Amrita Vishwa Vidyapeetham, Amritapuri Department of Computer Science and Engineering

23CSE202 Database Management Systems

AIM : To familiarize SQL commands for creating tables, applying constraints, and manipulating data in a relational database.

OBJECTIVE :

1. **To create tables with primary key, foreign key, not null, default, and check constraints.**
2. **To understand how to modify tables by adding, deleting, and updating columns.**
3. **To practice basic SQL queries such as selection, insertion, deletion, and retrieval of records.**
4. **To apply referential integrity between related tables.**

Lab Assignment – 2

NAME : B . TEJA SAI CHARAN
ROLLNUMBER : AM.SC.U4CSE24271
SECTION : CSE C
DATE : 12TH SEPTEMBER 2025

Queries

1. Create the tables with suitable constraints.

   Query : CREATE TABLE department (deptno INT PRIMARY KEY,dname VARCHAR(14) NOT NULL,loc VARCHAR(20));

   Query : CREATE TABLE employee (empno INT PRIMARY KEY, ename VARCHAR(20) NOT NULL, job VARCHAR(10), mgr_id INT, hired_date DATE, basic_sal NUMERIC(6,2)

DEFAULT 1000, incentive NUMERIC(6,2) CHECK (incentive <= basic_sal), deptno INT REFERENCES department(deptno));

```
dbmslab=# \dt
          List of relations
 Schema |    Name    | Type  |  Owner
--------+------------+-------+----------
 public | department | table | postgres
 public | employee   | table | postgres
(2 rows)
```

2. Insert data in the two tables.

Query : INSERT INTO department (deptno, dname, loc) VALUES (10, 'ACCOUNTING', 'NEW YORK'), (20, 'RESEARCH', 'DALLAS'), (30, 'SALES', 'CHICAGO'), (40, 'OPERATIONS', 'BOSTON');

```
INSERT 0 4
```

Query : INSERT INTO employee (empno, ename, job, mgr_id, hired_date, basic_sal, incentive, deptno) VALUES (7369, 'SMITH', 'CLERK', 7902, '1980-12-17', 6800.00, NULL, 20),(7499, 'ALLEN', 'SALESMAN', 7698, '1981-02-20', 11600.00, 300.00, 30),(7521, 'WARD', 'SALESMAN', 7698, '1981-02-22', 11250.00, 500.00, 30),(7566, 'JONES', 'MANAGER', 7839, '1981-04-02', 22975.00, NULL, 20),(7654, 'MARTIN', 'SALESMAN', 7698, '1981-09-28', 11250.00, 1400.00, 30),(7698, 'BLAKE', 'MANAGER', 7839, '1981-05-01', 22850.00, NULL, 30),(7782, 'CLARK', 'MANAGER', 7839, '1981-06-09', 22450.00, NULL, 10),(7788, 'SCOTT', 'ANALYST', 7566, '1982-12-09', 13000.00, NULL, 20);

```
INSERT 0 8
```

3. Select all data from the DEPARTMENT table.

Query : SELECT * from department;

```
dbmslab=# select * from department ;
 deptno |   dname    |   loc
--------+------------+----------
     10 | ACCOUNTING | NEW YORK
     20 | RESEARCH   | DALLAS
     30 | SALES      | CHICAGO
     40 | OPERATIONS | BOSTON
(4 rows)
```

4. Get the details of all the employees.

Query : SELECT * from employee;

```
 empno | ename  |   job    | mgr_id | hired_date | basic_sal | incentive | deptno
-------+--------+----------+--------+------------+-----------+-----------+--------
  7369 | SMITH  | CLERK    |   7902 | 1980-12-17 |   6800.00 |           |     20
  7499 | ALLEN  | SALESMAN |   7698 | 1981-02-20 |  11600.00 |    300.00 |     30
  7521 | WARD   | SALESMAN |   7698 | 1981-02-22 |  11250.00 |    500.00 |     30
  7566 | JONES  | MANAGER  |   7839 | 1981-04-02 |  22975.00 |           |     20
  7654 | MARTIN | SALESMAN |   7698 | 1981-09-28 |  11250.00 |   1400.00 |     30
  7698 | BLAKE  | MANAGER  |   7839 | 1981-05-01 |  22850.00 |           |     30
  7782 | CLARK  | MANAGER  |   7839 | 1981-06-09 |  22450.00 |           |     10
  7788 | SCOTT  | ANALYST  |   7566 | 1982-12-09 |  13000.00 |           |     20
(8 rows)
```

