1.1) $\prod_{id, person\_name}(\sigma_{company\_name = \text{"BigBank"}}(works))$

1.2) $\prod_{id, person\_name, city}(\sigma_{company\_name = \text{"BigBank"}}(works))$
$\bowtie_{works.person\_name=employee.person\_name} employee)$

1.3) $\prod_{id, person\_name, street, city}(\sigma_{company\_name = \text{"BigBank"} \wedge salary > 10000}(works))$
$\bowtie_{works.person\_name=employee.person\_name} employee)$

1.4) joined $\leftarrow$ (works$\bowtie_{works.company\_name=company.company\_name}$company)

$\prod_{id, person\_name}$ (joined$\bowtie_{joined.person\_name=employee.person\_name \wedge}$
$_{joined.city=employee.city}$employee)

2.1) $\prod_{id, person\_name}(employee)$ - $\prod_{id, person\_name}(\sigma_{company\_name =}$
$_{\text{"BigBank"}}(works))$

2.2) $\prod_{id, person\_name}(works)$ - $\prod_{works.id,}$
$_{works.person\_name}(works\bowtie_{works.salary\leq works\_2.salary}\rho_{works\_2}(works))$

3) instructor(ID, name, <u>dept_name</u>, salary)

department(<u>dept_name</u>, 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) Candidate keys: {person_name}, {street}, {city}. One of them can be primary key. In the RM of DB, a primary key is a specific choice of a minimal set of attributes