

Trường Đại Học Quốc Tế - ĐHQG TP.HCM

LAB REPORT

Course: Principles Of Database Management LAB 2

Full Name: Trần Minh Phúc

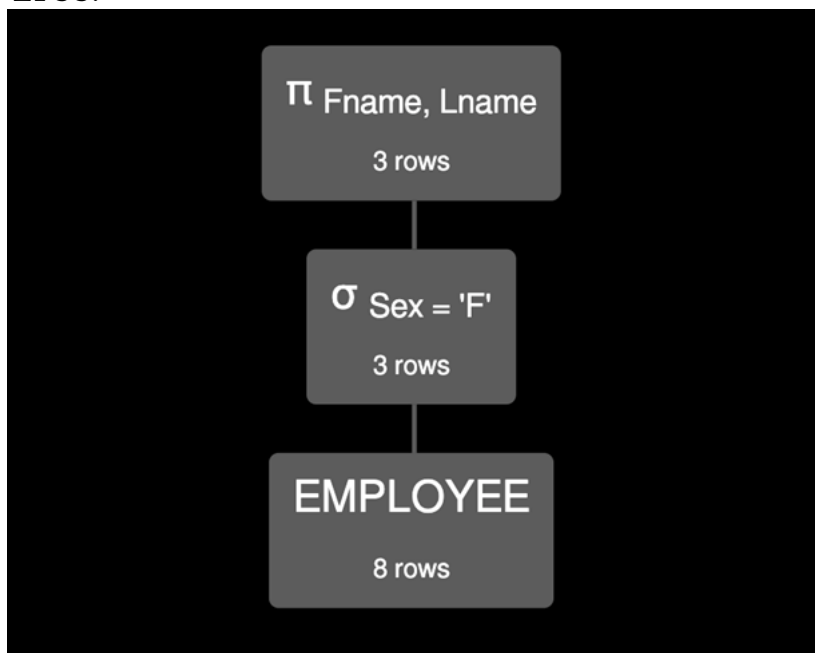
Student's ID: ITCSIU24070

1. Query: List the names of all female employees.

- Query:

```
1  $\pi$  Fname, Lname( $\sigma$  Sex = 'F' (EMPLOYEE))
```

- Tree:



- Result:

π Fname, Lname (σ Sex = 'F' (EMPLOYEE))

Execution time: 0 ms

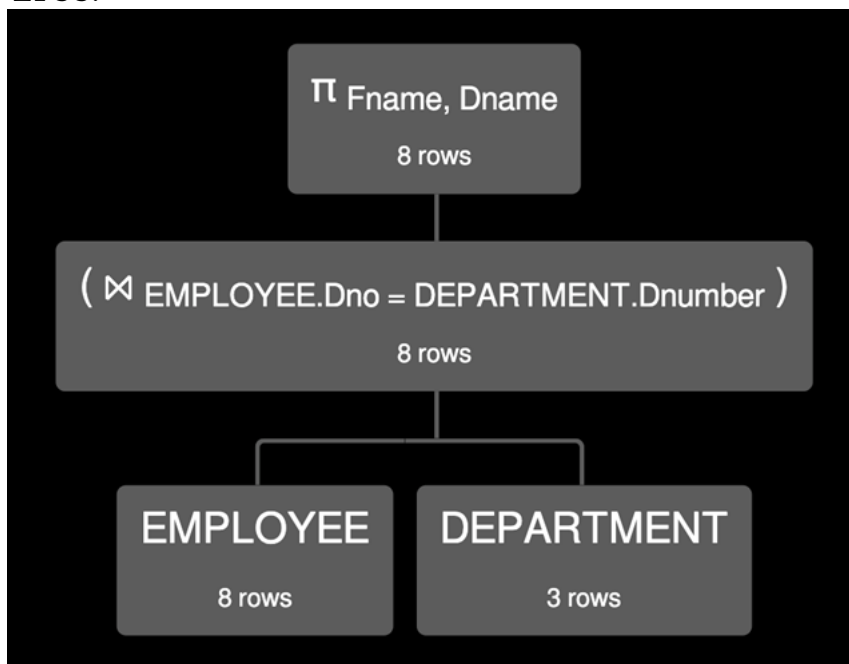
EMPLOYEE.Fname	EMPLOYEE.Lname
'Alicia'	'Zelaya'
'Jennifer'	'Wallace'
'Joyce'	'English'

