**SQL**

# Data Modelling

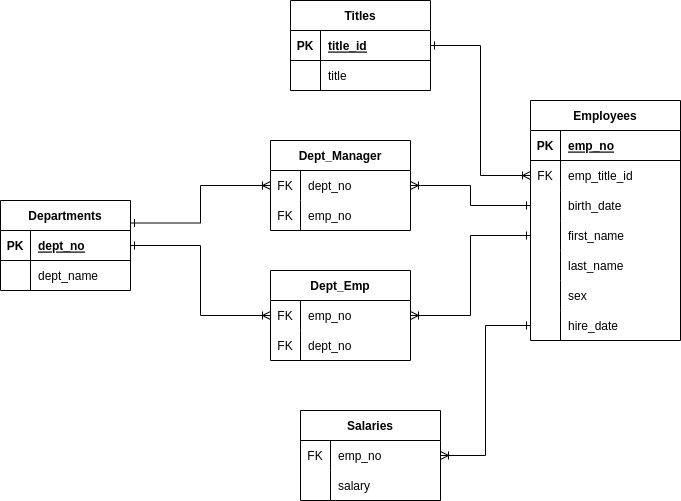


Figure : ERD

# Data Engineering

## Database Schema

CREATE TABLE `departments` (

`dept\_no` varchar(50) PRIMARY KEY,

`dept\_name` varchar(50) NOT NULL

);

CREATE TABLE `titles` (

`title\_id` varchar(50) PRIMARY KEY,

`title` varchar(50) NOT NULL

);

CREATE TABLE `employees` (

`emp\_no` int(11) PRIMARY KEY,

`emp\_title\_id` varchar(50) NOT NULL,

`birth\_date` date NOT NULL,

`first\_name` varchar(50) NOT NULL,

`last\_name` varchar(50) NOT NULL,

`sex` char(1) NOT NULL,

`hire\_date` date NOT NULL

);

CREATE TABLE `salaries` (

`emp\_no` int(11) NOT NULL,

`salary` double NOT NULL

);

CREATE TABLE `dept\_emp` (

`emp\_no` int(11) NOT NULL,

`dept\_no` varchar(50) NOT NULL

);

CREATE TABLE `dept\_manager` (

`emp\_no` int(11) NOT NULL,

`dept\_no` varchar(50) NOT NULL

);

ALTER TABLE `dept\_emp`

ADD CONSTRAINT `dept\_emp\_ibfk\_1` FOREIGN KEY (`dept\_no`) REFERENCES `departments` (`dept\_no`) ON UPDATE CASCADE,

ADD CONSTRAINT `dept\_emp\_ibfk\_2` FOREIGN KEY (`emp\_no`) REFERENCES `employees` (`emp\_no`) ON UPDATE CASCADE;

ALTER TABLE `dept\_manager`

ADD CONSTRAINT `dept\_manager\_ibfk\_1` FOREIGN KEY (`dept\_no`) REFERENCES `departments` (`dept\_no`) ON UPDATE CASCADE,

ADD CONSTRAINT `dept\_manager\_ibfk\_2` FOREIGN KEY (`emp\_no`) REFERENCES `employees` (`emp\_no`) ON UPDATE CASCADE;

ALTER TABLE `employees`

ADD CONSTRAINT `employees\_ibfk\_1` FOREIGN KEY (`emp\_title\_id`) REFERENCES `titles` (`title\_id`) ON UPDATE CASCADE;

ALTER TABLE `salaries`

ADD CONSTRAINT `salaries\_ibfk\_1` FOREIGN KEY (`emp\_no`) REFERENCES `employees` (`emp\_no`) ON UPDATE CASCADE;

# Data Analysis

List the employee number, last name, first name, sex, and salary of each employee.

SELECT

employees.emp\_no as EmployeeNo,

employees.last\_name as LastName,

employees.first\_name as FirstName,

employees.sex as Sex,

salaries.salary as Salary

FROM employees

JOIN salaries ON employees.emp\_no = salaries.emp\_no

ORDER BY employees.emp\_no;



## 2.

List the first name, last name, and hire date for the employees who were hired in 1986.

