

True/False:

1. BSD Socket API was created at Stanford.
2. TCP guarantees reliable, in-order, and at most once delivery.
3. Serial schedules are necessary to preserve ACID transaction semantics
4. It is possible to solve the Two Generals Problem with certainty over a lossy channel.

Short Answer:

1. What does ACID stand for? Explain each of them.
2. What are some elements you might want to lock in a database?
3. What are types of possible conflicts in an execution of multiple transactions?

Long Answer:

1. Assume two end-hosts using the sliding window protocol to implement flow control, and Selective Repeat to implement reliability. Assume sender sends 7 packets. The window size at the receiver is 3 packets, the round-trip time is 200ms, and the retransmission timeout is 500ms. The transmission time of the packet is negligible, i.e., assume the size of a packet is 0. The time to send all packets is the interval between the time the sender sends the first packet and the time the sender receives the ack from the last packet.

a) How long does it take to send all packets, assuming no losses? Draw the time diagram.

b) How long does it take to send all packets assuming the 5th packet is lost? Draw the time diagram.

c) How long does it take to send all packets assuming the ack of the 6th packet is lost? Draw the time diagram.