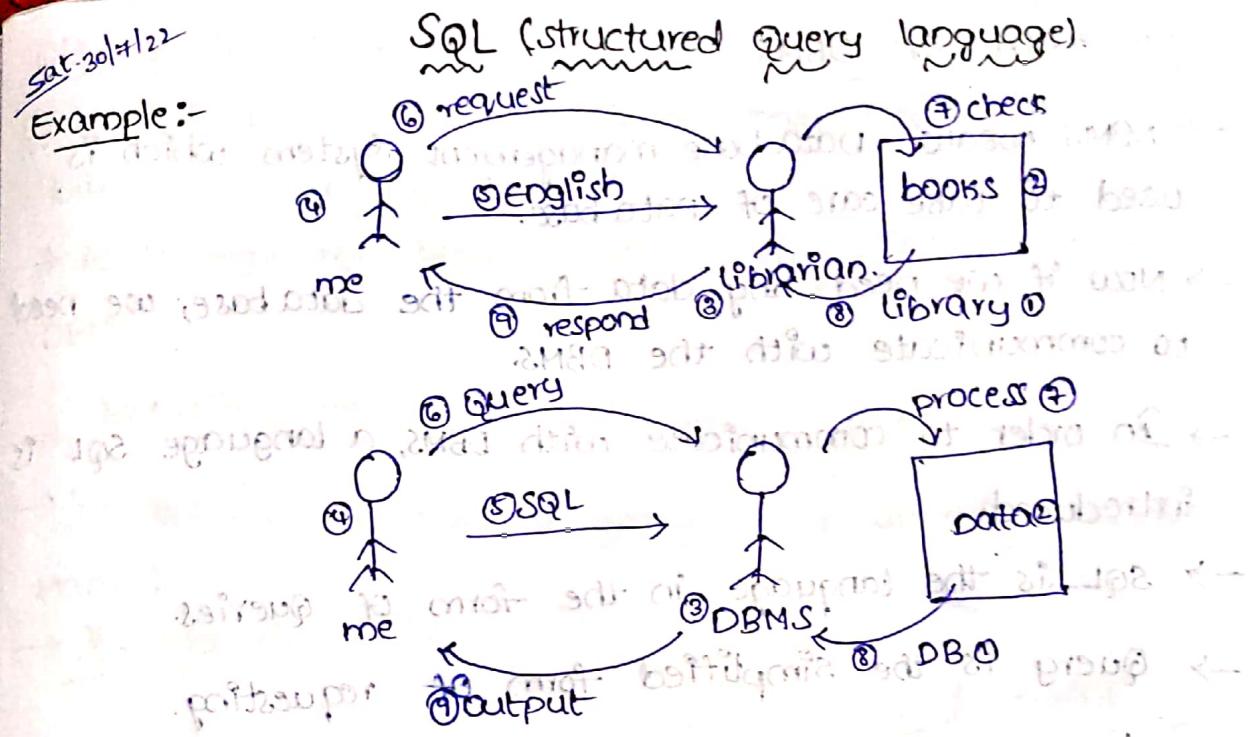


Sat. 30/1/22

Example:-



⇒ What is DATA?

A piece of information
(or)

Small set of information.

⇒ What is Data base?

place where you store data

(or)
is an organised collection of information.
(or)

collection of one or more tables.

⇒ What is DBMS?

is a program that stores retrieves and modifies
data in the database on request.

Study of different techniques of design,

development and maintenance of the database.

procedure of DBMS

- DBMS means Data base management system which is used to take care of data base.
- Now if we need any data from the database, we need to communicate with the DBMS.
- In order to communicate with DBMS, a language SQL is introduced.
- SQL is the language in the form of queries.
- Query is the simplified form of requesting.
- Through query, we can make a request (query) to DBMS for our data.
- Now, DBMS will process the query from us and search in DB.
- If find so, DBMS displays the information (or) data as an output for the user.
- If the data that we are searching if it is not present in the database then DBMS will display output called as no data found.

Note:-

- First name of SQL is SEQUEL (structured English query language).
- Later they changed it to SQL (structured query language).

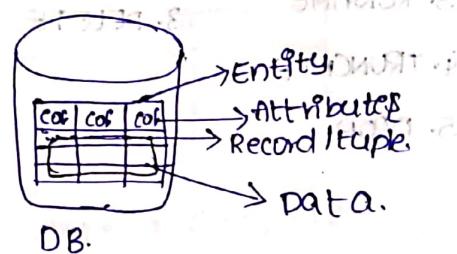
DBMS & Its Types:-

- One of the job of DBMS is not only storing the data but also arranging the data.
- To arrange the data we are having different types of DBMS.

Relational Database Management System

→ In Rdbms the data is going to be stored in Tabular manner.

→ Like Example:-



Example Table :-

The Table Name is STUDENT

student id	student name	contact no.
1	Rajalakshmi	9876543210
2	Rani	9876543211
3	Sweety	9876543212

→ Student is called as Entity.

→ Attributes/ col names :- std_id, stuname, contact no.

→ Record / Row / tuple :-

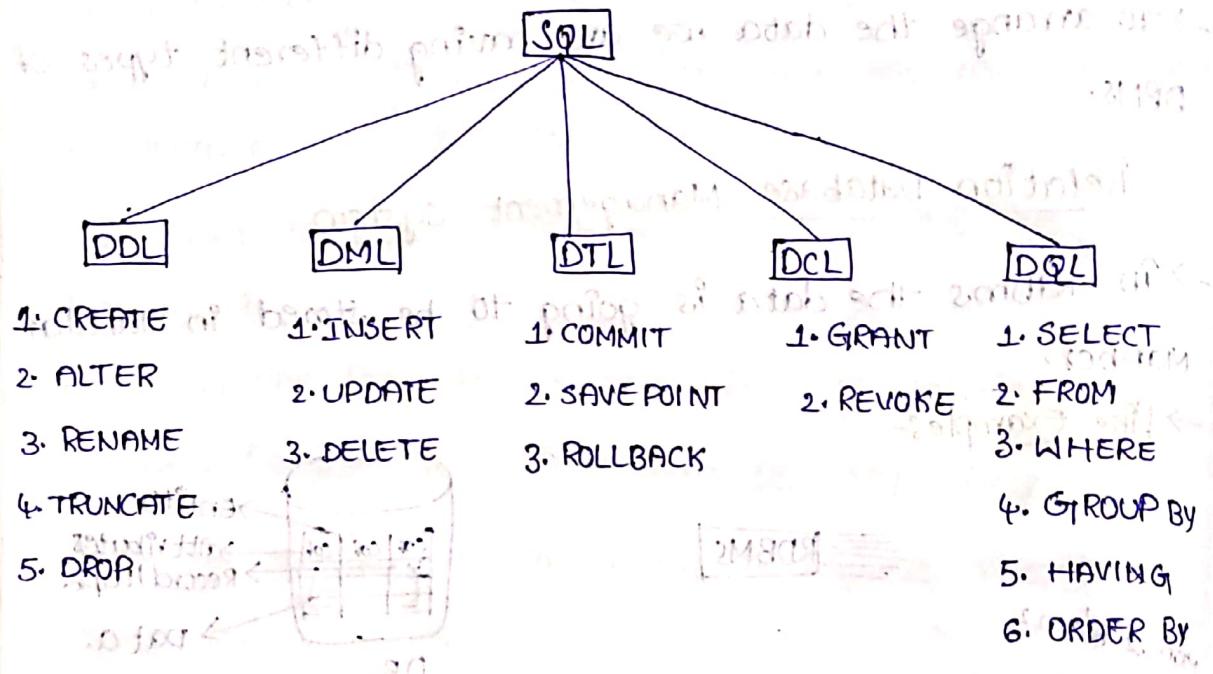
→ Data / information

NAME	GRADE	MANUFACTURER	DATE
V.	1		

1	Raja	123
2	Rani	234
3	Sweety	345

Summary of SQL

→ The SQL language is divided into 5 different languages
They are,



(1) DDL (Data Definition Language)

1. Create :- Create statement is used to create a table along with column names and table name.

Ex:-

TABLE NAME : STUDENT

S.NO	STUNAME	STUNO

2. ALTER :- Alter statement is used to add a column or Rename a column or delete a column.

Ex:-

S.NO	STUNAME	STUNO	CONTACT

→ add a column

S.NO	STUNAME	STUNO	CONTACT
			X
			X
			X
			X

→ delete a column

S.NO	STUNAME	STUNO

→ Rename a column

3. RENAME :- Rename statement is used to change the existing table name.

Ex:- TABLE NAME : TEACHER → RENAME

S.NO	STUNA	STUNO
1	123	456
2	789	098
3	456	789
4	098	123

89	Dinesh	98
45	Shivam	67

4. TRUNCATE :- Truncate statement is used to delete all the data present inside the table.

Ex:-

S.NO	STUNA	STUNO
-	-	-
-	-	-
-	-	-

→ Deletes
Truncate
(deleting the
data)

S.NO	STUNA	STUNO
-	-	-
-	-	-
-	-	-

5. DROP :- DROP statement is used to delete a complete table.

Ex:- TABLE NAME : TEACHER

S.NO	STUNA	STUNO
1	123	456
2	789	098

→ DROP

(2) DML (Data Manipulation language)

1. INSERT :- Insert statement is used to insert the data inside a table.

col1	col2	col3
01	Raja	123
02	Rani	234

2. UPDATE :- Update statement is used to update the existing information.

col1	col2	col3
01	Raja	123
02	Rani	234

→ Update

col1	col2	col3
01	Raja	123
02	Rani	456

3. DELETE:- DELETE statement is used to delete the particular record.

col 1	col 2	col 3
01	Raja	123
02	Rani	234

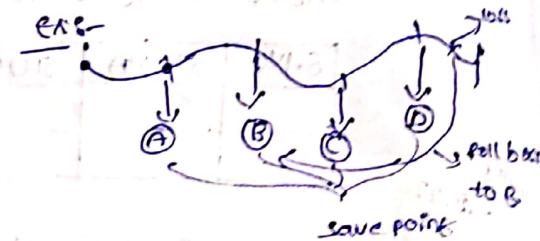
Delete.

col 1	col 2	col 3
-	-	-
02	Rani	234

(3) DTL (Data Transaction language)
(Or)

TCL (Transaction control language)

1. Commit:- Commit statement is used to save the data inside the data base permanently.
2. Save point:- Save point is used to save the data at multiple points temporarily.
3. Roll back:- Rollback statement is used to go back to a save point.



