4th BOTTLENECK: Concurrency control mechanisms

- Every effort should be made to eliminate the cost of traditional dynamic locking for concurrency control, which will also be a bottleneck. Remember that concurrency control guards the C and I features of the ACID properties by means of locking mechanisms. In general, multiuser databases use some form of data locking to solve the problems associated with data concurrency, consistency, and integrity.
Briefly, locks are mechanisms that prevent destructive interaction between transactions accessing the same resource.

5th BOTTLENECK: Distributed protocols to guarantee ACID

- One should avoid a two-phase commit protocol for distributed transactions, wherever possible, as network latencies imposed by round trip communications in **2PC** often take on the order of milliseconds.

2PC (2-phase commit): Is a distributed algorithm to guarantee the ACID properties for distributed relational DBMS. 2PC consists of two phases, namely a voting phase and a decision phase. During the voting phase, the coordinator requests all the sites participating in the transaction's execution to prepare-to-commit whereas, during the decision phase, the coordinator either decides to commit the transaction if all the participants are prepared to commit (voted "yes"), or to abort if any participant has decided to abort (voted "no").

Network latency: In a network, latency, a synonym for delay, is an expression of how much time it takes for a packet of data to get from one designated point to another.