1.

// $\Pi_{person\_name}(Sigma_{company\_name\,=\,\text{"Big Bank"}}(Works))$

// $\Pi_{person\_name,city}(Sigma_{company\_name\,=\,\text{"Big Bank"}}(works \bowtie_{(works.person\_name\,=\,employee.person\_name)} employee))$

// $\Pi_{person\_name,city,\,street,city}(Sigma_{company\_name\,=\,\text{"Big Bank"}\,\wedge\,salary\,>\,10000}(works \bowtie_{(works.person\_name\,=\,employee.person\_name)} employee))$

/ $\Pi_{person\_name}(Sigma_{company\_name\,=\,\text{"Big Bank"}\,\wedge\,employee\_city\,=\,company.city}(employee \bowtie_{(employee.person\_name\,=\,works.person\_name)} works \bowtie_{(works.company\_name\,=\,company.company\_name)} company))$

2.

// $\Pi_{person\_name}(Sigma_{company\_name\,!=\,\text{"Big Bank"}}(Works))$

3.

    if we delete primary key without deleting foreign keys which are reference to this primary key.

4.

employee → person_name
company → company_name