SQL

Day – 1:

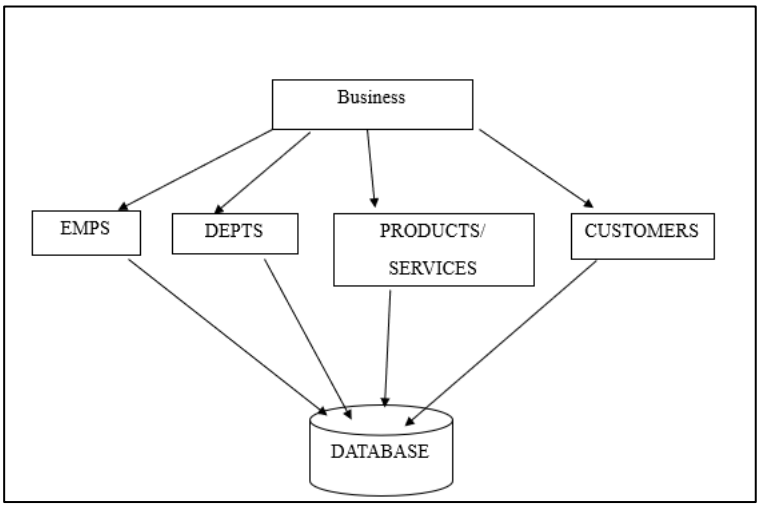
ORACLE

i. It is RDBMS from oracle company.
ii. RDBMS means Relational Data Base Management System
    - Store data
    - Access data
    - Manage data
iii. To automate business transactions

SQL Server

- DB2
- TERADATA
- POSTGRE SQL, etc.

BUSINESS – is a collection of objects/entities and activities



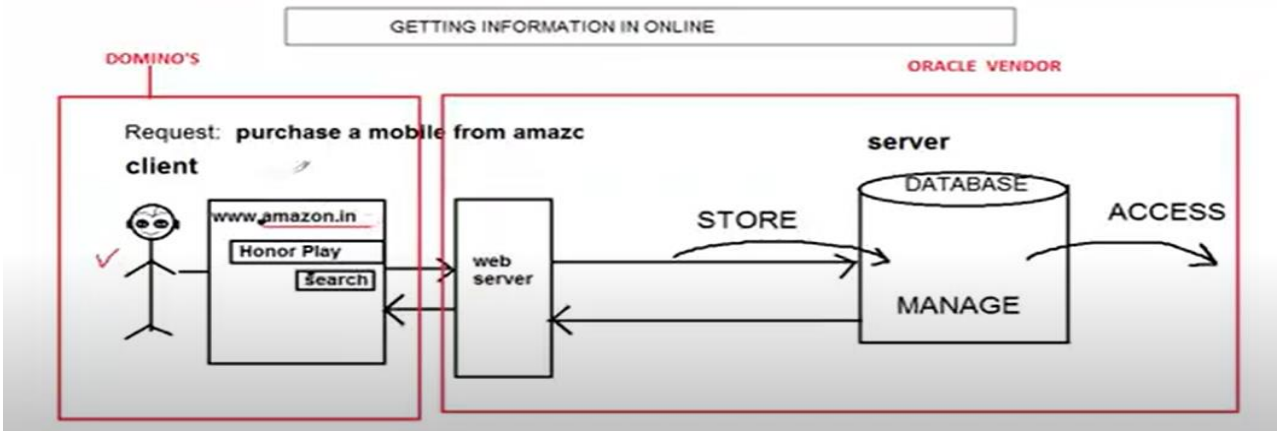
DATA – collection of information of any one business object/transaction

DATABASE – information of all objects within the business

DBMS – a database with management system services like

- Accept new information
- Change old information
- Delete unwanted information
- Authentication
- Security

RDBMS – collection of related information of all objects with business



SQL – Structured Query Language

Used to communicate with database

We should write statements – Queries

English	SQL
➢ Alphabets ➢ Words ➢ Grammar ➢ Sentence ➢ Paragraph ➢ Story	➢ Commands ➢ Keywords ➢ Syntax ➢ Statements – Queries ➢ Program o Procedure o Function o Trigger ➢ Package

Day – 2:

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SQL - STRUCTURED QUERY LANGUAGE

- It is useful to communicate with database.
- We will write queries.

Q. Where should I write queries?

Ans: we should write queries/programs in the client application window.

- ✓ Client application window is an interface between user and database.
- ✓ default client application window [oracle] -- SQL * PLUS
- ✓ default client application window [SQL SERVER]-- console / SSMS

SQL * PLUS:

Q. How to connect to the oracle database?

1. working with oracle 11g
   a) open SQL * plus

b) start-- programs--oracle-- select " Run SQL command line "

2. working with oracle 12c onwards
   a) start-- programs-- oracle-- select "SQL PLUS"

Q. How to connect with SQL server database?

a) By using SSMS [SQL SERVER MANAGEMENT STUDIO]
b) START-- PROGRAMS--MICROSOFT SQL SERVER TOOLS-- SELECT "sql server management studio"

Rules to write queries:

a) Any query should be terminated with semi colon [;]
b) Only one is executed at a time.
c) Queries are not case sensitive.
d) SQL commands are ANSI standard.

SQL COMMANDS: 5 categories

1) DDL - Data Definition Language

CREATE ALTER DROP TRUNCATE RENAME [ORACLE]

2) DML - Data Manipulation Language

INSERT UPDATE DELETE

3) DRL/DQL - Data Retrieval / Data Query Language

SELECT

4) DCL - Data Control Language

GRANT REVOKE

5) TCL - Transaction Control Language

COMMIT ROLLBACK SAVEPOINT

RDBMS – STORE – ACCESS – MANAGE

|

TABLE

|

ROWS+COLUMNS

- ROW is known as record
- COLUMN is known as field

CREATE:

- used to create any database object [table /view / index/ sequence/. . .]

SYNTAX to create table:

CREATE TABLE TBLNAME

(

COLNAME DATATYPE(SIZE),

COLNAME DATATYPE(SIZE),

. . .

);

Rules for table name and column names:

- start with alphabet
- we can also use digits and _, @, #, $ with in the name.
- names are not case sensitive.
- Names cannot be duplicated.
- Don't use spaces with in the name.

Day – 3:

Datatypes:

- It is a predefined name given by oracle company.
- Datatypes are 4 types.

Character data	Numeric data	Date data	Binary data
It has alphabets, digits, symbols.	It has digits, decimal points, + and -	It has day value, month value and year value	It is supporting images, logos, digital signatures, audio files and video files.
• CHAR (size) ✓ to store fixed length values ✓ E.g.: pan card no, Aadhar card no. • VARCHAR (size) ✓ to store variable length values ✓ E.g.: names, descriptions ✓ 11g max size – 4000 bytes	• NUMBER (p) ✓ To store integers ✓ p – precision max no. of digits in the value • NUMBER (p, s) ✓ To store integers/decimal values ✓ s – scale max no. of digits in the decimal part	• DATE ✓ Oracle date format is DD-MM-YY ✓ 24-JAN-24	• RAW() • LONGRAW() • BLOB() • CLOB()

DROP –Delete Table from Database

PURGE – Remove from Recycle bin

CREATE:

E.g.: create table myemps

(

empid number(4),

ename varchar2(20),

salary number(6),

desg varchar2(10),

joindt date

);

INSERT:

- Used to insert new records into a table.

Syntax:

INSERT INTO tblname VALUES(value1, value2, . . .);

- No. of supplied values and no. of columns in the table should be same
- Value datatypes and column datatypes should similar.
- Character values and date values should be in single quotations.
- Missed values are inserted as NULL values.

Ex-1

insert into myemps values(1010,'vijay',50000,'developer','20-jun-2023');

insert into myemps values(1001,'keerthana',55000,'developer','14-jan-2023');

Ex-2 INSERTING LIMITED VALUES

insert into myemps values(NULL,'venkat',45000,'developer',NULL);

insert into myemps values(1122,'nancy',45000,'manager',NULL);

insert into myemps(ename,desg) values('sathya','admin');

insert into myemps(empid,ename) values(1221,'sravani');

DRL/DQL COMMAND: -

SELECT

It is useful to fetch/ display/ retrieve data from a table or view.

Syntax:

- To select data from all columns

SELECT * FROM TBLNAME;

- To select data from specific columns

SELECT colname, colname, . . FROM tblname;

Q: Get all employee names?

SELECT ENAME FROM MYEMPS;

Q: Display all employee details?

SELECT * FROM MYEMPS;

Q: Get empnames and their salaries?

SELECT ENAME, SALARY FROM MYEMPS;

Day – 4:

E.g.:

The below statement is printing list of all table names

SELECT * FROM TAB;

Q. What is TAB?

TAB means table space [memory reserved for current user account]

E.g.: How to display the structure of the table?

