

## 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  $b_R$  pagesSel(S) needs max  $b_S$  pagesJoin 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  $b_R$  pagesSel(S) needs max  $b_S$  pagesJoin(R,T) cost =  $1 + b_T$ Join(Tmp,S) cost =  $1 + b_S/2$ 

(c)

Tmp1 = Sel[rval = 'abc'](R)

Tmp2 = Sel[sval &lt; '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 &lt; '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