

Why Two-phase Locking \Rightarrow Serial Equivalence?

- Proof by contradiction
- Assume two phase locking system where serial equivalence is violated for some two transactions T1, T2
- Two facts must then be true:
 - (A) For some object O1, there were conflicting operations in T1 and T2 such that the time ordering pair is (T1, T2)
 - (B) For some object O2, the conflicting operation pair is (T2, T1)
 - (A) \Rightarrow T1 released O1's lock and T2 acquired it after that
 \Rightarrow T1's shrinking phase is before or overlaps with T2's growing phase
- Similarly, (B) \Rightarrow T2's shrinking phase is before or overlaps with T1's growing phase
- But both these cannot be true!