SELECT

first\_name as FirstName,

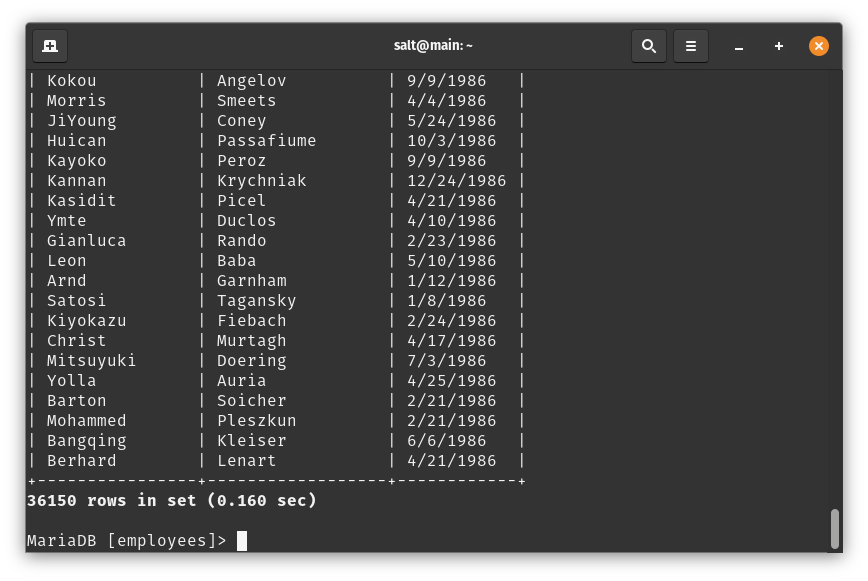
last\_name as LastName,

hire\_date as HireDate

FROM employees

WHERE year(str\_to\_date(hire\_date,'%m/%d/%Y'))=1986

ORDER BY emp\_no;



## 3.

List the manager of each department along with their department number, department name, employee number, last name, and first name.

SELECT

departments.dept\_no,

departments.dept\_name,

employees.emp\_no,

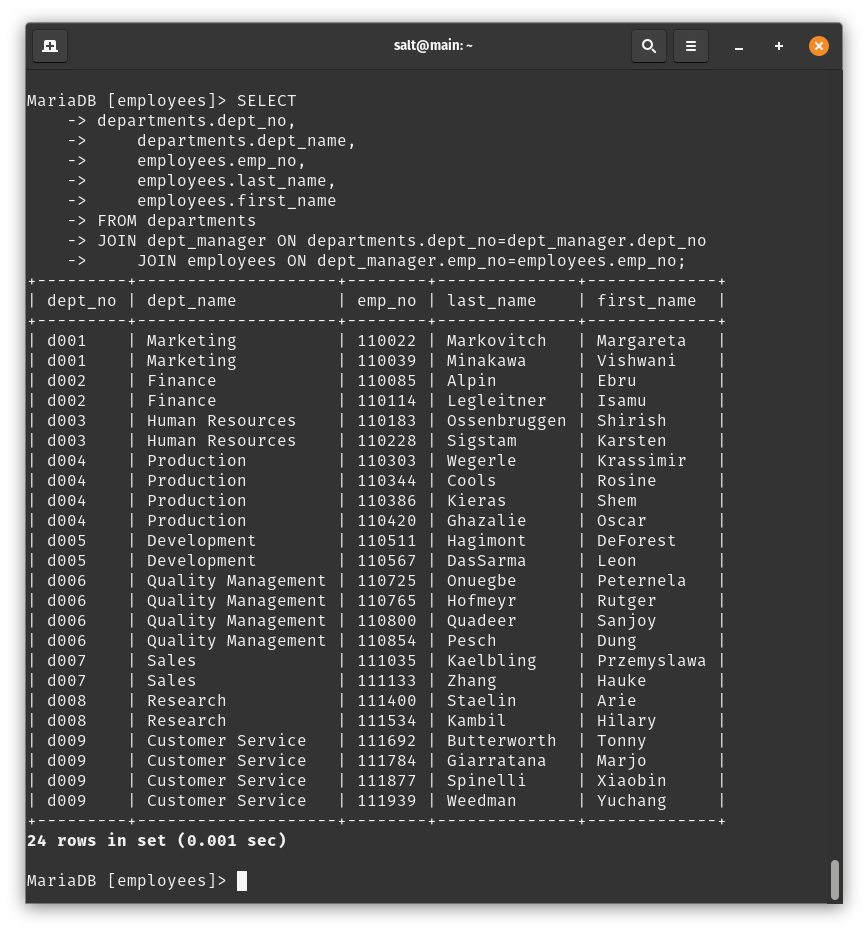
employees.last\_name,

employees.first\_name

FROM departments

JOIN dept\_manager ON departments.dept\_no=dept\_manager.dept\_no

JOIN employees ON dept\_manager.emp\_no=employees.emp\_no;



## 4.

List the department number for each employee along with that employee’s employee number, last name, first name, and department name.

