SQL CASE STUDY

DATA IN MOTION HUMAN RESOURCES

DATA IN MOTION

SQL SCHEMA

```
-- Create 'departments' table
CREATE TABLE departments (
 id SERIAL PRIMARY KEY,
name VARCHAR(50),
manager_id INT
);
-- Create 'employees' table
CREATE TABLE employees (
id SERIAL PRIMARY KEY,
name VARCHAR(50),
hire_date DATE,
job_title VARCHAR(50),
department_id INT REFERENCES departments(id)
);
-- Create 'projects' table
CREATE TABLE projects (
id SERIAL PRIMARY KEY,
name VARCHAR(50),
start_date DATE,
end_date DATE,
department_id INT REFERENCES departments(id)
);
```

```sql
-- Insert data into 'departments’
INSERT INTO departments(
name, manager_id)
VALUES ('HR', 1), ('IT', 2), ('Sales', 3);

-- Insert data into 'employees’
INSERT INTO employees(
name, hire_date, job_title, department_id)
VALUES ('John Doe', '2018-06-20', 'HR Manager', 1),
('Jane Smith', '2019-07-15', 'IT Manager', 2),
('Alice Johnson', '2020-01-10', 'Sales Manager', 3),
('Bob Miller', '2021-04-30', 'HR Associate', 1),
('Charlie Brown', '2022-10-01', 'IT Associate', 2),
('Dave Davis', '2023-03-15', 'Sales Associate', 3);

-- Insert data into 'projects’
INSERT INTO projects(
name, start_date, end_date, department_id)
VALUES ('HR Project 1', '2023-01-01', '2023-06-30', 1),
('IT Project 1', '2023-02-01', '2023-07-31', 2),
('Sales Project 1', '2023-03-01', '2023-08-31', 3);
```

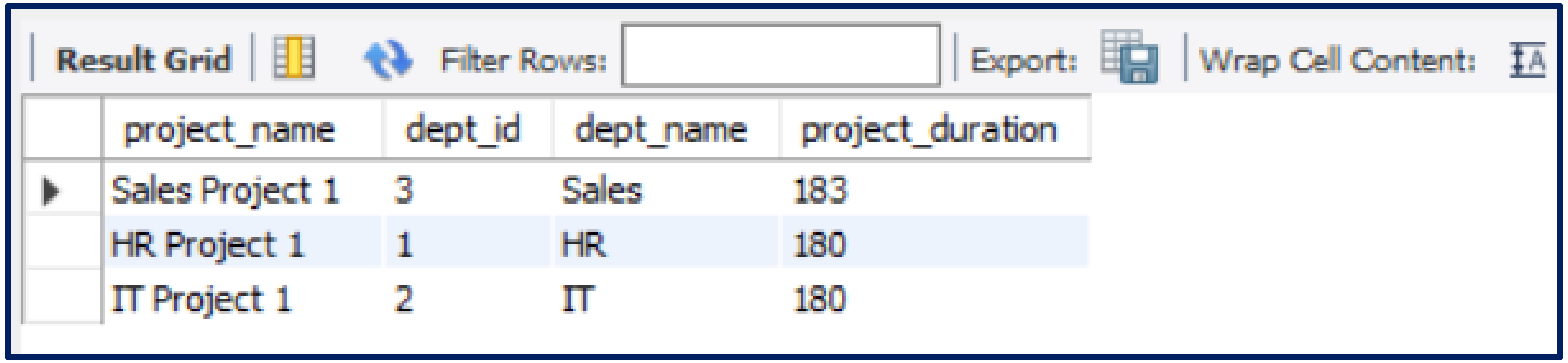
```
UPDATE departments
SET manager_id = (SELECT id FROM employees WHERE name = 'John Doe’)
WHERE name = 'HR’;

UPDATE departments
SET manager_id = (SELECT id FROM employees WHERE name = 'Jane Smith’)
WHERE name = 'IT’;

UPDATE departments
SET manager_id = (SELECT id FROM employees WHERE name = 'Alice Johnson’)
WHERE name = 'Sales';
```

QUESTIONS

- Find the longest ongoing project for each department.
- Find all employees who are not managers.
- Find all employees who have been hired after the start of a project in their department.
- Rank employees within each department based on their hire date (earliest hire gets the highest rank).
- Find the duration between the hire date of each employee and the hire date of the next employee hired in the same department.

