

Information System - Lab work 2

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Database

- employees (emp_no, birth_date, first_name, last_name, gender)
- departments (dept_no, dept_name)
- dept_emp (emp_no, dept_no, from_date, to_date)
- dept_manager (dept_no, emp_no, from_date, to_date)
- titles (emp_no, title, from_date, to_date)
- salaries (emp_no, salary, from_date, to_date)

Relational Algebra

1. All info of all employees.

```
SELECT * FROM employees;
```

2. All info of all departments.

```
SELECT * FROM departments;
```

3. Full names of all employees.

```
SELECT CONCAT(first_name, " ", last_name) as full_name  
FROM employees;
```

4. Name of all departments

```
SELECT dept_name FROM departments;
```

5. Full names of employees working in "Sale" department.

```
SELECT CONCAT(first_name, " ", last_name) as full_name
FROM employees
NATURAL JOIN departments
NATURAL JOIN dept_manager
WHERE dept_name ="sales"
UNION
SELECT CONCAT(first_name, " ", last_name) as full_name
FROM employees
NATURAL JOIN departments
NATURAL JOIN dept_emp
WHERE dept_name ="sales";
```

6. Full names of male employees working in "Finance" department.

```
SELECT CONCAT(first_name, " ", last_name) as full_name
FROM employees
NATURAL JOIN departments
NATURAL JOIN dept_manager
WHERE dept_name ="finance" and gender="M"
UNION
SELECT CONCAT(first_name, " ", last_name) as full_name
FROM employees
NATURAL JOIN departments
NATURAL JOIN dept_emp
WHERE dept_name ="finance" and gender="M" ;
```

7. Salaries of female employees working in "Marketing" department.

```
SELECT CONCAT (first_name, " ", last_name) AS full_name, salary
FROM salaries NATURAL JOIN employees NATURAL JOIN departments
WHERE gender="F" AND dept_name="Marketing";
```

8. Full names of employees who have the same last name as their manager.

```
SELECT CONCAT (R1.first_name, " ", R1.last_name) as full_name
FROM (SELECT first_name, last_name, dept_name FROM employees
NATURAL JOIN (SELECT * FROM titles
NATURAL JOIN departments
NATURAL JOIN dept_manager
WHERE title='manager')AS sub_query1) AS R1
JOIN
(SELECT first_name, last_name, dept_name FROM employees
NATURAL JOIN (SELECT* FROM titles
NATURAL JOIN departments
```

```

NATURAL JOIN dept_emp
WHERE title != 'manager') AS sub_query2) AS R2
ON R1.last_name = R2.last_name and R1.dept_name = R2.dept_name;

```

9. Full names of managers who have been doing the job at least twice.

```

SELECT CONCAT(first_name, " ", last_name) as full_name
FROM employees NATURAL JOIN dept_manager GROUP BY emp_no
HAVING count(emp_no) > 1;

```

10. Full names of employees who was paid more than \$100000.

```

SELECT CONCAT(first_name, " ", last_name) as full_name, salary
FROM employees NATURAL JOIN salaries
WHERE salary > 100000;

```

11. Names of all departments that have employees paid more than \$100000.

```

SELECT dept_name FROM dept_emp
NATURAL JOIN departments
NATURAL JOIN salaries
WHERE salary > 100000
UNION
SELECT dept_name FROM departments
NATURAL JOIN salaries
NATURAL JOIN dept_manager
WHERE salary > 100000;

```