salary?

Select Ename, Sal
from (Select Rownum Slno, Sal, Ename
from Emp)

Select Ename
from Emp
where Sal In (Select Ename, Sal
from (Select Rownum Slno, Sal
from (Select Distinct Sal
from Emp
order by Sal Desc))
where Slno = 4);

WEDDING Day of our marriage
BOSTON Common Galaxy

Guests &

from Camp

John and wife Carl

Robert and wife Pauline

from (Guests) Pauline

from Camp

John by Carl (etc))

Whence St. No = 7

WEDDING Day of our marriage
BOSTON Common Galaxy (of Guests)

Guests Present

from Camp (Guests) from Camp

Whence Camp (Guests) from Camp

John and wife Carl

from (Guests) from Camp

from Camp (Guests) from Camp

John and wife Carl (etc))

WEDDING Day of our marriage (etc) (etc)
BOSTON Common Galaxy (etc) (etc)

John and wife Carl (etc) (etc)

from (Guests) from Camp (etc) (etc)

Guests Present

from Camp (Guests) from Camp

Whence St. No = 7

from (Guests) from Camp

from Camp

John and wife Carl (etc))

Whence St. No = 7

Q) WATD Location of an employee having
 5th Last ? [New York] [DESC]

```

    : select LOC
      from DEPT
      where Deptno IN (select Deptno
                        from EMP
                        where hiredate IN (select hiredate
                        from (select Rownum Slno, hiredate
                        from (select Distinct hiredate
                        from EMP
                        order by hiredate Desc))
                        where Slno = 5));
  
```

④ WATD Ename and Location of Analyst
 [Fond Dallas] [Scott Dallas]

Select Ename, LOC
 From emp, DBPT
 Where Emp.Deptno = Dept.Deptno and
 Job = ~~ANALYST~~ 'ANALYST';

JOINS

* It is used to retrieve the Data from Multiple Table Simultaneously.

Types of Joins:

(1) Cartesian Join/Cross join

(2) Inner join

(3) Outer join
 (i) Left - Outer join
 (ii) Right - Outer join

(4) Self join
 (i) Full - Outer join

⑤ Natural join

Ca
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 of
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 te
 u

C=3
 R=3

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Cartesian

* In Cartesian join Records from table-1 will be merged in all the records of table-2. No of Columns in Resultant table will be the sum of Columns in table-1 and table-2.

* No of Records in Resultant table will be the product of Records in table-1, table-2.

* In Cartesian join will be writing getting the error Records.

Boy

BID	Bname	GID	C=2	GID	Gname
101	Virat	201	R=3	201	Anushka
102	Ranbir	202		202	Adia
103	Dhoni	203		203	Sakshi

Girl

C=2	GID	Gname
R=3	201	Anushka
	202	Adia
	203	Sakshi

Cartesian

Q) What Bname & Gname?

② Select Bname, Gname

① From Boy, Girl;

② Bname

Bname	Gname
Virat	Anushka
Virat	Adia
Virat	Sakshi
Ranbir	Anushka
Ranbir	Adia
Ranbir	Sakshi
Dhoni	Anushka
Dhoni	Adia
Dhoni	Sakshi

① 4+2 BOY GIRL

BID	BoyName	GID	GIRL		O/P. of from class
			GID	GirlName	
101	Virat	201	201	Anuska	
101	Virat	201	202	Alica	
101	Virat	201	203	Sakshi	
102	Ranbir	202	201	Anuska	
102	Ranbir	202	202	Alica	
102	Ranbir	202	203	Sakshi	
103	Dhoni	203	201	Anuska	
103	Dhoni	203	202	Alica	
103	Dhoni	203	203	Sakshi	

Syntax

① ANSI : SELECT Column-Name

FROM Table-Name1 CROSS JOIN
table-Name2;

Ex SELECT *
FROM BMP CROSS JOIN DEPT;

② ORACLE : SELECT Column-Name

FROM Table-Name1, Table-Name2;

Inner JOIN

* We use Inner Join to get
matched records.

* Matched records are obtain by
writing join condition.

Join Condition :

* It is the condition on
which we merge 2 tables.

* Join Condition follows a pattern

~~Table1~~ Table1.Column \leftrightarrow Table2.Column

O/P.04
Name
Name

WANT Name & Gname ?

⇒ ③ Select Name, Gname

from Boy, Girl

where Boy.GID = Girl.GID;

Join condition

<u>Boy</u> BID	Name	GID	GID	Gname
101	Virat	201	201	Anushka
102	Rahbir	202	202	Alica
103	Dhoni	203	203	Sakshi

Final output	Name
Boy	Gname
Virat	Anushka
Rahbir	Alica
Dhoni	Sakshi

Table1: Comm.
Column = Table2: Comm
Column

~~Emp. Deptno2 Dept. Deptno1~~

Syntax

1. ANSI : select Column-Name
from Table-Name1 INNER JOIN Table-Name2
on Table-Name1.Column-Name2
ON<Join-Condition>;

Ex select *
from Emp Inner join Dept
on Emp.Deptno = Dept.Deptno;

2. Oracle : select Column-Name
from Table-Name1, Table-Name2
where<Join-Condition>;

2) ~~WATD Deptname of all the employee.~~ 24/11/22

Select Dname

from Dept

Select Ename, Dname

from Emp, Dept

where Emp. Deptno = Dept. Deptno;

Select *

from Emp, Dept

where Emp. Deptno = Dept. Deptno;

3) ~~WATD employee name department name of all the employees.~~

Select Ename, Dept. Deptno, Dname

from Emp, Dept

where Emp. Deptno = Dept. Deptno;

OR

Select Ename, D. Deptno, Dname

from Emp B, Dept D

where E. Deptno = D. Deptno;

4) ~~WATD Ename & Dname of employees working as the manager in New York.~~

Select Ename, Dname

from Emp, Dept

where Emp. Deptno = Dept. Deptno

and job = 'MANAGER' and

loc = 'NEW YORK';

① what & ID Employee & Name of Employee
whose name starts with A & End
department name ends with S ?

Select Ename, Dname

From Emp, Dept

where Emp.Deptno = Dept.Deptno

and Ename like 'A%' and

Dname like '%S';

② what & ID Ename & Location who are
working in Manager in Research?

Select Ename, Loc

From Emp, Dept

where Emp.Deptno = Dept.Deptno and

where Ename = 'Research' and Dname = 'Research'

job = 'Manager' and Loc = 'Research'

③ what & ID Ename & Name of Employee
working as Clerk in New York ?

Select Ename, Dname

From Emp, Dept

where Emp.Deptno = Dept.Deptno

and job = 'CLERK' and

Loc = 'NEW YORK'

⑦ what is name & Dname of employee
earning more than 2000 in Dallas?

Select Ename, Dname
from emp, Dept

where emp. Deptno = Dept. Deptno and
Sal > 2000 and Loc = 'DALLAS';

⑧ what is name & location of
employees earning more than Miller
in New York?

Select Ename, Loc

from emp, Dept
where emp. Deptno = Dept. Deptno and
Sal > (select Sal

from emp
where Ename = 'MILLER') and
Loc = 'NEW YORK';

⑨ what is name & Dname of employee hired
Patter Ford in Accounting?

