

Laboratory work № 1

#1

- a) $\Pi_{ID, person_name}(\sigma_{company_name="BigBank" \wedge employee.ID=works.ID}(employee \times works))$
- b) $\Pi_{ID, person_name, city}(\sigma_{company_name="BigBank" \wedge employee.ID=works.ID}(employee \times works))$
- c) $\Pi_{ID, person_name, street, city}(\sigma_{company_name="BigBank" \wedge salary > 10000 \wedge employee.ID=works.ID}(employee \times works))$
- d) $\Pi_{ID, person_name}(\sigma_{employee.ID=works.ID \wedge employee.city=company.city \wedge works.company_name=company.company_name}(employee \times works \times company))$

#2

- a) $\Pi_{ID, person_name}(employee) - \Pi_{ID, person_name}(\sigma_{company_name="BigBank" \wedge employee.ID=works.ID}(employee \times works))$
- b) $\Pi_{ID, person_name}(employee) - \Pi_{A.ID, A.person_name}(\rho_A(employee) \times_{A.salary < B.salary} \rho_B(employee))$

#3

- a) 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.
- b) 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.

#4

The primary keys is: ID, person_name, street, company_name.