

Laboratory work 1

Please write your answers to the pdf file for defense:

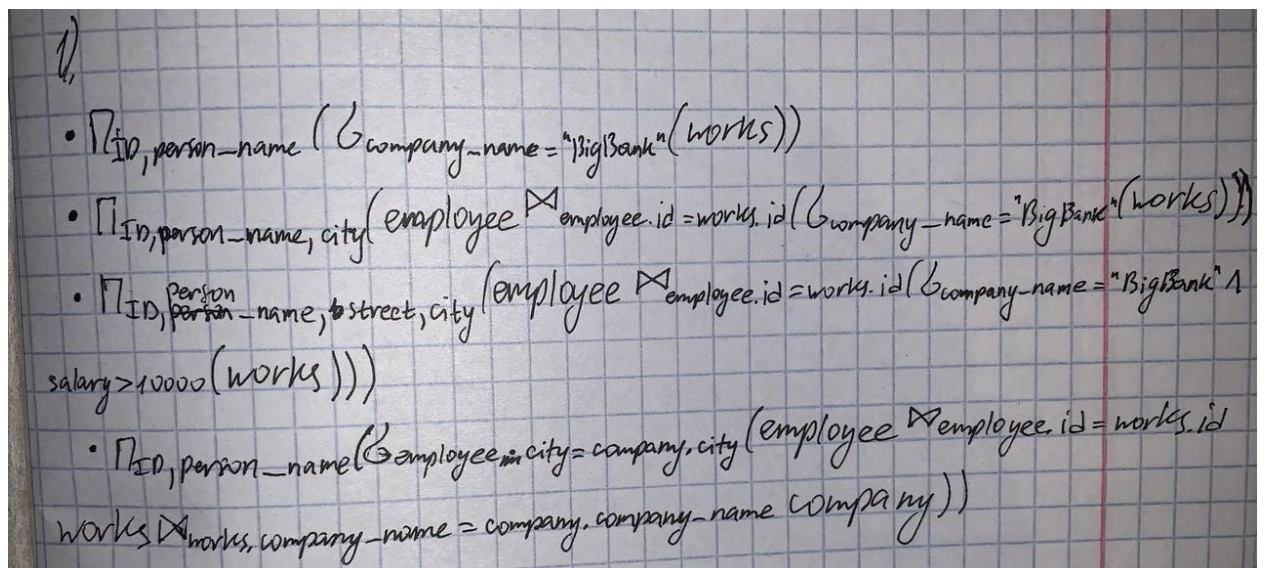
1. Consider the employee database of figure below. Give an expression in the relational algebra to express each of the following queries:

employee (*person_name*, *street*, *city*)
works (*person_name*, *company_name*, *salary*)
company (*company_name*, *city*)

Figure

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

Answer:



2. Consider the employee database of figure above. Give an expression in the relational algebra to express each of the following queries:

- Find the ID and name of each employee who does not work for "

BigBank".

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

Answer:

2)

- $\Pi_{ID, person-name}(\sigma_{works(company-name = "BigBank")}(works))$
- $\Pi_{ID, person-name}(employee) - \Pi_{ID, person-name}(\sigma_{first.salary < second.salary}(employee))$

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.

Answer:

3) INSERT INTO instructor VALUES ('010', 'Thomas', 'PE', '68000');
DELETE FROM department WHERE dept_name = 'Music';

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

Answer:

4)

employee (ID, person-name, street, city)

works (ID, person-name, company-name, salary)

company (company-name, city)