Select Ename, Dname

from emp, Dept
where emp. Deptno = Dept. Deptno and
hiredate > (select hiredate

from emp
where Ename = 'FORD') and
Dname = 'ACCOUNTING';

⑧ WHAT'S Ename, Job & Dname of employee
working in Sales Designation as
that of Jones in Chicago? [Blake - many
sales]
Select Ename, Job, Dname
from Emp, Dept
where Emp.Deptno = Dept.Deptno and
Job IN (select Job
from Emp
where Ename = ('jones') and
Loc = ('CHICAGO');

⑨ what's name of an employee working
more than Clark IN same Designation
as that of Jones in Sales? [Blake]
Select Ename
from Emp, Dept
where Emp.Deptno = Dept.Deptno and
Job IN (select Job
from Emp
where Ename = ('CLARK') and
Job IN (select Job
from Emp
where Ename = ('jones') and
Dname = ('sales'));

Q10) ~~grop~~ ~~WATD~~ Employee Name & Name of employee
earning 5th minimum salary ? [Mention - Accuracy]
Select Employee Name, Dept
from Emp, Dept
where Emp.Deptno = Dept.Deptno and
Sal In (Select Sal
from (Select Rownum Slno, Sal
from (Select Distinct Sal
from Emp
Order by Sal Asc))
where (Slno = 5));

Q11) ~~grop~~ ~~WATD~~ Employee & Location of employee
hired 2nd last ? [Mention - Data]
Select Employee Name, Loc
from Emp, Dept
where Emp.Deptno = Dept.Deptno and
Hiredate In (Select hiredate
from (Select Rownum Slno, hiredate
from (Select Distinct hiredate
from Emp
Order by Hiredate Desc))
where (Slno = 2));

① WHATD Name of the Employee And their location of all the Employee?
Select Ename, Loc
from Emp, Dept
where Emp. Deptno = Dept. Deptno; ~~and~~

② WHATD Dname and salary for all the Employee working in Accounting Dept?

Select Dname, Sal
from Emp, Dept
where Emp. Deptno = Dept. Deptno and
~~Dept. Job IN (Select Job Job)~~
~~Dept. Job IN (Select Job Job Deptno)~~
~~from Dept Job IN (Select Job Job)~~
~~where Dname = 'ACCOUNTING'~~

③ WHATD Dname & Annual salary for all employee whose salary is more than 2340?

Select Dname, Sal * 12 "AnnualSal"
from Emp, Dept
where Emp. Deptno = Dept. Deptno and
Sal > 2340;

Q) WAPTD Ename and Dname for Employee
Having character 'A' in their Dname?

Select Ename, Dname

from Emp, Dept

where Emp. Deptno = Dept. Deptno

and Dname like '%.A%'

Q) WAPTD Ename & Dname for all the employee
working as Salesman?

Select Ename, Dname

from Emp, Dept

where Emp. Deptno = Dept. Deptno

and Job IN (Select Job

from Emp

where Dname = ('SALESMAN');

Q) WAPTD Dname and Job for all the
employee whose job and Dname starts
with character 'S'?

Select Dname, Job

from Emp, Dept

where Emp. Deptno = Dept. Deptno

and Job like 'S%' and Dname like 'S%';

④ w&TD Dname & MGRNO for Employee
reporting to 7839 ?
Select Dname, MGR
from emp, Dept
where Comp. Deptno = Dept. Deptno and
MGRNO = 7839 ;

⑤ w&TD Dname and hiredate for Employee
hired after 83 into Accounting OR
Research Dept.?
Select Dname, hiredate
from emp, Dept
where Comp. Deptno = Dept. Deptno and
hiredate > '31-DEC-83' and
Dname IN ('ACCOUNTING', 'RESEARCH');

⑥ w&TD Ename and Dname of the Employee
who are getting Comm in Dept 10 or 30?
Select Ename, Dname
from emp, Dept
where Comp. Deptno = Dept. Deptno
and Comm is not null and
Deptno IN (10, 30);

① What's Name and Empno for all the employees whose Empno are (7839, 7902) and are working in Loc New York?

Select Name, Empno

From Emp, Dept

where Emp.Deptno = Dept.Deptno and

Empno IN (7839, 7902) and

~~NOCTED~~ Loc = 'NEW YORK';

② What's names of an employee reporting to Blaake.

Select Name,

From Emp, Dept

where Emp.Deptno = Dept.Deptno and

where MGR IN (Select Empno

From Emp

where Name = 'BLAAKE');

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Self Join

③ What's Employee name along with his Manager's name.

Select E₁.Name, E₂.Name

From Emp E₁, Emp E₂

where E₁.MGR = E₂.Empno;

join Condition

Self Join

Joining the same 2 table on the table itself. is known as self join.

why do we use self join?

Ans if the Data should be selected and Condition to be executed are present in same table but in different records, we use self join.

e.g. wanted Employee Name along with

Emp: E1

Empno	Ename	MGR
1	Smith	2
2	Allen	3
3	Pond	5
4	Jones	5
5	King	5

Emp: E2

Empno	Ename	MGR
1	Smith	2
2	Allen	3
3	Pond	5
4	Jones	5
5	King	5

offset

Empno	Ename	MGR	Empno	Ename	MGR
1	Smith	2	2	Allen	3
2	Allen	3	3	Pond	5
3	Pond	5	5	King	5
4	Jones	5		King	

Employee - Manager

Employee	Manager
Smith	Allen
Allen	Pond
Pond	King
Jones	King

(3)

Syntax

ANSI Select Column - Name

From Table-name T₁, Table-name T₂
where <Join Condition>

Ex Select

From Emp E₁, Emp E₂

Where E₁.MGR = E₂.Empno;

Oracle

Select Column - name

From Table-name T₁, Table-name T₂

Where <Join Condition>

Q1) What is Employee name, Employee designation and
Manager's employee is working as CLERK ?

Select E₁.Ename, E₁.Job, E₂.Ename

From Emp E₁, Emp E₂

Where E₁.MGR = E₂.Empno

and E₁.Job = 'CLERK'

Q2) What is Employee names, Manager's
name, Manager's deptno if manager
is working in deptno 20 ?

Select E₁.Ename, E₂.Ename, E₂.deptno

From Emp E₁, Emp E₂

Where E₁.MGR = E₂.Empno and

E₂.deptno = 20

③ WATD Employee Name, Employee Job,
Manager Name Manager's Dept No
Employee is working as CLERK OR Salesman
and manager is working in Dept 10 or 20.

Select E_1 . Ename, E_1 . Job, E_2 . Ename, E_2 . Deptno

From Emp E_1 , Emp E_2

where E_1 . MGR = E_2 . Empno and

~~E_1 . Job IN ('CLERK')~~ Job
From EMP

~~where Ename = 'CLERK'~~ and

E_1 . Job IN ('CLERK', 'SALESMAN') and.

E_1 . Job IN ('CLERK', 'SALESMAN');

E_2 . Deptno IN (10, 20);

WATD Employee Name & Manager's Name
if Employee has character 'A' in his
name and Manager does not have
name and 'A' in his name?
character

Select E_1 . Ename, E_2 . Ename

From Emp E_1 , Emp E_2

where E_1 . MGR = E_2 . Empno and

E_1 . Ename like '%A%' and

E_2 . Ename Not like '%A%'

Eg. Ename Not like 'Y.A.Y.'

front + 3 word length
front 3 word length
= front + 3 word length

② what Name of both employee and managers, works in Dept 10 or 20

Select E1.ename, E2.job
from Emp E1, Emp E2
where E1.MGR = E2.empno and
E2.Deptno In (10, 20);

③ what Name of the emp and managers salary if employee and manager both earn more than 2300.

Select E1.ename, E2.sal

from Emp E1, Emp E2
where E1.MGR = E2.empno and
E1.sal > 2300 and

E2.sal > 2300;

④ what Emp Name and manager's hiredate if employee was hired Before 1982?

Select E1.ename, E2.hiredate
from Emp E1, Emp E2

where E1.MGR = E2.empno and
E1.hiredate <= '31-DEC-81';

⑤ WATD emp Name and manager comm
if employee works as Salesman and manager
works in Dept 30 ?
Select E₁.Ename, E₂.COMM
from emp E₁; emp E₂
where E₁.MGR = E₂.Empno and
E₁.Job ~~not in~~ Job = 'SALESMAN' and
~~from emp~~
where Ename = ('SALESMAN') and
E₂.Deptno = 30 ;

⑥ WATD Emp Name and manager Name
and their salaries if employee earns
more than their manager !
Select E₁.Ename, E₂.Ename
from emp E₁, emp E₂
where E₁.MGR = E₂.Empno and
E₁.Sal > E₂.Sal ;

⑦ WATD emp Name and hiredate, manager
Name and hiredate if manager was
hired before employee
Select E₁.Ename, E₁.Hiredate, E₂.Ename,
E₂.hiredate
from emp E₁, emp E₂
where E₁.MGR = E₂.Empno and
E₂.Hiredate < E₁.Hiredate ;

⑥ Q WAT'D Emp Name and manager name &
both are working in same job?