5. Show the details of employee ‘BLAKE’.

Query : SELECT * from employee WHERE ename='BLAKE';

```
 empno | ename |   job   | mgr_id | hired_date | basic_sal | incentive | deptno
-------+-------+---------+--------+------------+-----------+-----------+--------
  7698 | BLAKE | MANAGER |   7839 | 1981-05-01 |  22850.00 |           |     30
(1 row)
```

6. Get employee number, employee name of employees who are managers.

Query : SELECT empno,ename from employee WHERE job='MANAGER' ;

```
dbmslab=# SELECT empno,ename from employee WHERE job='MANAGER' ;

 empno | ename
-------+-------
  7566 | JONES
  7698 | BLAKE
  7782 | CLARK
(3 rows)
```

7. Display unique jobs with second letter as ‘a' from the EMPLOYEE table.

Query : SELECT DISTINCT job FROM employee WHERE job LIKE '_A%';

```
dbmslab=# SELECT DISTINCT job FROM employee WHERE job LIKE '_A%';
   job
----------
 MANAGER
 SALESMAN
(2 rows)
```

8. Display the names of employees concatenated with their jobs.

Query : SELECT (ename || ' ' || job) AS Concatenated FROM employee;

```
dbmslab=# SELECT (ename || ' ' || job) AS Concatenated FROM employee;
  concatenated
-----------------
 SMITH CLERK
 ALLEN SALESMAN
 WARD SALESMAN
 JONES MANAGER
 MARTIN SALESMAN
 BLAKE MANAGER
 CLARK MANAGER
 SCOTT ANALYST
(8 rows)
```

9. Display all the names, department numbers and hired dates from the EMPLOYEE table.

Query : SELECT ename,deptno,hired_date FROM employee;

```
dbmslab=# SELECT ename,deptno,hired_date FROM employee;
 ename  | deptno | hired_date
--------+--------+------------
 SMITH  |     20 | 1980-12-17
 ALLEN  |     30 | 1981-02-20
 WARD   |     30 | 1981-02-22
 JONES  |     20 | 1981-04-02
 MARTIN |     30 | 1981-09-28
 BLAKE  |     30 | 1981-05-01
 CLARK  |     10 | 1981-06-09
 SCOTT  |     20 | 1982-12-09
(8 rows)
```

10. Display employees in the ascending order of their names.

Query : SELECT ename FROM employee ORDER BY ename ASC;

```
dbmslab=# SELECT ename FROM employee ORDER BY ename ASC;
 ename
--------
 ALLEN
 BLAKE
 CLARK
 JONES
 MARTIN
 SCOTT
 SMITH
 WARD
(8 rows)
```

11. Find the names of all employees that begin with ‘S’ or ‘J’.

Query : SELECT ename FROM employee WHERE ename LIKE 'S%' OR ename LIKE 'J%';

```
dbmslab=# SELECT ename FROM employee WHERE ename LIKE 'S%' OR ename LIKE 'J%';

 ename
-------
 SMITH
 JONES
 SCOTT
(3 rows)
```

12. Get the highest salary from the EMPLOYEE table.

Query : SELECT MAX(basic_sal) FROM employee;

```
dbmslab=# SELECT MAX(basic_sal) FROM employee
dbmslab-# ;
   max
----------
 22975.00
(1 row)
```

13. Display the names, deptno of all employees who receive salary between 10000 and 25000.

Query : SELECT ename, deptno FROM employee WHERE basic_sal>=10000 AND basic_sal<=25000;

```
dbmslab=# SELECT ename, deptno FROM employee WHERE basic_sal>=10000 AND basic_sal<=25000;
 ename  | deptno
--------+--------
 ALLEN  |     30
 WARD   |     30
 JONES  |     20
 MARTIN |     30
 BLAKE  |     30
 CLARK  |     10
 SCOTT  |     20
(7 rows)
```