Structure means column names, datatypes and sizes.

DESCRIBE TBLNAME; (OR)

DESC TBLNAME;

E.g: DESCRIBE myemps;

Q: How to clear the screen?

CL SCR;

Q: How to retrieve data from oracle tables?

SELECT * FROM EMP;

EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7369	SMITH	CLERK	7902	Wed Dec 17 1980 00:00:00 GMT+0530 (India Standard Time)	800	null	20
7499	ALLEN	SALESMAN	7698	Fri Feb 20 1981 00:00:00 GMT+0530 (India Standard Time)	1600	300	30
7521	WARD	SALESMAN	7698	Sun Feb 22 1981 00:00:00 GMT+0530 (India Standard Time)	1250	500	30
7566	JONES	MANAGER	7839	Thu Apr 02 1981 00:00:00 GMT+0530 (India Standard Time)	2975	null	20
7654	MARTIN	SALESMAN	7698	Mon Sep 28 1981 00:00:00 GMT+0530 (India Standard Time)	1250	1400	30
7698	BLAKE	MANAGER	7839	Fri May 01 1981 00:00:00 GMT+0530 (India Standard Time)	2850	null	30
7782	CLARK	MANAGER	7839	Tue Jun 09 1981 00:00:00 GMT+0530 (India Standard Time)	2450	null	10
7788	SCOTT	ANALYST	7566	Sun Apr 19 1987 00:00:00 GMT+0530 (India Standard Time)	3000	null	20
7839	KING	PRESIDENT	null	Tue Nov 17 1981 00:00:00 GMT+0530 (India Standard Time)	5000	null	10
7844	TURNER	SALESMAN	7698	Tue Sep 08 1981 00:00:00 GMT+0530 (India Standard Time)	1500	0	30
7876	ADAMS	CLERK	7788	Sat May 23 1987 00:00:00 GMT+0530 (India Standard Time)	1100	null	20
7900	JAMES	CLERK	7698	Thu Dec 03 1981 00:00:00 GMT+0530 (India Standard Time)	950	null	30
7902	FORD	ANALYST	7566	Thu Dec 03 1981 00:00:00 GMT+0530 (India Standard Time)	3000	null	20
7934	MILLER	CLERK	7782	Sat Jan 23 1982 00:00:00 GMT+0530 (India Standard Time)	1300	null	10

DISTINCT clause:

It will display unique values from a column or unique records from a table.

Syntax:

SELECT DISTINCT colname, colname, . . FROM tblname;

or

SELECT DISTINCT * FROM tblname;

Q. Display job values with duplicates?

SELECT JOB FROM EMP;

JOB
CLERK
SALESMAN
SALESMAN
MANAGER
SALESMAN
MANAGER
MANAGER
ANALYST
PRESIDENT
SALESMAN
CLERK
CLERK
ANALYST
CLERK

Q. Display job values without duplicates?

SELECT DISTINCT JOB FROM EMP;

JOB
CLERK
SALESMAN
MANAGER
ANALYST
PRESIDENT

Q: Display unique dept numbers?

select distinct deptno from emp;

ORDER BY clause:

It is useful to display ordered values from given column.

Syntax:

SELECT . . . FROM Tblname ORDER BY colname [desc], colname [desc], . . ;

Q: Display Salary values?

SELECT SAL FROM EMP;

SAL
800
1600
1250
2975
1250
2850
2450
3000
5000
1500
1100
950
3000
1300

Q. Display ascending order salaries?

SELECT SAL FROM EMP ORDER BY SAL;

SAL
800
950
1100
1250
1250
1300
1500
1600
2450
2850
2975
3000
3000
5000

Q: Display descending order salaries?

SELECT SAL FROM EMP ORDER BY SAL DESC;

SAL
5000
3000
3000
2975
2850
2450
1600
1500
1300
1250
1250
1100
950
800

Q: Get employee details based on deptno order?

SELECT * FROM EMP ORDER BY DEPTNO;

EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7782	CLARK	MANAGER	7839	Tue Jun 09 1981 00:00:00 GMT+0530 (India Standard Time)	2450	null	10
7839	KING	PRESIDENT	null	Tue Nov 17 1981 00:00:00 GMT+0530 (India Standard Time)	5000	null	10
7934	MILLER	CLERK	7782	Sat Jan 23 1982 00:00:00 GMT+0530 (India Standard Time)	1300	null	10
7369	SMITH	CLERK	7902	Wed Dec 17 1980 00:00:00 GMT+0530 (India Standard Time)	800	null	20
7566	JONES	MANAGER	7839	Thu Apr 02 1981 00:00:00 GMT+0530 (India Standard Time)	2975	null	20
7788	SCOTT	ANALYST	7566	Sun Apr 19 1987 00:00:00 GMT+0530 (India Standard Time)	3000	null	20
7876	ADAMS	CLERK	7788	Sat May 23 1987 00:00:00 GMT+0530 (India Standard Time)	1100	null	20
7902	FORD	ANALYST	7566	Thu Dec 03 1981 00:00:00 GMT+0530 (India Standard Time)	3000	null	20
7499	ALLEN	SALESMAN	7698	Fri Feb 20 1981 00:00:00 GMT+0530 (India Standard Time)	1600	300	30
7521	WARD	SALESMAN	7698	Sun Feb 22 1981 00:00:00 GMT+0530 (India Standard Time)	1250	500	30
7654	MARTIN	SALESMAN	7698	Mon Sep 28 1981 00:00:00 GMT+0530 (India Standard Time)	1250	1400	30
7698	BLAKE	MANAGER	7839	Fri May 01 1981 00:00:00 GMT+0530 (India Standard Time)	2850	null	30
7844	TURNER	SALESMAN	7698	Tue Sep 08 1981 00:00:00 GMT+0530 (India Standard Time)	1500	0	30
7900	JAMES	CLERK	7698	Thu Dec 03 1981 00:00:00 GMT+0530 (India Standard Time)	950	null	30

Day – 5:

OPERATORS

i. Arithmetic operators
ii. Relational operators
iii. Range operators
iv. Logical operators

1) **ARITHEMATIC OPERATORS:**
   - These are useful to calculate arithmetic calculations
   - on user data and table data.
   - + - * /

DUAL:

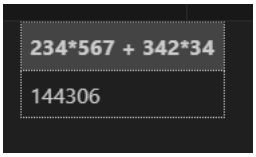
- It is a system defined table.
- It is useful to calculate constant expressions.
  - ✓ 10+20
  - ✓ 112*6
  - ✓ 145-234*567

Syntax:

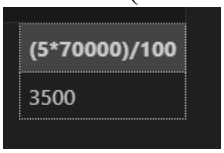
- SELECT constant expr FROM DUAL;
- SELECT 10+20 FROM DUAL;

- SELECT 1000-2000*5 FROM DUAL;

- SELECT 234*567 + 342*34 FROM DUAL;



- SELECT (5*70000)/100 FROM DUAL;



Q: Get employee names, salaries and 10% of salary as bonus and also display total salary?

SELECT ename, sal, (0.1 * sal) AS bonus, sal + (0.1 * sal) AS total_salary_with_bonus FROM emp;

ename	sal	bonus	total_salary_with_bonus
SMITH	800	80	880
ALLEN	1600	160	1760
WARD	1250	125	1375
JONES	2975	297.5	3272.5
MARTIN	1250	125	1375
BLAKE	2850	285	3135
CLARK	2450	245	2695
SCOTT	3000	300	3300
KING	5000	500	5500
TURNER	1500	150	1650
ADAMS	1100	110	1210
JAMES	950	95	1045
FORD	3000	300	3300
MILLER	1300	130	1430

2) **RELATIONAL OPERATORS:**

- < > = <= >= <> or !=
- These are useful to compare values by writing conditions.
- The result of a condition is TRUE OR FALSE [Boolean value].

WHERE clause:

- In this clause, we will write conditions on the columns.

  SELECT Query with WHERE Clause:

- It will select data only from condition satisfied records.

Syntax:

select . . . from tblname where condition;

Q: Find the name of empid 7788?

SELECT ENAME FROM EMP WHERE EMPNO=7788;

ENAME
SCOTT

Q: Find the job of empid 7839?

SELECT JOB FROM EMP WHERE EMPNO=7839;

JOB
PRESIDENT

Q: Get names of clerks?

SELECT ENAME FROM EMP WHERE JOB='CLERK';

ENAME
SMITH
ADAMS
JAMES
MILLER

Q: Identify who is woking in deptno 30?

SELECT ENAME FROM EMP WHERE DEPTNO = 30;

ENAME
ALLEN
WARD
MARTIN
BLAKE
TURNER
JAMES

Q: Find the details of employee KING?

