1. **Cascade of selection**

(R)=

Eg.

branchNo=’B003’ ⋀ salary>15000(Staff) = branchNo=’B003’(salary>15000(Staff))

1. **Commutativity of selection operations**

Eg.

branchNo=’B003’(salary>15000(Staff)) = salary>15000(branchNo=’B003’(Staff))

1. **In a sequence of projection operations , only the last sequence is required**

L(M...N(R)= L(R)

Eg.

IName(branchNo,IName(Staff))= IName(Staff)

1. **Commutativity of Selection and Projection**

If the predicate p involves only the attributes in the projection list, then the Selection and projection operations can commute as follows:

A1,...,Am(p(R)) = p(A1,...,Am(R)) where p ∊ {A1 , A2,...,An}

Eg.

fName, IName(IName=’Lee’(Staff)) = IName=’Lee’(fName,IName(Staff))

1. **Commutativity of Theta join (and Cartesian product)**

Note:This rule also applies to the equijoin and the natural join because they are special cases of the Theta join

Rp S = S ⨝p R

RS = S R

Eg.

Staff ⨝ Staff.branchNo=Branch.branchNoBranch = Branch ⨝Staff.branchNo=Branch.branchNoStaff

1. **Commutativity of Selection and Theta join (or Cartesian product)**

p(R ⨝r S) = (p(R)) ⨝r S

p(RS) = (p(R))

1. **Commutative pr**