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”.

$$\Pi_{ID,person-name}(\sigma_{company-name="BigBank"}(works))$$

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

$$\Pi_{ID,person-name,city}(\sigma_{company-name="BigBank"}(employee \bowtie works))$$

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

$$\Pi_{ID,person-name,street,city}(\sigma_{company-name="BigBank"} \wedge {}_{salary>10000}(employee \bowtie works \bowtie company))$$

- 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.

$$\Pi_{ID,person-name}(\sigma_{employee.city=company.city}(employee \bowtie company))$$

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”.

$$\Pi_{ID,person-name}(\sigma_{company-name\neq"BigBank"}(works))$$

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

$$\Pi_{ID,person-name}(\sigma_{\mathbf{salary}=\mathbf{max}(\mathbf{salary})}(employee \bowtie works))$$

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.

код

INSERT INTO department (dept_name)VALUES(“202140”);
DELETE FROM instructor WHERE(dept_name)

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

{ID}