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# COMP9315 14s2 ... Q3

(a)

r_S = 5000,  r_C = 1000,  r_E = 20000

R_S = 4+20+4+4 = 32,  C_S = floor(4096/32) = 128
b_S = ceil(r_S/C_S) = 5000/128 = 40

R_C = 4+8+4+24 = 40,  C_C = floor(4096/40) = 102
b_C = ceil(1000/102) = 10

R_E = 4+4+4+4 = 16,  C_E = floor(4096/16) = 256
b_E = ceil(20000/40) = 79


(b)

R_Tmp1 = R_C+R_E = 56,  C_Tmp1 = floor(4096/56) = 73
r_Tmp1 = 20000,  b_Tmp1 = ceil(20000/73) = 274
Cost(Join(C,E)) = read(b_C + b_C*b_E) + write(b_Tmp1) = 10 + 10*79 +
274 = 1074

R_Tmp2 = R_Tmp1+R_S = 56+32 = 88, C_Tmp2 = floor(4096/88) = 46
r_Tmp2 = 20000,  b_Tmp2 = ceil(20000/46) = 435
Cost(Join(S,Tmp1)) = read(b_S + b_S*b_Tmp1) + write(b_Tmp2) = 40 +
40*274 + 435 = 11435

R_Tmp3 = R_Tmp2 = 88,  C_Tmp3 = 46
r_Tmp3 = 70,  b_Tmp3 = 2
Cost(Sel) = read(b_Tmp2)+ write(b_Tmp3) = 435 + 2 = 437

R_Tmp4 = 24,  C_Tmp4 = floor(4096/24) = 170
r_Tmp4 = 70,  b_Tmp4 = 1
Cost(Proj) = read(b_Tmp3) + write(b_Tmp4) = 2 + 1 = 3

R_Res = 24,  C_Res = 170
r_Res = 70,  b_Res = 1
Cost(Sort) = read(b_Tmp4) + write(b_Res) = 1 + 1 = 2

Total Cost = 1074 + 11435 + 437 + 3 + 2 = 12951  (not required)


(c)

Tmp1 = Sel[code=COMP9315&term=14s2](Courses)
Tmp2 = Proj[sid,name](Students)
Tmp3 = Join[cid=course](Courses,Enrolments)
Tmp4 = Join[sid=student](Tmp3,Tmp2)
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