CSC343 Worksheet 4 Solution

June 17, 2020

1. **Exercise 5.2.1**: Here are two relations

   $R(A, B)$: [(0,1),(2,3),(0,1,),(2,4),(3,4)]

   $S(A, B)$: [(0,1), (2,4), (2,5), (3,4), (0,2), (3,4)]

   Compute the following

   a) π_{A+B,A^2,B^2}
   b) $\pi_{B+1,C-1}(S)$
   c) $\tau_{B,A}(R)$
   d) $\tau_{B,C}(S)$
   e) $\delta(S)$
   f) $\gamma_{A,SUM(B)}(R)$
   g) $\gamma_{B,AVG(C)}(S)$
   h) $\gamma_{A}(R)$
   i) $\gamma_{A,MAX(C)}(R \bowtie S)$
   j) $R \overset{\circ}{\bowtie}_{L} S$
   k) $R \overset{\circ}{\bowtie}_{R} S$
   l) $R \overset{\circ}{\bowtie} S$
   m) $R \overset{\circ}{\bowtie}_{R.B<S.B} S$

2. **Exercise 6.4.1:** Write each of the quires in Exercise 2.4.1 in SQL, making sure that duplicates are eliminated

3. **Exercise 6.4.2** Write each of the queries in Exercise 2.4.3 in SQL, making sure duplicates are eliminated