CS150A Quiz10

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Distributed Data

1) Instead of having just one copy of our ACID database on one machine, we replicate it across five machines. What happens to our performance, in general?

Check all that apply.

- [x] Reads are faster   *read : fastest*
- [ ] Reads are slower   *write : to all (slowest)*
- [ ] Writes are faster
- [x] Writes are slower

2) Suppose that you are a Coordinator node, and you're participating in a transaction with 4 Participants. How many YES votes do you need to COMMIT?

Mark only one oval.

- ( ) 0
- ( ) 1
- (✓) 4
- ( ) 6
- ( ) 7
- ( ) 14

3) You wake up. You have no memory of what happened. You're a Participant node, and you realize that you've just crashed. You look at your logs and see that there is no log record on transaction T1. What do you do?

Mark only one oval.

- ( ) Commit the transaction
- (✓) Abort the transaction   *(presumed abort)*
- ( ) Ask the Coordinator for its status; wait

4) Suppose we have a Coordinator and 4 Participants. When *could* the Coordinator ABORT a transaction?

In other words, which of the following can possibly happen before a transaction ABORT?
Check all that apply.

- [x] A. The Coordinator has written ABORT in its logs
- [ ] B. The Coordinator sent PREPARE to all Participants and received 4 YES votes *must comm't*
- [ ] C. The Coordinator sent COMMIT to all Participants and received 2 ACK but hasn't yet heard from the other nodes *must*
- [x] D. A Participant has written ABORT in its log
- [ ] E. A Participant has written COMMIT in its log
- [x] F. A Participant has voted YES

5) Suppose we have a Coordinator and 4 Participants. When *could* the Coordinator COMMIT a transaction?

In other words, which of the following can possibly happen before a transaction COMMIT?
Check all that apply.

- [ ] A. The Coordinator has written ABORT in its logs
- [x] B. The Coordinator sent PREPARE to all Participants and received 4 YES votes
- [x] C. The Coordinator sent COMMIT to all Participants and received 2 ACKs but hasn't yet heard from the other nodes
- [ ] D. A Participant has written ABORT in its log
- [x] E. A Participant has written COMMIT in its log
- [x] F. A Participant has voted YES

Participant — Coordinator

Time

Participant Log — Prepare ← Coordinator Log

prepare* or abort*
(with coord ID)

Vote Yes/No →

commit* or abort*
(commit includes all participant IDs)

Commit/Abort ←

commit* or abort*

Ack on commit →

end
(on commit)