Select B₁.Bname, B₂.Bname
from EMP B₁, EMP B₂
where B₁.MGR = B₂.EMPNO and
B₁.JOB = B₂.JOB;

⑦ WAT'D Emp Name & manager Name if
manager is working as Actual Manager.

Select B₁.Bname, B₂.ename
from EMP B₁, EMP B₂
where B₁.MGR = B₂.EMPNO and
B₂.Job = 'MANAGER';

⑧ WAT'D 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 salary.

Select E₁.ename, E₁.Sal * 12, E₂.ename, E₂.sal
from EMP E₁, EMP E₂
where E₁.MGR = E₂.empno and
E₁.Deptno In (10,20) and
E₂.sal > E₁.sal;

⑪ ~~WAPTD~~ employee's Name and manager's designation for all the employee.

Select B₁.Bname, B₂.Job

From BMP B₁, BMP B₂

Where B₁.MGR = B₂.BMPNO;

⑫ ~~WAPTD~~ employee's Name and manager's salary for all the employees if manager's salary end with 50.

Select B₁.Bname, B₂.Sal

From BMP B₁, BMP B₂

Where B₁.MGR = B₂.BMPNO and

B₂.Sal like '%.50';

Manager's name for which
salary ends in 50 is required

Manager's name is required

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① WAPTD Employee Name, Employee Salary
Manager's name Manager's Salary
Employee is earning more than Smith
and manager named before Miller?

Sellect E_1 . Ename, E_1 .sal, E_2 .ename, E_2 .sal,
 E_2 .Hiredate

from Emp E_1 , Emp E_2
where E_1 .MGR = E_2 .Empno and

E_1 .sal > (Sellect sal

from Emp
where ename = 'Smith') and

E_2 .Hiredate < (Sellect hiredate

from Emp

where ename = 'MILLERS');

② WAPTD Employee Name, Employee
designation, manager's name, Manager's
Deptno if employee is working at
Deptno if employee is working at
'Salesman' or 'CLERK' and earning more
than James and manager's name
should not have character 'A' and
working in same Department
designation as that of Blake.

Sellect E_1 .ename, E_1 .Job, E_2 .ename,
 E_2 .Deptno

from Emp E_1 , Emp E_2

where E_1 .MGR = E_2 .Empno and

E_1 .Job In ('SALESMAN', 'CLERK') and

2
salary
answ.
if there
date
SL
es?
2 say,

e₁. Set > (select sal
from emp
where ename = 'JAMES') and

e₂. ename NOT LIKE '%AY' and

e₂. job IN (select job
from emp

where ename = 'BLAKE');

③ WAPTD Employee Name, Manager's
name, Employee Deptname and
Manager's Deptname.

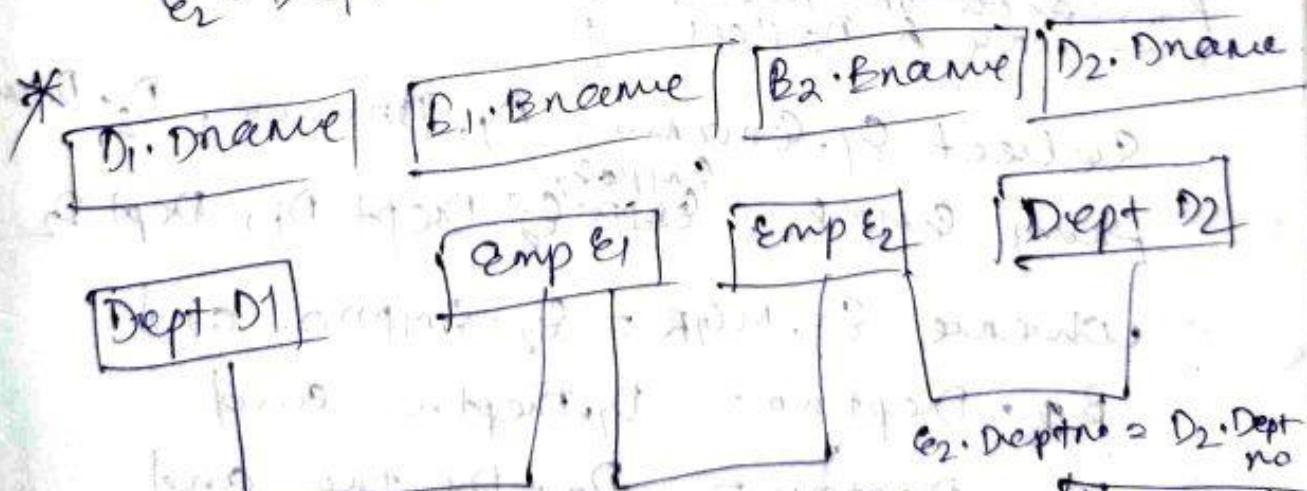
Select e₁. ename, D₁. Dname, e₂. ename,
D₂. Dname

from emp e₁, emp e₂, dept D₁, dept D₂

where e₁. mgr = e₂. empno and

e₁. Deptno = D₁. Deptno and

e₂. Deptno = D₂. Deptno



e₁. Deptno = D₁. Deptno e₁. mgr = e₂. empno e₂. Deptno = D₂. Deptno

Inner join

Outer join

① WATD Employee name, Employee Dept name
Manager's name and manager's location
if employee is earning more than 2000
and manager is working in new york.

Select E₁.Ename, D₁.Dname, E₂.Ename,
D₂.Loc

From EMP E₁, EMP E₂, Dept D₁, Dept D₂
where E₁.MGR = E₂.Empno and
E₁.Deptno = D₁.Deptno and
E₂.Deptno = D₂.Deptno and
B₁.Sal > 2000 and
D₂.Loc = ('NEW YORK');

② WATD Employee Name, Employee Dept name
Manager's Dept name, if employee
name has character 'A' in Research or
~~Sales~~ and manager's Name does not
~~Dept~~ have character 'Y' in New York or
Research or Sales
everyony & Dallas.

Select E₁.Ename, D₁.Dname, D₂.Dname
From EMP E₁, EMP E₂, Dept D₁, Dept D₂
where E₁.MGR = E₂.Empno and
E₂.Deptno = D₁.Deptno and
E₂.Deptno = D₂.Deptno and
E₁.Ename like 'M%' and
D₁.Dname IN ('RESEARCH', 'SALES') and
D₂.Loc NOT LIKE 'Y.%' and
D₂.Loc IN ('NEW YORK', 'DALLAS');

③ ~~case~~
along
joined
more
and
Analy
Acc

Select
Pr
wh

Q) QTD Employee name Manager's name along with their location if employee was hired in the year 81 and earning more than James in Research or sales and Manager working as president, or Analyst and hired before miller in Accounting or Sales?

Select E₁. Ename, D₁. ~~Loc~~, E₂. Ename, D₂. ~~Loc~~
from EMP E₁, EMP E₂, Dept D₁, Dept D₂
where E₁. MGR = E₂. Empno and

E₁. Deptno = D₁. Deptno and

E₂. Deptno = D₂. Deptno and

E₁. hiredate like 'Y.81%' and

E₁. sal > (select sal

from EMP

where Ename = 'JAMES') and

D₁. Deptno IN ('RESEARCH', 'SALES') and

E₂. Job IN ('PRESIDENT', 'ANALYST') and

E₂. hiredate < (select hiredate

E₂. from EMP

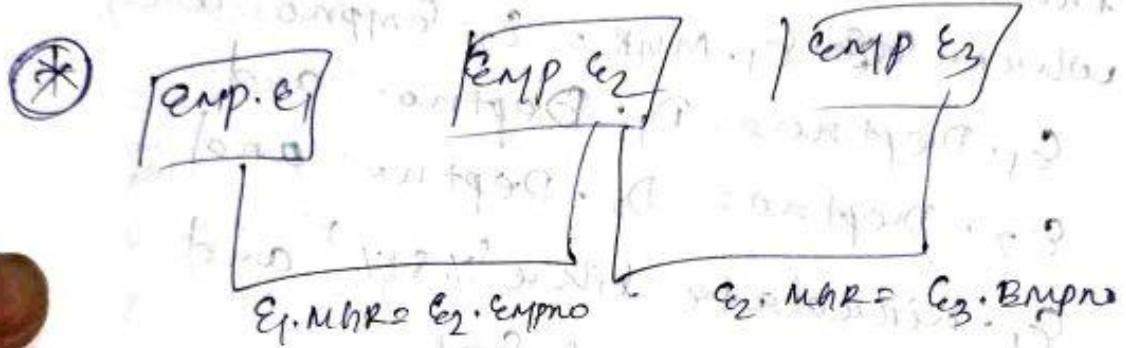
where Ename = 'MILLER') and

D₂. Dname IN ('ACCOUNTING', 'SALES');

ANSWER : 3 - APRIL 3

DATE : APRIL 3 - 2014

① WAPTD Employee Name, Manager name
 manager's salary along with manager's name
 Select E₁.ename, E₂.ename, E₃.ename
 from emp E₁, emp E₂, emp E₃
 where E₁.MGR = E₂.empno and
 E₂.MGR = E₃.empno;



② WAPTD Employee Name, Manager name
 manager's manager name along with
 their Depart name?