2. Query: List the names of all employees along with their department names.

- Query:

```
1 |  $\pi$  Fname, Dname (EMPLOYEE  $\bowtie$  EMPLOYEE.Dno = DEPARTMENT.Dnumber DEPARTMENT)
```

- Tree:



- Result:

π Fname, Dname (EMPLOYEE \bowtie EMPLOYEE.Dno = DEPARTMENT.Dnumber DEPARTMENT)

Execution time: 4 ms

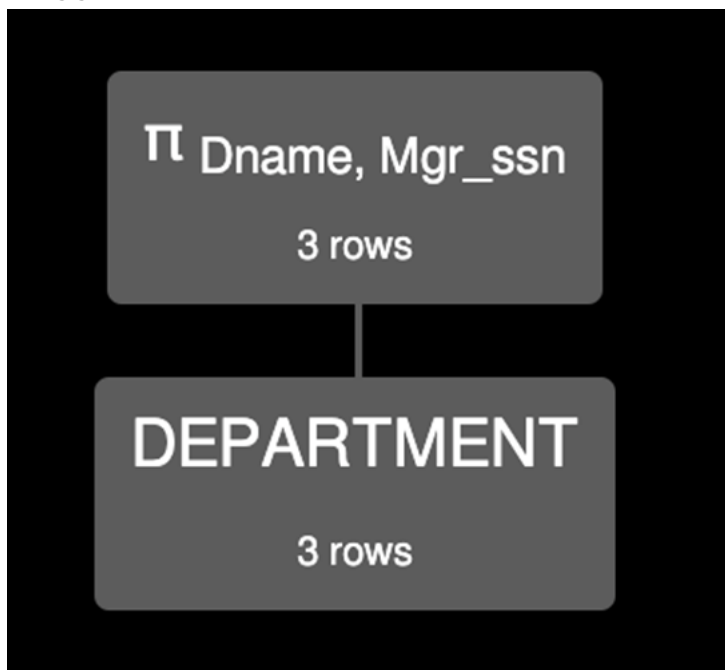
EMPLOYEE.Fname	DEPARTMENT.Dname
'John'	'Research'
'Franklin'	'Research'
'Alicia'	'Administration'
'Jennifer'	'Administration'
'Ramesh'	'Research'
'Joyce'	'Research'
'Ahmad'	'Administration'
'James'	'Headquarters'

3. Query: List the names of all departments along with their manager's social security number.

- Query:

```
1 |  $\pi$  Dname, Mgr_ssn(DEPARTMENT)|
```

- Tree:



- Result:

π Dname, Mgr_ssn (DEPARTMENT)	
Execution time: 0 ms	
DEPARTMENT.Dname	DEPARTMENT.Mgr_ssn
'Research'	333445555
'Administration'	987654321
'Headquarters'	888665555

4. Query: Find the average salary of employees in each department.

- Query:

```
1 ρ Department(γ Dname; avg(Salary) → avg_salary (EMPLOYEE ⋈ Dno =
  Dnumber DEPARTMENT))
```

- Tree:



- Result:

```
ρ Department ( γ Dname; AVG(Salary)→avg_salary ( EMPLOYEE ⋈ Dno =
  Dnumber DEPARTMENT ) )
```

