

- 1.1) $\Pi_{id, person_name}(\sigma_{company_name = "BigBank"}(works))$
- 1.2) $\Pi_{id, person_name, city}(\sigma_{company_name = "BigBank"}(works))$
 $\bowtie_{works.person_name=employee.person_name} employee$
- 1.3) $\Pi_{id, person_name, street, city}(\sigma_{company_name = "BigBank" \wedge salary > 10000}(works))$
 $\bowtie_{works.person_name=employee.person_name} employee$
- 1.4) $joined \leftarrow (works \bowtie_{works.company_name=company.company_name} company)$
 $\Pi_{id, person_name} (joined \bowtie_{joined.person_name=employee.person_name \wedge joined.city=employee.city} employee)$

2.1) $\Pi_{ID, person_name} (\sigma_{company_name \neq "BigBank"} (Works))$

$\Pi_{id, person_name}(employee) - \Pi_{id, person_name}(\sigma_{company_name = "BigBank"}(works))$

2.2) $\Pi_{id, person_name}(works) - \Pi_{works.id, works.person_name}(works \bowtie_{works.salary \leq works_2.salary} \rho_{works_2}(works))$

3) instructor(ID, name, dept_name, salary)

department(dept_name, building, budget)

Inserting: (22222, Einstein, Physics, 95000)

into the instructor table, where the department table doesn't have the department Physics, would violate the foreign key constraint

Deleting: (Physics, Watson, 70000)

From the department table, where at least one instructor has dept_name as Physics, would violate the foreign key constraint

4)

employee (person_name, street, city) OR ID for each table
works (person_name, company_name, salary)
company (company_name, city)