Team 2
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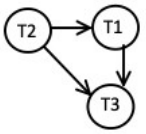
1. Conflict equivalence of two histories H and H' indicates that both histories are defined over the same set of transactions {T1 … Tn}. Thus, the serialization graphs of both histories must contain the exact same set of nodes, which represent the transactions.

   Conflict equivalence of two histories indicates that for any pair of conflicting operations pi and qj belonging to non-aborted transactions Ti and Tj, if pi < H qj, then pj < H' qj. Similarly, in a serialization graph, any pair of conflicting operations pi and qj belonging to Ti and Tj in the set of transactions {T1 … Tn} would cause a directed edge to be drawn from node Ti to node Tj.
   Thus, the serialization graphs of H and H' would have the same set of directed edges.

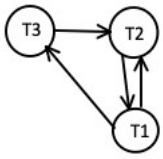
   Since the serialization graphs of H and H' have the same sets of edges and nodes, they are identical.

2. Serialization graphs for each history:

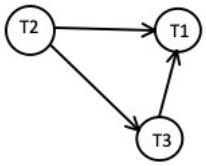
   H1:



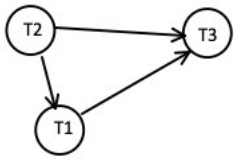
   H2:



   H3:



   H4:



   a. H1 and H4 are conflict equivalent since they have the identical serialization graph
   b. H1, H3 and H4 are conflict serializable
      Equivalent serial history according to their serialization graphs:
      H1: T2 -> T1 -> T3
      H3: T2 -> T3 -> T1

H4: T2 -> T1 -> T3

c.

H1: not possible

H2: not possible

H3: $R_3(z)W_2(x)R_2(z)W_2(y)\mathrm{c}2;R_1(x)R_3(x)R_3(y)W_1(x)\mathrm{c}1;\mathrm{c}3;$

H4: not possible

d.

H1: not possible

H2: not possible

H3: $R_3(z)W_2(x)R_2(z)W_2(y)\mathrm{c}2;R_1(x)R_3(x)R_3(y)\mathrm{c}3;W_1(x)\mathrm{c}1;$

H4: not possible

3.

a. W3(x) R1(z) R1(y) W1(x) R3(z) R3(y) W2(x) R2(z) W2(y)
b. R1(z) R1(y) W1(x) W2(x) W3(x) R2(z) W2(y) R3(z) R3(y)

4.

	Pop	Push	Top	Exchange B	ExchangeT
Pop	N	N	N	N	N
Push	N	N	N	Y	Y
Top	N	N	Y	N	N
Exchange B	N	Y	N	Y	N
ExchangeT	N	Y	N	N	Y

5. Snapshot isolation ensures that data read by a transaction is consistent with what the data value was when the transaction started. If for example a transaction B updates the data D at time t2 in between transaction A's beginning time t1 and a read operation on D at time t3, such that t1 < t2 < t3, then the value that transaction A reads at time t3 will be the value at time t1, and not the updated value from time t2.

   The following history of transactions T1 and T2 without write-write conflicts is considered at snapshot isolation level, yet it is not serializable.

   H: R1(x)W2(x)R1(x)