Select E₁.ename, D₁.Dname, E₂.ename,
 D₂.Dname, E₃.ename, D₃.Dname

from emp E₁, emp E₂, emp E₃,
 Dept D₁, Dept D₂, Dept D₃

where E₁.MGR = E₂.empno and
 E₂.MGR = E₃.empno and

B₁.Deptno = D₁.Deptno and

B₂.Deptno = D₂.Deptno

B₃.Deptno = D₃.Deptno;

① whatD Ename, manager's Name and
their Dname if Emply. Emp earning
more than Smith and manager
earning more than Allen,

Select E₁. Ename, D₁. Dname, E₂. Ename,
D₂. Dname

From. EMP E₁, EMP E₂, Dept D₁, Dept D₂
where E₁. MGR = E₂. EMPNO and
B₁. Deptno = D₁. Deptno and
B₂. Deptno = D₂. Deptno and

E₁. Sal > (Select Sal
From EMP
Where Ename = 'SMITH') and

E₂. Sal > (Select Sal
From EMP
Where Ename = 'ALLEN');

② whatD Ename, manager's Name and
their LOC if Emp working in Dept 10 or 30
and manager earning more than Ford
and manager earning more than Ford
and Emp working in Loc newyork or Chicago

Select E₁. Ename, D₁. Dname, E₂. Ename,
D₂. LOC

From EMP E₁, EMP E₂

where E₁. MGR = E₂. EMPNO and
B₁. Deptno = D₁. Deptno and

B₂. Deptno = D₂. Deptno and

B₂. ~~Sal~~ E₁. Deptno In (10,30) and

B₂. Sal > (Select Sal

From EMP
Where Ename = 'FORD') and

D₁. LOC In ('NEW YORK', 'CHICAGO');

1/22

employees
managers
name
nager

name,

DL

② WATD: Employee name, manager's name
manager's manager's name & elongate
location of employee name has character
of A and can be more than 8 characters
and in Dallas & Chicago and
manager working in same designation
as that of CLARK and hired in the
year 81 in sales or Research and
Manager's Manager hired in the
month of November in New York?

Select E₁.ename, D₁.loc, E₂.ename,
D₂.loc, E₃.ename, D₃.loc
from EMP E₁, EMP E₂, EMP E₃, Dept D₁,
Dept D₂, Dept D₃

where E₁.MGR = E₂.EMPNO and
E₂.MGR = E₃.EMPNO and
E₁.DeptNo = D₁.DeptNo and
E₂.DeptNo = D₂.DeptNo and
E₃.DeptNo = D₃.DeptNo and

E₁.ename like 'Y.T.Y.' and
E₁.sal in (Select sal
from EMP
where ename = 'SMITH') and
D₁.loc in ('DALLAS', 'CHICAGO') and

D₂.job in (Select job
from EMP
where ename = 'CLARK') and
E₂.hiredate like '1981%' and
D₂.dname in ('SALES', 'RESEARCH') and
E₃.hiredate like '1981%' and
D₃.loc in ('NEW YORK');

~~Q3~~ Q4&TD Employee Name, Manager Name, along with
Manager's Manager Name, along with
Dept. name if employee is working as
CLERK or Salesman and Earnings more
than Smith In Research, Sales or Account
and manager hired after Smith and
~~his manager doesn't have character of~~
~~his name with same designation as~~
and working in Chicago or New York
that of Jones is manager working
and Manager's Manager working as that of
in same Dept Department as that of
Smith and earning less than Jones
Research and Employee must be
New York and Employee must be
hired in the year 82? [critic]

~~Ans~~ Select E₁.Ename, D₁.Dname, E₂.Ename,
D₂.Dname, E₃.Ename, D₃.Dname
from EMP E₁, EMP E₂, EMP E₃, Dept D₁,
Dept D₂, Dept D₃
where E₁.MGR = E₂.EMPNO and
E₂.MGR = E₃.EMPNO and
E₁.DeptNo = D₁.DeptNo and
E₂.DeptNo = D₂.DeptNo and
E₃.DeptNo = D₃.DeptNo) and
E₁.Job IN ('CLERK', 'SALESMAN') and
E₁.Sal > (Select Sal
from Emp)

where Ename = ('SMITH') and

D₁.Dname IN ('RESEARCH', 'SALES', 'ACCOUNTING')

and E₂.Hiredate > (Select hiredate
from Emp)

where Ename = ('SMITH') and
D₂.Dname = ('RESEARCH')

~~Q1~~ E_2 . Ename like 'Y. A.Y.' and
 E_2 . Job IN (Select Job
from EMP
where Ename = 'JONES') and
 D_2 . Loc IN ('CHICAGO', 'NEW YORK') and
 D_3 . Deptno IN (Select Deptno
from EMP
where Ename = 'MILLER') and
 E_3 . Sal > (Select Sal
from EMP
where Ename = 'JONES') and
 D_3 . Loc = 'NEW YORK' and
 E_4 . hiredate like 'Y-82%';

~~Q2~~ $Q2$ Employee Name and location

~~Q3~~ $Q3$ All the Details of Employee
along with the Annual Salary if Employee
is working as President, Analyst, or Manager.
excluding the Employees working in
Deptno 30 and Employee must be hired
in the year 81 and earning 3000 Rupees
[pond]

Select Emp.* , sal * 12 "Annual Sal"
from EMP
where job IN ('PRESIDENT', 'ANALYST', 'MANA-
GER')
and Deptno NOT IN (30) and
hiredate like 'Y-81%' and sal = 3000;

② What names of an employee earning more than Smith and hired before Miller and working in same designation as that of Blake in New York? [CITRUS]

Select Ename

From Emp

where Sal > (Select Sal

From Emp

where Ename = 'SMITH') and

Hiredate < (Select hiredate

From Emp

where Ename = 'MILLER') and

Job IN (Select Job

From Emp

where Ename = 'BLAKE') and

Deptno IN (Select Deptno

From Dept

where Loc = 'NEW YORK');

③ What Ename & Dname of Employee earning maximum salary [CITRUS, ACCOUNT]

5th maximum salary

Select Ename, Dname

From Emp, Dept

where Emp.Deptno = Dept.Deptno and

Sal IN (Select Sal

From (Select Rownum Sal, Sal

From (Select Distinct Sal

From Emp

Order by Sal Desc))

where Rowno = 5);

Q) What are last 3 records from employee table?
 Select *
 From (Select *
 From EMP
 Order by Rownum Desc)
 Where Rownum <= 3;

[EMP]
[METHAN]
[ADAMS]
[TUNNEY]

Q) What are 2nd half records from Employee Table.

Select *
 From (Select Rownum Slno, Emp.*
 From EMP
 Order by Rownum Desc)
 Where Rownum <= 7;

[SCOTT]
king
TUNNEY
ADAMS
JAMES
FOND
MILLEN

Select *
 From (Select Rownum Slno, Emp.*
 From EMP)
 Where Slno >= (Select Count(*) - 2
 From EMP);

Q) Last 3rd Record ?

