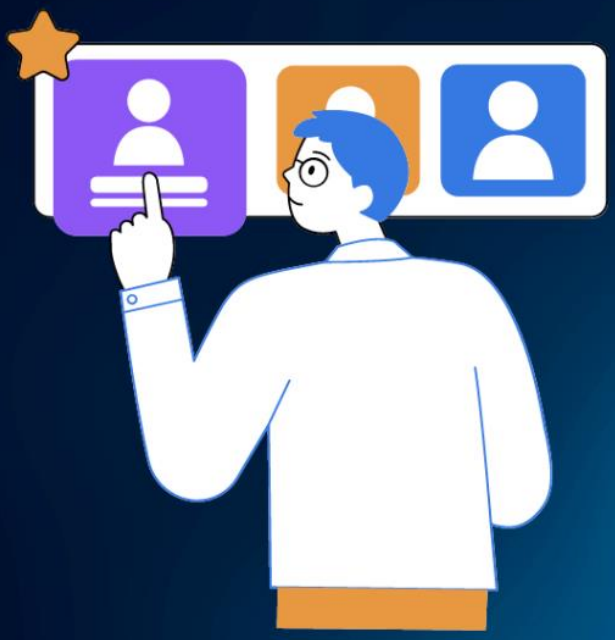
SQL CASE STUDY

DATA IN MOTION
HUMAN RESOURCES



DATA IN MOTION

```sql
-- Create tables and insert data for analysis

-- Create 'departments' table

CREATE TABLE departments (
    id INT IDENTITY(1,1) PRIMARY KEY,
    name VARCHAR(50),
    manager_id INT
);

--Create 'employees' table

CREATE TABLE employees (
    id INT IDENTITY(1,1) 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 INT IDENTITY(1,1) PRIMARY KEY,
    name VARCHAR(50),
    start_date DATE,
    end_date DATE,
    department_id INT REFERENCES departments(id)
);

-- 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';

-- SQL Challenge Questions

--1. Find the longest ongoing project for each department.

SELECT d.name AS department_name,
    p.name AS project_name,
    p.start_date AS project_start_date,
    p.end_date AS project_end_date,
    DATEDIFF(DAY, p.start_date, GETDATE()) AS project_duration_days
FROM departments d
LEFT JOIN projects p ON d.id = p.department_id
WHERE p.end_date <= GETDATE()
```

```
ORDER BY d.name, project_duration_days DESC;
```

Results Messages

	department_n…	project_…	project_start_…	project_end_date	project_d…
1	HR	HR Project 1	2023-01-01	2023-06-30	250
2	IT	IT Project 1	2023-02-01	2023-07-31	219
3	Sales	Sales Proje…	2023-03-01	2023-08-31	191

```
--2. Find all employees who are not managers.

SELECT e.name AS employee_name, e.job_title
FROM employees e
LEFT JOIN departments d ON e.id = d.manager_id
WHERE d.id IS NULL;
```

Results Messages

	employee_name	job_title
1	Bob Miller	HR Associate
2	Charlie Brown	IT Associate
3	Dave Davis	Sales Associate

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

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

Results Messages

	employee_name	hire_date	project_name	project_start_date
1	Dave Davis	2023-03-15	Sales Project 1	2023-03-01

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

SELECT e.name AS employee_name, e.hire_date, d.name AS department_name,
    RANK() OVER (PARTITION BY e.department_id ORDER BY e.hire_date) AS hire_rank
```

```
FROM employees e
INNER JOIN departments d ON e.department_id = d.id
ORDER BY hire_rank, e.hire_date;
```

Results Messages

	employee_name	hire_date	department_name	hire_rank
1	John Doe	2018-06-20	HR	1
2	Jane Smith	2019-07-15	IT	1
3	Alice Johnson	2020-01-10	Sales	1
4	Bob Miller	2021-04-30	HR	2
5	Charlie Brown	2022-10-01	IT	2
6	Dave Davis	2023-03-15	Sales	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.

WITH EmployeeWithNextHire AS (
    SELECT e.name AS employee_name, e.hire_date, d.name AS department_name,
        LEAD(e.hire_date) OVER (PARTITION BY e.department_id ORDER BY e.hire_date) AS next_hire_date
    FROM employees e
    INNER JOIN departments d ON e.department_id = d.id
)

SELECT employee_name, hire_date, department_name,
    DATEDIFF(DAY, hire_date, next_hire_date) AS hire_duration_days
FROM EmployeeWithNextHire;
```

Results Messages

	employee_name	hire_date	department_name	hire_duration_days
1	John Doe	2018-06-20	HR	1045
2	Bob Miller	2021-04-30	HR	*NULL*
3	Jane Smith	2019-07-15	IT	1174
4	Charlie Brown	2022-10-01	IT	*NULL*
5	Alice Johnson	2020-01-10	Sales	1160
6	Dave Davis	2023-03-15	Sales	*NULL*