Nguyễn Vũ Bảo Hưng

MI 1.02 - Information Systems
Lab work 2

- All info of all employees

$\pi_{emp\_no,\ birth\_date,\ first\_name,\ last\_name,\ gender,\ hire\_date}$(employees)

- All info of all departments

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

- Full names of all employees

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

- Names of all departments

π_{dept_name}(departments)

- Full names of employees working in "Sales" department

$\pi_{first\_name,\ last\_name}$\{employees ⋈ [dept_emp ⋈ $\sigma_{dept\_name='Sales'}$(department)]\}

- Full names of male employees working in "Finance" department

$\pi_{first\_name,\ last\_name}$\{$\sigma_{gender\ =\ 'M'}$(employees) ⋈ [dept_emp ⋈ $\sigma_{dept\_name\ =\ 'Finance'}$(department)]\}

- Salaries of female employees working in "Marketing" department

$\pi_{first\_name,\ last\_name,\ salary}$\{[$\sigma_{gender\ =\ 'F'}$(employees) ⋈ salaries] ⋈ [dept_emp ⋈ $\sigma_{dept\_name='Marketing'}$(department)]\}

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

$\pi_{\text{employees.first\_name, employees.last\_name}}$\{(employees ⋈ dept_emp) ⋈$_{\text{employees.last\_name = manager.last\_name AND employees.emp\_no!=manager.emp\_no}}$
[(employees AS manager) ⋈ dept_manager]\}

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

$\pi_{first\_name,\ last\_name}$[employees ⋈ $\sigma_{COUNT(dept\_manager.emp\_no)\ >\ 1}$(dept_manager)]

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

$\pi_{first\_name,\ last\_name}$[employees ⋈ $\sigma_{salary\ >\ 100000\ GROUP\ BY\ emp\_no}$(salaries)]

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

π_{dept_name}\{$\sigma_{GROUP\ BY\ dept\_name}$\{[$\sigma_{salary\ >\ 100000\ GROUP\ BY\ emp\_no}$(salaries) ⋈ dept_emp] ⋈ departments \}\}