Laboratory work 1

Task 1

1. $\Pi_{ID,\ person\_name}\ (\sigma_{company\_name\ =\ \text{“BigBank”}}\ (works))$
2. $\Pi_{ID,\ person\_name,\ city}\ (employee \bowtie_{employee.id=works.id}\ (\sigma_{company\_name\ =\ \text{“BigBank”}}(works)))$
3. $\Pi_{ID,\ person\_name,\ street,\ city}\ (\sigma_{(company\_name=\ \text{“BigBank”}\ \wedge\ salary\ >\ 10000)}\ (works \bowtie_{employee.id=works.id}\ employee))$
4. $\Pi_{ID,person\_name}(\sigma_{employee.city=company.city}(employee \bowtie_{employee.ID=works.ID}\ works \bowtie_{works.company\_name=company.company\_name}\ company))$

Task 2

1. $\Pi_{ID,person\_name}\ (\sigma_{company\_name!=\ \text{“BigBank”}}\ (works))$
2. $\Pi_{ID,person\_name}\ (\sigma_{salary>average\_salary}\ (works))$

Task 3

Inserting a tuple: (10111, Ostrom, Economics, 110,000) into the instructor table, where the department table does not have the department Economics, would violate the foreign key constraint.

Deleting the tuple: (Biology, Watson, 90000) from the department table, where at least one student or instructor tuple has dept name as Biology, would violate the foreign key constraint.

Task 4

Relation employee: person_name .
Relation works: person_name, company_name .
Relation company: company_name .