Laboratory work 1

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)

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

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

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

$\Pi_{id,person-name,city}(employee \bowtie_{employee.person-name=works.person-name} (\sigma_{company-name="BigBank"} works))$

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

$\Pi_{id,person-name,street,city}(employee \bowtie_{employee.person-name=works.person-name} (\sigma_{company-name=\text{BigBank} \wedge salary >1000\$} (works)))$

4) 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.

$\Pi_{id,person-name}[$
$\sigma_{city=city}[$

$((works \bowtie_{works.company-name=company.company-name} company)$

$\bowtie_{person-name=person-name} employee)]]$

2.1)

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

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

2)

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

$\Pi_{id,person-name}(employee) -$
$\Pi_{table.ID,table.person-name}(p_{table}(employee) \bowtie_{table.salary<some.salary} p_{some}(employee))$

3.1)

Inserting (1111, “Dimashka”, “some_dept_name”, 100000) if “some_dept_name” wont in department table it will give violation

Deleting (“Dimashka”, “some_dept_name”, 1000) if “some_dept_name” wont primary key in the department it will give violation

4.
Employee -> id, person_name
Works ->id
Company->id, company_name