Select *
 From (Select Rownum Slno, Emp.*
 From EMP)
 Order by Rownum Desc
 Where Slno = (Select Count(*) - 2
 From EMP);

Q) WAP to display 2nd maximum salary from each department?

select max(sal), Deptno
from emp

where (Deptno, sal) not in (select
Deptno, max(sal))

from emp

group by Deptno)

group by Deptno;

max
deptno

deptno

max

deptno

30/11/22

Outer Join :-

It is used to get the Unmatched records along with the Matched record.

Outer join

- Left Outer join
- Right Outer join
- Full Outer join

Left Outer join :-

It is used to get the unmatched records along with the matched records from the left table.

Emp		Dept	
ename	Deptno	Deptno	Dname
smith	10	10	D1
allen	20	20	D2
kings		30	D3
ward	30	40	D4

Select *
 = (+) artq
 from Emp E, Dept D
 where E.Deptno = D. Deptno (+);



ename	Deptno	Deptno	Dname
smith	10	10	D1
allen	20	20	D2
ward	30	30	D3
kings	Null	Null	Nicell

{Matched record}

{Unmatched record}

Syntax Left Outer Join

1. ANSI: SELECT Column-Name
 From Table-Name1 LEFT [OUTER] JOIN
 Table-Name2
 ON <JOIN CONDITION>;

Ex Select *

From Emp B Left Outer Join Dept D
 On E. Deptno = D. Deptno;

② Oracle : SBLCT Column-Name

FROM Table-Name1, Table-Name2
 where Table-Name1.Column-Name =
 Table-Name2.Column-Name(+);

Right Outer Join

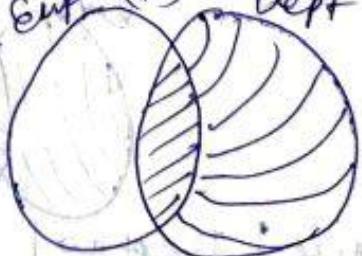
If we want to get the unmatched records along with the matched records from Right table, we go for Right Outer Join.

Employee	Dept		Deptno	Dname
	Deptno	Dept		
Smith	10		10	D1
Allen	20		20	D2
King			30	D3
Wong	30		40	D4

Employee	Deptno	Deptno	Dname
Smith	10	10	D1
Allen	20	20	D2
Wong	30	30	D3
King			D4

Ex (I) Select *
 From Emp E, Dept D
 Where E.deptno(+) =
 D.deptno;

Ex (II)



matched record
 } unmatched record

Right Outer Join

1. ANSI: `SELECT Column-Name
from Table-Name1 RIGHT[OUTER] JOIN
Table-Name2
ON < JOIN-CONDITION>;`

Ex `Select *
from EMP E right Outer Join DEPT D
ON E.Deptno = D.Deptno;`

2. Oracle: `Select Column-Name
from Table-Name1, Table-Name2
where Table-Name1.Column(+)=
Table-Name2.Column;`

Full Outer Join

It is used to get the records along with the matched records from both the tables.



Syntax

1. ANSI: `SELECT Column-Name
from Table-Name1 FULL[OUTER]
JOIN Table-Name2
ON < JOIN-CONDITION>;`

Ex `SELECT *
FROM EMP E FULL OUTER JOIN DBPT D
ON E.DBPTNO = D.DBPTNO;`

Ename	Deptno	Deptno	Dname	
Smith	10	10	D ₁	Matched record
Allan	20	20	D ₂	
Ward	30	30	D ₃	Remaining
Mall	NULL	40	D ₄	
King	NULL	NULL	NULL	Both tables

Natural JOIN

* We use Natural Join whenever we do not know the structure of Table.

structure

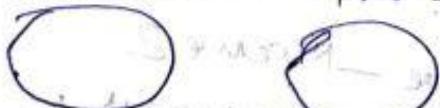
* The columns present in the table → if there is Common Columns betw two tables we get the output of Inner Join.

→ if there is No common Columns betw two tables. We get the output of Cartesian Join.

INNER JOIN
(Common Columns)

EMP (No Common Columns)
Cartesian Join | Sales Grade

Ex - 1 Customer Product



Ans Select *

Output from Customer Natural Join Product

Natural Join

Ans:- SELECT Colmn - Name
FROM Table - Name1 Natural Join Table - Name2

Eg:- Select *
From EMP Natural Join Dept;

or Select *
From emp Natural Join Selgrade;

Single Row Function ↗

DUAL ↗ DUAL is a Dummy Table
that is present in the DataBase
to perform some operation.

LOWER ↗ It is used to convert any
string from upper case to lower
case.

Ex Syntax:- LOWER("STRING")

Ex (Select LOWER('KABHI KHUSHI KABHI GHAM'))

FROM DUAL;

Op kabhi khushi kabi gham.

('KHUSHI') HINDI

UPPER : It is used to any string from Lower case to Upper Case.

Syntax UPPER ('STRING')

Ex select UPPER ('Kabhi Alvida na Kehna')
FROM DUAL

O/p → KABHI ALVIDA NA KEHNA

INITCAP : It is used to convert initial character of a string in Upper Case.

Syntax INITCAP ('STRING')

Ex select INITCAP ('PUSHPA')
FROM DUAL

O/p → Pushpa

REVERSE : It is used to Reverse a string.

Syntax REVERSE ('STRING')

Ex Select REVERSE ('KGP')
FROM DUAL

O/p → PGK

Length : It is used to find no. number of character in a string.

Syntax LENGTH ('STRING')

Select LENGTH ('BISWASIT SATISH')
FROM DUAL

O/p → 14

Q) W.A.Q.T.D . Ename, no. of character present in all the employees.
Select ENAME, LENGTH(BNAME)
FROM EMP;

(2) W.A.Q.T.D Details of an employee who are having exactly 5 character in their name . Using (single row function)
Select *
from emp
where LENGTH(BNAME) = 5;

(3) W.A.Q.T.D Details of an employee who are earning 3 digits salary.

Select *
from emp
where Length(SAL) = 3;

Replace :- Replace is used to replace any character from the string.

Syntax :-

Replace('String', 'Original-String', [New-String])

Ex) Select Replace ('Qspider', 'Q', 'J')

from DUAL

[Op → Jspider]

(2) Select Replace ("Qspider", 'S', '\$')
from Dual

Op → ~~Qspider~~ Q\$pider\$

② Select Replace ('Spiderens', 'Q')
from Dual

Top Spidens [Q = NULL]

~~Q~~ what names of an employee
who are having exactly 1 'A'
in their Name?

[ALLEN
WARD
MARTIN
BLAKE
CLARK
JAMES]

Select Ename
From EMP

Where (Length(ename) - Length(Replace
(ename, 'A'))) = 1;

② what display 2nd last records
from Emp table?

Select *

From (Select Rownum Salno, emp.*

From EMP

Order by Rownum Desc)

where Rownum <= 2;

15/12/22

(7) SUBSTRING (Substr)

* Substr is used to part of a string.

Syntax SUBSTR ('original string', position, [length])

SUBSTR('Bangalore', 1, 3) → BAN

SUBSTR('Bangalore', 2, 2) → AN

, 1, 1) → B

, 1) → Bangalore

, 6, 3) → LOR

, 7, 4) → ORB

, 8, 2) → RE

, 7) → ORB

, -3, 2) → OR

, -7, 3) → NGA

, -2) → RB

, -3, 4) → ORB

Q) What employee Name and 1st 3 character of names of all the employee
select Ename, substr(Ename, 1, 3)
from EMP;

② ~~WATD~~ Ename, 1st character
of all the Employee.
select Ename, substr(Ename, 1)
from EMP;

③ ~~WATD~~ Details of employee
whose Names start with K
using single row function.
Select *
from EMP
where substr(Ename, 1, 1)='K';

④ ~~WATD~~ Details of employee
whose Names start with A or S.

