

Database Management System Laboratory

(MCA 291)

Assignment – 4

1.

```
CREATE TABLE departments (  
    department_id INT PRIMARY KEY,  
    department_name VARCHAR(50)  
);
```

```
CREATE TABLE employees (  
    employee_id INT PRIMARY KEY,  
    name VARCHAR(50),  
    department_id INT,  
    salary DECIMAL(10,2),  
    FOREIGN KEY (department_id) REFERENCES  
departments(department_id)  
);
```

```
CREATE TABLE projects (  
    project_id INT PRIMARY KEY,  
    project_name VARCHAR(100),  
    department_id INT,  
    FOREIGN KEY (department_id) REFERENCES  
departments(department_id)  
);
```

Table DEPARTMENTS created.

Elapsed: 00:00:00.015

Table EMPLOYEES created.

Elapsed: 00:00:00.015

Table PROJECTS created.

Elapsed: 00:00:00.015

2.

INSERT INTO departments VALUES (1, 'HR'), (2, 'IT'), (3, 'Finance');

INSERT INTO employees VALUES
(101, 'Alice', 1, 60000),
(102, 'Bob', 2, 75000),
(103, 'Charlie', 2, 80000),
(104, 'David', 3, 65000),
(105, 'Emma', 3, 70000),
(106, 'Frank', NULL, 72000);

INSERT INTO projects VALUES
(201, 'Payroll System', 1),
(202, 'AI Development', 2),
(203, 'Cyber Security', 2),
(204, 'Tax Management', 3);

3 rows inserted.

Elapsed: 00:00:00.017

6 rows inserted.

Elapsed: 00:00:00.018

4 rows inserted.

Elapsed: 00:00:00.027

3.

```
SELECT department_id, COUNT(*) AS Total_employees
FROM employees
GROUP BY department_id;
```

	DEPARTMENT_ID	TOTAL_EMPLOYEES
1	1	1
2	2	2
3	3	2
4	(null)	1

4.

```
SELECT department_id, AVG(salary) AS average_salary
FROM employees
GROUP BY department_id;
```

	DEPARTMENT_ID	AVERAGE_SALARY
1	1	60000
2	2	77500
3	3	67500
4	(null)	72000

5.

```
SELECT department_id, AVG(salary) AS average_salary
FROM employees
GROUP BY department_id
HAVING AVG(salary) > 70000;
```

	DEPARTMENT_ID	AVERAGE_SALARY
1	2	77500
2	(null)	72000

6.

```
SELECT department_id, COUNT(*) AS total_employees
FROM employees
GROUP BY department_id
HAVING COUNT(*) > 2;
```

DEPARTMENT_ID	TOTAL_EMPLOYEES
No items to display.	

7.

```
SELECT department_id, SUM(salary) AS total_salary
FROM employees
GROUP BY department_id
```

ORDER BY total_salary DESC;

	DEPARTMENT_ID	TOTAL_SALARY
1	2	155000
2	3	135000
3	(null)	72000
4	1	60000

8.

```
SELECT name, salary
FROM employees
WHERE department_id = (SELECT department_id FROM
departments WHERE department_name = 'IT');
```

	NAME	SALARY
1	Bob	75000
2	Charlie	80000

9.

```
SELECT department_id, COUNT(*) AS total_projects
FROM projects
GROUP BY department_id;
```

	DEPARTMENT_ID	TOTAL_PROJECTS
1	1	1
2	2	2
3	3	1

10.

```
SELECT department_id, COUNT(*) AS total_projects  
FROM projects  
GROUP BY department_id  
HAVING COUNT(*) > 1;
```

	DEPARTMENT_ID	TOTAL_PROJECTS
1	2	2

11.

```
SELECT department_id, MAX(salary) AS highest_salary  
FROM employees  
GROUP BY department_id;
```

	DEPARTMENT_ID	HIGHEST_SALARY
1	1	60000
2	2	80000
3	3	70000
4	(null)	72000