MI 1.02: Report #1

Due on Tuesday, November 7, 2017

Nghiem Thi Phuong 5:30pm

Cao Anh Quan

Problem 1

- `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)`

1. All info of all employees

$$\sigma(employees)$$

2. All info of all departments

$$\sigma(departments)$$

3. Full names of all employees

$$\pi_{first\_name,last\_name}(employees)$$

4. Names of all departments

$$\pi_{dept\_name}(departments)$$

5. Full names of employees working in ICT department

$$\pi_{last\_name,first\_name}(employees \bowtie (dept\_emp \bowtie \sigma_{dept\_name="ICT"} departments))$$

6. Full names of male employees working in BIO department

$$\pi_{last\_name,first\_name}(\sigma_{gender="M"} employees \bowtie (dept\_emp \bowtie \sigma_{dept\_name="BIO"} departments))$$

7. Salaries of female employees working in WEO department

$$\pi_{salary}((\sigma_{gender="M"} employees \bowtie salaries) \bowtie (dept\_emp \bowtie \sigma_{dept\_name="WEO"} departments))$$

Problem 2

- 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)

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

$$\pi_{R1.first\_name,R2.last\_name}((employees \bowtie dept\_emp)\ as\ R1 \bowtie_{R1.last\_name=R2.last\_name} (employees \bowtie dept\_manager)\ as\ R2)$$

2. Full names of managers who have been doing the job at least twice (use name g Count()(R) to count)

$$\pi_{first\_name,last\_name}(employees \bowtie (\sigma_{count>2}(\pi_{emp_no,count/count(emp\_no)\ groupby\ emp\_no}(dept\_manager))))$$

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

$$\pi_{fist\_name,last\_name}(employees \bowtie \sigma_{salary>100000} salaries)$$

4. Names of all departments that have employees paid more than $1000000

$$\pi_{dept\_name}(departments \bowtie (dept\_emp \bowtie \sigma_{salary>100000} salaries))$$