1] Find the longest ongoing project for each department.

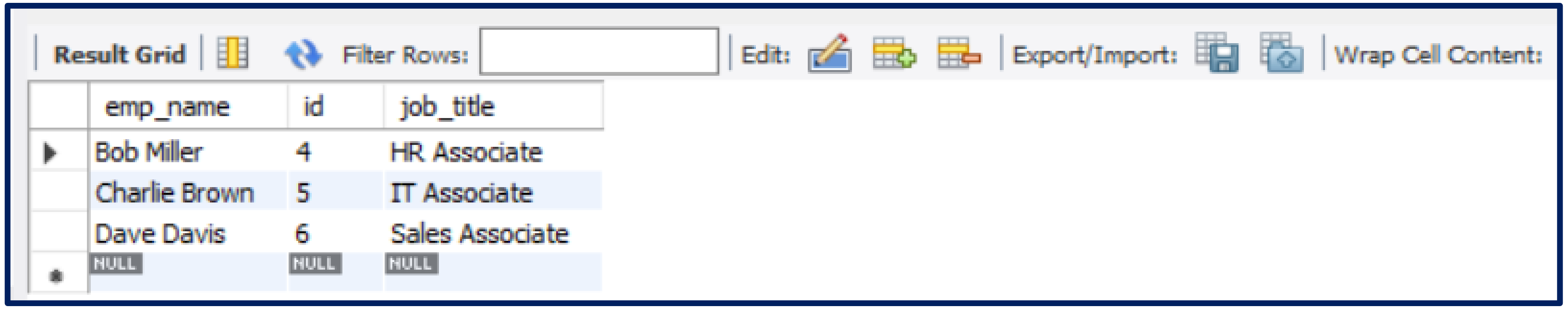
```
SELECT p.name AS project_name, d.id AS dept_id, d.name AS dept_name, DATEDIFF(end_date, start_date) AS
project_duration  FROM projects p
JOIN departments d ON p.id = d.id
GROUP BY d.id
ORDER BY project_duration DESC;
```



project_name	dept_id	dept_name	project_duration
Sales Project 1	3	Sales	183
HR Project 1	1	HR	180
IT Project 1	2	IT	180

2] Find all employees who are not managers.

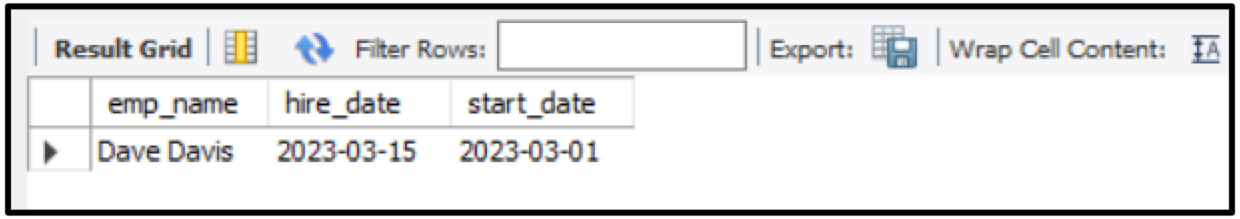
```
SELECT e.name AS emp_name, e.id, e.job_title FROM employees e
WHERE e.job_title NOT LIKE '%manager%';
```



emp_name	id	job_title
Bob Miller	4	HR Associate
Charlie Brown	5	IT Associate
Dave Davis	6	Sales Associate
NULL	NULL	NULL

3] Find all employees who have been hired after the start of a project in their department.

