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COMP9315 Sample Exam, Q5 Sample Solution

(a)

Any three of ..
R join (S join T)  or  (S join T) join R
S join (R join T)  or  (R join T) join S
T join (R join S)  or  (R join S) join T
etc.

(b)

(R join S) join T
Sel[rval = 'abc'](R) gives only one tuple
Sel[sval < 'xyz'](S) gives r_S/2 tuples
Some attempt at cost analysis for each step
Sel(R) needs max b_R pages
Sel(S) needs max b_S pages
Join of above results ... cost = 1 + b_S/2 + b_Out
Followed by ... b_Out + b_Out*b_T (nested loop)

(R join T) join S
Sel[rval = 'abc'](R) gives only one tuple
(R join T) on T's fk can give only one tuple
Sel[sval < 'xyz'](S) gives r_S/2 tuples
Some attempt at cost analysis for each step
Sel(R) needs max b_R pages
Sel(S) needs max b_S pages
Join(R,T) cost = 1 + b_T
Join(Tmp,S) cost = 1 + b_S/2

(c)

Tmp1 = Sel[rval = 'abc'](R)
Tmp2 = Sel[sval < 'xyz'](S)
Tmp3 = Tmp1 Join[Tmp1.id = Tmp2.rid] Tmp2
Result = Tmp2 Join[T.sid = Tmp3.sid and Tmp3.tid = T.id] T

R(id,rval,tid)  S(id,sval,rid)  T(id,tval,sid)
Tmp1(rid,rval,tid) = Sel[rval = 'abc'](R)
Tmp2(sid,sval,rid) = Sel[sval < 'xyz'](S)
Tmp3(rid,rval,tid,sid,sval) = Tmp1 Join[Tmp1.rid = Tmp2.rid] Tmp2
Result(rid,tid,sid,rval,sval,tval) = Tmp2 Join[T.sid = Tmp3.sid and Tmp3.tid = T.id] T
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