SELECT * FROM EMP WHERE ENAME='KING';

EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7839	KING	PRESIDENT	null	Tue Nov 17 1981 00:00:00 GMT+0530 (India Standard Time)	5000	null	10

Q: Get all manager details?

SELECT * FROM EMP WHERE JOB = 'MANAGER';

EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7566	JONES	MANAGER	7839	Thu Apr 02 1981 00:00:00 GMT+0530 (India Standard Time)	2975	null	20
7698	BLAKE	MANAGER	7839	Fri May 01 1981 00:00:00 GMT+0530 (India Standard Time)	2850	null	30
7782	CLARK	MANAGER	7839	Tue Jun 09 1981 00:00:00 GMT+0530 (India Standard Time)	2450	null	10

3) RANGE OPERATORS

i. BETWEEN NOT BETWEEN
ii. IN NOT IN
iii. IS NULL IS NOT NULL
iv. LIKE NOT LIKE

i. BETWEEN:

- Used to write a condition based on range of values.

Syntax:

select . . . from tblname where colname BETWEEN begin_value AND end_value;

Q: display employee details with min salary 2000 and max salary 3000?

SELECT * FROM EMP WHERE SAL BETWEEN 2000 AND 3000;

EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7566	JONES	MANAGER	7839	Thu Apr 02 1981 00:00:00 GMT+0530 (India Standard Time)	2975	null	20
7698	BLAKE	MANAGER	7839	Fri May 01 1981 00:00:00 GMT+0530 (India Standard Time)	2850	null	30
7782	CLARK	MANAGER	7839	Tue Jun 09 1981 00:00:00 GMT+0530 (India Standard Time)	2450	null	10
7788	SCOTT	ANALYST	7566	Sun Apr 19 1987 00:00:00 GMT+0530 (India Standard Time)	3000	null	20
7902	FORD	ANALYST	7566	Thu Dec 03 1981 00:00:00 GMT+0530 (India Standard Time)	3000	null	20

Q: get employee details with salary below 1000 and above 3000 ?

SELECT * FROM EMP WHERE SAL NOT BETWEEN 1000 AND 3000;

EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7369	SMITH	CLERK	7902	Wed Dec 17 1980 00:00:00 GMT+0530 (India Standard Time)	800	null	20
7839	KING	PRESIDENT	null	Tue Nov 17 1981 00:00:00 GMT+0530 (India Standard Time)	5000	null	10
7900	JAMES	CLERK	7698	Thu Dec 03 1981 00:00:00 GMT+0530 (India Standard Time)	950	null	30

ii. IN:

- Used to search multiple values in a column.

Syntax:

select . . . from tblname where colname in(value, value, . .);

Q: Get all managers and clerks details?

select * from emp where job in('MANAGER','CLERK');

EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7369	SMITH	CLERK	7902	Wed Dec 17 1980 00:00:00 GMT+0530 (India Standard Time)	800	null	20
7566	JONES	MANAGER	7839	Thu Apr 02 1981 00:00:00 GMT+0530 (India Standard Time)	2975	null	20
7698	BLAKE	MANAGER	7839	Fri May 01 1981 00:00:00 GMT+0530 (India Standard Time)	2850	null	30
7782	CLARK	MANAGER	7839	Tue Jun 09 1981 00:00:00 GMT+0530 (India Standard Time)	2450	null	10
7876	ADAMS	CLERK	7788	Sat May 23 1987 00:00:00 GMT+0530 (India Standard Time)	1100	null	20
7900	JAMES	CLERK	7698	Thu Dec 03 1981 00:00:00 GMT+0530 (India Standard Time)	950	null	30
7934	MILLER	CLERK	7782	Sat Jan 23 1982 00:00:00 GMT+0530 (India Standard Time)	1300	null	10

Q: Get the details of tv and ac?

SELECT * FROM product WHERE pname IN ('tv', 'ac');

pid	pname	price	mfgdt	warranty	cmpid
p1	tv	50000	Wed Oct 12 2022 00:00:00 GMT+0530 (India Standard Time)	3 years	cmp1
p22	ac	45000	Mon Dec 26 2022 00:00:00 GMT+0530 (India Standard Time)	10 years	cmp4
p5	ac	40000	Sun Jan 01 2023 00:00:00 GMT+0530 (India Standard Time)	5 years	cmp2

Day – 6:

iii. IS NULL

used to search for null values in a column.

Syntax:

SELECT . . . FROM tblname WHERE COLNAME IS NULL;

Q: Find out employee details if the employee not working under any manager?

SELECT * FROM EMP WHERE MGR IS NULL;

EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7839	KING	PRESIDENT	null	Tue Nov 17 1981 00:00:00 GMT+0530 (India Standard Time)	5000	null	10

Q: Find out employees who is not working under any dept?

SELECT * FROM EMP WHERE DEPTNO IS NULL;

No data

Q: Find out employee details if the employee is working under any one dept?

SELECT * FROM EMP WHERE DEPTNO IS NOT NULL;

EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7369	SMITH	CLERK	7902	Wed Dec 17 1980 00:00:00 GMT+0530 (India Standard Time)	800	null	20
7499	ALLEN	SALESMAN	7698	Fri Feb 20 1981 00:00:00 GMT+0530 (India Standard Time)	1600	300	30
7521	WARD	SALESMAN	7698	Sun Feb 22 1981 00:00:00 GMT+0530 (India Standard Time)	1250	500	30
7566	JONES	MANAGER	7839	Thu Apr 02 1981 00:00:00 GMT+0530 (India Standard Time)	2975	null	20
7654	MARTIN	SALESMAN	7698	Mon Sep 28 1981 00:00:00 GMT+0530 (India Standard Time)	1250	1400	30
7698	BLAKE	MANAGER	7839	Fri May 01 1981 00:00:00 GMT+0530 (India Standard Time)	2850	null	30
7782	CLARK	MANAGER	7839	Tue Jun 09 1981 00:00:00 GMT+0530 (India Standard Time)	2450	null	10
7788	SCOTT	ANALYST	7566	Sun Apr 19 1987 00:00:00 GMT+0530 (India Standard Time)	3000	null	20
7839	KING	PRESIDENT	null	Tue Nov 17 1981 00:00:00 GMT+0530 (India Standard Time)	5000	null	10
7844	TURNER	SALESMAN	7698	Tue Sep 08 1981 00:00:00 GMT+0530 (India Standard Time)	1500	0	30
7876	ADAMS	CLERK	7788	Sat May 23 1987 00:00:00 GMT+0530 (India Standard Time)	1100	null	20
7900	JAMES	CLERK	7698	Thu Dec 03 1981 00:00:00 GMT+0530 (India Standard Time)	950	null	30
7902	FORD	ANALYST	7566	Thu Dec 03 1981 00:00:00 GMT+0530 (India Standard Time)	3000	null	20
7934	MILLER	CLERK	7782	Sat Jan 23 1982 00:00:00 GMT+0530 (India Standard Time)	1300	null	10

iv. LIKE

- Used to search for pattern.
- Pattern means a group of characters/digits/symbols.
- Like operator is using 2 special symbols, to represent pattern.
- _ (underscore) represents any one character.
- % (percentile) represents any number of characters.

Syntax:

SELECT . . . FROM TBLNAME WHERE COLNAME LIKE'pattern';

Q: Find out employee names with 4 characters?

SELECT ENAME FROM EMP WHERE ENAME LIKE '____';

ENAME
WARD
KING
FORD

Q: Find out employee names beginning with character " S " ?

SELECT ENAME FROM EMP WHERE ENAME LIKE 'S%';

ENAME
SMITH
SCOTT

Q: Find out employee names beginning and ending with character " S " ?

SELECT ENAME FROM EMP WHERE ENAME LIKE 'S%S';

No data

Q: Get employee names except 5 character length names?

SELECT ENAME FROM EMP WHERE ENAME NOT LIKE '_____';

ENAME
WARD
MARTIN
KING
TURNER
FORD
MILLER

4) LOGICAL OPERATORS

Used to write multiple conditions on multiple columns in the where clause.

i. AND:

It returns true if all conditions are satisfied in a record.

ii. OR

It returns true if at least one condition satisfied in a record.

Syntax:

SELECT . . . FROM TBLNAME WHERE COND1 AND/OR COND2 AND/OR COND3. . .;

Q: Find out all managers?

SELECT * FROM EMP WHERE JOB = 'MANAGER';

EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7566	JONES	MANAGER	7839	Thu Apr 02 1981 00:00:00 GMT+0530 (India Standard Time)	2975	null	20
7698	BLAKE	MANAGER	7839	Fri May 01 1981 00:00:00 GMT+0530 (India Standard Time)	2850	null	30
7782	CLARK	MANAGER	7839	Tue Jun 09 1981 00:00:00 GMT+0530 (India Standard Time)	2450	null	10

Q: Get clerk details who is working under deptno 30?

