

First task

1. π ID, person_name(σ company_name="Big Bank" (works))
2. π works.ID, works.person_name,employee.city(σ company_name="Big Bank" (works \times employee))
3. π works.ID, works.person_name,employee.street,employee.city(σ company_name="Big Bank"
 \wedge salary>10000 (works \times employee))
4. π works.ID, works.person_name(σ company.city=employee.city (works \times employee \times company)
)

Second task

1. π ID, person_name(σ company_name \neq "Big Bank" (works))
2. π ID, person_name(σ salary \geq average(salary) (works))

Third task

Inserting rows into instructor table, with unexisting department - example:physical education. Also field semester is any word but not Fall Spring Summer. Example - wintet. Or the same ID of two different students.

Fourth task

Employee(person_name,street,city) Primary key – person_name

Works(person_name,company_name,salary) Foreign key – person_name and company_name

Company(company_name,city) Primary key – company_name