Select *
from EMP
where substr(Ename, 1, 1)='A'
OR substr(Ename, 1, 1)='S';

OR
Select *
from EMP
where substr(Ename, 1, 1) IN ('A', 'S');

(Ex. answer) string with
string1, string2, ... , stringn

Ex
① Select To-Char(SYSDATE, 'YYYY')
From DUAL;

OP 2022

② Select To-Char(SYSDATE 'YY')
From DUAL;

OP 22

③ Select To-Char(SYSDATE, 'DAY')
From DUAL;

OP Thursday

④ Select To-Char(SYSDATE, 'SS')
From DUAL;

OP 19.

random output comes

To-Char(Date, 'PM')

DD D
15 2 → Twenty Two
(DY) THU' ← 15 - DEC - 22 → 2022 (YYYY)
DAY Thursday → 22 (YY)

(INT: HOUR, day) ← (V) 12 ↓ DEC → December AT exactly
(MM:RAM) ← (MON, Month) (X) . OF Jan

① WATD details of an employee hired on Friday, Saturday, Sunday

Select *

from EMP

where To-chan(Hiredate, 'D') =

IN ('friday', 'saturday', 'sunday')

② WATD Details of an employee hired in the Month of JAN, ^{Feb} ~~Mar~~ or Mar ?

Select *

From emp

where To-chan(Hiredate, 'MON') IN (

'JAN', 'FEB', 'MAR'),

③ WATD Details of an employee hired on Monday, Thursday or Tuesday in the Month of March and April ?

Select *

From EMP

where To-chan(Hiredate, 'D') IN ('MON', 'TUE')

and To-chan(Hiredate, 'MON') IN ('MAR', 'APR');

MOD

Ex - ~~Mod~~ Mod (8,2) $\rightarrow 0$

$$\begin{array}{r} 21814 \\ \times 8 \\ \hline 0 \end{array}$$

Ex - Mod (11,2) $\rightarrow 1$

$$\begin{array}{r} 21115 \\ \times 2 \\ \hline 1 \end{array}$$

MOD()

This function is used to obtain modulus of the given numbers (remainder).

Syntax

MOD(M,N)

Names of an employee
hired in the leap year
(Smith)

Select Ename

From EMP

where Mod(To-char(Hiredate,'yy'),4)=

(0,1,2,3) + 102 + 012

as < output < (0,1,2) + one +

NULL VALUE LOGIC

Q) What total salary given to each employee?

Select Sal + NVL(Comm, 0)
From EMP;

NULL VALUE LOGIC

- > It can accept two arguments arg 1, arg 2
- > In arg 1 we must write a column name which would be a null.
- > In arg 2 we write a column which would be a substitute to Null(0)
- > if arg 1 is not null NVL refers same value present in arg 1.

EMP

ename	sal	comm	Sal + Comm
smith	2000	200	2200
allen	1000		1000
ward	1500	0	1500

NVL (arg1, arg2)

↓
Column name
which could be a
null value

↓
Substitute
to
Null(0)

Select Sal + NVL(Comm, 0)
from EMP;

- 2000 + NVL(200, 0) → 2000 + 200 → 2200
- 1000 + NVL(NULL, 0) → 1000 + 0 → 1000
- 1500 + NVL(0, 0) → 1500 + 0 → 1500

each
Q) What Details of an employee whose names start with 'vowels'?

Select *
from EMP
where Substr (Ename, 1, 1) IN
(‘A’, ‘E’, ‘I’, ‘O’, ‘U’);

⑥ What Details of an employee hired in the year 81.

Select *
from EMP
where Hiredate like ‘%81%’;

⑦ What Details of an employee hired in the month of December

Select *
from EMP
where Substr(hiredate, 7, 2) like ‘%DEC’;

⑧ What Details of an employee hired on thursday.

Select *
from EMP

Select *
from EMP

Select To-Char(Hiredate, ‘DY’)

Select *
from EMP

From EMP

where To-Char(Hiredate, ‘DY’) = ‘THU’;

Select Sys

SYS DATE

It is used to Print the Date that represent in the system.

SYSTIMESTAMP

It is used to find the date, time along with the time zone.

TO-CHAR()

This funⁿ is used to convert the given date into the particular date format.

Syntax

TO-CHAR (DATE,FORMAT-MODELS)

FORMAT-MODELS

1. Year	2. YYYY	3. YY
4. Month	5. MON	6. MM
7. DAY	8. DY	9. DD
10. D	11. HH24	12. HH12
13. MI	14. SS	

[15-Dec-22]

Ex Select To-char('SYSDATE', 'year')

From DUAL;

Output: Twenty twenty two

INSTR()

This function is used to obtain index value of the substring which is present in the original string.

INDEX VALUE - position of character

Syntax

INSTR ('original_string', 'substr',
[position, [Nth occurrence])

Nth occurrence \rightarrow no. of times it
is present.

Ex (INSTR ('os', 'ss', 'pos', [Nth occ]))

INSTR ('BANANA', 'A', 1, 1) \rightarrow 2

('A', 1, 3) \rightarrow 6

('N', 2, 2) \rightarrow 5

('A', 2, 2) \rightarrow 4

('Z', 1, 1) \rightarrow 0

('NA', 1, 1) \rightarrow 3

INSTR ('BANANA', 'A', 1, 2) \rightarrow 4

} BANANA (ans)

INSTR ('BANANA', 'A', 1, 3) \rightarrow 6

DML (Data Manipulation Language)

- * We have 3 statement ~~to keep in mind~~
DML. They are -
 - ① Insert
 - ② Update
 - ③ Delete

Invert

Convert it is used to convert the values into the table.

Syntax

Syntax Insert into table-name Values(v₁, v₂, v₃...v_n);

Ex ~~#~~ INSERT INTO BONUS VALUES ('SMITH', 'CLERK', 800, NULL);
Dysen

* INSERT INTO BONUS VALUES ('Sneek', 'Allen',
 'Sneek', 500, 300),
 ('Saberman', 0.1600, 300);

Ex Insert into Bonus (ename, job, sal, comm) 1234567

values ('king', 'president', 500, null)

③ Insert into table-name (col1, col2, ..., coln)
values (& col1, & col2, & col3, ..., & coln);

Ex Insert into bonus (ename, job, sal,
comm) values (& ename, & job, & sal,
& comm);

INSBRT

① Insert into Bonus values ('smith', 'CLERK',
500, NULL);

② Insert into Bonus (ename, job, sal,
comm)
values ('king', 'president', 5000, NULL);

③ ~~Insert into table~~
Insert into Bonus (ename, job, sal,
comm) ~~values~~:

values (& ename, & job, & sal, & comm);

Extra Table check per command

select *
from Bonus;

update :-

It is used to modify an existing value / To make changes in the Record.

Syntax :- update Table - Name

Set Col - Name = Value,

Col - Name = Value, ..

[Where Clause];

① & ~~2~~ whatD update the salary
of smith to 6000

↳ update Bonuses

Set Sal = 6000

where ename = 'Smith';

② whatD update the name of
Adabhat to Anushka Sharma

update Bonuses

set ename = 'Anushka Sharma'

where ename = 'Adabhat';

Delete

It is used to delete particular record from table.

* Syntax :- Delete from Table - Name

where [filter - condition]

Q whatD to remove Smith from the
list of employee?

↳ Delete from Bonuses

where ename = 'Smith';

Data Definition Language (DDL) 19/12/22

There are 5 statements

- ① Create
- ② Rename
- ③ Alter
- ④ Truncate
- ⑤ Drop

student

① Create

student

column names

ID	Name	Branch	Perce
Number (3)	Varchar (20)	Varchar (20)	Number(5,2)
Data types			
Constraints primary key	Not Null	Not Null	Not Check (Per > 0) → Perching

Syntax

```
Create table table-name
(
    column-name1 Datatype Not Null/[Null],
    column-name2 Datatype Not Null/[Null],
    column-name-> Datatype Not Null/[Null],
    constraint constraint-ref-name unique(column-name),
    constraint constraint-ref-name check(condition),
    constraint constraint-ref-name primarykey(column-name),
    constraint constraint-ref-name foreignkey(column-name),
    References Parent-table-name (column-name)
);
```

Ex-2 Create table Student ?