(4) DCL (Data Transaction language)

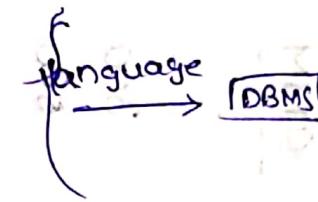
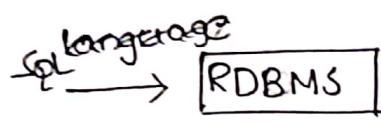
1. GRANT:- Grant statement is used to give a permission to another user to access our data.
2. REVOKE:- Revoke statement is used to take back a given permission.

Ex:- In google drive we want some picture, we don't ask a pictures directly the google drive want to give a permission.
If google drive take backs the picture it will take back a given permission.

(5) DQL (Data Query Language):-

DQL language is used to search the data inside the database.

5/12/22 wed
Note:-



Employee ID	Employee Name	Address	City, State	Phone No.	Join Date	Dept ID	Dept Name	Manager ID	Manager Name	Salary	Commission %	Total Salary	Department ID	Department Name	Manager ID	Manager Name	Commission %	Total Salary
10001	John Doe	123 Main St	New York, NY	555-1234	2022-01-01	101	Sales	10002	Jane Smith	60000	5%	63000	102	Marketing	10003	Mike Johnson	5%	57500
10002	Jane Smith	456 Elm St	Los Angeles, CA	555-2345	2021-07-01	102	Marketing	10004	David Wilson	65000	6%	70300	103	Customer Service	10005	Sarah Lee	4%	62000
10003	Mike Johnson	789 Oak St	Chicago, IL	555-3456	2022-03-01	101	Sales	10006	Alex Rodriguez	70000	7%	77000	104	Product Dev	10007	Emily Chen	3%	73100
10004	Alex Rodriguez	123 Pine St	Houston, TX	555-4567	2021-09-01	102	Marketing	10008	Christopher Lee	75000	8%	82500	105	HR	10009	Robert Green	2%	79000
10005	Emily Chen	456 Cedar St	Seattle, WA	555-5678	2022-05-01	103	Customer Service	10010	James Wilson	80000	9%	88000	106	Finance	10011	Sarah Lee	1%	82800
10006	Christopher Lee	789 Birch St	Boston, MA	555-6789	2021-11-01	104	Product Dev	10012	David Wilson	85000	10%	93500	107	IT	10013	Sarah Lee	0.5%	90750
10007	Robert Green	123 Maple St	Atlanta, GA	555-7890	2022-07-01	105	HR	10014	Alex Rodriguez	90000	11%	99000	108	Logistics	10015	Emily Chen	0.5%	94500
10008	Alex Rodriguez	456 Pine St	Tampa, FL	555-8901	2021-12-01	106	Finance	10016	Christopher Lee	95000	12%	104500	109	R&D	10017	Sarah Lee	0.5%	100750
10009	Christopher Lee	789 Cedar St	Phoenix, AZ	555-9012	2022-01-01	107	IT	10018	David Wilson	100000	13%	110000	1010	Manufacturing	10019	Emily Chen	0.5%	104500
10010	David Wilson	123 Birch St	San Jose, CA	555-0123	2021-08-01	108	Logistics	10021	Alex Rodriguez	105000	14%	115500	1011	Quality Control	10022	Christopher Lee	0.5%	110750
10011	Sarah Lee	456 Maple St	Austin, TX	555-1234	2022-04-01	109	R&D	10023	Emily Chen	110000	15%	121000	1012	Customer Support	10024	David Wilson	0.5%	116750
10012	Emily Chen	789 Pine St	Portland, OR	555-2345	2021-09-01	1010	Manufacturing	10025	Christopher Lee	115000	16%	126500	1011	Quality Control	10026	Alex Rodriguez	0.5%	122750
10013	Sarah Lee	123 Cedar St	Oklahoma City, OK	555-3456	2022-05-01	1011	Customer Support	10027	David Wilson	120000	17%	129000	1012	Product Dev	10028	Emily Chen	0.5%	125750
10014	Christopher Lee	456 Birch St	Memphis, TN	555-4567	2021-11-01	1010	Manufacturing	10029	Alex Rodriguez	125000	18%	132500	1011	HR	10030	Sarah Lee	0.5%	128750
10015	David Wilson	789 Maple St	Nashville, TN	555-5678	2022-01-01	1011	Customer Support	10031	Emily Chen	130000	19%	133000	1012	Product Dev	10032	Christopher Lee	0.5%	130750
10016	Emily Chen	123 Cedar St	St. Louis, MO	555-6789	2021-07-01	1010	Manufacturing	10033	Christopher Lee	135000	20%	138500	1011	HR	10034	David Wilson	0.5%	133750
10017	Christopher Lee	456 Birch St	Louisville, KY	555-7890	2022-03-01	1011	Customer Support	10035	David Wilson	140000	21%	144000	1012	Product Dev	10036	Emily Chen	0.5%	136750
10018	David Wilson	789 Maple St	Knoxville, TN	555-8901	2021-12-01	1010	Manufacturing	10037	Emily Chen	145000	22%	150500	1011	HR	10038	Christopher Lee	0.5%	140750
10019	Emily Chen	123 Cedar St	Chattanooga, TN	555-9012	2022-09-01	1011	Customer Support	10039	Christopher Lee	150000	23%	155000	1012	Product Dev	10040	David Wilson	0.5%	144750
10020	Christopher Lee	456 Birch St	Memphis, TN	555-0123	2021-04-01	1010	Manufacturing	10041	David Wilson	155000	24%	160500	1011	HR	10042	Emily Chen	0.5%	148750
10021	David Wilson	789 Maple St	Nashville, TN	555-1234	2022-01-01	1011	Customer Support	10043	Emily Chen	160000	25%	166000	1012	Product Dev	10044	Christopher Lee	0.5%	150750
10022	Emily Chen	123 Cedar St	St. Louis, MO	555-2345	2021-07-01	1010	Manufacturing	10045	Christopher Lee	165000	26%	171500	1011	HR	10046	David Wilson	0.5%	154750
10023	Christopher Lee	456 Birch St	Louisville, KY	555-3456	2022-03-01	1011	Customer Support	10047	David Wilson	170000	27%	177000	1012	Product Dev	10048	Emily Chen	0.5%	158750
10024	David Wilson	789 Maple St	Knoxville, TN	555-4567	2021-12-01	1010	Manufacturing	10049	Emily Chen	175000	28%	182500	1011	HR	10050	Christopher Lee	0.5%	160750
10025	Emily Chen	123 Cedar St	Chattanooga, TN	555-5678	2022-09-01	1011	Customer Support	10051	Christopher Lee	180000	29%	188000	1012	Product Dev	10052	David Wilson	0.5%	164750
10026	Christopher Lee	456 Birch St	Memphis, TN	555-6789	2021-04-01	1010	Manufacturing	10053	David Wilson	185000	30%	193500	1011	HR	10054	Emily Chen	0.5%	168750
10027	David Wilson	789 Maple St	Nashville, TN	555-7890	2022-01-01	1011	Customer Support	10055	Emily Chen	190000	31%	199000	1012	Product Dev	10056	Christopher Lee	0.5%	170750
10028	Emily Chen	123 Cedar St	St. Louis, MO	555-8901	2021-07-01	1010	Manufacturing	10057	Christopher Lee	195000	32%	204500	1011	HR	10058	David Wilson	0.5%	174750
10029	Christopher Lee	456 Birch St	Louisville, KY	555-9012	2022-03-01	1011	Customer Support	10059	David Wilson	200000	33%	209000	1012	Product Dev	10060	Emily Chen	0.5%	178750
10030	David Wilson	789 Maple St	Knoxville, TN	555-0123	2021-12-01	1010	Manufacturing	10061	Emily Chen	205000	34%	214500	1011	HR	10062	Christopher Lee	0.5%	180750
10031	Emily Chen	123 Cedar St	Chattanooga, TN	555-1234	2022-09-01	1011	Customer Support	10063	Christopher Lee	210000	35%	219000	1012	Product Dev	10064	David Wilson	0.5%	184750
10032	Christopher Lee	456 Birch St	Memphis, TN	555-2345	2021-04-01	1010	Manufacturing	10065	David Wilson	215000	36%	224500	1011	HR	10066	Emily Chen	0.5%	188750
10033	David Wilson	789 Maple St	Nashville, TN	555-3456	2022-01-01	1011	Customer Support	10067	Emily Chen	220000	37%	229000	1012	Product Dev	10068	Christopher Lee	0.5%	190750
10034	Emily Chen	123 Cedar St	St. Louis, MO	555-4567	2021-07-01	1010	Manufacturing	10069	Christopher Lee	225000	38%	234500	1011	HR	10070	David Wilson	0.5%	194750
10035	Christopher Lee	456 Birch St	Louisville, KY	555-5678	2022-03-01	1011	Customer Support	10071	David Wilson	230000	39%	239000	1012	Product Dev	10072	Emily Chen	0.5%	198750
10036	David Wilson	789 Maple St	Knoxville, TN	555-6789	2021-12-01	1010	Manufacturing	10073	Emily Chen	235000	40%	244500	1011	HR	10074	Christopher Lee	0.5%	200750
10037	Emily Chen	123 Cedar St	Chattanooga, TN	555-7890	2022-09-01	1011	Customer Support	10075	Christopher Lee	240000	41%	249000	1012	Product Dev	10076	David Wilson	0.5%	204750
10038	Christopher Lee	456 Birch St	Memphis, TN	555-8901	2021-04-01	1010	Manufacturing	10077	David Wilson	245000	42%	254500	1011	HR	10078	Emily Chen	0.5%	208750
10039	David Wilson	789 Maple St	Nashville, TN	555-9012	2022-01-01	1011	Customer Support	10079	Emily Chen	250000	43%	259000	1012	Product Dev	10080	Christopher Lee	0.5%	210750
10040	Emily Chen	123 Cedar St	St. Louis, MO	555-0123	2021-07-01	1010	Manufacturing	10081	Christopher Lee	255000	44%	264500	1011	HR	10082	David Wilson	0.5%	214750
10041	Christopher Lee	456 Birch St	Louisville, KY	555-1234	2022-03-01	1011	Customer Support	10083	David Wilson	260000	45%	269000	1012	Product Dev	10084	Emily Chen	0.5%	218750
10042	David Wilson	789 Maple St	Knoxville, TN	555-2345	2021-12-01	1010	Manufacturing	10085	Emily Chen	265000	46%	274500	1011	HR	10086	Christopher Lee	0.5%	220750
10043	Emily Chen	123 Cedar St	Chattanooga, TN	555-3456	2022-09-01	1011	Customer Support	10087	Christopher Lee	270000	47%	279000	1012	Product Dev	10088	David Wilson	0.5%	224750
10044	Christopher Lee	456 Birch St	Memphis, TN	555-4567	2021-04-01	1010	Manufacturing	10089	David Wilson	275000	48%	284500	1011	HR	10090	Emily Chen	0.5%	228750
10045	David Wilson	789 Maple St	Nashville, TN	555-5678	2022-01-01	1011	Customer Support	10091	Emily Chen	280000	49%	289000	1012	Product Dev	10092	Christopher Lee	0.5%	230750
10046	Emily Chen	123 Cedar St	St. Louis, MO	555-6789	2021-07-01	1010	Manufacturing	10093	Christopher Lee	285000	50%	294500	1011	HR	10094	David Wilson	0.5%	234750
10047	Christopher Lee	456 Birch St	Louisville, KY	555-7890	2022-03-01	1011	Customer Support	10095	David Wilson	290000	51%	299000	1012	Product Dev	10096	Emily Chen	0.5%	238750
10048	David Wilson	789 Maple St	Knoxville, TN	555-8901	2021-12-01	1010	Manufacturing	10097	Emily Chen	295000	52%	304500	1011	HR	10098	Christopher Lee	0.5%	240750
10049	Emily Chen	123 Cedar St	Chattanooga, TN	555-9012	2022-09-01	1011	Customer Support	10099	Christopher Lee	300000	53%	309000	1012	Product Dev	10100	David Wilson	0.5%	244750
10050	Christopher Lee	456 Birch St	Memphis, TN	555-0123	2021-04-01	1010	Manufacturing	10101	David Wilson	305000	54%	314500	1011	HR	10102	Emily Chen	0.5%	248750
10051	David Wilson	789 Maple St	Nashville, TN	555-1234	2022-01-01	1011	Customer Support	10103	Emily Chen	310000	55%	319000	1012	Product Dev	10104	Christopher Lee	0.5%	250750
10052	Emily Chen	123 Cedar St	St. Louis, MO	555-2345	2021-07-01	1010	Manufacturing	10105	Christopher Lee	315000	56%	324500	1011	HR	10106	David Wilson	0.5%	254750
10053	Christopher Lee	456 Birch St	Louisville, KY	555-3456	2022-03-01	1011	Customer Support	10107	David Wilson	320000	57%	329000	1012	Product Dev	10108	Emily Chen	0.5%	258750
10054	David Wilson	789 Maple St	Knoxville, TN	555-4567	2021-12-01	1010	Manufacturing	10109	Emily Chen	325000	58%	334500	1011	HR	10110	Christopher Lee	0.5%	260750
10055	Emily Chen	123 Cedar St	Chattanooga, TN	555-5678	2022-09-01	1011	Customer Support	10111	Christopher Lee	330000	59%	339000	1012	Product Dev	10112	David Wilson	0.5%	264750
10056	Christopher Lee	456 Birch St	Memphis, TN	555-6789	2021-04-01	1010	Manufacturing	10113	David Wilson	335000	60%	344500	1011	HR	10114	Emily Chen	0.5%	268750
10057	David Wilson	789 Maple St	Nashville, TN	555-7890	2022-01-01	1011	Customer Support	10115	Emily Chen	340000	61%	349000	1012	Product Dev	10116	Christopher Lee	0.5%	270750
10058	Emily Chen	123 Cedar St	St. Louis, MO	555-8901	2021-07-01	1010	Manufacturing	10117	Christopher Lee	345000								

