1. Employees in the 'IT' department

```sql
SELECT e.emp_id, e.name, d.dept_name

FROM Employees e

INNER JOIN Departments d

   ON e.dept_id = d.dept_id

WHERE d.dept_name = 'IT';
```

3. Departments with no employees

```sql
SELECT d.dept_id, d.dept_name

FROM Departments d

LEFT JOIN Employees e

   ON d.dept_id = e.dept_id

WHERE e.emp_id IS NULL;
```

4. All possible employee–department combinations

```sql
SELECT e.name, d.dept_name

FROM Employees e

CROSS JOIN Departments d;
```

5. All employees and all departments (FULL OUTER JOIN)

```sql
SELECT e.name, d.dept_name

FROM Employees e

LEFT JOIN Departments d

   ON e.dept_id = d.dept_id

UNION

SELECT e.name, d.dept_name

FROM Employees e

RIGHT JOIN Departments d

   ON e.dept_id = d.dept_id;
```

6. Employees with no department

sql

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```sql
SELECT e.emp_id, e.name
FROM Employees e
LEFT JOIN Departments d
   ON e.dept_id = d.dept_id
WHERE d.dept_id IS NULL;
```