SELECT * FROM EMP WHERE JOB = 'MANAGER' AND SAL >= 2500;

EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7566	JONES	MANAGER	7839	Thu Apr 02 1981 00:00:00 GMT+0530 (India Standard Time)	2975	null	20
7698	BLAKE	MANAGER	7839	Fri May 01 1981 00:00:00 GMT+0530 (India Standard Time)	2850	null	30

Q: Get clerk details who is working under deptno 30?

SELECT * FROM EMP WHERE JOB = 'CLERK' AND DEPTNO = 30;

EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7900	JAMES	CLERK	7698	Thu Dec 03 1981 00:00:00 GMT+0530 (India Standard Time)	950	null	30

Q: Get employe names with 4 characters and 6-character length employee names?

SELECT ENAME FROM EMP WHERE ENAME LIKE '____' OR ENAME LIKE '_____';

ENAME
WARD
MARTIN
KING
TURNER
FORD
MILLER

Day – 7:

DML COMMANDS - Data manipulation language commands

INSERT UPDATE DELETE

UPDATE:

- Used to change old values with new values.

Syntax:

UPDATE TBL

SET colname = value, colname = value,

WHERE condition;

Q: Change smith salary as 1800?

UPDATE EMP SET SAL=1800 WHERE ENAME='SMITH';

Q: Increase all employee salaries with 10%?

UPDATE EMP SET SAL= SAL + (10*SAL)/100;

EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7369	SMITH	CLERK	7902	Wed Dec 17 1980 00:00:00 GMT+0530 (India Standard Time)	1980	null	20
7499	ALLEN	SALESMAN	7698	Fri Feb 20 1981 00:00:00 GMT+0530 (India Standard Time)	1760	300	30
7521	WARD	SALESMAN	7698	Sun Feb 22 1981 00:00:00 GMT+0530 (India Standard Time)	1375	500	30
7566	JONES	MANAGER	7839	Thu Apr 02 1981 00:00:00 GMT+0530 (India Standard Time)	3272.5	null	20
7654	MARTIN	SALESMAN	7698	Mon Sep 28 1981 00:00:00 GMT+0530 (India Standard Time)	1375	1400	30
7698	BLAKE	MANAGER	7839	Fri May 01 1981 00:00:00 GMT+0530 (India Standard Time)	3135	null	30
7782	CLARK	MANAGER	7839	Tue Jun 09 1981 00:00:00 GMT+0530 (India Standard Time)	2695	null	10
7788	SCOTT	ANALYST	7566	Sun Apr 19 1987 00:00:00 GMT+0530 (India Standard Time)	3300	null	20
7839	KING	PRESIDENT	null	Tue Nov 17 1981 00:00:00 GMT+0530 (India Standard Time)	5500	null	10
7844	TURNER	SALESMAN	7698	Tue Sep 08 1981 00:00:00 GMT+0530 (India Standard Time)	1650	0	30
7876	ADAMS	CLERK	7788	Sat May 23 1987 00:00:00 GMT+0530 (India Standard Time)	1210	null	20
7900	JAMES	CLERK	7698	Thu Dec 03 1981 00:00:00 GMT+0530 (India Standard Time)	1045	null	30
7902	FORD	ANALYST	7566	Thu Dec 03 1981 00:00:00 GMT+0530 (India Standard Time)	3300	null	20
7934	MILLER	CLERK	7782	Sat Jan 23 1982 00:00:00 GMT+0530 (India Standard Time)	1430	null	10

Q: Delete HIREDATE and SAL of ENAME KING?

```
UPDATE EMP
SET HIREDATE = NULL,
   SAL = NULL
WHERE ENAME = 'KING';
```

EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7369	SMITH	CLERK	7902	Wed Dec 17 1980 00:00:00 GMT+0530 (India Standard Time)	1980	null	20
7499	ALLEN	SALESMAN	7698	Fri Feb 20 1981 00:00:00 GMT+0530 (India Standard Time)	1760	300	30
7521	WARD	SALESMAN	7698	Sun Feb 22 1981 00:00:00 GMT+0530 (India Standard Time)	1375	500	30
7566	JONES	MANAGER	7839	Thu Apr 02 1981 00:00:00 GMT+0530 (India Standard Time)	3272.5	null	20
7654	MARTIN	SALESMAN	7698	Mon Sep 28 1981 00:00:00 GMT+0530 (India Standard Time)	1375	1400	30
7698	BLAKE	MANAGER	7839	Fri May 01 1981 00:00:00 GMT+0530 (India Standard Time)	3135	null	30
7782	CLARK	MANAGER	7839	Tue Jun 09 1981 00:00:00 GMT+0530 (India Standard Time)	2695	null	10
7788	SCOTT	ANALYST	7566	Sun Apr 19 1987 00:00:00 GMT+0530 (India Standard Time)	3300	null	20
7839	KING	PRESIDENT	null	null	null	null	10
7844	TURNER	SALESMAN	7698	Tue Sep 08 1981 00:00:00 GMT+0530 (India Standard Time)	1650	0	30
7876	ADAMS	CLERK	7788	Sat May 23 1987 00:00:00 GMT+0530 (India Standard Time)	1210	null	20
7900	JAMES	CLERK	7698	Thu Dec 03 1981 00:00:00 GMT+0530 (India Standard Time)	1045	null	30
7902	FORD	ANALYST	7566	Thu Dec 03 1981 00:00:00 GMT+0530 (India Standard Time)	3300	null	20
7934	MILLER	CLERK	7782	Sat Jan 23 1982 00:00:00 GMT+0530 (India Standard Time)	1430	null	10

DELETE:

- Used to delete records from a table.

- By default, it is deleting all records.
- To delete specific records, use conditions.

Syntax:

DELETE FROM tblname WHERE condition;

Q: Delete the details of employee smith?

DELETE FROM EMP WHERE ENAME = 'SMITH';

EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7499	ALLEN	SALESMAN	7698	Fri Feb 20 1981 00:00:00 GMT+0530 (India Standard Time)	1760	300	30
7521	WARD	SALESMAN	7698	Sun Feb 22 1981 00:00:00 GMT+0530 (India Standard Time)	1375	500	30
7566	JONES	MANAGER	7839	Thu Apr 02 1981 00:00:00 GMT+0530 (India Standard Time)	3272.5	null	20
7654	MARTIN	SALESMAN	7698	Mon Sep 28 1981 00:00:00 GMT+0530 (India Standard Time)	1375	1400	30
7698	BLAKE	MANAGER	7839	Fri May 01 1981 00:00:00 GMT+0530 (India Standard Time)	3135	null	30
7782	CLARK	MANAGER	7839	Tue Jun 09 1981 00:00:00 GMT+0530 (India Standard Time)	2695	null	10
7788	SCOTT	ANALYST	7566	Sun Apr 19 1987 00:00:00 GMT+0530 (India Standard Time)	3300	null	20
7839	KING	PRESIDENT	null	null	null	null	10
7844	TURNER	SALESMAN	7698	Tue Sep 08 1981 00:00:00 GMT+0530 (India Standard Time)	1650	0	30
7876	ADAMS	CLERK	7788	Sat May 23 1987 00:00:00 GMT+0530 (India Standard Time)	1210	null	20
7900	JAMES	CLERK	7698	Thu Dec 03 1981 00:00:00 GMT+0530 (India Standard Time)	1045	null	30
7902	FORD	ANALYST	7566	Thu Dec 03 1981 00:00:00 GMT+0530 (India Standard Time)	3300	null	20
7934	MILLER	CLERK	7782	Sat Jan 23 1982 00:00:00 GMT+0530 (India Standard Time)	1430	null	10

Q: DELETE ALL MANAGER DETAILS?

DELETE FROM EMP WHERE JOB = 'MANAGER';

EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7499	ALLEN	SALESMAN	7698	Fri Feb 20 1981 00:00:00 GMT+0530 (India Standard Time)	1760	300	30
7521	WARD	SALESMAN	7698	Sun Feb 22 1981 00:00:00 GMT+0530 (India Standard Time)	1375	500	30
7654	MARTIN	SALESMAN	7698	Mon Sep 28 1981 00:00:00 GMT+0530 (India Standard Time)	1375	1400	30
7788	SCOTT	ANALYST	7566	Sun Apr 19 1987 00:00:00 GMT+0530 (India Standard Time)	3300	null	20
7839	KING	PRESIDENT	null	null	null	null	10
7844	TURNER	SALESMAN	7698	Tue Sep 08 1981 00:00:00 GMT+0530 (India Standard Time)	1650	0	30
7876	ADAMS	CLERK	7788	Sat May 23 1987 00:00:00 GMT+0530 (India Standard Time)	1210	null	20
7900	JAMES	CLERK	7698	Thu Dec 03 1981 00:00:00 GMT+0530 (India Standard Time)	1045	null	30
7902	FORD	ANALYST	7566	Thu Dec 03 1981 00:00:00 GMT+0530 (India Standard Time)	3300	null	20
7934	MILLER	CLERK	7782	Sat Jan 23 1982 00:00:00 GMT+0530 (India Standard Time)	1430	null	10

TCL COMMANDS - Transaction Control Language commands

COMMIT ROLLBACK SAVEPOINT

- Used to control the transactions (DML commands).

