

1. Task

- Find the ID and name of each employee who works for “BigBank”.

$\Pi_{ID, person\_name} (\sigma_{company\_name = \text{“BigBank”}}(works))$

- Find the ID, name, and city of residence of each employee who works for “BigBank”.

$\Pi_{ID, person\_name, city} (\sigma_{company\_name = \text{“BigBank”}}($

$\sigma_{employee.person\_name = works.person\_name}(employee \times works)))$

- Find the ID, name, street address, and city of residence of each employee who works for “BigBank” and earns more than \$10000.

$\Pi_{ID, person\_name, street, city} (\sigma_{company\_name = \text{“BigBank”} \wedge salary > 10000}($

$\sigma_{employee.person\_name = works.person\_name}(employee \times works)))$

- Find the ID and name of each employee in this database who lives in the same city as the company for which she or he works.

$\Pi_{ID, person\_name} (\sigma_{employee.city = company.city}(employee \times company))$

2. Task

- Find the ID and name of each employee who does not work for “BigBank”.

$\Pi_{ID, person\_name} (\sigma_{company\_name \neq \text{“BigBank”}}(works))$

- Find the ID and name of each employee who earns at least as much as every employee in the database.

$\Pi_{ID, person\_name} (\sigma_{salary > average(salary)}(works))$

3. Consider the foreign-key constraint from the dept\_name attribute of instructor to the department relation. Give examples of inserts and deletes to these relations that can cause a violation of the foreign-key constraint.

We cannot add tuple with department name Chemistry, because attribute dept\_name does not have department name Chemistry, it will be mistake.

We cannot delete tuple with department name Computer Science, because at least one instructor tuple has name Computer Science.

4. Consider the employee database of figure above. What are the appropriate primary keys? ID of each person