SQL Practice – Employee Insights Real-world business questions answered with PostgreSQL

Lilla Katona 2025.05.09.

Project Summary

This mini project demonstrates practical SQL skills through a fictional employee dataset. It includes two tables: *employees* and *performance_reviews*. The queries aim to extract and clean HR-related data such as full employee names, salary formatting, department counts, and performance trends.

Demonstrated Skills:

- CREATE TABLE, INSERT INTO
- CONCAT
- CAST
- COALESCE
- LPAD
- DISTINCT

Dataset Creation:

Query:

```
CREATE TABLE employees (
  id SERIAL PRIMARY KEY,
  first name TEXT,
  last_name TEXT,
  department TEXT,
  hire_date DATE,
  termination_date DATE,
  salary NUMERIC
);
CREATE TABLE performance_reviews (
  id SERIAL PRIMARY KEY,
  employee_id INTEGER REFERENCES employees(id),
  review date DATE,
  score INTEGER
);
-- Employees table
INSERT INTO employees (first_name, last_name, department, hire_date,
termination_date, salary) VALUES
('Alice', 'Smith', 'Marketing', '2020-02-15', NULL, 55000),
('Bob', 'Johnson', 'Sales', '2019-06-10', '2023-01-01', 62000),
('Charlie', 'Lee', 'IT', '2021-03-20', NULL, 70000),
('Diana', 'Wang', 'HR', '2018-11-01', NULL, 58000),
```

('Ethan', 'Brown', 'Sales', '2022-05-05', NULL, NULL);

-- Performance Reviews table

INSERT INTO performance_reviews (employee_id, review_date, score) VALUES

- (1, '2022-01-10', 80),
- (1, '2023-01-10', 85),
- (2, '2022-01-10', 70),
- (3, '2023-03-15', 90),
- (4, '2023-04-01', 88);

Result:

1	Select a.*, b.* FROM employees a LEFT JOIN performance reviews b	Resource:	5	rows re	eturned	L							
3				id integer	first_name text	last_name text	department text	hire_date date	termination_date date	salary numeric	employee_id integer	review_date date	score integer
4			1		Alice	Smith	Marketing	2020-02-15	null	55000		2022-01-10	80
	on a.id = b.id		- 2		Bob	Johnson	Sales	2019-06-10	2023-01-01	62000		2023-01-10	85
			3		Charlie	Lee		2021-03-20	null	70000		2022-01-10	70
			4		Diana	Wang	HR	2018-11-01	null	58000		2023-03-15	90
			5		Ethan	Brown	Sales	2022-05-05	null	null		2023-04-01	88

Queries:

1. **CONCAT**: Full name with department

SELECT

CONCAT(first_name, ' ', last_name) AS full_name, department

FROM employees;



2. **CAST**: Format salary with currency

SELECT

first_name,

last_name,

CAST(salary AS TEXT) || 'USD' AS formatted_salary

FROM employees;

Result:



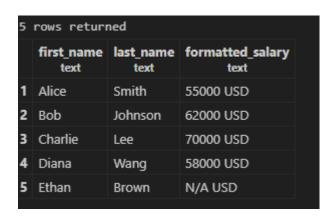
Alternative solution:

SELECT

first_name,

last_name,

CONCAT(COALESCE(CAST(salary AS TEXT), 'N/A'), 'USD') AS formatted_salary FROM employees;



3. **COALESCE**: Handle missing salaries

SELECT

first_name,
last_name,
salary
COALESCE(salary, 0) AS effective_salary
FROM employees;

Result:

5	5 rows returned										
	first_name text	last_name text	salary numeric	effective_salary numeric							
1	Alice	Smith	55000	55000							
2	Bob	Johnson	62000	62000							
3	Charlie	Lee	70000	70000							
4	Diana	Wang	58000	58000							
5	Ethan	Brown	null	0							

4. **LPAD**: Show employee IDs as 5-digit numbers

SELECT

LPAD(id::TEXT, 5, '0') AS padded_id, first_name, last_name
FROM employees;

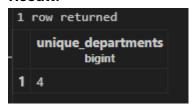


5. **DISTINCT**: Count and list unique departments

SELECT

COUNT(DISTINCT department) AS unique_departments FROM employees;

Result:



SELECT DISTINCT department FROM employees;