COMMIT:

It will make transaction as permanent.

ROLLBACK:

It will cancel uncommitted transactions.

SAVEPOINT:

In between transactions we can define save point.

```
--created a new table for TCL Commands
CREATE TABLE student (
    rno INT(2),
    sname VARCHAR(10)
);
INSERT INTO student VALUES (1, 'harini');
INSERT INTO student VALUES (2, 'sathya');
INSERT INTO student VALUES (3, 'dinesh');
SELECT * FROM student;
DELETE FROM student;
ROLLBACK;
COMMIT;
```

Day – 8:

DDL COMMANDS - Data Definition Language

CREATE ALTER DROP TRUNCATE RENAME

RENAME:

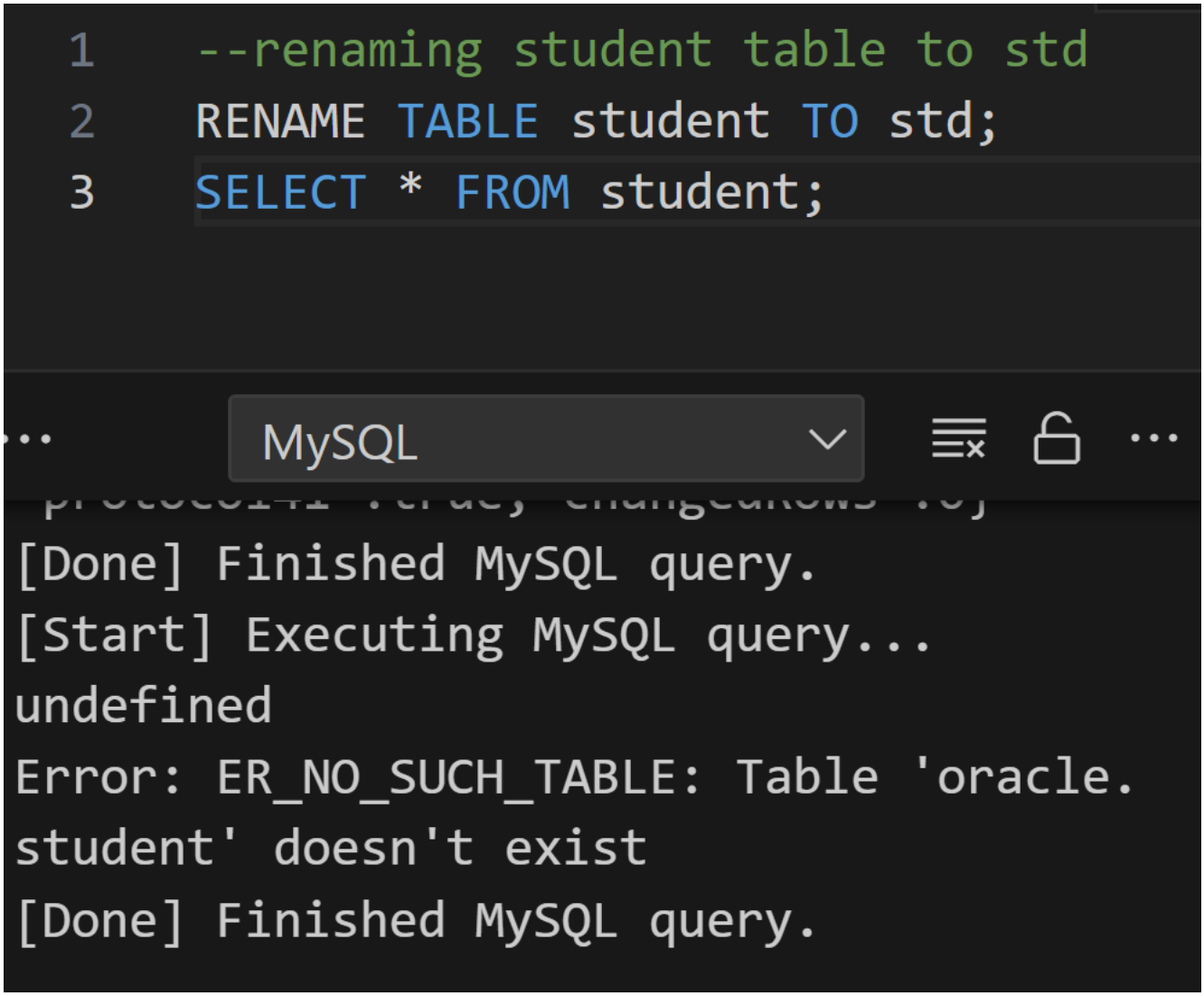
- Used to change the table name.

Syntax:

RENAME old_tbl_name TO new_tbl_name;

Q: How to rename student table into std?

RENAME TABLE student TO std;



TRUNCATE:

- Used to delete all records permanently.

Syntax:

TRUNCATE TABLE tblname;

Q: Delete all records from std table permanently?

TRUNCATE TABLE std;

```
--delete data permanently
TRUNCATE TABLE std;
SELECT * FROM std;
```

Note:

After delete and truncate commands, we can see structure of the table.

DROP:

- Used to delete the table [date + structure].

Syntax:

DROP TABLE tblname;

Q: Delete std table?

DROP TABLE std;

```
--delete table
DROP TABLE std;
```

```
--renaming student table to std
1   --renaming student t
2   RENAME TABLE student
3   SELECT * FROM studer
4
5   DELETE FROM std;
6   SELECT * FROM std;
```

Results

No data

ALTER:

- Used to change structure of the table as follows.

rno	sname	gender
1	harini	F
2	sathya	M
3	dinesh	M

i. By adding a column

alter table tblname

ADD

(

colname data type(size),

colname datatype(size), . .

);

Q: Add phno column in student table?

ALTER TABLE student

ADD COLUMN phno INT(10);

rno	sname	gender	phno
1	harini	F	null
2	sathya	M	null
3	dinesh	M	null

ii. By deleting a column

alter table tblname

drop column colname;

Q: Delete gender column from student table?

ALTER TABLE student

DROP COLUMN gender;

rno	sname	phno
1	harini	null
2	sathya	null
3	dinesh	null

iii. By changing column name

alter table tblname

RENAME column old_col_name TO new_col_name;

Q: How to change column name from phno to contact_no using alter command?

ALTER TABLE student

RENAME COLUMN phno TO contact_no;

rno	sname	contact_no
1	harini	null
2	sathya	null
3	dinesh	null

iv. Change table name

alter table tblname RENAME TO new_tbl_name;

Q: Change table name from student to stdinfo?

ALTER TABLE student

RENAME TO stdinfo;

```
Error: ER_NO_SUCH_TABLE: Table 'oracle.student' doesn't exist
[Done] Finished MySQL query.
```

v. Change data type/ size of a column

alter table tblname

MODIFY colname new_datatype(new_size);

Q: How to change size of contact_no column?

ALTER TABLE stdinfo

MODIFY COLUMN contact_no CHAR(14);

rno	sname	contact_no
1	harini	null
2	sathya	null
3	dinesh	null

DCL COMMANDS - Data Control Language

- Used to control any user activities on database objects.
- Only DBA [data base administrator] control the users.

GRANT REVOKE

GRANT:

- Used to give the permission.

Syntax:

GRANT privilage_list ON dbname.username.objectname TO dbname.username;

REVOKE:

- Used to cancel the permissions.

REVOKE privilage_list ON dbname.username.objectname FROM dbname.username;

Day – 9:

Data Integrity Constraints or Constraints:

- Constraints are known as set of rules.
- Constraints are useful to control invalid data into the tables.
- Constraints are divided into 3 categories.