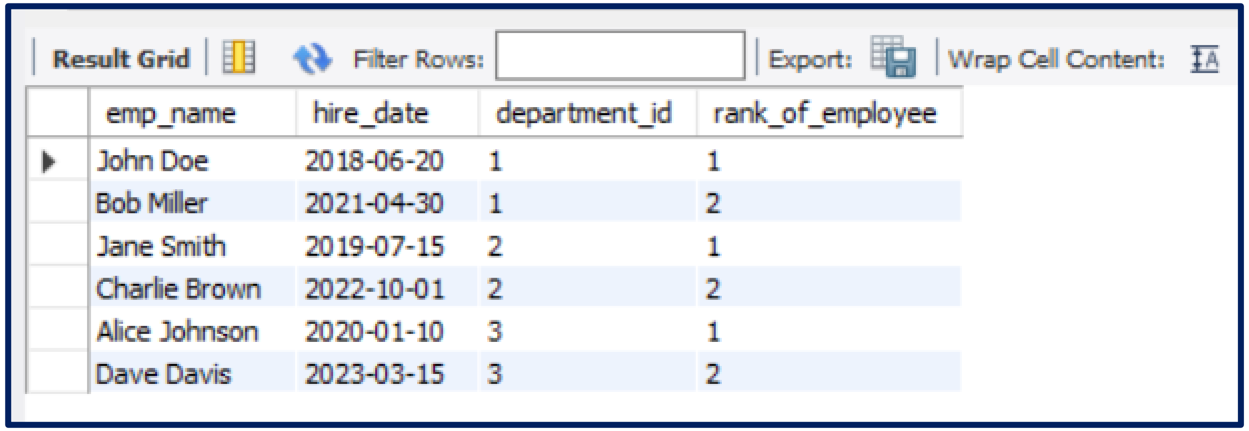
```
SELECT e.name AS emp_name, e.hire_date, p.start_date FROM employees e
JOIN projects p ON e.department_id = p.department_id
WHERE e.hire_date > p.start_date;
```



emp_name	hire_date	start_date
Dave Davis	2023-03-15	2023-03-01

4] Rank employees within each department based on their hire date (earliest hire gets the highest rank).

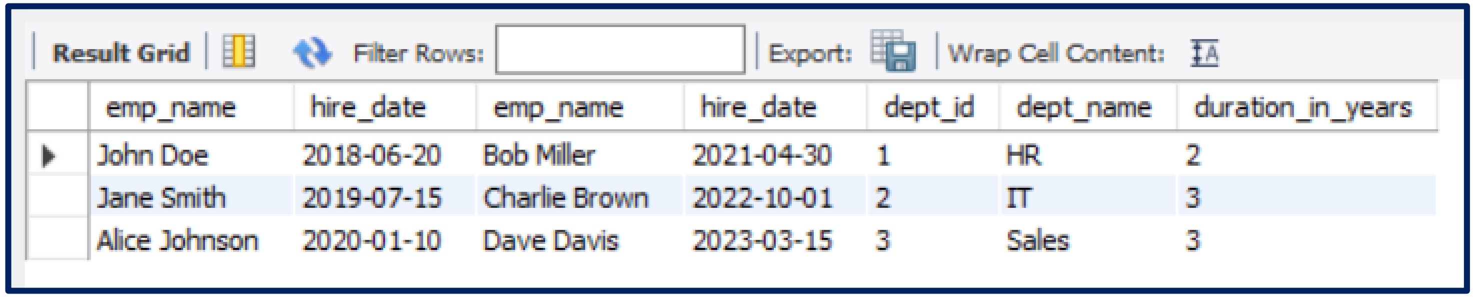
```
SELECT name AS emp_name, hire_date, department_id,
RANK() OVER(PARTITION BY department_id ORDER BY hire_date) AS rank_of_employee
FROM employees;
```



emp_name	hire_date	department_id	rank_of_employee
John Doe	2018-06-20	1	1
Bob Miller	2021-04-30	1	2
Jane Smith	2019-07-15	2	1
Charlie Brown	2022-10-01	2	2
Alice Johnson	2020-01-10	3	1
Dave Davis	2023-03-15	3	2

5] Find the duration between the hire date of each employee and the hire date of the next employee hired in the same department.

```
SELECT e1.name AS emp_name, e1.hire_date, e2.name AS emp_name, e2.hire_date, d.id AS dept_id, d.name AS
dept_name, TIMESTAMPDIFF(year, e1.hire_date, e2.hire_date) AS duration_in_years
FROM employees e1
JOIN employees e2 ON e1.department_id = e2.department_id
JOIN departments d ON e1.department_id = d.id AND e2.department_id = d.id
WHERE e2.hire_date > e1.hire_date
ORDER BY e1.department_id, e1.hire_date;
```



emp_name	hire_date	emp_name	hire_date	dept_id	dept_name	duration_in_years
John Doe	2018-06-20	Bob Miller	2021-04-30	1	HR	2
Jane Smith	2019-07-15	Charlie Brown	2022-10-01	2	IT	3
Alice Johnson	2020-01-10	Dave Davis	2023-03-15	3	Sales	3