Execution time: 2 ms

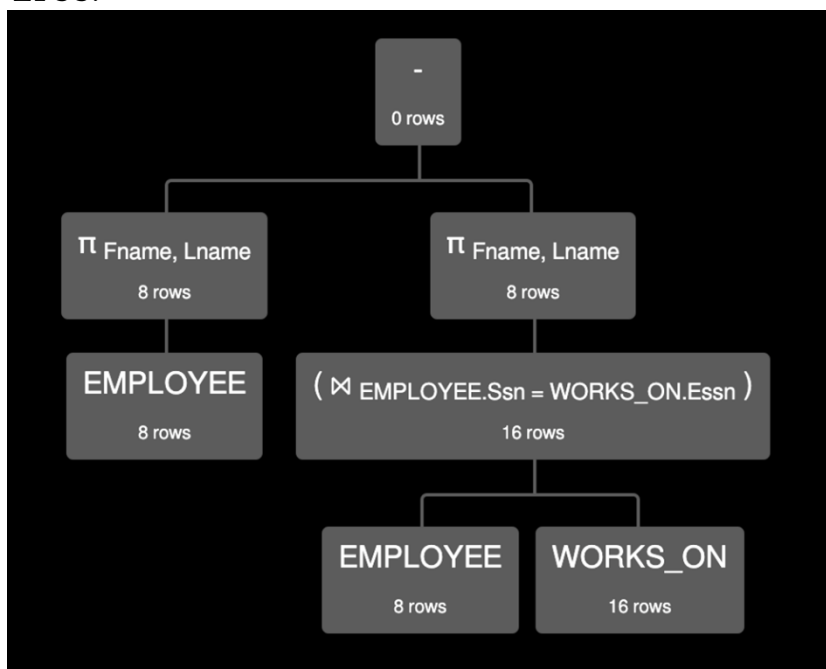
Department.Dname	Department.avg_salary
'Research'	33250
'Administration'	31000
'Headquarters'	55000

5. Query: List the names of employees who don't work on any projects.

- Query:

```
1 |  $\pi$  Fname, Lname (EMPLOYEE) - ( $\pi$  Fname, Lname ((EMPLOYEE)  $\bowtie$ 
  | EMPLOYEE.Ssn = WORKS_ON.Essn (WORKS_ON)))
```

- Tree:



- Result:

```
 $\pi$  Fname, Lname ( EMPLOYEE ) - (  $\pi$  Fname, Lname ( ( EMPLOYEE )
  |  $\bowtie$  EMPLOYEE.Ssn = WORKS_ON.Essn ( WORKS_ON ) ) )
```

Execution time: 3 ms

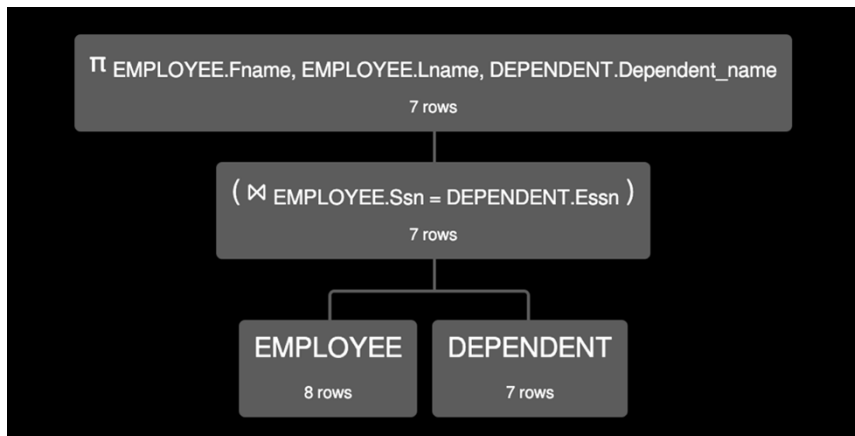
EMPLOYEE.Fname	EMPLOYEE.Lname
----------------	----------------

6. Query: List the names of all employees and their dependents.

- Query:

```
1 π EMPLOYEE.Fname, EMPLOYEE.Lname, DEPENDENT.Dependent_name
  ((EMPLOYEE) ⋈ EMPLOYEE.Ssn = DEPENDENT.Essn (DEPENDENT))
```