14. List department number and count of employees in each department ordered by department number.

Query :SELECT deptno,COUNT(*) FROM employee GROUP BY deptno ORDER BY deptno;

```
dbmslab=# SELECT deptno,COUNT(*) FROM employee GROUP BY deptno
ORDER BY deptno;
 deptno | count
--------+-------
     10 |     1
     20 |     3
     30 |     4
(3 rows)
```

15. List the names and hired date of managers and clerks without incentives.

Query : SELECT ename,hired_date FROM employee WHERE job='MANAGER' OR job='CLERK' AND incentive ISNULL;

```
dbmslab=# SELECT ename,hired_date FROM employee WHERE job='MANA
GER' OR job='CLERK' AND incentive ISNULL;
 ename | hired_date
-------+------------
 SMITH | 1980-12-17
 JONES | 1981-04-02
 BLAKE | 1981-05-01
 CLARK | 1981-06-09
(4 rows)
```

16. Delete the records with deptno '10' from the EMPLOYEE table.

Query : DELETE FROM employee WHERE deptno=10;

```
dbmslab=# DELETE FROM employee WHERE deptno=10;
DELETE 1
```

```
 empno | ename  |   job    | mgr_id | hired_date | basic_sal | incentive | deptno
-------+--------+----------+--------+------------+-----------+-----------+--------
  7369 | SMITH  | CLERK    |   7902 | 1980-12-17 |   6800.00 |           |     20
  7499 | ALLEN  | SALESMAN |   7698 | 1981-02-20 |  11600.00 |    300.00 |     30
  7521 | WARD   | SALESMAN |   7698 | 1981-02-22 |  11250.00 |    500.00 |     30
  7566 | JONES  | MANAGER  |   7839 | 1981-04-02 |  22975.00 |           |     20
  7654 | MARTIN | SALESMAN |   7698 | 1981-09-28 |  11250.00 |   1400.00 |     30
  7698 | BLAKE  | MANAGER  |   7839 | 1981-05-01 |  22850.00 |           |     30
  7788 | SCOTT  | ANALYST  |   7566 | 1982-12-09 |  13000.00 |           |     20
(7 rows)
```

17. Print the names and jobs of all employees except ‘analyst’.

Query : SELECT ename,job FROM employee WHERE job NOT IN ('ANALYST');

```
dbmslab=# SELECT ename,job FROM employee WHERE job NOT IN ('ANA
LYST');
 ename  |   job
--------+----------
 SMITH  | CLERK
 ALLEN  | SALESMAN
 WARD   | SALESMAN
 JONES  | MANAGER
 MARTIN | SALESMAN
 BLAKE  | MANAGER
(6 rows)
```

18. Print the name of employees whose salaries are greater than the value 21000.

Query : SELECT ename FROM employee WHERE basic_sal > 21000;

```
dbmslab=# SELECT ename FROM employee WHERE basic_sal > 210
00;
 ename
-------
 JONES
 BLAKE
(2 rows)
```

19. Find the names of employees who have a salary equal to Rs 13000.

Query : SELECT ename FROM employee WHERE basic_sal = 13000;

```
dbmslab=# SELECT ename FROM employee WHERE basic_sal = 130
00;
 ename
-------
 SCOTT
(1 row)
```

20. Display the empname, deptno, hired date information in the dept '20' and '30'.

Query : SELECT ename,deptno,hired_date FROM employee WHERE deptno IN (20,30);

```
dbmslab=# SELECT ename,deptno,hired_date FROM employee WHE
RE deptno IN (20,30);
 ename  | deptno | hired_date
--------+--------+------------
 SMITH  |     20 | 1980-12-17
 ALLEN  |     30 | 1981-02-20
 WARD   |     30 | 1981-02-22
 JONES  |     20 | 1981-04-02
 MARTIN |     30 | 1981-09-28
 BLAKE  |     30 | 1981-05-01
 SCOTT  |     20 | 1982-12-09
(7 rows)
```