SELECT

departments.dept\_no,

departments.dept\_name,

employees.emp\_no,

employees.last\_name,

employees.first\_name

FROM departments

JOIN dept\_emp ON departments.dept\_no=dept\_emp.dept\_no

JOIN employees ON dept\_emp.emp\_no=employees.emp\_no;



## 5.

List first name, last name, and sex of each employee whose first name is Hercules and whose last name begins with the letter B.

SELECT

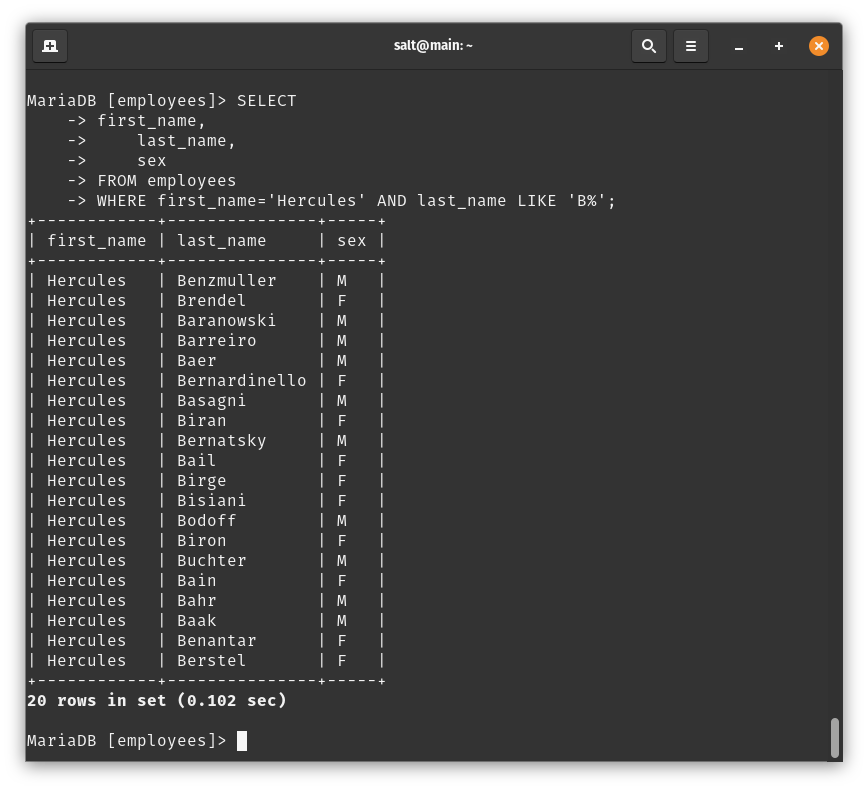
first\_name,

last\_name,

sex

FROM employees

WHERE first\_name='Hercules' AND last\_name LIKE 'B%';



## 6.

List each employee in the Sales department, including their employee number, last name, and first name.

