**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:



**Figure**

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

id, person\_name(σcompany\_name = ‘’BigBank’’ (works))

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

id, person\_name, city(σcompany\_name = ‘’BigBank’’ (works x employee))

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

id, person\_name, street, city(σcompany\_name = ‘’BigBank’’ (σ salary>10,000 (works x employee)))

• 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.

id, person\_name(σemployee.city = company.city (employee x 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”.

id, person\_name(σcompany\_name ≠‘’BigBank’’ (works))

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

id, person\_name(σsalary ≥ average(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.

If we try insert in instructor attribute which in department doesn’t exist for example (21216, Aika, Algebra, 16000 ) in department table we don’t have Algebra it will violate foreign key constraint.

trying delete null member

4. Consider the employee database of figure above. What are the appropriate primary keys? **ID of person 1,2 company\_name 3**