I. Key Constraints
   a. UNIQUE NOT NULL PRIMARY KEY

II. Domain constraints
   a. CHECK

III. Referential Integrity Constraints

REFERENCES

i. Key Constraints:

a) UNIQUE--don't allow duplicate values into a column.
Ex: phno INT(10) UNIQUE

b) NOT NULL-- don't allow null values into a column.
Ex: cname VARCHAR(10) NOT NULL

c) PRIMARY KEY-- don't allow duplicates and don't allow null values.
Ex: empid INT(3) PRIMARY KEY

Q: Write a query to create student table with columns RNO, SNAME, COURSE, FEE and PHNO along with constraints PK, NN, NN, NN and UK constraints respectively?

```
--Key Constraints
CREATE TABLE student1 (
    rno INT(3) PRIMARY KEY,
    sname VARCHAR(10) NOT NULL,
    course VARCHAR(10) NOT NULL,
    fee INT(5) NOT NULL,
    phno BIGINT UNIQUE
);

insert into student1 values(1,'a','oracle',5000,9800198001);
insert into student1 values(2,'x','java',1000,9800198002);
insert into student1 values(3,'b','welcome',1000,7897897899);
insert into student1 values(4,'krish','sap',99000,9800198003);
insert into student1 values(5,'sathya','sql',9000,12345123456);
```

Note: Even after key constraints, still the above table is accepting some invalid values. We can control these values, by using DOMAIN constraints.

ii. Domain Constraints:

- used to define conditions on the columns.
- The name of domain constraint is CHECK.

Q: Write a query to create student2 table with columns RNO, SNAME, COURSE, FEE and PHNO along with constraints PK, NN, NN, NN and UK constraints respectively. And also follow below rules?

- ✓ rno between 1 and 999
- ✓ valid courses are oracle and java
- ✓ min fee 5000 and max fee 10000
- ✓ phno length is 10 digits
- ✓ phno is begining with 6/7/8/9

```
--Domain Constraints
CREATE TABLE student2 (
    rno INT(3) PRIMARY KEY,
    sname VARCHAR(10) NOT NULL,
    course VARCHAR(10) NOT NULL,
    fee INT(5) NOT NULL,
    phno BIGINT(10) UNIQUE,
    CHECK (rno BETWEEN 1 AND 999),
    CHECK (course IN ('oracle', 'java')),
    CHECK (fee BETWEEN 5000 AND 10000),
    CHECK (LENGTH(phno) = 10),
    CHECK (phno LIKE '6%' OR phno LIKE '7%' OR phno LIKE '8%' OR phno LIKE '9%')
);

insert into student2 values(1,'a','oracle',5000,9800198001);
insert into student2 values(-10,'uday','java',6000,9879879871);
insert into student2 values(20,'deva','sap',8000,8908908902);
insert into student2 values(20,'deva','oracle',8000,8908908902);
insert into student2 values(2,'vahini','oracle',10001,null);
insert into student2 values(6,'swathi','java',7000,7896785679);
insert into student2 values(8,'isha','java',9000,5678956789);
insert into student2 values(8,'isha','java',9000,6678956789);

select * from student2;
```

Day – 10:

iii. Referential Integrity Constraint:

- It is useful to define relation between tables.
- Relation is defined by using parent table primary key, we can define foreign key column in the child table.

REFERENCES

- Used to define a column as foreign key column.

Syntax:

colname datatype(size) REFERENCES parent_tbl(pk_colname)

OR

colname datatype(size),

constraint const_name FOREIGN KEY (colname) REFERENCES parent_tbl(pk_colname)

Q: What is foreign key column

- Foreign key column is defined from primary key column.
- It will accept values from primey key column.
- It also contains duplicates and null values.

```
--creating company and product tables
CREATE TABLE company1 (
    cmpid VARCHAR(10) PRIMARY KEY,
    cmpname VARCHAR(20) NOT NULL,
    address VARCHAR(15) NOT NULL
);

INSERT INTO company1 VALUES ('cmp1', 'tata', 'india');
INSERT INTO company1 VALUES ('cmp2', 'sony', 'japan');
INSERT INTO company1 VALUES ('cmp3', 'wipro', 'india');
INSERT INTO company1 VALUES ('cmp4', 'samsung', 'south korea');

CREATE TABLE product1 (
    pid VARCHAR(5) PRIMARY KEY,
    pname VARCHAR(14) NOT NULL,
    price DECIMAL(8,2) NOT NULL,
    cmpid VARCHAR(10),
    CONSTRAINT FK_cmpid_Product1 FOREIGN KEY (cmpid) REFERENCES company1(cmpid)
);

INSERT INTO product1 VALUES ('p1', 'tv', 65000, 'cmp2');
INSERT INTO product1 VALUES ('p2', 'shampoo', 650, 'cmp3');
INSERT INTO product1 VALUES ('p3', 'speakers', 15000, 'cmp2');
INSERT INTO product1 VALUES ('p4', 'led tv', 50000, 'cmp4');
INSERT INTO product1 VALUES ('p5', 'ac', 42000, 'cmp1');
INSERT INTO product1 VALUES ('p6', 'water filter', 9500, 'cmp1');
```

DEFAULT Constraint:

- Used to define any column with fixed value.
- We will not enter any value into default column.

- The default column is automatically populated with default value.

COLNAME DATATYPE(SIZE) DEFAULT ' value ';

SEQUENCE:

- Used to generate sequential integers (primary key values).

```
create sequence seqname
start with value
increment by value;
```

Q: How to access sequence values?

```
select  seqname.CURRVAL from dual; [ current value ]
select  seqname.NEXTVAL from dual; [ next value ]
```

Ex:

```
create table customer1
(
cid      number(7) primary key,
cname    varchar2(10) not null,
phno     number(10) unique not null,
panno    char(10) unique,
brcode   char(7) default '05254',
ifscode  char(11) default 'SBIN0005254'
);
create sequence custid
start with 102001
increment by 1;
insert into customer1(cid, cname,phno,panno) values
(custid.nextval,'ajay',9800198001,'uhgt0203ju');
insert into customer1(cid, cname,phno,panno) values
(custid.nextval,'swathi',9866198661,'htre2945mn');
insert into customer1(cid, cname,phno,panno) values
(custid.nextval,'uday',9867598567,'ugde7621bc');
```

Day – 11:

JOINS

- Used to display data from multiple tables.
- Joins are 4 types

1) CROSS JOIN
2) EQUI JOIN / INNER JOIN
3) SELF JOIN
4) OUTER JOINS
   i. Left outer join
   ii. Right outer join
   iii. Full outer join

1) CROSS JOIN:

- It is also known as cartesian product.
- It will display all possible combinations.
- Each record/ value from first table is mapping with
- all records in the second table.

SYNTAX:

select . . . from t1, t2, . . .;

or

select . . . from tbl alias1, t2 alias2, . . .;

Note: alias name is nothing but temporary short name for the table.

Q: Display product details and company details?

select * from product, company;

or

select p.*, c.* from product p, company c;

Example:

SELECT P.*, C.*

FROM PRODUCT P

JOIN COMPANY C ON P. CMPID = C. CMPID;

pid	pname	price	mfgdt	warranty	cmpid	cmpname	country
p1	tv	50000	Wed Oct 12 2022 00:00:00 GMT+0530 (India Standard Time)	3 years	cmp1	sony	japan
p25	oven	15000	Sat Feb 25 2023 00:00:00 GMT+0530 (India Standard Time)	4 years	cmp1	sony	japan
p3	oled tv	99000	Mon Dec 19 2022 00:00:00 GMT+0530 (India Standard Time)	3 years	cmp1	sony	japan
p2	water filter	12000	Thu Oct 20 2022 00:00:00 GMT+0530 (India Standard Time)	2 years	cmp2	tata	india
p5	ac	40000	Sun Jan 01 2023 00:00:00 GMT+0530 (India Standard Time)	5 years	cmp2	tata	india
p11	soap	68	Sun Apr 23 2023 00:00:00 GMT+0530 (India Standard Time)	6 months	cmp3	wipro	india
p20	baby shampoo	345	Wed May 24 2023 00:00:00 GMT+0530 (India Standard Time)	1 year	cmp3	wipro	india
p10	bt speakers	25000	Sat Nov 12 2022 00:00:00 GMT+0530 (India Standard Time)	2 years	cmp4	samsung	south korea
p15	laptop	65000	Fri Mar 10 2023 00:00:00 GMT+0530 (India Standard Time)	1 year	cmp4	samsung	south korea
p22	ac	45000	Mon Dec 26 2022 00:00:00 GMT+0530 (India Standard Time)	10 years	cmp4	samsung	south korea

Note:

Cross join is printing invalid combinations also. We can eliminate invalid combinations by using Equi join.

2) EQUI JOIN:

- It will display only data from matched records from both tables.
- Matched data will be found based on join condition.
- Writing a condition on common column is known as join condition.

SYNTAX:

SELECT . . . FROM T1, T2, . . .

WHERE T1.COL = T2.COL;

Q: Display product name and its company name?

```
SELECT p.pname, c.cmpname
FROM product p
JOIN company c ON p.cmpid = c.cmpid;
```

pname	cmpname
tv	sony
oven	sony
oled tv	sony
water filter	tata
ac	tata
soap	wipro
baby shampoo	wipro
bt speakers	samsung
laptop	samsung
ac	samsung

Q: Display tv information along with company name and mfg country?