SELECT *
from emp;

EMPNO	ENAME	JOB	MGR	HIREDATE	DEPTNO
7369	SMITH	CLERK	7902	17-DEC-80	20
7499	ALLEN	SALESMAN	7698	20-FEB-81	30
7521	WARD	SALESMAN	7698	22-FEB-81	30
7566	JONES	MANAGER	7839	02-APR-81	20
7654	MARTIN	SALESMAN	7698	28-SEP-81	1400
7698	BLAKE	MANAGER	7839	01-MAY-81	2850
7782	CLARK	MANAGER	7839	09-JUN-81	2450
7788	SCOTT	ANALYST	7566	19-APR-81	3000
7839	KING	PRESIDENT		17-NOV-81	5000
7844	TURNER	SALESMAN	7698	08-SEP-81	1500
7876	ADAMS	CLERK	7788	23-MAY-81	1100
7900	JAMES	CLERK	7698	03-DEC-81	950
7902	FORD	ANALYST	7566	03-DEC-81	3000
7934	MILLER	CLERK		23-JAN-82	1300

14 rows selected.

SQL > Select *
2 from dept;

DEPT NO	DNAME	LOC
10	ACCOUNTING	NEW YORK
20	RESEARCH	DALLAS
30	SALES	CHICAGO
40	OPERATIONS	BOSTON

Thurs 8/8/22
1) write a query to display employee names of all employees.

SELECT ENAME -From EMP;

2) write a query to display salaries of all the employees.

Select SAL -from Emp;

3) write a query to display deptnames of all the departments.

Select DNAME -from Dept;

4) write a query to display joining dates of all the employees.

Select HIREDATE -from Emp;

5) write a query to display designation of all the employees.

Select JOB -from Emp;

6) write a query to display location of all the departments.

Select LOC -from Dept;

7) write a query to display emp names and salaries of all the employees.

Select ENAME, SAL
from Emp;

8) write a query to display dept names and location of all the departments.

Select DNAME, LOC
from Dept;

9) write a query to display empno, and emplnames of all the employees.

Select EMPNO, ENAME
from Emp;

10) write a query to display empname, sal, deptno of all the employees.

Select ENAME, SAL, DEPTNO
from Emp;

1) Write a query to display Empname, Empno, Hiredate, designation and salary of all the employees.

Select Ename, Empno, Hiredate, Job, Sal from EMP;

SQL Questions

1) Write a query to display name of the employees.

Select Ename from EMP;

2) Write a query to display Ename and salary of all employee.

Select Ename, sal

from EMP;

3) write a query to display department name and its location for all the departments.

Select Dname, Loc

from DEPT;

4) write a query to display name, salary, commission and date of joining of every employee.

Select Ename, sal, comm, hiredate

from EMP;

5) Write a query to display employee name, his designation and his manager's employee number.