(
ID Number(3) Not Null,
Name Varchar(20) Not Null,
Branch Varchar(20) Not Null,
Perce Number(5,2) Not Null,
Constraint perce check (perce > 0),
Constraint IDPK Primarykey (ID)
);

② Rename

It is used to change the name
of a table

Syntax Rename Current-table-name
(or) To new-table-name;

Ex Rename student to stud;

③ Alter

It is used to modify the table

Syntax

1. To add a col:

Alter table table-name

Add column-name datatype [Null/Not Null];

Ex Alter Table stud

Add Gender Varchar(6) Not Null;

(more to) servers without training

2. To drop a col:

After table table-name
Drop column column-name;

Ex → Alter Table stud

Drop column gender;

3. To change the Datatype:

Alter table table-name
Modify column-name new-datatype;

Ex Alter Table stud

Modify Name Varchar(20) Null;

4. To change the Not Null Constraint:

Alter Table Table-name

Modify column-name existing datatype Null/Not Null;

Ex Alter Table stud

Modify Name Varchar(20) Null;

Change the column!

5. To Rename the table

Alter table table-name
Rename column Current-name to
new-name;

Ex Alter Table stud

Rename column Perce to Percentage;

Desc Bonus;

↳ Bonus Table Description
Check.

Three data Data

→ Datatype

④ Truncate

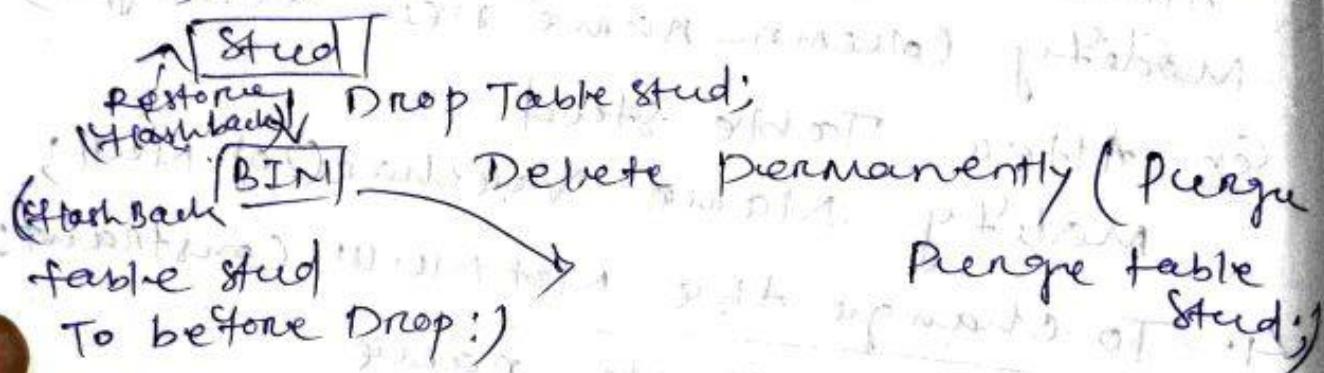
It is used to delete all the records from a table permanently.

Syntax: ~~Truncate~~ Truncate Table Table-name;

Ex- Truncate Table Bonus;

⑤ Drop

It is used to delete a table



Syntax: Drop table Table-name;

To Recover the table :-> (only in Oracle)

Syntax: Flashback Table table-name

To before Drop

[filename To new-name];

To drop the table from Recycle bin:

Syntax: Purge table table-name;

Attributes

- ① Key Attribute : \rightarrow An attribute which is used to identify a record uniquely from the table is called key attribute.
- ② Non-key Attribute : \rightarrow All the attributes except key attributes are referred as non key Attribute.
- ③ Preme-key Attribute : \rightarrow Among the key attributes an attribute is chosen to be the main attribute to identify the record uniquely from the table.
- ④ Non-Preme Key Attribute : \rightarrow All the key attributes except preme key attribute is referred Non-preme key attribute.
- ⑤ Composite Key Attribute : \rightarrow It is a combination of two or more non-key attributes which is used to identify the record uniquely from the table.
- ⑥ Super Key Attribute : \rightarrow It is the set of all the key attributes.
- ⑦ Foreign key Attribute : \rightarrow It is the attribute which is present in another table.

Functional Dependency

→ Let's consider the relation, R' with two attributes 'x' and 'y' respectively, in which attribute 'x' determines attribute 'y'.
 In other words 'y' is dependent on 'x'.
 There exists functional dependency.
 $R \rightarrow \{x, y\}$
 $x \rightarrow y$
 y is dependent on x

Types of Functional Dependency

- ① Total Functional Dependency
- ② Partial Functional Dependency
- ③ Transitive Functional Dependency

A) Total Functional Dependency

If all the attributes in a relation are determined by a single attribute which is a key attribute, then there exists total functional dependency.

Ex - Let us consider a relation with 4 attributes A, B, C & D in which 'A' is a key attribute.

$$R \rightarrow \{A, B, C, D\}$$

A is K, A

$$A \rightarrow B$$

$$A \rightarrow C$$

$$A \rightarrow D$$

There exists T.F.D
 $A \rightarrow \{B, C, D\}$,

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② PARTIAL functional Dependency

- for a Partial Functional Dependency to exist there must be a composite key attribute.
- One of the attribute in composite key relation determines another attribute separately, and this is known as Partial Functional Dependency.

Ex Lets consider a Relation 'R' with 4 Attributes A, B, C, D, in which A & B are composite key attributes.

$$R \rightarrow \{A, B, C, D\}$$

$$A \& B \rightarrow C \cdot K \cdot A$$

$$(A, B) \rightarrow (C, D)$$

$$B \rightarrow \{C\}$$

~~This is~~ There is exist P.F.D.

③ TRANSITIVE functional Dependency

If an attribute is determined by a non-key attribute which in turn is determined by a key attribute, then their exist Transitive functional dependency.

Ex Let us consider A Relation with four attributes A, B, C & D in which A is a key attributes.

$$R \rightarrow \{A, B, C, D\}$$

A is K.A

$$A \rightarrow B$$

$$D \rightarrow C$$

$$A \rightarrow D$$

$$(A \rightarrow C)$$

There exist T.F.D

Assignment

- Q1. Create a table with a name 'Movie' with three attributes, serial number, name & actor ?
- ② rename the table from 'Movie' to 'cinema' ?
- ③ Add a column with a name Actor (datatype as varchar(30), len as 30)
- ④ Rename the column from name to movie name ?
- ⑤ Insert 5 records

Sno	Movie name	Actor	Actress
1	pathan	Shahrukh	Deepika
2	Sita Ramam	Dulquer	Mrunal
3	Vikram Vedha	Sethupathi	
4	pushpa	Allu Arjun	Rashmika
5	Jab tak hai jaan	Shahrukh	Anushka

- ⑥ Change the name of the Actor from Sethupathi to Madhavan in the Movie Vikramvedha.
- ⑦ Change the name the actress from Anushka to Katrina in a movie Jab tak hai jaan.
- ⑧ Delete the second of the Movie Pathan.

Solution

① Create table Movie
Movie (MovieID int, Name varchar(40),
Serialnumber number(4) Not Null,
Name varchar(15) Not Null,
Actor varchar(16) Not Null,
constraint Sept primary key (Serial
Number))

[Table created.]

② Rename Movie to Cinema;
Table renamed.

