

Tuesday, July 31, 2018

When association classes are implicit (hidden), what becomes the definition of different join operations?

Let A' denote a computed relation, AB is a primitive association-class relation, and B is a primitive relation.
"Primitive" means a relation in the database.

1. Join: $A' \bowtie B = (A' \bowtie AB) \bowtie B$
2. Left Semi Join: $A' \ltimes B = A' \ltimes (AB \ltimes B) = A' \ltimes AB$.
 $(B \ltimes AB) \ltimes A' = AB \ltimes A'$
 $(B \ltimes AB)$ are the AB tuples that join with B . But that is just AB .
OR
 $A' \ltimes B = A' \ltimes AB$
3. Right Semi Join: $A' \rtimes B = (A' \rtimes AB) \rtimes B$
 $(A' \rtimes AB)$ are the AB tuples that join with A'
4. Left Anti Semi Join: $A' \bar{\ltimes} B = A' \bar{\ltimes} AB$
 $(A' \bar{\ltimes} AB)$ is the set of A' that do not join with B tuples
5. Right Anti Semi Join: $A' \bar{\rtimes} B = B \bar{\rtimes} (AB \rtimes A')$
 $(AB \rtimes A')$ identifies the set of B tuples that join with A'
 $B \bar{\rtimes} (AB \rtimes A')$ is set of B tuples that don't join with A'
OR
 $A' \bar{\rtimes} B = (A' \rtimes AB) \bar{\rtimes} B$
 $(A' \rtimes AB)$ identifies the B tuples that join with A' ;
 $(A' \rtimes AB) \bar{\rtimes} B$ is the set of B tuples that do NOT join with A'
6. Left Outer Join $A' \ltimes\!\!\!\! \times B = A' \ltimes\!\!\!\! \times (AB \ltimes B)$
 $(AB \ltimes B)$ is the set of A tuples paired with B tuple values
7. Right Outer Join $A' \rtimes\!\!\!\! \times B = (A' \rtimes\!\!\!\! \times AB) \rtimes\!\!\!\! \times B$
 $(A' \rtimes\!\!\!\! \times AB)$ is the set of A' tuples paired with B tuple identifiers