Select Ename, Job, MGR from EMP;

from EMP;

6) write a query to display employee name and his department number.

Select Ename, Deptno

from EMP;

7) Write a query to display all the details of each and every employee of the company.

Select *

from EMP;

8) write a query to display all the details of department present in company.

Select *

from DEPT;

6/8/22 - Friday

Aliasing is giving another name to a column name.

giving another name to a column name is known as Aliasing.

→ Aliasing is always temporary.

Syntax :- colName as AliasName { As is optional
it is not mandatory}

Example :-

Select sal as salary
from Emp;

Note :- (1) By default every aliasing name will be displaying

in the uppercase; except length of group is more than 6

(2) we use double quotes in two different cases:-

case (i) :- If the aliasing name is having space then

double quotes is mandatory.

Example :- Select sal as "monthly salary"

from Emp;

case (ii) :- In order to display the aliasing name in the same

format we wrote, double quotes is mandatory

Example :- Select sal as "Salary"

from Emp;

length of group is more than 6

1) write a query to display all the employee names as name for all the employees.

Select ename as name
from emp;

Select ename name

from emp;

as name

2) write a query to display employee name, sal as salary for all the employees.

Select ename, sal salary
from emp;

3) write a query to display employee name, sal as salary for all the employees.

Select ename, sal as salary
from emp;

4) write a query to display employee name, job designation, salary, department number of all the employees.

Select ename, Job designation, sal, dept no.
from emp;

Literals

→ Literals are called as Data

→ There are 3 types of literals:

(1) Number - 420

(2) character - 'Hello'

(3) Date - 'DD-MMM-YYYY' (or) 'DD-MMM-YY'

Note:- If we use literals in select statement, the same literal will be displayed for each and every row presenting the new table.

Example:-
(1) Select 420
from emp;

[14 rows are selected]

(2) Select 'HELLO'
from dept;

[4 rows are selected]

Concat operator (||)

Concat operator is used for merging the data

Ex:- Select ename || Job

from emp;

(1) write a query to display all the employees information in the below format. Smith is a clerks.

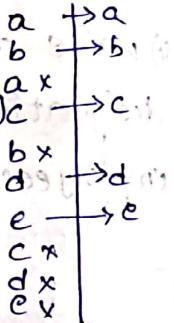
Select ename -||- is -A -||- job

Distinct:- Distinct keyword is used to display the

unique data present in the table.

its Syntax:- distinct (data).

Ex:- select distinct (Job)
from emp;



Operators

1) Arithmetic operators :-

+, -, *, /

2) Relational operator :- <, >, <=, >=, =, !=

3) Logical :- AND, OR, NOT

4) Special Operators:- Between And, Is Null, In, Like

q) write a query to display employee name, his employee number, his salary. and also his annual salary - for every employee.

Select ename, empno, sal, Sal*12
from emp;

Charging column
(Annual salary)

10) write a query to display employee name, his employee number and salary with the hike of 30% for every employee.

Select ename, empno, sal, sal + (sal * 30/100)
from emp;

↳ here we are adding new column

Note:-

Select *

from emp

where ename = 'Smith';

no rows selected:

→ Here I write Smith in lower case that's why no rows selected. It will write in upper case.

Select *

from emp

where ename = 'SMITH';

→ 1st from is started. because we are seeing all the information of employee. It is stored in a buffered table.

→ Next where. where is used to select a particular

data. It checks row by row not all the data. Then it check Smith if it is in emp table keeping the

data in another table.

→ finally Select. Select is used where we store another table it display as output.

1) write a query to display all the information of James

Select *

From Emp

where Enames = 'JAMES';

EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7369	KING	MANAGER	NULL	17-NOV-81	5000	1000	10
7400	JAMES	CLERK	7698	03-DEC-81	950	NULL	30

Note:- Edit a query

We write Edit. Then it displays a file where we wrote typed that we have to correct then it does not give semicolon and save it in file. Then open Queries. we use backward slash. It means it is a buffered execution.

2) Write a query to display job of ADAMS

Select JOB
From Emp
where Ename = 'ADAMS';

JOB
clerk

3) Write a query to display sal and deptno of MILLER

Select SAL, DEPTNO
From Emp
where Ename = 'MILLER';

4) Write a query to display emnames of all the salesman

Select Ename
From Emp
where Job = 'salesman';

5) Write a query to display salary of KING

Select SAL
From Emp
where Ename = 'KING';

6) write a query to display employees information who are working as Managers

```
Select *  
From EMP  
Where JOB = 'MANAGER';
```

7) Write a query to display employees information who are working in deptno 20.

```
Select *  
From EMP  
Where Deptno = 20;
```

8) Write a query to display employees information for an employee whose empno is 7788 and earn a peron

```
Select *  
From EMP  
Where Empno = 7788;
```

9) Write a query to display employees information who joined on the date of '03-DEC-81'

```
Select *  
From EMP  
Where HIREDATE = '03-DEC-81';
```

10) Write a query to display employees information whose salary is 3000

```
Select *  
From EMP  
Where SAL = 3000;
```

11) Write a query to display employees information who are working under the Manager number 7698

```
Select *  
From EMP  
Where MGR = 7698;
```

12) Write a query to display employees information whose name is ~~ADAMS~~ ADAMS

```
Select *  
From EMP  
Where ENAME = 'ADAMS';
```

13) Write a query to display employees information whose working in deptno = 30.

Select *
from EMP
where Deptno = 30;

14) Write a query to display Employees information whose commission is 1400

Select *
From EMP
Where COMM = 1400;

15) Write a query to display Employees information whose salary is more than 1500 and working in dept no 20

Select *
From EMP
Where SAL > 1500 and Deptno = 20;

16) Write a query to display Employees information who are working as clerks in deptno. 20

Select Job
From EMP
Where Deptno = 20;

Select *
From EMP
Where Job = 'clerk' And Deptno = 20;

17) Write a query to display Employees information who are working in deptno 10, 30

Select *
From EMP
Where Deptno = 10, OR Deptno = 30;

18) Write a query to display Employees information who are working as Manager, Analyst

Select *
From EMP
Where Job = 'MANAGER' OR Job = 'ANALYST';

19) Write a query to display employees information whose salary is between 1000 and 2000 and include some salary also

Select *
From EMP
Where SAL >= 1000 AND SAL <= 2000;

20) Write a query to display employees information who joined in the year of 1981.

Select * from emp where hiredate between '01-Jan-1981' and '31-Dec-1981';

Interview Questions

11) Write a query to display the details of employee in the following format.

a) Employee X earns a monthly salary of rupees Y.

select 'Employee - '||ename||' earns a monthly salary of rupees - '||sal from emp;

b) Employee X earns a monthly salary of rupees Y and annual salary of rupee Z.

select 'Employee '||ename||' earns a monthly salary of rupees '||sal|| ' and annual salary of rupee '||sal*12||;

c) The department X bearing department number Y is located in Z.

select 'The department - '||deptno||' bearing department number - '||deptno|| ' is located in - '||loc from dept;

12) Write a query to display name of the employee with annual salary with a monthly bonus of 200 and provide suitable alias name.

select ename, as "employee name", sal*12 as "Annual sal with bonus" from emp;

13) write a query to display name, salary along with annual salary of employee with yearly bonus of 1000.

select ename, sal*12, (sal*12)+1000 "Annual sal with bonus" from emp;

14) Write a query to select all the salary of employee of the salary is greater than 1500.

Select *

From emp

where sal > 1500;

15) Write a query to display employee name, his hire date, his salary and annual salary only if his annual salary greater than 10000.

Selectename, hiredate, sal, (sal*12) "AnnualSalary"

From emp

where sal*12 > 10000;

16) Write a query to display all the details of employee if the department number is 20.

Select *

From Emp

where dept no = 20;

17) Write a query to display all the details of the employee if designation is Manager.

Select *

From emp

where job = 'MANAGER';

18) Write a query to display all the details of employee only if they were hired after the year 1995.

Select

from emp

where hiredate > '31-Dec-1995';

no rows selected.

19) Write a query to display all the details of employee only if his commission is greater than his salary.

Select *

From Emp

where comm > sal;

20) Write a query to display all the details of employee only if his designation is clerk.

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Select *
From Emp
Where Job = 'CLERK';

Special operators:-

1) Between And :- whenever they have range values we use Between And.

Syntax :- colname between lower range and upper range.

Ex :- sal between 1000 and 2000.

Hiredate between '01-JAN-81' and '31-Dec-81';

2) In operator :- In operator, for a single column it has multiple conditions.

Syntax :- colname in (data)

Ex :- deptno in (10, 30)

(We can't use multiple columns)

'Job in ('MANAGER', 'ANALYST');

3) IS NULL :- It is used to find out the null data inside the table.

Syntax :- colname is NULL

Ex :- comm is NULL
MGR is NULL

comm =	NULL
deptno =	NULL
NULL =	0x
NULL =	spaces

4) Like operator :- It is a wildcard operator which is used to perform wildcard operations.

