Database Systems - Assignment 2

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Due Date 10th March 2014 in Class by 2:10PM

1. Consider $RJNS$, the join selectivity factor is given by
   $(T(R) \times T(S))/max(V(R,Y), V(S,Y))$,
   where Y is the join attribute. Suppose $card(R[Y] \cap S[Y]) = k$, will the above join selectivity factor be still correct, prove or disprove this statement.

2. Some laws that hold for sets hold for bags; others do not. Prove or disprove following statements.

   (a) $R \cup R = R$

   (b) $R \cap R = R$

   (c) $R - R = \emptyset$

   (d) $R \cup (S \cap T) = (R \cup S) \cap (R \cup T)$

3. Given relations R and S, and join attribute A is common between them, if A follows Zipfian distribution in the same order of attribute values in both relations, give an accurate estimate of number of rows in the $RJNS$.

4. Give an example for a multiple relation join query where it is more cheaper to create an index and use it to execute the query, than executing the query with out the index. You need to consider the cost of creating the index in the total cost of executing the query.