SELECT p.pname, p.price, c.cmpname, c.country

FROM product p, company c

WHERE p.pname LIKE '%tv%'

AND p.cmpid = c.cmpid;

pname	price	cmpname	country
tv	50000	sony	japan
oled tv	99000	sony	japan

Q: Display employee name, salary, desg and his dept name and working location?

SELECT e.ename, e.sal, e.job, d.dname, d.loc AS working_at

FROM emp e, dept d

WHERE e.deptno = d.deptno;

ename	sal	job	dname	working_at
KING	null	PRESIDENT	ACCOUNTING	NEW YORK
MILLER	1430	CLERK	ACCOUNTING	NEW YORK
SCOTT	3300	ANALYST	RESEARCH	DALLAS
ADAMS	1210	CLERK	RESEARCH	DALLAS
FORD	3300	ANALYST	RESEARCH	DALLAS
ALLEN	1760	SALESMAN	SALES	CHICAGO
WARD	1375	SALESMAN	SALES	CHICAGO
MARTIN	1375	SALESMAN	SALES	CHICAGO
TURNER	1650	SALESMAN	SALES	CHICAGO
JAMES	1045	CLERK	SALES	CHICAGO

Day – 12:

3) INNER JOIN:

- It will display only data from matched records from both tables like Equi join.
- Inner join is also working with outer joins.
- But Equi join is not working with outer joins.

Syntax:

SELECT . . . FROM t1 inner join t2

ON t1.col = t2.col

INNER JOIN T3

ON T2.COL = T3.COL;

Q: Display employee names and their dept names?

SELECT e.ename, d.dname

FROM emp e

INNER JOIN dept d ON e.deptno = d.deptno;

ename	dname
KING	ACCOUNTING
MILLER	ACCOUNTING
SCOTT	RESEARCH
ADAMS	RESEARCH
FORD	RESEARCH
ALLEN	SALES
WARD	SALES
MARTIN	SALES
TURNER	SALES
JAMES	SALES

Q: Display customer details and his order details?

SELECT c.*, o.*

FROM customers c

INNER JOIN orders o ON c.cid = o.cid;

cid	cname	phno	orderno	orderdt	qty	payment	pid
c110	uday	7890178901	10200001	Sun Jan 28 2024 00:00:00 GMT+0530 (India Standard Time)	1	65000	p15
c110	uday	7890178901	10200110	Wed Feb 07 2024 00:00:00 GMT+0530 (India Standard Time)	1	25000	p10
c101	harini	8900189001	10200111	Fri Feb 02 2024 00:00:00 GMT+0530 (India Standard Time)	1	12000	p2
c201	ajay	9800198001	10200125	Mon Feb 05 2024 00:00:00 GMT+0530 (India Standard Time)	1	50000	p1

Q: Display customer name, order no, product name and its company name?

SELECT C. CNAME, O. ORDERNO, P. PNAME, CMP.CMPNAME

FROM CUSTOMERS C

INNER JOIN ORDERS O ON C.CID = O.CID

INNER JOIN PRODUCT P ON O.PID = P.PID

INNER JOIN COMPANY CMP ON P. CMPID = CMP.CMPID;

CNAME	ORDERNO	PNAME	CMPNAME
uday	10200001	laptop	samsung
uday	10200110	bt speakers	samsung
harini	10200111	water filter	tata
ajay	10200125	tv	sony

4) SELF JOIN:

- Writing a join query based on single table.

Syntax:

SELECT A2. * FROM TBL A1, TBL A2

WHERE A1.COL = 'VALUE'

AND

A1.COL = A2.COL;

Q: Get employee details from a dept where employee smith is working?

SELECT e2.*

FROM emp e1, emp e2

WHERE e1.ename = 'SMITH' AND e1.deptno = e2.deptno;

No data

Q: Get employee details who is working like martin?

SELECT e2.*

FROM emp e1, emp e2

WHERE e1.ename = 'MARTIN' AND e1.job = e2.job;

EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
7499	ALLEN	SALESMAN	7698	Fri Feb 20 1981 00:00:00 GMT+0530 (India Standard Time)	1760	300	30
7521	WARD	SALESMAN	7698	Sun Feb 22 1981 00:00:00 GMT+0530 (India Standard Time)	1375	500	30
7654	MARTIN	SALESMAN	7698	Mon Sep 28 1981 00:00:00 GMT+0530 (India Standard Time)	1375	1400	30
7844	TURNER	SALESMAN	7698	Tue Sep 08 1981 00:00:00 GMT+0530 (India Standard Time)	1650	0	30

5) OUTER JOIN:

- It will display all records from 1 table and only matched records from other table.

Syntax:

SELECT ... from t1 outer_join_name t2

on t1.col = t2.colname;

i. Left outer join:

- Display all records from left table and only matched records from right table.

Syntax:

SELECT ... from t1 Left outer join t2

on t1.col = t2.colname;

ii. Right outer join:

- Display all records from RIGHT table and only matched records from LEFT table.

Syntax:

SELECT ... from t1 Right outer join t2

on t1.col = t2.colname;

iii. Full outer join:

- Display matched records from both tables.
- Display unmatched records from left table.
- Display unmatched records from right table.

Syntax:

SELECT ... from t1 Full outer join t2

on t1.col = t2.colname;

Q: Display customer details and his order no, date

SELECT c.*, o.orderno, o.orderdt

FROM customers c

LEFT JOIN orders o ON c.cid = o.cid;

cid	cname	phno	orderno	orderdt
c1	deva	8988089880	null	null
c10	isha	8979695949	null	null
c101	harini	8900189001	10200111	Fri Feb 02 2024 00:00:00 GMT+0530 (India Standard Time)
c110	uday	7890178901	10200110	Wed Feb 07 2024 00:00:00 GMT+0530 (India Standard Time)
c110	uday	7890178901	10200001	Sun Jan 28 2024 00:00:00 GMT+0530 (India Standard Time)
c12	vijay	null	null	null
c2	teja	8000980009	null	null
c201	ajay	9800198001	10200125	Mon Feb 05 2024 00:00:00 GMT+0530 (India Standard Time)
c3	arya	7890178902	null	null
c4	jay	null	null	null

Q: Display all registered customers. And also if any customer make an order then display his orderno and orderdt?

SELECT c.*, o.orderno, o.orderdt

FROM customers c

LEFT OUTER JOIN orders o ON c.cid = o.cid;

cid	cname	phno	orderno	orderdt
c1	deva	8988089880	null	null
c10	isha	8979695949	null	null
c101	harini	8900189001	10200111	Fri Feb 02 2024 00:00:00 GMT+0530 (India Standard Time)
c110	uday	7890178901	10200110	Wed Feb 07 2024 00:00:00 GMT+0530 (India Standard Time)
c110	uday	7890178901	10200001	Sun Jan 28 2024 00:00:00 GMT+0530 (India Standard Time)
c12	vijay	null	null	null
c2	teja	8000980009	null	null
c201	ajay	9800198001	10200125	Mon Feb 05 2024 00:00:00 GMT+0530 (India Standard Time)
c3	arya	7890178902	null	null
c4	jay	null	null	null

Day – 13:

SUB QUERIES

- Sub query is a select query in the where clause of other select query.
- Sub queries are useful to get data from 1 table based on input value from another table.

Syntax:

SELECT . . . FROM T1

WHERE colname operator (SELECT colname from T2 where colname op (SELECT . . .));

  - T1-- output tablename
  - T2-- input tablename
  - colname-- common column name.
- Sub query execution process is from inner most query to outer most query.
- Sub query types: 2

i. single row subquery:

- This sub query select data from 1 record.

ii. Multi row sub query:

- This sub query select data from multiple records.

Q: In which dept employee SMITH is working.

SELECT DNAME

FROM DEPT

WHERE DEPTNO = (SELECT DEPTNO FROM EMP WHERE ENAME = 'SMITH');

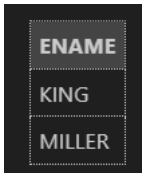
No data

Q: Get employee names from the dept ACCOUNTING

SELECT ENAME

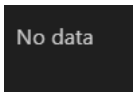
FROM EMP

```
WHERE DEPTNO = (SELECT DEPTNO FROM DEPT WHERE DNAME = 'ACCOUNTING');
```



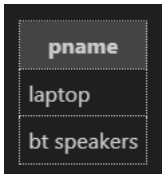
Q: Get manager details from SALES dept

```
SELECT *
FROM EMP
WHERE JOB = 'MANAGER'
AND DEPTNO = (SELECT DEPTNO FROM DEPT WHERE DNAME = 'SALES');
```



Q: Find out product names sold to customer UDAY

```
SELECT pname
FROM product
WHERE pid IN (
   SELECT pid
   FROM orders
   WHERE cid = (
      SELECT cid
      FROM customers
      WHERE cname = 'uday'
   )
);
```



SET OPERATORS:

I. UNION ALL
II. UNION
III. INTERSECT
IV. MINUS

i. UNION ALL

- display combined data from multiple similar tables along with duplicate records.

ii. UNION

- display combined data from multiple similar tables without duplicate records.

iii. INTERSECT

- display common records from multiple similar tables.

iv. MINUS

- display only records from first selection.