There are two wildcard operators.

i) % → 0-N characters

ii) _ (underscore) → only one single character

Syntax :- colname like 'data'

Ex :- ename like '%o%'

ename like '%E-%'

ename like '%o_s'

ename like '_E%'

NOT Operator: NOT operator can't be used sololy. It should be clubbed with any special operator.

Ex:- not between and

not in

is not null

not like

Ex:- comm IS NOT NULL;

1) Display all the employees who are getting 2500 and excess salaries in deptno 20 or 30.

Select * from emp
where sal >= 2500 and deptno in (20, 30);

2) Display all the manager's working in 20 and 30 department.

Select *
from emp
where job = 'MANAGER' and deptno in (20, 30);

3) Display other employees whose job is manager, who don't have a manager.

Select *
from emp
where job = 'MANAGER' OR mgr IS NULL;

4) Display all the employees who are getting some commission with their designation is neither manager nor analyst.

Select *
from emp
where comm IS NOT NULL AND job NOT IN ('MANAGER', 'ANALYST');

5) Display all the analyst whose name does not ends with 's'.

Select *
from emp
where job = 'ANALYST' AND ENAME NOT LIKE '%s';

6) Display all the employees whose name is having letter 'E' as the last but one character.

Select *

From EMP

where ename like '%E-%'

7) Display all the employees who's total salary is more than 2000 {total salary = sal + comm}

Select *

Display information about employees whose total salary is more than 2000 where (sal + comm) > 2000;

8) Display all the employees who are getting some commission in department 20 and 30.

Select *

From emp

where comm is not null and deptno

9) Display all the manager whose name doesn't start with 'A' and 'S'.

Select *

From emp

where job = 'MANAGER' AND ENAME

not like 'A%' AND ENAME NOT LIKE 'S%';

10) Display all the employees whose earning salary NOT in the range of 2500 and 5000 in dept 10 and 20.

Select *

From emp

where sal not between 2500 and 5000 and

deptno in (10,20);

11) Display all the employees whose annual sal is ending with 0.

Select *

From emp

where sal % 10 like '%0';

12) List all even sal.

Select *

From emp

where sal like '%0' (or) sal like '%2'

or sal like '%4' (or) sal like '%6' (or) sal like '%8'

- 13) List all odd sal's
- Select * from emp
where sal like '%1' (or) sal like '%3' (or) sal like '%5' (or) sal like '%7' (or) sal like '%9'
- 14) Display company owner's info.

15) Select * from emp where mgr is NULL;

16) Select * from emp where job = 'PRESIDENT';

- 15) Display all employees who are 'salesman' having E as the last but one character in ename but with salary having exactly 4 chars.
- Select * from emp
where job = 'SALESMAN' and ENAME
like '%E-' AND sal like '---';

- 16) Display all employees who have joined in FEB.

Select * from emp where hiredate like '%FEB
(or) --- FEB ---';

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- i) Write a query to display employees information who joined in the year of 1992.
- Select * from emp
where HIREDATE LIKE '%1992%';

- ii) Write a query to display employees information whose salary is starting with 2.

Select *

From EMP

where sal like '2%'

- 3) Write a query to display employees information whose empno is having 4

Select *

From Emp

where EMPNO like '4%';

4) Write a query to display employees information whose name is having M.

Select *

From Emp

Where Ename like '%M%';

Interview Questions

21) Write a query to display depart name, depart number for all the department which is located in BOSTON.

Select Dname, Deptno
From Dept
Where Loc = 'BOSTON';

22) Write a query to display all the details of employee only if he belongs to depart number 10 and salary is greater than 2000.

Select *

From Emp

Where Deptno = 10 And Sal > 2000;

23) Write a query to display Ename, salary, annual salary with the like of 25%. Only if he is a clerk and his date of hire is after 16th of June 1982.

Select Ename, sal, sal * 12, (sal * 12) + ((sal * 12) * 25 / 100)

From EMP

Where Job = 'clerk' And hiredate > '16-JUN-82';

24) Write a query to display all the details of employee only if annual salary is greater than 15000 and his commission is greater than his salary.

Select *

From emp

Where sal * 12 > 15000 And comm > sal;

→ No rows selected

→ No tuples to associate to no pattern of set up

→ Block vector base on all null reference insertion, if

25) Write a query to display all the details of department only if department number is 10 or name of department is RESEARCH.

Select *
From dept
Where deptno = 10 or dname = 'RESEARCH';

26) Write a query to display employee name and his employee number and his hired date and salary with reduction of 20% only if his salary is greater than 2500 of his department number is 10.

Select ename, empno, hiredate, sal - (sal * 20/100)
From emp
Where sal > 2500 and deptno = 10;

27) Write a query to display all the details of employee, if they have joined the company before 1985 or his salary is greater than 2500.

Select *
From emp
Where hiredate < '01-JAN-1985' or sal > 2500;

28) Write a query to display all the details of employee who belongs to department number is 10 or 20 and salary greater than 2000.

Select *
From EMP
Where Deptno in (10,20) and sal > 2000;

29) Write a query to display all the details of employee if he is working as a salesman or analyst and department number either 10 or 20 and salary should be greater than 2000.

Select * from emp like salary between 500 and 250 and deptno in (10, 20) and sal > 2000;

- 30) Write a query to display all the details of Employee who is working as SALESMAN or ANALYST.

Select *

From emp

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

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- 31) Write a query to display all the details of employee if he is working either Salesman or clerks and salary greater than 3000 or not equal to 2500 and department number either 30, 10, 40.

(And and or we should not give brackets)

Select *

From Emp

where job in ('salesman', 'clerk') and (sal > 3000 or sal != 2500)

- 32) Write a query to display employee name, Job, Commission, depart number, existing salary, new salary with the reduction of 35% only if job not equal to 'CHECK' and department number either 10, 20, 30. Hiredate greater than 1983 and commission should be less than salary.

Select Ename, job, comm, deptno, sal, sal - (sal * 35/100)

From Emp

where job != 'CHECK' and deptno in (10, 20, 30)

and hiredate > '01-JAN-83' and comm < sal

No rows selected.

- 33) write a query to display all the details of employee if the salary ranges between 500 and 250 and department number either 10, 20, 30.

Select *

From Emp

where sal Between 500 and 250 and deptno in (10, 20, 30)

34) Write a query to display all the employee who belong to department number 10 or 20 and comm between 1000 and 3000 and were hired during 1980 to 1983.

Query :- select * from emp where deptno in (10, 20) and comm between 1000 and 3000 and hiredate between '01-JAN-80' and '31-DEC-83';

35) Write a query to display all the details of employee if he is not having the reporting manager.

Query :- select * from emp where mgr is null;

36) Write a query to display all the employee who don't take comm.

Query :- select * from emp

where comm is null;

37) Write a query to select a name which begins with 'A'.

Query :- select * from emp where ename like 'A%'

38) Write a query to select a name which begins with 'A' and ends with 'A'.

Query :- select

from emp

where ename like '%A%' and ename like '%A%';
No rows selected.

39) Write a query to select the name which is having atleast 2 'A' in it.

Query :- select *

from emp

where ename like '%A%A%'

40) Write a query to select the name which starts with 'M'.

Query :- select *

from emp

where ename like 'M%';

4) Write a query to match name to select string which is having substring MAD.

Select *

From emp

where ename like '%MAD%';

o/p:- no rows selected

4) Write a query to select name which is having substring NA atleast twice.

Select *

From emp

where ename like '%NA%NA%';

4) Write a query to display all the employees whose name is having 'R' as the second last character.

Select *

From Emp

where Ename like '%OR-';

4) List all the employee whose name starts with 'S'.

Select *

From EMP

where Ename like 'S%';

4) List all the employee whose name is having letter 'L' as second character.

Select *

From EMP

where Ename like '%L%';

4) List all the employee whose name is having atleast 2 letters in it.

Select *

From EMP

where Ename like '%L%L%';

4) List all the employee whose name having letter 'E' as the last but one character.

Select *

From EMP

where Ename like '%E-';

4) List all the employee whose name is having letter 'R' in the 3rd position.

Select *

From EMP

where Ename like '_-R%';

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

Select *

From EMP

where job like '----';

50) List the employee where salary is between 2000 and 3000.

Select * From emp

where sal between 2000 and 3000;

Report name is employees with the help of query which contains the function like $\text{len}(\text{job})$.

It finds the name which contains job.

Wanted output is print name with employees with job length greater than 5.

Wanted output is print name employees with job length less than 5.

Wanted output name which employees with job length greater than 5 and less than 10.

Wanted output of name which employees with job length less than 5.

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Functions

- Functions are used to perform operations on a table.
- There are two types of functions, They are:

1. Single Row Function

2. Multi Row Function.

Single Row Function:

- These Single Row functions will take each row as input and produce output for each row.
- Like that it will create a corresponding output for every row.

Emp table

1
2
3
4
5

SRF

Output of 1
Output of 2
Output of 3
Output of 4
Output of 5

- 2. Multi Row Function:
- This function will take all the rows as input and produces exactly one output.

Emp table

1
2
3
4
5

MRF

Output
Output

(It contains) insert, update, delete, select

Single Row Functions :-

1) Length :- Length function is used to find out the length of whatever data given as input. It displays output in length, i.e. no. of characters in the given input.

