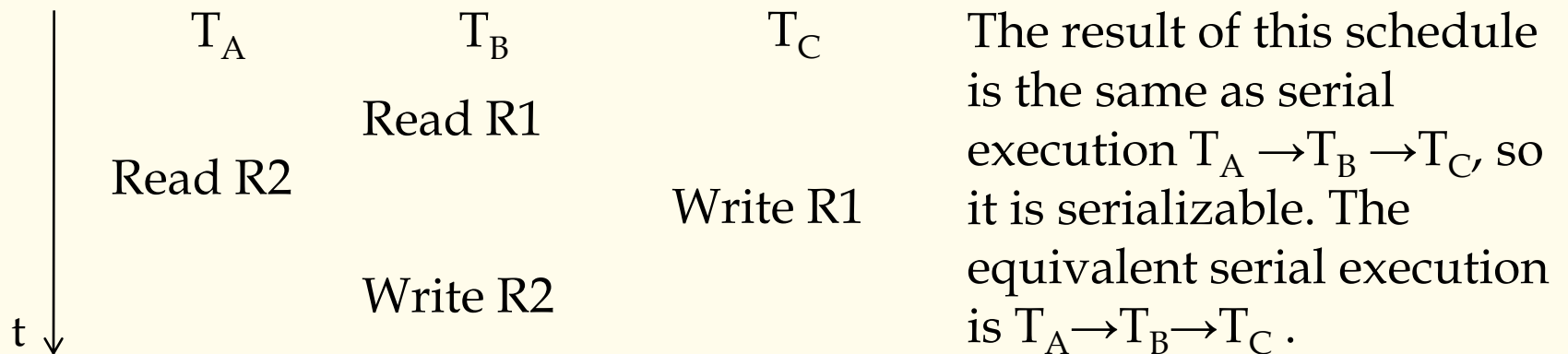




4.6.2 Serialization --- the criterion for concurrency consistency

Definition: suppose $\{T_1, T_2, \dots, T_n\}$ is a set of transactions executing concurrently. If a schedule of $\{T_1, T_2, \dots, T_n\}$ produces the same effect on database as some serial execution of this set of transactions, then the schedule is serializable.

Problem: different schedule \rightarrow different equivalent serial execution \rightarrow different result? (yes, $n!$)



4.6.3 Locking Protocol

Locking method is the most basic concurrency control method. There maybe many kinds of locking protocols.

(1) X locks

Only one type of lock, for both read and write.

Compatibility matrix : NL—no lock X—X lock
 Y —compatible N—incompatible

	NL	X
NL	Y	Y
X	Y	N

T_A
 X_lock R
 Update R
 ⋮
 X_unlock R
 EOT

T_B
 X_lock R
 wait
 ↓
 X_lock R
 Read R
 ⋮