Assignment 2

1. employee (person_name, street, city)
works (person_name, company_name, salary)
company (company_name, city)

- $\Pi_{person\_name}(\sigma_{company\_name = "BigBank"}(works))$
- $\Pi_{ID, person\_name, city}(employee \bowtie \sigma_{company\_name = "BigBank" \wedge works.ID = employee.ID}(works))$
- $\Pi_{ID, person\_name, street, city}(employee \bowtie \sigma_{company\_name = "BigBank" \wedge salary > 10000}(works))$
- $\Pi_{ID, person\_name}(employee \bowtie \sigma_{employee\_city = company.city}(works) \bowtie (company))$

2.

- $\Pi_{ID, person\_name}(\sigma_{company\_name \neq "BigBank"}(works))$
- $\Pi_{person\_name}(\sigma_{works.salary \geq all \wedge company\_name = "BigBank"}(works))$

3. Inserting a tuple:
(33456, Physics, Math, 87000) into the istructor table, where the department table doesn't have the department Physics, Math would violate the foreign-key.

Deleting a tuple:
(Economics, Uk, 90000) from department table, where at least one instructor tuple has dept_name as economics, would violate foreign-key constraint.

4. In the relational algebra model of DB, a primary key is a specific choice of a min set of attributes (columns) that uniquely specify a tuple in a relation; so the primary keys were ID, city, company_name.