Syntax :- `length (data)`

Ex :- SMITH - 5 length of smith is 5
ALLEN - 5 Select ename, length(ename)
from emp;

2) Lower :- It converts the input data into lower case, that data which is in upper case it converts into lower, lowercase output.

Syntax :- `lower (data)`

Ex :- SMITH - Smith Select ename, lower(ename)
Ward - ward from emp;

3) Upper :- The upper function converts lower case input into uppercase output.

Syntax :- `upper (data)`

Ex :- Smith - SMITH select ename, upper(ename)
Miller - MILLER from dual;

4) Init cap :- Function converts the initial into uppercase and remaining data into lower case.

Syntax :- `initcap (data)`

Ex :- SMITH - Smith Select ename, initcap(ename)
Ward - ward from emp;

5) Concat function :- concat function is used to merge data. It can merge only 2 data.

Syntax :- `concat (ip1, ip2)`

Ex :- `concat ('SMITH', 'CLERK')` - SMITHCLERK.

Select ename, job, concat(ename, job)
from emp;

6) Nested function:- Nested function is used to insert the function inside another function.

Syntax :- func(func(data))
 ↑
 output
 ↓
 print output

Select ename, job, concat(ename, job), length(concat(ename, job))
from emp;

1) Write a query to display all the employees information in the below format using only functions.

SMITH IS A CLERK.
⇒ Select ename, job, concat ('IS A', job);
from EMP;

Replace :- Replace statement is used to replace the character from the given input.

Ex: replace('java', 'a', 'b') = JbvBqjib Pip3 - Replacing character

replace ('Java', 'x', 'y') - Java

ip1 - data

ip2 - character to replace

Pip3 - Replacing character

replace ('Java', 'x', 'y') - Java

replace ('Java', 'x', 'y') - Java

replace ('Java', 'J', 'L') - lar

replace ('Java', 'y') = JV

Replaces Classification Tools

replace ("java", "N") = sun

replace ('Java', 'sql', 'Java')

Replace ('java', 'sql', 'sql')

replace (!:JavaSql', Ja!

1875-1876. 1876-1877.

Note:- The 3rd input is not given then input 2 is removed from input 1.

Substring:- Substring function is used to display some part of character from the given input.

String syntax: $\text{substr}(\text{IP1}, \text{IP2}, \text{IP3})$

1	2	3	4	5	6	7	8	9
d	e	v	e	l	o	p	e	r

IP1 - Data

IP2 - starting position

IP3 - No. of characters

Ex:- $\text{substr('developer', 1, 3)}$

- dev

$\text{substr('developer', 3, 3)}$ - vel

$\text{substr('developer', -5, 2)}$ - to

$\text{substr('developer', 5, 1)}$ - l

$\text{substr('developer', 5, 5)}$ - loper

$\text{substr('developer', 7, 3)}$ - per

$\text{substr('developer', 7, 6)}$ - per

$\text{substr('developer', -3, 3)}$ - per

$\text{substr('developer', 5)}$ - loper.

Note:- SQL starts with 1 and moves only left to right.

Java starts with 0.

1) Write a query to display 1st character of every employee name

name

select Ename, substr(ename, 1, 1)

From Emp;

2) Write a query to display last character of every employee name

name

Select Ename, substr(ename, -1, 1)

From Emp;

vt - (b', 'vni')

3) Write a query to display last character of every employee name without using '-1'

Select Ename, substr(ename, length(ename), 1)

From Emp;

avt - (b', 'vni')

4) Write a query to Replace 'A' character with 'X' character for every employee name.

select Replace(ename, 'A', 'X') as vt

From Emp;

5) Write a query to remove 'A' character from every employee name.

select Ename, Replace(Ename, 'A')
From EMP;

6) Write a query to display length of every employee name by Removing 'A' character from it.

select Ename, replace(Ename, 'A'), Length(replace(Ename, 'A'))
from EMP;

7) Write a query to display number of 'A' characters present in a employee name.

select Ename, replace(Ename, 'A'), Length(replace(Ename, 'A'))
Length(Ename) - Length(Replace(Ename, 'A'))

8) Write a query to display Employees information whose name is having exactly 6 characters.

select Ename
from EMP
where Length(Ename) = 6;

9) Write a query to display Employees information whose name is starting with 'S'.

select *
from EMP
where Substr(Ename, 1, 1) = 'S';

10) Write a query to display Employees information whose name is ending with 'S'.

select *
from EMP
where substr(Ename, -1, 1) = 'S';

11) Write a query to display Employees information whose job is starting with 'MAN'.

select *
from EMP
where substr(Job, 1, 3) = 'MAN';

Q) Write a query to display Employees' Information who joined in the month of FEB.

Select *
From EMP
Where substr (hiredate, 4, 3) = 'FEB'

Ans 12

Instring: Instring function is used to display the position of the character.

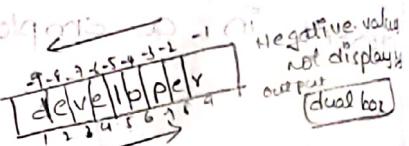
Syntax: instr(ip1, ip2, ip3, ip4)

ip1 - Data

ip2 - character to search

ip3 - starting position

ip4 - occurrence.



instr('developer', 'e', 1, 1) - 2

instr('developer', 'e', -3, 1) - 6

instr('developer', 'el', 1, 2) - 4

instr('developer', 'el', -1, 3) - 2

instr('developer', 'el', 3, 1) - 4

instr('developer', 'vel', 1, 1) - 3

instr('developer', 'l', 1, 1) - 0

instr('developer', 'velp', 1, 1) - 0

instr('developer', 'e', 5, 2) - 0

instr('developer', 'e') - 2

1) Write a query to display position of first time 'A' character in every employee name.

Select instr(ename, 'A', 1, 1)

Select ename, instr(ename, 'A', 1, 1) From EMP;

2) Write a query to display position of second time 'A' character in every employee name

Select ename, instr(ename, 'A', 1, 2)
From EMP;

Select ename, instr(ename, 'A', 1, 2)
From EMP;

3) Write a query to display position of MAN in every job

Select job, instr(job, 'MAN', 1, 1)
From EMP;

4) Write a query to display employees information whose name is starting with 'S'.

Ans:-
Select *
From EMP
Where instr(ename, 'S', 1, 1) = '\$';

5) Write a query to display employees information whose name is ending with 'S'.

Ans:-
Select *
From EMP
Where instr(ename, 'S', -1, 1) = '\$';

6) Write a query to display employees information whose job is starting with 'MAN'

Ans:-
Select *
From EMP
Where instr(job, 'MAN', 1, 1) = 'MAN';

7) Write a query to display employees information who joined in the month of FEB.

Ans:-
Select *
From EMP
Where instr(hiredate, 'FEB', 1, 1) = 'FEB';

8) Write a query to display employee name, salary, commission, total salary of all the employees. (total sal = sal + comm)

Ans:-
Select ename, sal, comm, sal + nvl(comm, 0)
From EMP;

NVL:— NVL function is used to replace the null data present in the table.

Syntax:- $nvl(columname, value)$

Ex:-
Select comm, nvl(comm, 0)
From emp;

comm	nvl(comm, 0)
300	300
600	600
1400	1400

NVL Function:- NVL function is used to replace the null data and not null data present in the table.

Syntax:- $\text{NVL}(\text{column}, \text{value 1}, \text{value 2})$

Ex:-
Select comm, NVL(comm, 111, 222)
From Emp;

comm	NVL(comm, 111, 222)
300	111
500	111
	222

→ Write a query to display employee name, sal, comm, total salary of all the employees. (total sal = sal + comm)

Select ename, sal, comm, sal + NVL(comm, 0)
From Emp;

Ex:-
Select ename, sal, comm, NVL(comm, sal + comm, 0) From Emp;

System Functions:- System function is used to has two types:

1. System Date:- System Date function is used to display current date running in the system.

Syntax:- SysDate

Ex:- Select sysdate
From Emp;

2. System Timestamp:- system timestamp function is used to display the current date and time in the system.

Syntax:- Systimestamp

Ex:- Select systimestamp from emp;

Trunc:- If we give decimal value as input it will remove that decimal and it will give integer as output.

Syntax:- trunc(data)

$\text{trunc}(14.2) - 14$

$\text{trunc}(29.8) - 29$

$\text{trunc}(88.7) 88$

Round :- If we give decimal value as input it will round the data and display the integer values as output.

Syntax :- Round (data)

Ex :- round (12.3) = 12

round (-6.9) = -7

round (55.5) = 56

0, 1, 2, 3, 4, -0

5, 6, 7, 8, 9, -1

* It is also called as modulus function.

Mod Function :- If we give two integers values as input it will divide the two integers and display the remaining data remainder as output.