Syntax:

```
SELECT . . . FROM T1
SET OPERATOR
SELECT . . . FROM T2
SET OPERATOR
. . .      ;
```

Q: Get all customers information from all branches?

```
SELECT * FROM CUST_BR1
UNION ALL
SELECT * FROM CUST_BR2
UNION ALL
SELECT * FROM CUST_BR3;
```

Q: Find out common customers from first 2 branches?

```
select * from cust_br1
intersect
select * from cust_br2;
```

Q: Get only customers from br2?

```
select * from cust_br2
minus
(
select * from cust_br1
union
select * from cust_br3
);
```

Limitations:

- Each select query should contain same number of columns.

- The select list column data types should be similar in the same sequence.

Day – 14:

VIEWS:

- It is a database object like a table.
- View has logical data and dynamic data.
- View is created based on frequently using data in the table.

Syntax:

create view vwname

as

select . . . ;

Ex:

create view vwcust

as

select * from customers;

Note:

By default, we don't have permission to create a view. We should take permission from DBA

i. connect as DBA
ii. grant create view to dinesh8pm
iii. connect as dinesh
iv. create the view

Ex:

update customers set phno=7888990011 where cname='vijay';

INDEX:

- It is also database object like a table.
- Index is useful to search data as much as fast.

Note:

If the table has more than 15000 records and if you want search data based on conditions, then only create index.

Syntax:

create index idxname

on tblname(colname);

Ex:

create index idxpname

on product(pname);

ORACLE SQL FUNCTIONS:

- SQL function is a predefined program.
- It is useful to perform any one task.
- These functions are divided into 2 categories.

I. GROUP / AGGREGATE
   - Execute on set of values and display single output value.

II. SCALAR / SINGLE ROW
   - Execute on set of values and display set of output values.

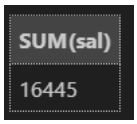
1) **AGGREGATE FUNCTIONS:**

sum(), avg(), min(), max(), count(), count(*)

1. **sum(colname)**
   - It will find sum of values in the column and print the result.

Q: Find out total salary?

SELECT SUM(sal) FROM emp;



2. **avg(colname)**
   - It will find average value from given column and display the result.

Q: Find out average salary of a manager

SELECT AVG(sal) FROM emp WHERE job = 'MANAGER';

3. **min(colname)**
   - It will find out least value from given column and display the result.

Q: Find out least salary in clerk category?

SELECT MIN(sal) FROM emp WHERE job = 'CLERK';

4. **MAX(colname)**
   - It will find highest value from given column and print the value.

Q: Find the highest salary in RESEARCH dept?

SELECT MAX(sal) FROM emp

WHERE deptno = (SELECT deptno FROM dept WHERE dname = 'RESEARCH');

MAX(sal)
3300

5. **COUNT(colname)**
    - It will find out number of existing values in the given column.

Q: Find out number of emps with commission?

SELECT COUNT(comm) FROM emp;

COUNT(comm)
4

6. **COUNT(*)**
    - It is counting number of records in the given table and print the result.

Q: Find out number of emps?

SELECT COUNT(*) FROM emp;

COUNT(*)
10

GROUP BY clause:

- Used to calculate aggregations based on column.

HAVING clause:

- Used to filter group by result.
- In this clause, we can write conditions on aggregate functions.

Syntax:

SELECT colname, colname, . . ., agg1, agg2, . .

from t1, t2, . . .

where cond1 and / or cond2. . .

GROUP BY colname, colname, . .

HAVING agg1_cond and / or agg2_cond. . .

ORDER BY colname, colname, . . .;

Q: find out number of emps from each deptno

SELECT deptno, COUNT(*) FROM emp GROUP BY deptno;

deptno	COUNT(*)
10	2
20	3
30	5

Q: Find out number of emps from each job category

SELECT job, COUNT(*) FROM emp GROUP BY job;

job	COUNT(*)
SALESMAN	4
ANALYST	2
PRESIDENT	1
CLERK	3

Q: Find the highest salary from each job category

SELECT job, MAX(sal) FROM emp GROUP BY job;

job	MAX(sal)
SALESMAN	1760
ANALYST	3300
PRESIDENT	null
CLERK	1430

Day – 15:

2) SCALAR FUNCTIONS:

1. ROUND(m,n)

- m-- input value
- n-- number of digits in decimal part
- display given value by adjusting the value with n number of decimal places.

Q: select round(2341.23356234,2) from dual;

round(2341.23356234,2)
2341.23

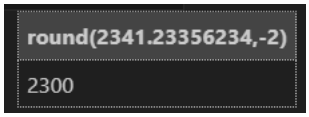
Q: select round(2341.23356234,0) from dual;

round(2341.23356234,0)
2341

Q: select round(2341.23356234,4) from dual;

round(2341.23356234,4)
2341.2336

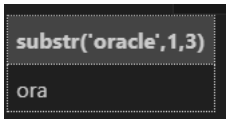
Q: select round(2341.23356234,-2) from dual;



round(2341.23356234,-2)
2300

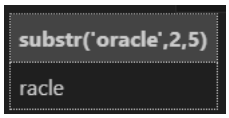
2. **substr('value',m,n)**
    - value-- input value
    - m-- begining position
    - n-- number of characters from begining position.
    - It will display substring from given string.

Q: select substr('oracle',1,3) from dual;



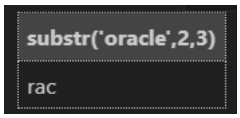
substr('oracle',1,3)
ora

Q: select substr('oracle',2,5) from dual;



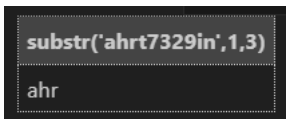
substr('oracle',2,5)
racle

Q: select substr('oracle',2,3) from dual;



substr('oracle',2,3)
rac

Q: select substr('ahrt7329in',1,3) from dual;



substr('ahrt7329in',1,3)
ahr

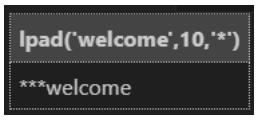
Ex: select substr('ahrt7329in',-3,3) from dual;

substr('ahrt7329in',-3,3)
9in

xxxxxxx9in

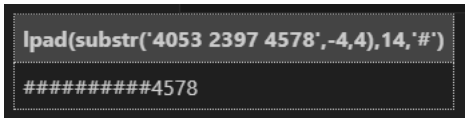
3. **lpad('value',length,'symbol') [LEFT PADDING]**
    - value -- input value
    - length -- output length
    - symbol -- masking symbol
    - It will display given value along with masking character in the left side.

Q: select lpad('welcome',10,'*') from dual;



lpad('welcome',10,'*')
***welcome

Q: select lpad(substr('4053 2397 4578',-4,4),14,'#') from dual;

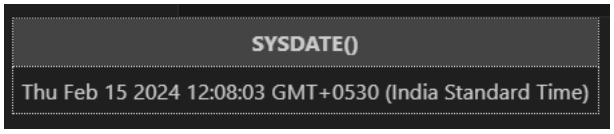


4. **rpad('value',length,'symbol') [right padding]**
   - value -- input value
   - length -- output length
   - symbol -- masking symbol
   - It will display given value along with masking character in the right side.

Q: select rpad(substr('9866872919',1,4),10,'.') from dual;

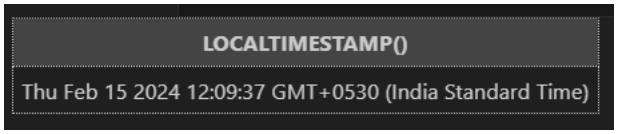
5. **SYSDATE**
   - Print system date value.

Q: SELECT SYSDATE();



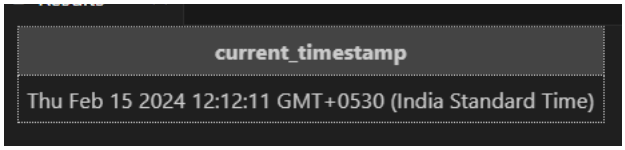
6. **localtimestamp**
   - Display system date along with time component.

Q: SELECT LOCALTIMESTAMP();



7. **current_timestamp**
   - Display system date, time and time zone also

Q: select current_timestamp from dual;



8. **to_char(datevalue,'char format')**
   - input-- date value
   - output -- character format of given date value.

Q: SELECT DATE_FORMAT(NOW(), '%W');