A) Crete the database and used that database and create the table and insert the data in table two table are created first one EMPLOYEE0 and DEPERTMENT0

```
Limit to 1000 rows

3 •    CREATE TABLE EMPLOYEE0(EMP_ID INT, EMP_NAME VARCHAR(26) NOT NULL, DEPT_ID INT NULL);
4 •    INSERT INTO EMPLOYEE0(EMP_ID, EMP_NAME,DEPT_ID) VALUES(1,"RAJESH",101),
5      (2,"PRIYA", 102),
6      (3,"VIKRAM",NULL),
7      (4,"ANANYA", 104),
8      (5,"SURESH",105);
9 •    SELECT * FROM EMPLOYEE0;
10
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: IA

EMP_ID	EMP_NAME	DEPT_ID
1	RAJESH	101
2	PRIYA	102
3	VIKRAM	NULL
4	ANANYA	104
5	SURESH	105

```
10
11 •    CREATE TABLE DEPARTMENT0(DEPT_ID INT NOT NULL, DEPT_NAME VARCHAR(35) NOT NULL);
12 •    INSERT INTO DEPARTMENT0(DEPT_ID, DEPT_NAME )VALUES
13      (101,"HR"), (102,"IT"),(103,"FINANCE"),(104,"MARKETING");
14 •    SELECT * FROM DEPARTMENT0;
15
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: IA

DEPT_ID	DEPT_NAME
101	HR
102	IT
103	FINANCE
104	MARKETING
101	HR
102	IT
103	FINANCE
104	MARKETING
101	HR
102	IT
103	FINANCE
104	MARKETING

b. JOINS (INNER, LEFT, RIGHT)

```
15
16 •    SELECT EMPLOYEE0.EMP_ID , EMPLOYEE0.EMP_NAME, DEPARTMENT0.DEPT_NAME FROM EMPLOYEE0
17      INNER JOIN DEPARTMENT0 ON EMPLOYEE0.DEPT_ID = DEPARTMENT0.DEPT_ID;
18
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: IA

EMP_ID	EMP_NAME	DEPT_NAME
1	RAJESH	HR
1	RAJESH	HR
1	RAJESH	HR
2	PRIYA	IT
2	PRIYA	IT
2	PRIYA	IT
4	ANANYA	MARKETING
4	ANANYA	MARKETING
4	ANANYA	MARKETING
1	RAJESH	HR
1	RAJESH	HR
1	RAJESH	HR
2	PRIYA	IT
2	PRIYA	IT
2	PRIYA	IT
4	ANANYA	MARKETING
4	ANANYA	MARKETING
4	ANANYA	MARKETING

```sql
19 ● SELECT EMPLOYEE0.EMP_ID , EMPLOYEE0.EMP_NAME, DEPARTMENT0.DEPT_NAME FROM EMPLOYEE0
20     LEFT JOIN DEPARTMENT0 ON EMPLOYEE0.DEPT_ID = DEPARTMENT0.DEPT_ID;
21
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

EMP_ID	EMP_NAME	DEPT_NAME
1	RAJESH	HR
1	RAJESH	HR
1	RAJESH	HR
2	PRIYA	IT
2	PRIYA	IT
2	PRIYA	IT
3	VIKRAM	NULL
4	ANANYA	MARKETING
4	ANANYA	MARKETING
4	ANANYA	MARKETING
5	SURESH	NULL
1	RAJESH	HR
1	RAJESH	HR
1	RAJESH	HR
2	PRIYA	IT
2	PRIYA	IT
2	PRIYA	IT
3	VIKRAM	NULL

```sql
22 ● SELECT EMPLOYEE0.EMP_ID, EMPLOYEE0.EMP_NAME, DEPARTMENT0.DEPT_NAME
23     FROM EMPLOYEE0
24     LEFT JOIN DEPARTMENT0 ON EMPLOYEE0.DEPT_ID = DEPARTMENT0.DEPT_ID
25     WHERE DEPARTMENT0.DEPT_ID IS  NULL;
26
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

EMP_ID	EMP_NAME	DEPT_NAME
3	VIKRAM	NULL
5	SURESH	NULL
3	VIKRAM	NULL
5	SURESH	NULL
3	VIKRAM	NULL
5	SURESH	NULL
3	VIKRAM	NULL
5	SURESH	NULL
3	VIKRAM	NULL
5	SURESH	NULL
3	VIKRAM	NULL
5	SURESH	NULL
3	VIKRAM	NULL
5	SURESH	NULL