Syntax :- mod(p1, p2, p3)

Ex :- mod (20,2) = 0

mod (21,3) = 0

- 1) EvenSal Select * from Emp where mod (sal,2) = 0;
- 2) OddSal Select * from Emp where mod (sal,2) != 0;

1) Write a query to display Employee name, salary, hire date, number of days working in the company for all the employees.

```
select ename, sal, hiredate, sysdate - hiredate
from emp;
```

2) write a query to display Employees information who are working in the company for more than 15000 days.

```
select ename, sal, hiredate, sysdate - hiredate
from emp
where (sysdate - hiredate) > 15000;
```

3) Write a query to display employee name, sal, hiredate, years of Experience for all the employees.

```
select ename, sal, hiredate, (sysdate - hiredate)/365
from emp;
```

20/8/22 Order by statement

Order by statement: Order by statement is used to arrange the data inside the table.

Syntax: Order by column name / condition.

Ex:- Select * From Emp

order by desc;

From Emp order by ename;

Ex:- Select ename, sal, sal*12 "Annual salary" from Emp
order by "Annual salary";

Descending order

Select ename, sal, sal*12 "Annual salary"

From Emp

order by "Annual salary" desc;

1. Write a query to display employees information and arrange them in the ascending order of their department number.

Select *

From Emp

order by deptno;

2. WAPTD Employees information, who are working as salesman or manager and arrange them in the descending order of their salaries.

Select *

From Emp

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

order by sal desc;

3. WAPTD Employees information who joined after second half of 1981 and arrange them according to their designation.

Select *

From Emp

where hiredate > '31-Dec-81'

order by job;

Q. WAQTP Employee name, salary, hiredate, years of experience of all the Managers and arrange them according to their years of Experience.

Select Ename, sal, hiredate, (sysdate - hiredate) / 365 "YOE"
From emp
where job = 'MANAGER'
order by "YOE";

22/8/22 To perform the multi row functions we have five types. They are,

Select Max(sal)

From Emp;

MAX(sal)

5000

Select MIN(sal)

From Emp;

MIN(sal)

800

Select SUM(sal)

From Emp;

SUM(sal)

29025

Select AVG(sal)

From Emp;

AVG(sal)

2073.21429

Select COUNT(*)

From Emp;

COUNT(*)

14

Select COUNT(comm)

From Emp;

COUNT(COMM)

6

1) Write a query to display no. of employees working as Analyst.

Select count(JOB) (or) (x)
From EMP

where JOB = 'ANALYST'

2) Write a query to display least salary earned by a clerk.

Select MIN(SAL)

From EMP

where ENAME = 'CLERK'

3) Write a query to display total salary of all the department number '20'

Select SUM(SAL) From EMP

where Deptno = 20;

4) WAPTD number of employees working in deptno 30

Select count(x)

From EMP

Where Deptno = 30;

5) WAPTD least salary earned in deptno '10'

Select MIN(SAL)

From EMP

Where Deptno = 10;

6) WAPTD MAX salary earned by a manager.

Select MAX(SAL)

From EMP

Where JOB = 'MANAGER';

7) WAPTD number of employees joined in the year of

1981

Select count(x)

From EMP

where HIREDATE Like '%.81';

(or) where substr(HIREDATE, -2) = '81'

8) WAPTD number of employees working in each department

Select deptno, Select count(x)

From EMP

group by deptno;

Group By statement:-

Group By statement is used to make some records as a group.

Syntax :- Group By column name / condition

Ex :- Select deptno, count (*)

From Emp

group by deptno;

deptno	count (*)
10	3
20	5
30	6
40	4

9) WAQTD number of employees working in each job.

Select job, count (*)

From Emp

Group by job;

10) WAQTD MAX salary earned in each department

Select Max(sal)

From EMP

Group By Deptno;

11) WAQTD number of employees joined in each year

Select substr(hiredate, -2), count (*)

From Emp

Group by substr(hiredate, -2);

12) WAQTD number of employees working in each job,

Select only those jobs where number of employees working

in that job are 3 and above.

Select job, count (*)

From Emp

Group by job

+ Having count (*) >= 3

Having statement :- Having statement is used to provide a condition for groupby statement.

Ex :- Select job, count (*)

From Emp

Group by job

+ Having count (*) >= 3

job	count(*)
clerk	4
salesman	4
Manager	3

→ Difference between coherent statement and having statements.

Where Statement	Having Statement
<ol style="list-style-type: none"> 1. In where statement we cannot use multirow functions 2. where statement cannot provide condition for group by 3. where statement executes row by row. 	<ol style="list-style-type: none"> 1. In having statement we can use multirow functions 2. having statement will provide condition for group by 3. having statement executes group by group.

1. Write a query to display total salary of each department,
select only those departments whose total salary is more

than 9000. Select sum(SAL), DEPTNO.

Select sum(SAL), DEPTNO

From Emp

Group By Deptno

-Having ,Sum(saf) >9000

2. write a query to display average salary of each job except Analyst, select only those jobs whose Average salary is more than 1100 and arrange them according to their designations in descending order.

Select JOB, AVG(SAL)

-From FDR

where JOB1 = 'ANALYST'

Group B4 Job

JOB AVG(SAL)

SALESMAN 1400

Salesman 5000

PRESIDENT

MANAGER 2756-33
S. Kornblatt

Top of spine

Statements	Order of writing	Order of execution
Select	1	5
From	2	1
Where	3	2
group by	4	3
having	5	4
Order by	6	6

- Q1. Write a query to display employees information whose salary is more than 800.
- Ans: Select * from Emp where SAL > 800;

- Q2. Write a query to display employees information who are working as salesman.

Ans: Select * from Emp where JOB = 'SALESMAN';

- Q3. Write a query to display employees information who joined on the date of 03-Dec-81.

Ans: Select * from Emp where HIREDATE = '03-DEC-81';

- Q4. Write a query to display employees information whose name is having x character.

Ans: Select * from Emp where ENAME like '%x%';

- Q5. Write a query to display employees information who are working deptno 20.

Ans: Select * from Emp where DEPTNO = 20;

6. Write a query to display employees information whose salary is more than smith salary.

Select *

From Emp

Where SAL > (Select SAL From Emp Where ENAME = 'SMITH');

Sub Queries :- writing a query inside Another Query is known as subquery

Ex:- Select *

From Emp

Where SAL > (Select SAL From Emp Where ENAME = 'SUYA');

1. Write a query to display employees information who are working in the same department of miller.

Select *

From Emp
Where Deptno = (Select Deptno From Emp Where ENAME = 'MILLER');

2. Write a query to display employees information who are working in the same job -ADAMS.

Select *

From Emp
Where JOB = (Select JOB From Emp Where ENAME = 'ADAMS');

3. Write a query to display employees information who joined on the same date of JAMES.

Select *

From Emp
Where HIREDATE = (Select HIREDATE From Emp Where ENAME = 'JAMES');

4. Write a query to display employees information who are working in the same department of Any Manager.

Select *

From Emp
Where Deptno = ANY (Select DeptNO From Emp

Where JOB = 'MANAGER');

~~Ques 1~~ Subqueries are two types. They are,

1. Single row subquery

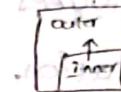
2. Multi row subquery

1. Single row Subquery :- The inner query returns only one output as output is called single row subquery.

One-one:

<, >, =, <=, >=, !=

outer query
inner query

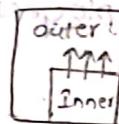


2. Multi row Subquery :- The inner query returns more than one query as output is called Multi row subquery.

One-Many:

Any → or

All → And



1. Write a query to display employees information whose salary is more than Average sal of all the departments.

Select *
From EMP

where SAL > all (select avg(sal) from Emp group

by (deptno))

2. WAPTD Employees information whose sal is less than MAX sal of Dept no 20.

Select *
From EMP
where SAL < (select max(sal) from Emp where deptno=20);

3. WAPTD Employees information whose sal is less than all the managers

Select *
From EMP
where SAL < all (select sal from EMP where job='MANAGER');

4. WAPTD Employees information whose sal is more than maximum salary of clerk.

Select *
From EMP
where SAL > (select max(sal) from EMP where job='clerk');

5. WAQTD DeptName of Smith
- select DNAME
From Dept
where DeptNo = (select DeptNo From Emp Where Ename='SMITH');
6. WAQTD LOC OF KING
- select Loc
From DEPT
where DeptNo = (select DeptNo From Emp Where Ename='KING');
7. WAQTD Employees information who are working in Newyork location.
- select *
From EMP
where DeptNo = (select DeptNo From Dept Where Loc='NEW YORK');
8. WAQTD Employees information who joined the company after King.
- select *
From EMP
Where HIREDATE > (select HIREDATE From Emp Where Ename='KING');
9. WAQTD DName of MILLER.
- select DNAME
From Dept
where DeptNo = (select DeptNo From Emp Where Ename='MILLER');
10. WAQTD Employees information who joined the company before ALLEN.
- select *
From EMP
Where HIREDATE < (select HIREDATE From Emp Where Ename='ALLEN');
11. WAQTD First employee of the company
- select *
From EMP
Where HIREDATE = (select min(HIREDATE) From EMP);
12. WAQTD Last employee of the company
- select *
From EMP
where HIREDATE = (select max(HIREDATE) From EMP);

26/18/12
13. WAQTD Department name turner.