③ Alter Table Cinema
Add Actress varchar(30) Null;

[Table altered]

④ Alter Table Cinema
Rename column Name to Movename;

[Table altered]

⑤
[Table altered]

→ same steps

'Movename' = movie + 2

'Actorname' = movie + 3 movie

⑤ Insert into Cinema (SerialNumber, movie name, Actor, Actress) values (1, 'spathan', 'Shahrukh', 'Deepika');

[1 row created]

Insert into Cinema (SerialNumber, movie name, Actor, Actress) values (2, 'spitanan', 'Dulqar', 'Mrunal')

[1 row created]

Insert into Cinema (SerialNumber, movie name, Actor, Actress) values (3, 'vikramvedha', 'Sethupathi', Null);

[1 row created]

Insert into Cinema (SerialNumber, movie name, Actor, Actress) values (4, 'pushpa', 'Arujan', 'Rashmika');

[1 row created]

Insert into Cinema (SerialNumber, movie name, Actor, Actress) values (5, 'yabtak hai jaan', 'Shahrukh', 'Anushka');

[1 row created]

⑥ Update Cinema

Set Actor = 'Madhavan'

Where movie name = ('vikramvedha');

[1 row updated]

⑦ update cinemaa
Set Actress = 'katrina'
where moviename = 'jab tak hai jaan';
1 row updated

⑧ Delete
from cinemaa
where moviename = 'pathan';
1 row deleted
Commit;

select *

from cinemaa;

OP Serial Number Moviename Actor Name

2	Sifarasan	Dulquer Salmaan
3	Vikram Vedha	Madhavan
4	Pushpa	Akshay Kumar, Rishi Kapoor
5	Jab Tak Hai Jaan	Shahrukh Khan
X		

(→ serial number starts from 1)

Serial number starts from 1

TCL (Transaction Control Language)

There are 3 statement :-

- ① Commit
- ② Save point
- ③ Roll Back

① Commit

Commit is used to save the records. Syntax Commit;

② Save point

It is used to go the check point to a particular record. Syntax: ~~SAVE point savepoint_name;~~

③ Roll Back

Roll Back

It acts as the undo operation

Syntax

Roll Back;

Roll Back 2

It is used to go back to a particular save point.

Syntax

Roll Back to savepoint_name;

Ex Insert into Bonus value(-);
Savepoint R1;

Insert into Bonus (-);

Savepoint R2;

Insert into Bonus (-);

Roll Back R1

Q2 u

Drop

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Q) write a diff b/w Truncate & Delete ?

Drop & Delete ?

Truncate

Drop

Delete

* Drop is used to

* Truncate is used to Delete the all the records from table permanently.

* The Data that is Truncated is lost by using Flashback

* Truncate is AutoCommit,

* Drop is AutoCommit

Delete

* It is used to Delete the records

* The Data that is Deleted can be Recovered by using Roll Back Command ;

* Delete is not Auto Commit .

11.28	answ for	xx
Tue, 12 Aug	W.M.	(1)

Normalization

* It is the process of Reducing the larger table to smaller table by removing the Redundancy and Anomaly & events of normal form.

Levels of Normal Form

- ① First Normal Form (1NF)
- ② Second Normal Form (2NF)
- ③ Third Normal Form (3NF)
- ④ Boyce-Codd Normal Form (BCNF)

Note: A table is said to be normalized if it is in 3NF.

1NF

A table is said to be in 1st Normal Form if it satisfies the following conditions.

- (i) A table should not consists of Multi-value Data.
- (ii) A table should not have Duplicate or Repeated value.

Ex

ID	name	skills
101	Smith	gal, MT
102	Miller	MT.
103	Ward	java, MT
104	Allen	MT, IT
102	Miller	java

DBMS (Relational)

① Ex

ID	name	skill 1	skill 2
101	Smith	SQL	MT
102	Milken	MT	Java
103	Ward	Java	MT
104	Allen	MT	AT
102	Milken	Java	

② 2 NF

A table is said to be in 2nd Normal Form if it satisfies the following conditions.

- * The table should be in 1st Normal Form
- * The table should not have partial dependency.

Note: If the table consists of partial functional dependency between the attributes Responsible for it removed from the table.

consist in 1NF

$R \rightarrow \{ \text{Empno, Ename, Sal, Comm, Deptno, Dname, Loc} \}$

$\text{Empno} \rightarrow \{ \text{Ename, Sal, Comm, Deptno, Dname, Loc} \}$

$\text{Ename} \rightarrow \{ \text{Deptno, Dname} \}$
 $\text{Sal} \rightarrow \{ \text{Loc} \}$
 $\text{Comm} \rightarrow \{ \text{Dname} \}$
 $\text{Deptno} \rightarrow \{ \text{Loc} \}$

Ex

$\text{Empno} \rightarrow \{ \text{Ename, Sal, Comm, Deptno, Dname, Loc} \}$

$\text{Deptno} \rightarrow \{ \text{Dname, Loc} \}$

$R_1 \rightarrow \{ \text{Empno, Ename, Sal, Comm} \}$
2nd NF
 $R_2 \rightarrow \{ \text{Deptno, Dname, Loc} \}$

P

D

T

(i)

per

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(ii)

th

③ 3NF

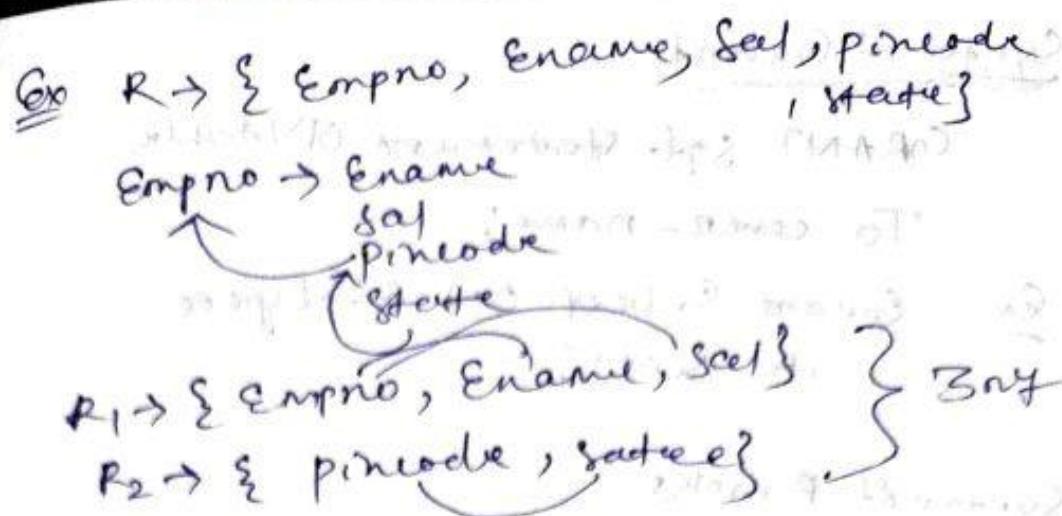
A table is said to be in 3rd Normal Form if it satisfies the following conditions -

> A table should be in 2nd Normal Form,

> A table should not have transitive functional dependency.

Note Then the attribute responsible are removed from the table.

* if the table consist of transitive functional dependency.



Data Control Language (DCL)

There are 2 statements

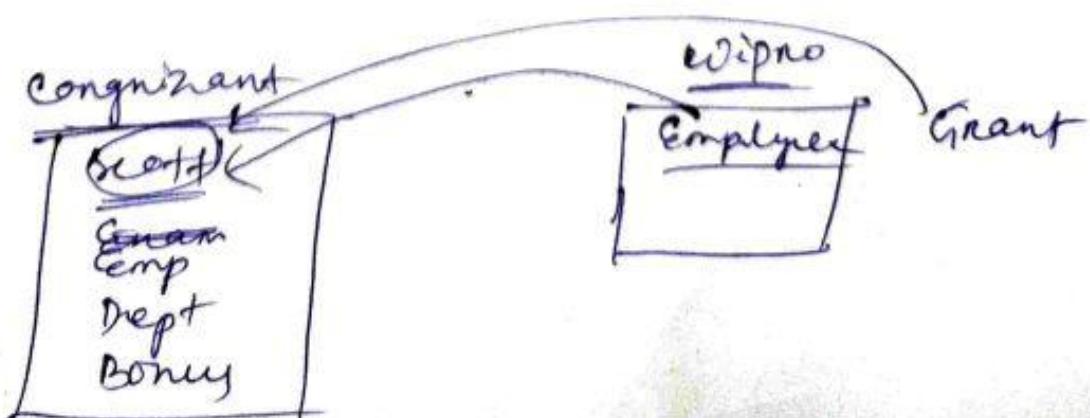
- (i) Grant
- (ii) Revoke

(i) Grant :

Grant is used to keep the permission to another DataBase for Accessing the Data.

(ii) Revoke :

Revoke is used to take back the permission



Syntax of Grant

GRANT sql-statement ON Table
To user-name;

Ex Grant Select ON Employees
to Scott;

Syntax of Revoke

REVOKE sql-statement ON Table
from user-name;

Ex Revoked Select ON Employees
from Scott;