- Tree:



- Result:

```
π EMPLOYEE.Fname, EMPLOYEE.Lname, DEPENDENT.Dependent_name (
  (EMPLOYEE) ⋈ EMPLOYEE.Ssn = DEPENDENT.Essn (DEPENDENT)
)
```

Execution time: 2 ms

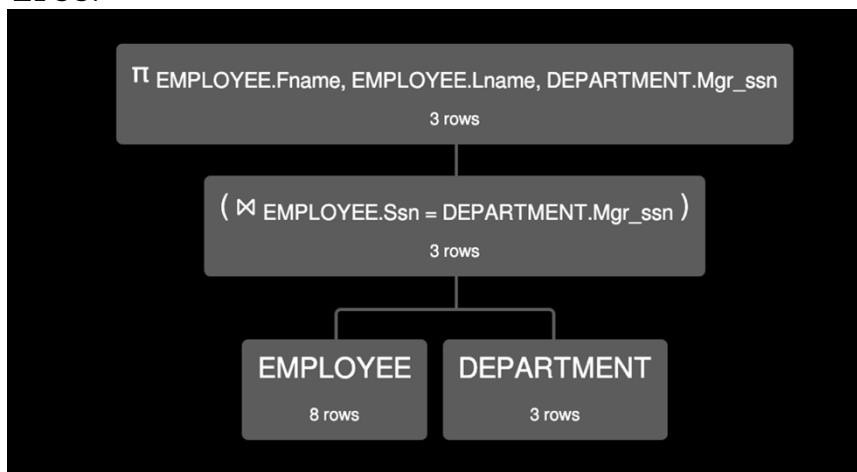
EMPLOYEE.Fname	EMPLOYEE.Lname	DEPENDENT.Dependent_name
'John'	'Smith'	'Michael'
'John'	'Smith'	'Alice'
'John'	'Smith'	'Elizabeth'
'Franklin'	'Wong'	'Alice'
'Franklin'	'Wong'	'Theodore'
'Franklin'	'Wong'	'Joy'
'Jennifer'	'Wallace'	'Abner'

7. Query: List the names of employees who are also managers of departments.

- Query:

```
1 π EMPLOYEE.Fname, EMPLOYEE.Lname,
  DEPARTMENT.Mgr_ssn ( ( EMPLOYEE ) ⋈ EMPLOYEE.Ssn = DEPARTMENT.Mgr_ssn
    ( DEPARTMENT ) )
```

- Tree:



- Result:

```
π EMPLOYEE.Fname, EMPLOYEE.Lname, DEPARTMENT.Mgr_ssn ( (
  EMPLOYEE ) ⋈ EMPLOYEE.Ssn = DEPARTMENT.Mgr_ssn (
    DEPARTMENT ) )
```

Execution time: 2 ms

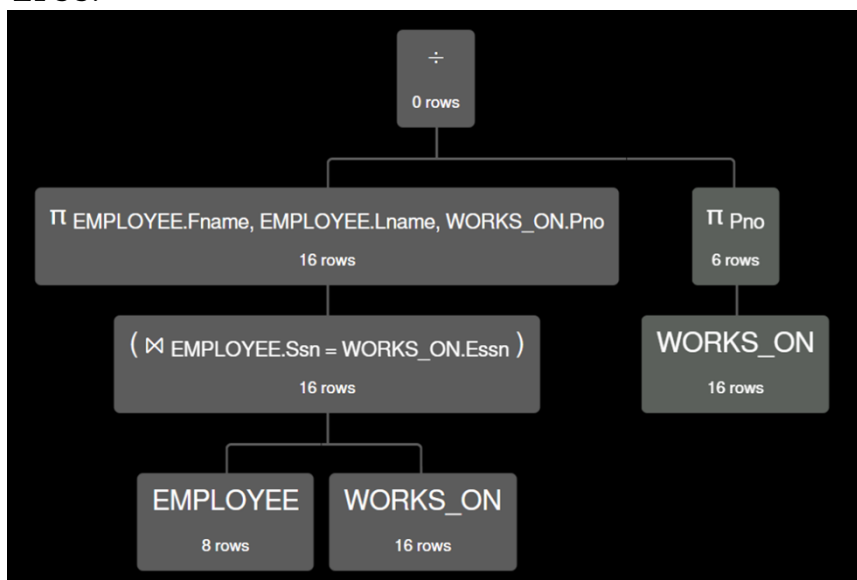
EMPLOYEE.Fname	EMPLOYEE.Lname	DEPARTMENT.Mgr_ssn
'Franklin'	'Wong'	333445555
'Jennifer'	'Wallace'	987654321
'James'	'Borg'	888665555

