

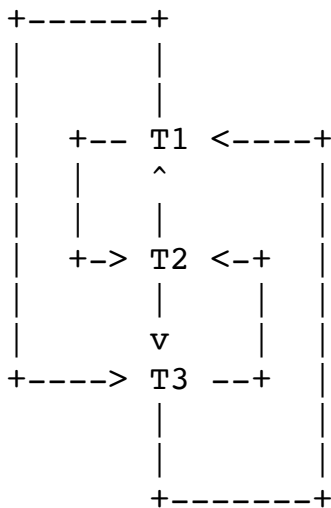
COMP9315 20T1 Final Exam Q7

Type your answer(s) to replace the xxx's
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| | | | | | |
|-----|-----------|------|------|-----------|----------------|
| T1: | R(X) W(X) | | R(Y) | | W(Y) |
| T2: | | R(Y) | | R(X) W(Y) | W(X) |
| T3: | | | R(X) | | R(Y) W(X) W(Y) |

a. Conflict serializability

- Precedence graph:



- Edges:

- Edge from T1 to T2, as T1 must do R(X) before T2 does W(X)
- Edge from T1 to T3, as T1 must do R(X) before T3 does W(X)
- Edge from T2 to T1, as T2 must do R(Y) before T1 does W(Y)
- Edge from T2 to T3, as T2 must do R(Y) before T3 does W(Y)
- Edge from T3 to T1, as T3 must do R(Y) before T1 does W(Y)
- Edge from T3 to T2, as T3 must do R(X) before T2 does W(X)

- There are cycles everywhere (e.g., T1 T2 T3 T1), so the schedule is not conflict serializable

b. View serializability

- Need to find a serial schedule that is view equivalent to the original schedule

- In any serial schedule that is view equivalent to the original schedule,

T1 must be executed first, because in the original schedule, both T2 and

T3 read the value of X written by T1

- In any serial schedule that is view equivalent to the original

schedule,

T2 must be executed before T3, because in the original schedule T3 reads

the value of Y written by T2

- So now, the only schedule that could possibly be view equivalent to the

original schedule is T1 T2 T3.

- This is T1 T2 T3:

T1: R(X) W(X) R(Y) W(Y)

T2: R(Y) R(X) W(Y) W(X)

T3: R(X) R(Y) W(X) W(Y)

- This is the original schedule:

T1: R(X) W(X) R(Y) W(Y)

T2: R(Y) R(X) W(Y) W(X)

T3: R(X) R(Y) W(X) W(Y)

- These schedules are not view equivalent, because in T1 T2 T3, T3 reads

the value of X written by T2, while in the original schedule, T3 reads

the value of X written by T1.

- Hence, the schedule is not view serializable.