```sql
26
27 ● SELECT * FROM EMPLOYEE0 RIGHT JOIN DEPARTMENT0
28     ON EMPLOYEE0.DEPT_ID = DEPARTMENT0.DEPT_ID;
29
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

EMP_ID	EMP_NAME	DEPT_ID	DEPT_ID	DEPT_NAME
1	RAJESH	101	101	HR
1	RAJESH	101	101	HR
1	RAJESH	101	101	HR
1	RAJESH	101	101	HR
1	RAJESH	101	101	HR
1	RAJESH	101	101	HR
1	RAJESH	101	101	HR
2	PRIYA	102	102	IT
2	PRIYA	102	102	IT
2	PRIYA	102	102	IT
2	PRIYA	102	102	IT
2	PRIYA	102	102	IT
2	PRIYA	102	102	IT
NULL	NULL	NULL	103	FINANCE
4	ANANYA	104	104	MARKETING
4	ANANYA	104	104	MARKETING
4	ANANYA	104	104	MARKETING

```
30  ●   SELECT DEPARTMENT0.DEPT_ID, DEPARTMENT0.DEPT_NAME
31      FROM EMPLOYEE0
32      RIGHT JOIN DEPARTMENT0 ON EMPLOYEE0.DEPT_ID = DEPARTMENT0.DEPT_ID
33      WHERE EMPLOYEE0.EMP_ID IS NULL;
34
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: IA

DEPT_ID	DEPT_NAME
103	FINANCE
103	FINANCE
103	FINANCE

```
35  ●   SELECT * FROM EMPLOYEE0 RIGHT JOIN DEPARTMENT0
36      ON EMPLOYEE0.DEPT_ID = DEPARTMENT0.DEPT_ID
37      UNION
38      SELECT * FROM EMPLOYEE0 LEFT JOIN DEPARTMENT0
39      ON EMPLOYEE0.DEPT_ID = DEPARTMENT0.DEPT_ID;
40
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: IA

EMP_ID	EMP_NAME	DEPT_ID	DEPT_ID	DEPT_NAME
1	RAJESH	101	101	HR
2	PRIYA	102	102	IT
NULL	NULL	NULL	103	FINANCE
4	ANANYA	104	104	MARKETING
3	VIKRAM	NULL	NULL	NULL
5	SURESH	105	NULL	NULL

```
41  ●   SELECT * FROM EMPLOYEE0 LEFT OUTER JOIN DEPARTMENT0
42      ON EMPLOYEE0.DEPT_ID = DEPARTMENT0.DEPT_ID;
43
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: IA

EMP_ID	EMP_NAME	DEPT_ID	DEPT_ID	DEPT_NAME
1	RAJESH	101	101	HR
1	RAJESH	101	101	HR
1	RAJESH	101	101	HR
2	PRIYA	102	102	IT
2	PRIYA	102	102	IT
2	PRIYA	102	102	IT
3	VIKRAM	NULL	NULL	NULL
4	ANANYA	104	104	MARKETING
4	ANANYA	104	104	MARKETING
4	ANANYA	104	104	MARKETING
5	SURESH	105	NULL	NULL
1	RAJESH	101	101	HR
1	RAJESH	101	101	HR
1	RAJESH	101	101	HR
2	PRIYA	102	102	IT
2	PRIYA	102	102	IT
2	PRIYA	102	102	IT
3	VIKRAM	NULL	NULL	NULL
ANANYA	104	104	MARKETING

```
47 •    SELECT * FROM EMPLOYEE0 LEFT JOIN DEPARTMENT0 ON EMPLOYEE0.DEPT_ID = DEPARTMENT0.DEPT_ID;
48
49
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

