Welcome to ACS TA Session 2

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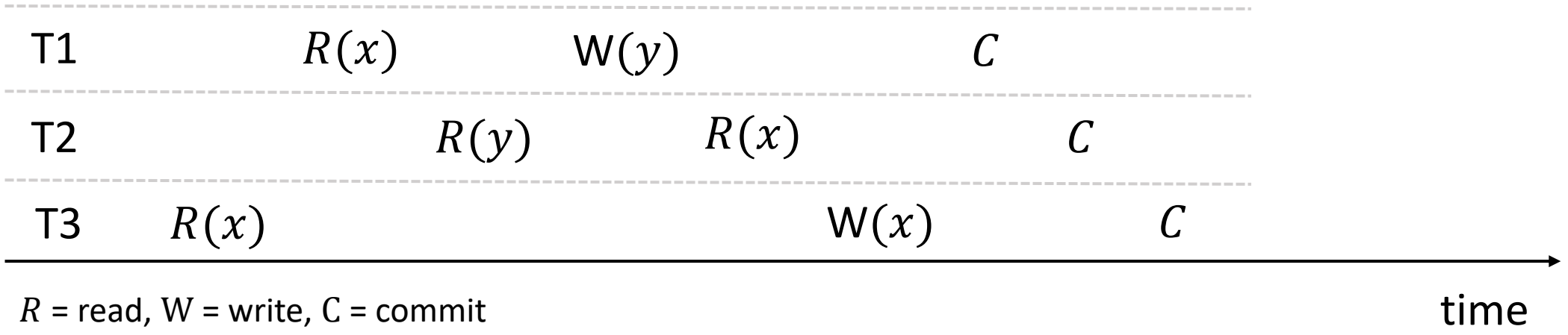
Agenda for today

4 Exercises using concepts such as:

- Precedence graphs and conflict serializability
- Strict two-phase locking **(Strict 2PL)**
- Optimistic concurrency control

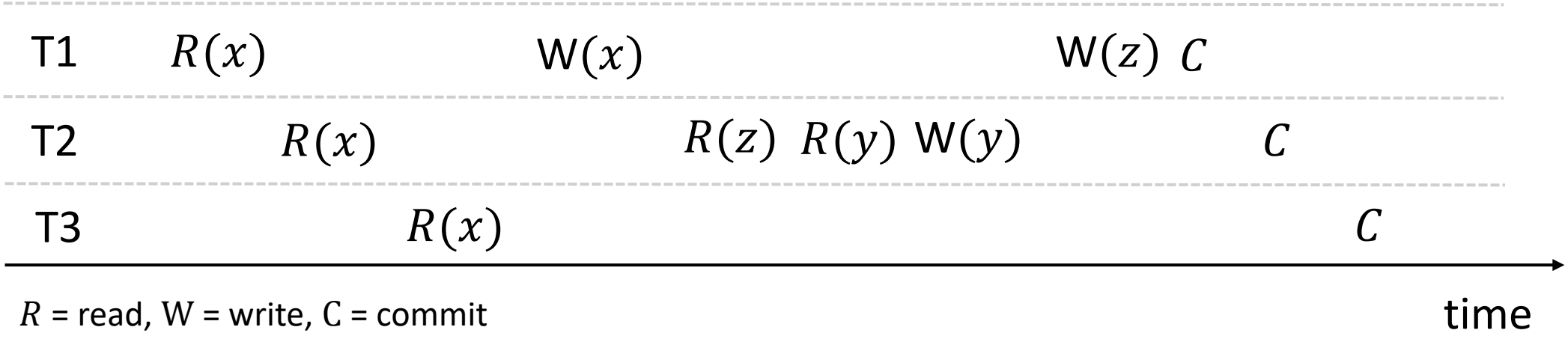
Exercise 1



R = read, W = write, C = commit

- What is the precedence graph for this schedule ?
- Is the schedule conflict serializable ?
- Could the schedule have been generated by a scheduler using Strict 2PL ?

Exercise 2



R = read, W = write, C = commit

- Are there conflicts between the following pairs of transactions: {T1,T2},{T1,T3},{T2,T3} ?
- Is the schedule conflict serializable ?
- Could the schedule have been generated by a scheduler using Strict 2PL ?

Exercise 3

For each statement, say whether it is **true** or **false**.
Explain why.

1) The ACID properties are:
   Availability, **C**onsistency, **I**ntegrity and **D**urability

2) Strict 2PL is a concurrency control protocol that has a lock acquisition phase and a lock release phase, so Strict 2PL may suffer from cascading aborts.

3) Strict 2PL may lead to deadlocks.

Exercise 4

For each statement, say whether it is **true** or **false**.
Explain why.

1) Locking is a pessimistic approach in which conflicts are prevented and performance is improved.

2) There are concurrency control protocols based on locking that prevent deadlocks altogether, and therefore there protocols do not need to implement deadlock detection.

3) In optimistic concurrency control, transactions are allowed to issue writes during the Read Phase, but these writes are **not** made in-place directly to the database.

Thank you!

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