Select Dname
From Dept
where DeptNo = (select DeptNo From Emp where
Dname = 'turner'))

4. WAQTD Employees information who are working in
operations department.

Select *
From EMP
Where DeptNo = (select DeptNo From Dept where
no rows selected.
Dname = 'operations');

5. WAQTD Employees information who are working in
chicago location.

Select *
From EMP
Where DeptNo = (select DeptNo From Dept where Loc = 'CHICAGO');

6. WAQTD Department names of all the departments
where number of employees working in that department
should be 3 and above.

Select Dname
From Dept
Where DeptNo = Any (select DeptNo From Emp group by DeptNo
having count(*) >= 3);

7. WAQTD first highest salary employee information

Select *
From EMP
Where SAL = (select Max(sal) From Emp);

8. WAQTD Employees information of first least salary.

Select *
From EMP
Where SAL = (select Min(sal) From Emp);

9. WAQTD Second highest salary.

Select Max(sal)
From EMP
Where sal < (select Max(sal) From Emp);

10. WAQTD Third highest salary

Select Max(sal)
From EMP
Where sal < (select Max(sal) From Emp)
Where sal < (select Max(sal) From Emp);

11. WAQTD second least salary

Select Min(sal)
From EMP
Where sal > (select min(sal) From Emp);

22) WAQTD - third least salary.

Select min(sal)

-From Emp
where sal > (select min(sal) from Emp
where sal > (select min(sal) from

23) WAQTD Smith's Managers information.

Select *

From Emp

where empno = (Select MGR from Emp where Ename='SMITH');

Highest

24) WAQTD - fourth least salary.

Select *
From Emp
where sal < (select Max(sal))

-From Emp

where sal < (select Max(sal))

From Emp

where sal < (select Max(sal))

From Emp

where sal < (select Max(sal))

From Emp

where sal < (select Max(sal))

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25) WAQTD employees information who are working under King.

Select *
From Emp

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

26) WAQTD Department name of Martin.

Select Dname

From Dept

where Deptno = (Select Deptno from Emp
where Ename = 'MARTIN');

27) WAQTD Location of James.

Select Loc -> DEPTLOC -> DEPTNO -> DEPTNAME
from Dept

where Deptno = (Select Deptno from Emp
where Ename = 'JAMES');

28) WAQTD employees information who are working under blake.

Select *

From Emp

where MGR = (select Empno from Emp where Dname = 'DEPTNAME'
ename = 'BLAKE');

29) WAFQTD Smith Manager's Manager name.

Select *
From EMP
Where EMPNO=(Select MGR From EMP
Where EMPNO=(Select mgr from EMP
Where ENAME='Smith'))

Very Imp Joins

Multiples tables can be joined together to get required information.

Join :- For the joining of two or more tables and displaying them as a single table is known as Joins.

Displaying the information from multiple tables at a time is known as Join.

Joins are different types:

1. Equi Join / Inner Join

2. Non Equi Join

3. Self Join

4. Cross Join / cartesian Join

5. Outer Join

SQL ---> ANSI -----> JOINS

ORACLE ---> JOINS

ANSI Means American National Standard institution

1. Equi JOIN / INNER JOIN :-

For the joining of two or more tables. if we make use of "=" operator.

(Or)

Inner Join will display the common information present in both the tables.

Syntax:- For oracle

Select Data

From Table 1, Table 2

where Table 1. column name = Table 2. column name;

For ANSI

Select Data

-From Table1 join Table2

on Table1.columnname = Table2.columnname;

Ex - for oracle

Select *

From emp,dept

where emp.deptno=dept.deptno;

for ANSI

Select *

From emp join dept

where on emp.deptno=dept.deptno;

for oracle - for a particular column.name.

Select * from dept where deptno = 10;

From emp,dept

where emp.deptno=dept.deptno and ename = 'SMITH';

for ANSI - added slight change in comparison with previous file

Select *

From Emp join dept

on emp.deptno = dept.deptno

where ename = 'SMITH';

1) Write a query to display employee name and deptname of all the employees.

ANSI - for oracle

Select ename, dname

From emp join dept

where emp.deptno = dept.deptno;

2) Write a query to display employee name, deptno and location of all the departments.

ANSI - for oracle

Select ename, emp.deptno, loc

From emp, dept

where emp.deptno = dept.deptno;

3) Write a query to display only employees information of all the employees who are working in New York location.

Select emp.*

From emp,dept

where emp.deptno=dept.deptno

and loc = 'NEW YORK';

ANSI - for oracle

Select emp.*

From emp join dept

where emp.deptno=dept.deptno;

NON-EQUI JOIN :-

For the joining of two or more tables

If we don't make use of "=" operator.

Oracle Format :-

```
Select *  
      FROM emp, salgrade
```

where sal between losal and hisal;

ANSI Format :-

```
Select *  
      FROM emp JOIN salgrade  
      ON sal between losal and hisal;
```

1. Write a query to display employee names and grades of all the employees.

```
Select ename, Grade  
      From Emp, Salgrade  
     Where sal between losal and hisal
```

2. Write a query to display employee name, employee no and grades of all the employees.

```
Select ename, empno, Grade  
      From Emp, Salgrade  
     Where sal between losal and hisal;
```

3. Write a query to display employee name, job and grade of all the salesmen.

```
Select ename, job, grade
```

```
      From Emp, Salgrade
```

Where sal between losal and hisal;

4. Write employees information whose grade is 4.

```
Select *  
      From emp, Salgrade  
     Where sal between losal and hisal, and grade = 4;
```

Self JOIN :-

Joining a table again with itself is known as self join. For self join aliasing is mandatory.

Ex

Emp ---> Employees, Manager

Emp ---> Employee ---> MGR

Emp ---> Employee ---> Empno

- 1) Write a query to display employee name and manager name of all the employees.

Select E.Ename, M.Mename from

Employee E, Employee M

where E.MGR = M.Empno

- 2) Write a query to display employee names of all the employees who are working under King.

Select E.Ename

From EMP E, EMP M

where E.mgr = M.Empno and M.Ename='King'

- 3) Write a query to display employees information who are working under Blake.

Select E.*

From EMP E, EMP M

where E.mgr = M.Empno and M.Ename='Blake'

- Ex Insurance company wants to print a list of employees who paid amount in last year and this year.

Oracle Syntax:-

Select *

From emp E, emp M

where E.mgr = M.Empno;

Select data

From Table1 Tab1, Table2 Tab2

where A.1.colname = B.2.colname

ANSI Syntax:-

Select *

From emp E join emp M

on E.mgr = M.Empno.

Q. Write a Query to display employee name, dept name and grade of all the employees.

Select Ename, Dname, Grade
From Emp, Dept, Salgrade
Where Emp.deptno = Dept.deptno and sal between

1000 & 1500;
Select emp.ename, dept.dname, salgrade

4. Cross Join / cartesian Join :-

For the joining of two or more tables if we don't provide joining condition, By default it will perform cross join.

emp - 14
dept - 14
 $14 \times 14 = 196$ records.

Oracle format :-

Select *
From emp, dept;

Ansi format :-

Select *
From emp cross join dept;

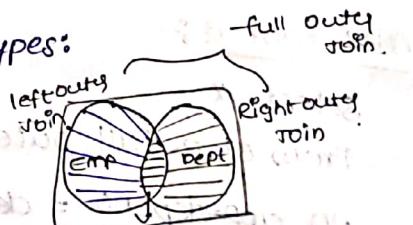
Outer JOIN :-
Outer Join will display inner join information and left out data from tables.

Outer Join is divided into 3 types:

1. Left Outer Join

2. Right Outer Join

3. Full Outer Join.



1. Left Outer Join :-

left outer join will display inner join information and left out data from leftside table.

Oracle Format :-

Select *
From emp, dept

Where emp.deptno = dept.deptno (+)

ANSI Format:-

```
Select * from emp join dept on emp.deptno=dept.deptno;
```

2. Right Outer Join:-

Right outer join will display inner join information and left out data from Right side table.

ANSI Format :-

```
Select * from emp right outer join dept on emp.deptno=dept.deptno;
```

Oracle Format :-

```
Select * from emp, dept  
where emp.deptno(+)=dept.deptno;
```

3. Full Outer Join:-

Full outer join will display inner join information and left out data from left side table and Right side table.

ANSI Format :-

```
Select * from emp full outer join dept  
on emp.deptno=dept.deptno;
```

- full outer join is not possible in oracle database.
- It is only possible in ANSI format.

Natural Join :- Natural join will work like either inner join or cross join.

ANSI for Inner Join:-

1. Select *

```
from emp natural join dept;
```

ANSI for Cross Join:-

Select *

```
from emp natural join salgrade;
```

Constraints :-

constraints are used to apply restrictions on a table.

unique constraint:-

Unique constraint will not allow duplicate data but it allows null data.

stud id	Name	Contact no
1	Dinga	123
2	Dingi	234

unique constraint

Not Null constraint:-

Not null constraint will not allow null data but it allows duplicate data.

primary key constraint:-

primary key constraint is also known as unique identifier.

It is a combination of unique and not-null constraints.

Rule:- In a whole table we can have only one column as a primary key.

→ Foreign key constraint

→ Foreign key constraint is also Referential Integrity constraint

→ In a single table we can have multiple foreign keys

→ It is used to build the relationships between tables.

check constraints:-

Check constraints is used to apply a restriction of user defined.