EMP_ID	EMP_NAME	DEPT_ID	DEPT_ID	DEPT_NAME
1	RAJESH	101	101	HR
1	RAJESH	101	101	HR
1	RAJESH	101	101	HR
2	PRIYA	102	102	IT
2	PRIYA	102	102	IT
2	PRIYA	102	102	IT
3	VIKRAM	NULL	NULL	NULL
4	ANANYA	104	104	MARKETING
4	ANANYA	104	104	MARKETING
4	ANANYA	104	104	MARKETING
5	SURESH	105	NULL	NULL
1	RAJESH	101	101	HR
1	RAJESH	101	101	HR
1	RAJESH	101	101	HR
2	PRIYA	102	102	IT
2	PRIYA	102	102	IT
2	PRIYA	102	102	IT
3	VIKRAM	NULL	NULL	NULL

a. SELECT, WHERE, ORDER BY, GROUP BY

```
49 •    SELECT EMP_NAME
50      FROM EMPLOYEE0 E
51      JOIN DEPARTMENT0 D ON E.DEPT_ID = D.DEPT_ID
52      WHERE D.DEPT_NAME = 'IT';
53
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

EMP_NAME
PRIYA
PRIYA
PRIYA
PRIYA
PRIYA
PRIYA

```
54 •    SELECT * FROM EMPLOYEE0
55      ORDER BY EMP_NAME ASC;
56
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

EMP_ID	EMP_NAME	DEPT_ID
4	ANANYA	104
4	ANANYA	104
4	ANANYA	104
4	ANANYA	104
4	ANANYA	104
4	ANANYA	104
4	ANANYA	104
2	PRIYA	102
2	PRIYA	102
2	PRIYA	102
2	PRIYA	102
2	PRIYA	102

```
57 ●    SELECT D.DEPT_NAME, COUNT(E.EMP_ID) AS EMP_COUNT
58      FROM EMPLOYEE0 E
59      JOIN DEPARTMENT0 D ON E.DEPT_ID = D.DEPT_ID
60      GROUP BY D.DEPT_NAME;
61
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

DEPT_NAME	EMP_COUNT
HR	21
IT	21
MARKETING	21

c. Subqueries

```
61
62 ●    SELECT EMP_NAME
63      FROM EMPLOYEE0
64 ⊖   WHERE DEPT_ID IN (
65          SELECT DEPT_ID
66          FROM EMPLOYEE0
67          GROUP BY DEPT_ID
68          HAVING COUNT(*) > 1
69      );
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

EMP_NAME
RAJESH
PRIYA
ANANYA
SURESH
RAJESH
PRIYA
ANANYA
SURESH
RAJESH
PRIYA
ANANYA

```
72      -- Show department names where no employees are assigned
73 ●    SELECT DEPT_NAME
74      FROM DEPARTMENT0
75      WHERE DEPT_ID NOT IN (SELECT DEPT_ID FROM EMPLOYEE0 WHERE DEPT_ID IS NOT NULL);
76
77
78
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

DEPT_NAME
FINANCE
FINANCE
FINANCE

Aggregate Functions (SUM, AVG, etc.)

```
80      -- Update sample salary values
81 •    UPDATE EMPLOYEE0 SET SALARY = 40000 WHERE EMP_ID = 1;
82 •    UPDATE EMPLOYEE0 SET SALARY = 50000 WHERE EMP_ID = 2;
83 •    UPDATE EMPLOYEE0 SET SALARY = 55000 WHERE EMP_ID = 3;
84 •    UPDATE EMPLOYEE0 SET SALARY = 45000 WHERE EMP_ID = 4;
85 •    UPDATE EMPLOYEE0 SET SALARY = 48000 WHERE EMP_ID = 5;
86
87
88
89
```

Output

Action Output ▾

#	Time	Action	Message
✓	65 21:18:03	SET SQL_SAFE_UPDATES = 0	0 row(s) affected
✓	66 21:18:06	UPDATE EMPLOYEE0 SET SALARY = 48000 WHERE EMP_ID = 5	7 row(s) affected Rows matched: 7 Changed: 7 Warnings: 0