SELECT

employees.emp\_no,

employees.last\_name,

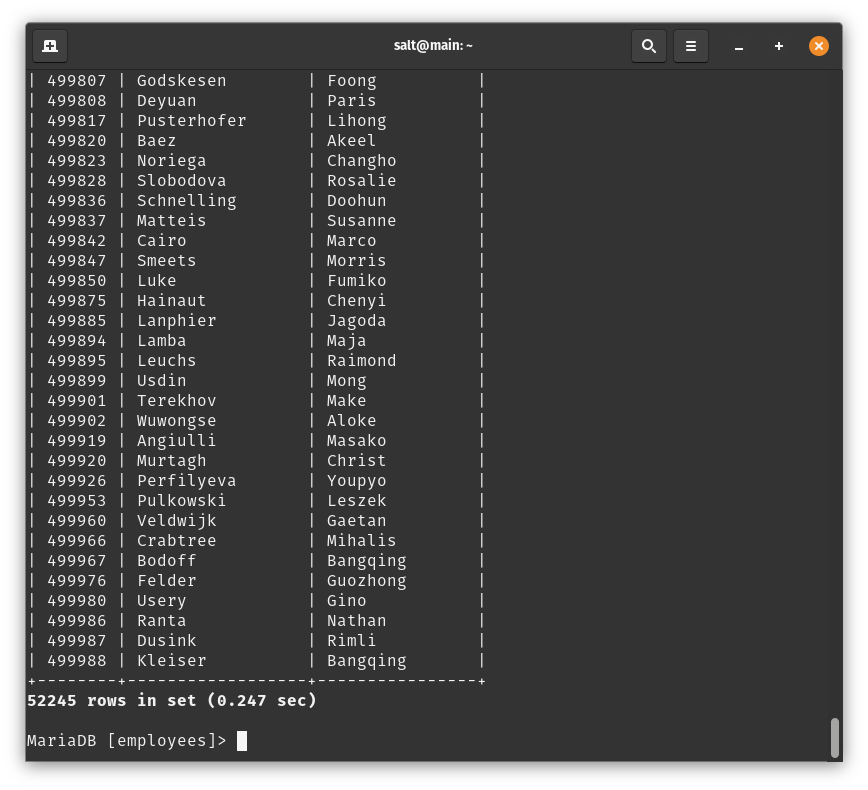
employees.first\_name

FROM employees

JOIN dept\_emp ON dept\_emp.emp\_no=employees.emp\_no

JOIN departments ON departments.dept\_no=dept\_emp.dept\_no

WHERE departments.dept\_name='Sales';



## 7.

List each employee in the Sales and Development departments, including their employee number, last name, first name, and department name.

SELECT

employees.emp\_no,

employees.last\_name,

employees.first\_name,

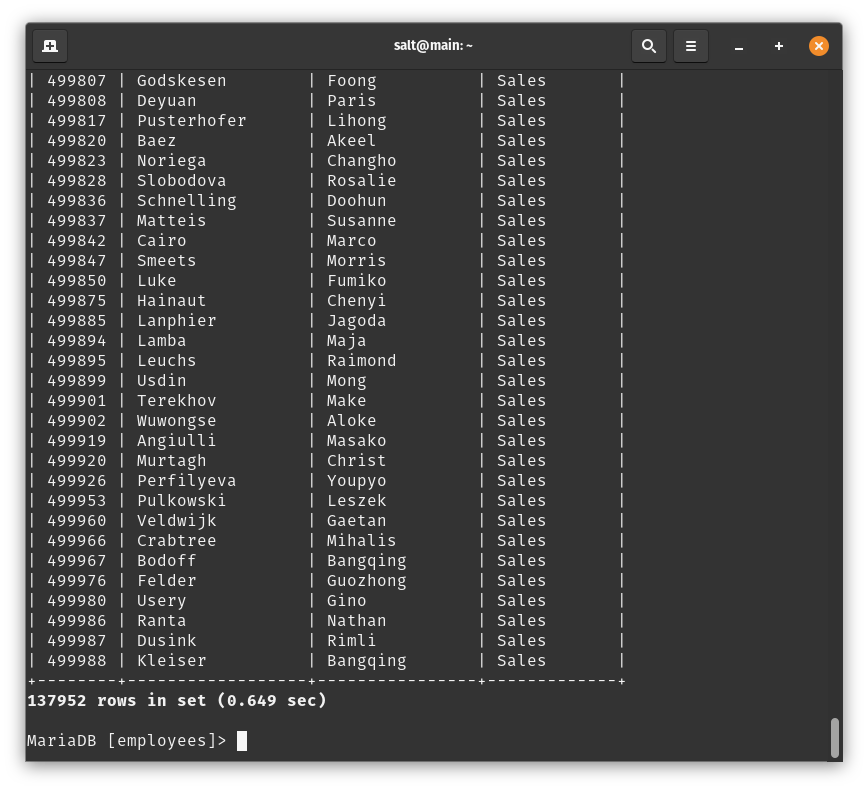
departments.dept\_name

FROM employees

JOIN dept\_emp ON dept\_emp.emp\_no=employees.emp\_no

JOIN departments ON departments.dept\_no=dept\_emp.dept\_no

WHERE departments.dept\_name='Sales' OR departments.dept\_name='Development';



## 8.

List the frequency counts, in descending order, of all the employee last names (that is, how many employees share each last name).

SELECT

employees.last\_name,

count(last\_name) as Frequency

FROM employees

GROUP BY employees.last\_name;

