```sql
use employees;
-- a. SELECT, WHERE, ORDER BY, GROUP BY
SELECT d.dept_name, COUNT(de.emp_no) AS employee_count
FROM departments d
JOIN dept_emp de ON d.dept_no = de.dept_no
WHERE de.to_date = '9999-01-01' -- Current department assignments
GROUP BY d.dept_name
HAVING employee_count > 10000
ORDER BY employee_count DESC;
```

100%    30:10

Result Grid    Filter Rows:    Q Search    Export:

| dept_name | employee_cou... |
|---|---|
| Development | 61386 |
| Production | 53304 |
| Sales | 37701 |
| Customer Service | 17569 |
| Research | 15441 |
| Marketing | 14842 |
| Quality Management | 14546 |
| Human Resources | 12898 |
| Finance | 12437 |

```sql
11
12    -- b. LEFT JOIN: Employees with or without a department
13  * SELECT e.first_name, e.last_name, d.dept_name
14    FROM employees e
15    LEFT JOIN dept_emp de ON e.emp_no = de.emp_no
16    LEFT JOIN departments d ON de.dept_no = d.dept_no
17    LIMIT 15;
18
19
20
```

100%    ◇    10:17

Result Grid | Filter Rows: Search | Export: | Fetch rows:

| first_name | last_name | dept_name |
|---|---|---|
| Georgi | Facello | Development |
| Bezalel | Simmel | Sales |
| Parto | Bamford | Production |
| Chirstian | Koblick | Production |
| Kyoichi | Maliniak | Human Resources |
| Anneke | Preusig | Development |
| Tzvetan | Zielinski | Research |
| Saniya | Kalloufi | Development |
| Sumant | Peac | Quality Management |
| Duangkaew | Piveteau | Production |
| Duangkaew | Piveteau | Quality Management |
| Mary | Sluis | Customer Service |
| Patricio | Bridgland | Development |
| Eberhardt | Terkki | Human Resources |
| Berni | Genin | Development |

```sql
19    -- b2. RIGHT JOIN: Departments with or without employees
20  ● SELECT d.dept_name, COUNT(de.emp_no) AS Employee_Count
21    FROM dept_emp de
22    RIGHT JOIN departments d ON de.dept_no = d.dept_no
23    GROUP BY d.dept_name;
24
25
26
27
28
```

100% ⇕ 1:25

Result Grid | Filter Rows: Search | Export:

| dept_name | Employee_Count |
|---|---|
| Customer Service | 23580 |
| Development | 85707 |
| Finance | 17346 |
| Human Resources | 17786 |
| Marketing | 20211 |
| Production | 73485 |
| Quality Management | 20117 |
| Research | 21126 |
| Sales | 52245 |

```sql
33    -- c. Subquery: Employees with salary above 60000
34    SELECT e.first_name, e.last_name, s.salary
35    FROM employees e
36    JOIN salaries s ON e.emp_no = s.emp_no
37    WHERE s.salary > (SELECT 60000)
38    ORDER BY s.salary
39    LIMIT 10;
40
41
42
```

100%    10:39

Result Grid | Filter Rows: Search | Export: | Fetch rows:

| first_name | last_name | salary |
| --- | --- | --- |
| Bernd | Pileggi | 60001 |
| Chinho | Spinelli | 60001 |
| Eberhardt | Baca | 60001 |
| Rosalie | Marchesini | 60001 |
| Claudi | Kaminger | 60001 |
| Kazuhiro | Coorg | 60001 |
| Masadi | Terwilliger | 60001 |
| Neelam | Menhardt | 60001 |
| Takahiro | Feldmann | 60001 |
| Gad | Griswold | 60001 |

```sql
40        -- d. Aggregate Fuctions: using AVG functions to show average salary
41  •     SELECT d.dept_name AS DEPT_NAME, AVG(s.salary) AS average_salary
42        from departments d
43        JOIN dept_emp de ON d.dept_no = de.dept_no
44        JOIN salaries s ON de.emp_no = s.emp_no
45        GROUP BY d.dept_name;
46
47
48
49
```

100%    ⇕    22:45

**Result Grid**  ⬛ ↻  Filter Rows: 🔍 Search      Export: 🖫

| DEPT_NAME | average_salary |
| --- | --- |
| Customer Service | 58755.4406 |
| Development | 59503.5750 |
| Finance | 70159.4662 |
| Human Resources | 55353.5203 |
| Marketing | 71901.7237 |
| Production | 59539.7899 |
| Quality Management | 57294.6570 |
| Research | 59866.2435 |
| Sales | 80776.6204 |

```sql
48
49      -- e. Create View: Department employee count
50    * CREATE VIEW dept_employee_count AS
51      SELECT d.dept_name, COUNT(de.emp_no) AS employee_count
52      FROM departments d
53      LEFT JOIN dept_emp de ON d.dept_no = de.dept_no
54      GROUP BY d.dept_name;
55
56    * SELECT * FROM dept_employee_count;
57
```

100%    ◇    35:56

**Result Grid** | 🔳 ↻  Filter Rows: 🔍 Search    Export: 🖫

| DEPT_NAME | average_salary |
|---|---|
| Customer Service | 58755.4406 |
| Development | 59503.5750 |
| Finance | 70159.4662 |
| Human Resources | 55353.5203 |
| Marketing | 71901.7237 |
| Production | 59539.7899 |
| Quality Management | 57294.6570 |
| Research | 59866.2435 |
| Sales | 80776.6204 |

```
58
59
60
61
62
63
64
65    -- f. Optimize with Index
66  * CREATE INDEX idx_dept_emp_no ON dept_emp(emp_no);
67
```

100%   ◇   50:66

**Result Grid** ▊ ⇄ Filter Rows: 🔍 Search          Export: 🖫

| DEPT_NAME | average_salary |
|---|---|
| Customer Service | 58755.4406 |
| Development | 59503.5750 |
| Finance | 70159.4662 |
| Human Resources | 55353.5203 |
| Marketing | 71901.7237 |
| Production | 59539.7899 |
| Quality Management | 57294.6570 |
| Research | 59866.2435 |
| Sales | 80776.6204 |