```
88      -- Calculate average salary by department
89 •    SELECT D.DEPT_NAME, AVG(E.SALARY) AS AVG_SALARY
90      FROM EMPLOYEE0 E
91      JOIN DEPARTMENT0 D ON E.DEPT_ID = D.DEPT_ID
92      GROUP BY D.DEPT_NAME;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

	DEPT_NAME	AVG_SALARY
▶	HR	NULL
	IT	NULL
	MARKETING	NULL

```
94      -- Total salary expense
95 •    SELECT SUM(SALARY) AS TOTAL_SALARY FROM EMPLOYEE0;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

	TOTAL_SALARY
▶	336000

e. Views for Analysis

```
97      -- View to show employee with department name
98 •    CREATE VIEW EMP_DEPT_VIEW AS
99      SELECT E.EMP_ID, E.EMP_NAME, D.DEPT_NAME
100     FROM EMPLOYEE0 E
101     LEFT JOIN DEPARTMENT0 D ON E.DEPT_ID = D.DEPT_ID;
102
103
104
```

Output

Action Output ▾

#	Time	Action	Message
✓	68 21:19:34	SELECT SUM(SALARY) AS TOTAL_SALARY FROM EMPLOYEE0 LIMIT 0, 1000	1 row(s) returned
✓	69 21:20:28	CREATE VIEW EMP_DEPT_VIEW AS SELECT E.EMP_ID, E.EMP_NAME, D.DEPT_NAME FROM EMPLO...	0 row(s) affected

```
103     -- View to show department with number of employees
104 •   CREATE VIEW DEPT_EMP_COUNT AS
105     SELECT D.DEPT_NAME, COUNT(E.EMP_ID) AS EMPLOYEE_COUNT
106     FROM DEPARTMENT0 D
107     LEFT JOIN EMPLOYEE0 E ON E.DEPT_ID = D.DEPT_ID
108     GROUP BY D.DEPT_NAME;
```

Output

Action Output ▾

#	Time	Action	Message
✓	69 21:20:28	CREATE VIEW EMP_DEPT_VIEW AS SELECT E.EMP_ID, E.EMP_NAME, D.DEPT_NAME FROM EMPLO...	0 row(s) affected
✓	70 21:20:55	CREATE VIEW DEPT_EMP_COUNT AS SELECT D.DEPT_NAME, COUNT(E.EMP_ID) AS EMPLOYEE_CO...	0 row(s) affected

```
110     -- Use view
111 •   SELECT * FROM EMP_DEPT_VIEW;
112 •   SELECT * FROM DEPT_EMP_COUNT;
```

Result Grid | 🔢 | ⇄ Filter Rows: [   ] | Export: 📑 | Wrap Cell Content: 🔤

DEPT_NAME	EMPLOYEE_COUNT
▶ HR	21
IT	21
FINANCE	0
MARKETING	21

f. Optimize Queries with Indexes

```
114     -- Create indexes for faster joins and search
115 •   CREATE INDEX idx_emp_dept_id ON EMPLOYEE0(DEPT_ID);
116 •   CREATE INDEX idx_dept_id ON DEPARTMENT0(DEPT_ID);
117 •   CREATE INDEX idx_emp_name ON EMPLOYEE0(EMP_NAME);
118
```

Output

Action Output ▾

#	Time	Action	Message
✓	72 21:22:48	CREATE INDEX idx_emp_dept_id ON EMPLOYEE0(DEPT_ID)	0 row(s) affected Records: 0 Duplicates: 0 Warnings: 0
✓	73 21:22:54	CREATE INDEX idx_dept_id ON DEPARTMENT0(DEPT_ID)	0 row(s) affected Records: 0 Duplicates: 0 Warnings: 0
✓	74 21:22:58	CREATE INDEX idx_emp_name ON EMPLOYEE0(EMP_NAME)	0 row(s) affected Records: 0 Duplicates: 0 Warnings: 0