SQL Exercise: Practicing Basic Queries – Answers

Database: employees_db

Syntax Covered: SELECT statement, SELECT DISTINCT statement, ORDER BY statement, LIMIT statement, WHERE statement, AND statement, OR statement, NOT statement, IN statement

Assume you have a table called **employees** with the following structure:

id	first_name	last_name	department	salary	hire_date	city
1	John	Doe	IT	55000	2018-06-15	New York
2	Jane	Smith	HR	48000	2019-07-20	Chicago
3	Mike	Johnson	Finance	60000	2017-09-30	Los Angeles
4	Sarah	Brown	IT	53000	2021-03-25	New York
5	David	White	Marketing	52000	2016-04-10	San Francisco
6	Emily	Davis	IT	62000	2015-02-14	Chicago
7	Robert	Wilson	Finance	59000	2019-10-01	Houston
8	Jessica	Moore	HR	51000	2018-05-22	Los Angeles
9	Daniel	Clark	Marketing	53000	2022-06-01	Chicago
10	Laura	Hall	IT	50000	2020-08-10	San Francisco

Here are the definitions for each column in the **employees** table:

Column Name	Definition
id	A unique identifier for each employee in the table (Primary Key).
first_name	The first name of the employee.
last_name	The last name of the employee.
department	The department where the employee works (e.g., IT, HR, Finance, Marketing).
salary	The monthly or annual salary of the employee (numeric value).
hire_date	The date the employee was hired in the format YYYY-MM-DD.
city	The city where the employee is located or works from.

Questions

1. SELECT Statement

Question: Retrieve all columns from the employees table.

SQL Query:

```
SELECT * FROM employees;
```

Expected Output (Sample Data):

id	first_name	last_name	department	salary	hire_date	city
1	John	Doe	IT	55000	2018-06-15	New York
2	Jane	Smith	HR	48000	2019-07-20	Chicago
3	Mike	Johnson	Finance	60000	2017-09-30	Los Angeles
4	Sarah	Brown	IT	53000	2021-03-25	New York
5	David	White	Marketing	52000	2016-04-10	San Francisco
6	Emily	Davis	IT	62000	2015-02-14	Chicago
7	Robert	Wilson	Finance	59000	2019-10-01	Houston
8	Jessica	Moore	HR	51000	2018-05-22	Los Angeles
9	Daniel	Clark	Marketing	53000	2022-06-01	Chicago
10	Laura	Hall	IT	50000	2020-08-10	San Francisco

2. SELECT DISTINCT Statement

Question: Find all the unique departments in the employees table.

SQL Query:

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

Expected Output:

department
IT
HR
Finance
Marketing

3. ORDER BY Statement

Question: Retrieve all employees' first and last names, ordered by salary in descending order.

SQL Query:

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

Expected Output:

first_name	last_name	salary
Emily	Davis	62000
Mike	Johnson	60000
Robert	Wilson	59000

4. LIMIT Statement

Question: Retrieve the top 5 highest-paid employees.

SQL Query:

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

Expected Output:

first_name	last_name	salary
Emily	Davis	62000
Mike	Johnson	60000
Robert	Wilson	59000
John	Doe	55000
Sarah	Brown	53000

5. WHERE Statement

Question: Find employees who work in the IT department.

SQL Query:

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

Expected Output:

first_name	last_name	department
John	Doe	IT
Sarah	Brown	IT

---

6. AND Statement

Question: Find employees who work in the Finance department AND have a salary greater than 58,000.

SQL Query:

```
SELECT first_name,
       last_name,
       department,
       salary
FROM employees
WHERE department = 'Finance'
AND salary > 58000;
```

Expected Output:

first_name	last_name	department	salary
Mike	Johnson	Finance	60000

7. OR Statement

Question: Find employees who work in the HR department OR the Marketing department.

SQL Query:

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

Expected Output:

first_name	last_name	department
Jane	Smith	HR
Jessica	Moore	HR
David	White	Marketing

---

8. NOT Statement

Question: Find employees who do not work in the IT department.

SQL Query:

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

Expected Output:

first_name	last_name	department
Jane	Smith	HR
Mike	Johnson	Finance

---

9. IN Statement

Question: Find employees who are in the HR, IT, or Finance departments.

SQL Query:

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

Expected Output:

first_name	last_name	department
John	Doe	IT
Jane	Smith	HR
Robert	Wilson	Finance
Mike	Johnson	Finance

---

10. Combining Conditions

Question: Find employees who are in the IT department, have a salary greater than 50,000, and are located in New York.

SQL Query:

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

Expected Output:

first_name	last_name	department	salary	city
John	Doe	IT	55000	New York

Additional Questions – Combining Multiple SQL Statements

11. Combining WHERE, AND, and ORDER BY

SQL Query:

```
SELECT first_name,
        last_name,
        department,
        salary
FROM employees
WHERE (department = 'Finance' OR department = 'Marketing')
AND salary > 52000
ORDER BY salary DESC;
```

---

12. Combining SELECT DISTINCT, WHERE, and IN

SQL Query:

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

---

13. Combining WHERE, NOT, AND, and ORDER BY

SQL Query:

```
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

SQL Query:

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

---

15. Combining WHERE, AND, OR, NOT, ORDER BY, and LIMIT

SQL Query:

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