Exercise 1: SQL Fundamentals

① SELECT statement

```
SELECT * FROM employees;
```

```
SELECT id,
       first_name,
       last_name,
       department,
       salary,
       hire_date,
       city
FROM employees;
```

② SELECT DISTINCT statement

```
SELECT DISTINCT id,
                first_name,
                last_name,
                department,
                salary,
                hire_date,
                city
FROM employees;
```

```
SELECT DISTINCT department
FROM employees;
```

③ ORDER BY statement

```
SELECT first_name
       last_name
       salary
FROM employees
ORDER BY salary DESC;
```

④ LIMIT statement

```
SELECT first_name,
       last_name
FROM employees
LIMIT TOP 5
```

```
SELECT first_name
       last_name
       salary
FROM employees
ORDER BY salary DESC
LIMIT 5;
```

⑤ WHERE statement

```
SELECT first_name,
       last_name,
       department
FROM employees
WHERE department='IT';
```

⑥ AND statement

```
SELECT first_name,
       last_name,
       department,
       salary
FROM employees
WHERE department='Finance'
AND salary > 50000
```

⑦ OR statement

```
SELECT first_name,
       last_name,
       department
FROM   employees
WHERE  department = 'HR' OR department = 'Marketing';
```

⑧ NOT statement

```
SELECT first_name,
       last_name,
       department
FROM employees
WHERE NOT department = 'IT';
```

⑨ IN statement

```
SELECT first_name,
       last_name,
       department
FROM employees
WHERE department IN ('HR', 'IT', 'finance');
```

⑩ Combining condition.

```
SELECT first_name,
       last_name,
       department,
       salary,
       city
FROM   employees
WHERE  department = 'IT'
AND salary > 50000
AND city = 'New York';
```

⑪ Combining WHERE, AND & ORDER BY

```
SELECT first_name,
       last_name,
       department,
       salary
FROM employees,
WHERE (department = finance
       OR department = 'Marketing'
AND salary > 52 000
ORDER salary DESC;
```

⑫ Combining SELECT DISTINCT, WHERE, IN

```
SELECT DISTINCT city
       FROM    employees
       WHERE   department
       NOT IN  ('IT', 'HR');
```

(13) Combining WHERE, NOT, AND & ORDER BY

```
SELECT first_name,
       last_name,
       department,
       Salary,
       Hire_date
FROM employees
WHERE department != 'Finance'
 AND  salary > 50000
 ORDER BY Hire_date
 ASC;
```

(14) Combining WHERE, OR, IN and LIMIT

```
SELECT first_name,
       last_name,
       department,
        city
FROM employees
WHERE city IN ('Chicago', 'Los Angeles')
AND department IN ('IT', 'Marketing')
 LIMIT 3;
```

(15) Set Combining WHERE, AND, OR, NOT, ORDER BY and LIMIT

```
SELECT first_name,
       last_name,
       department,
       Salary,
        city
FROM employees
WHERE (department = 'IT' OR department = 'Finance')
AND City != 'San Fracisco'
 AND Salary > 55000
ORDER BY Salary DESC
 LIMIT 5;
```

Exercise 2 : Aggregated Functions & Grouping

① COUNT ( ) function

```
SELECT COUNT(DISTINCT id)
.. FROM employees;
```

✗

```
SELECT COUNT(*)
AS total_employees
FROM employees;
```

② SUM ( ) function

```
SELECT
    SUM(salary) from employees
    WHERE department = IT
    ORDER BY salary;
```

✓

```
SELECT
SUM(salary) AS total_salary
FROM employees
WHERE department = 'IT';
```

③ AVG ( ) function

```
SELECT AVG(salary) AS avg_hr_salary
    FROM employees
    WHERE department = 'HR';
```

```
SELECT
MIN(salary) AS lowest_salary,
MAX(salary) AS highest_salary
FROM employees;
```

④ MIN & MAX ( ) Function

```
SELECT MIN(salary)
    FROM employees;
```

?

```
SELECT MAX(salary)
FROM employees;
```

?

⑤ Group BY COUNT

```
SELECT
    city,
    SUM(city AS total employees)
FROM employees
GROUP BY city;
```

✗

```
SELECT
    city,
    COUNT(*) AS total_employees
FROM employees
GROUP BY city;
```

⑥ Group BY

```
SELECT department,
FROM employees
WHERE salary
```

✗

```
SELECT department,
    SUM(salary) AS total_salary
FROM employees
Group BY department;
```

(7) Group BY and ORDER BY

```
SELECT department,
    AVG (salary) AS avg-Salary
FROM employees
GROUP BY department
ORDER BY avg-Salary DESC;
```

(8) HAVING clause

```
SELECT
    SUM (salary) AS total-Salary
FROM employees
GROUP BY department
HAVING SUM (salary) > 100000;
```

(9) Combining GROUP BY, HAVING & ORDER BY

```
SELECT city,
        COUNT (*) AS employee-count
        FROM employees
        GROUP BY city
    HAVING COUNT (*) > 1
    ORDER BY employee-count DESC;
```

(10) Combining Aggregate functions

```
SELECT department,
    AVG (salary) AS avg-Salary
FROM employees
GROUP BY department
ORDER BY avg-salary DESC
LIMIT 1;
```