8. Query: Find the names of all employees who work on every project.

- Query:

```
1 (π EMPLOYEE.Fname, EMPLOYEE.Lname, WORKS_ON.Pno (EMPLOYEE ⋈ EMPLOYEE.Ssn =  
WORKS_ON.Essn WORKS_ON)) ÷ (π Pno (WORKS_ON))
```

- Tree:



- Result:

```
( π EMPLOYEE.Fname, EMPLOYEE.Lname, WORKS_ON.Pno ( EMPLOYEE  
⋈ EMPLOYEE.Ssn = WORKS_ON.Essn WORKS_ON ) ) ÷ ( π Pno (  
WORKS_ON ) )
```

Execution time: 2 ms

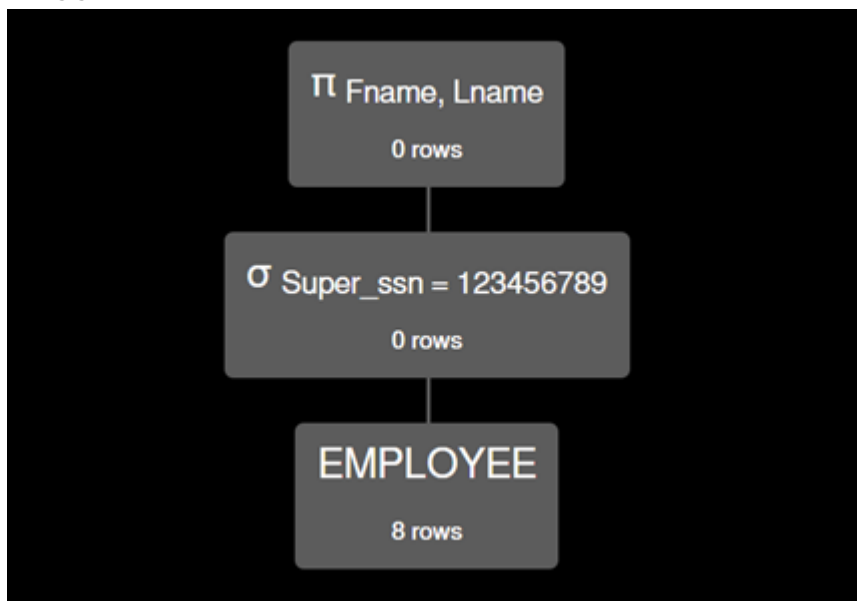
EMPLOYEE.Fname	EMPLOYEE.Lname
----------------	----------------

9. Query: Find the names of employees with the same supervisor as the employee with social security number '123456789'.

- Query:

```
1 |  $\pi$  Fname, Lname( $\sigma$  Super_ssn = 123456789 (EMPLOYEE))
```

- Tree:



- Result:

```
 $\pi$  Fname, Lname (  $\sigma$  Super_ssn = 123456789 ( EMPLOYEE ) )
Execution time: 1 ms
```

EMPLOYEE.Fname	EMPLOYEE.Lname
----------------	----------------

————— *This is the end of the report* —————