

Exercise 8

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1 Concurrency Control

Given the following schedule:

$$S = \langle r_3(x), r_1(x), r_2(x), w_1(y), r_2(x), w_3(x) \rangle .$$

Answer the following questions:

1. When are two schedules conflict equivalent?
2. What is a conflict serializable schedule?
3. Draw the **serialization graph** for S.
4. Is S **conflict serializable**? Give an explanation for your answer.

2 Two-Phase Locking

Locking protocols are typically used to ensure that only serializable schedules are allowed in a DBMS. A widely used variant of a locking protocol is the two-phase locking protocol, that was discussed in the lecture.

1. Describe the basic idea of the two-phase locking protocol.
2. What techniques do you know to deal with deadlocks in two-phase locking?
3. What is the difference between preclaiming/conservative and strict two-phase locking?