CS150A Quiz10

Distributed Data

2. **1) Instead of having just one copy of our ACID database on one machine, we replicate it across three machines. What happens to our performance, in general?**
   Check all that apply.

   - [ ] Reads are faster
   - [ ] Reads are slower
   - [ ] Writes are faster
   - [ ] Writes are slower

3. **2) Suppose that you are a Coordinator node, and you're participating in a transaction with 7 Participants. How many YES votes do you need to COMMIT?**
   Mark only one oval.

   - ◯ 0
   - ◯ 1
   - ◯ 4
   - ◯ 6
   - ◯ 7
   - ◯ 14

4. **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 the last record that appeared on transaction T1 is a PREPARE record. What do you do?**
   Mark only one oval.

   - ◯ Commit the transaction
   - ◯ Abort the transaction
   - ◯ Ask the Coordinator for its status; wait

5. **4) Suppose we have a Coordinator and 7 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.

   - [ ] The Coordinator has written ABORT in its logs
   - [ ] The Coordinator sent PREPARE to all Participants and received 6 YES votes but hasn't yet heard from the seventh node
   - [ ] The Coordinator sent COMMIT to all Participants and received 6 ACKs but hasn't yet heard from the seventh node
   - [ ] A Participant has written ABORT in its log
   - [ ] A Participant has written COMMIT in its log
   - [ ] A Participant has voted YES

6. **5) Suppose we have a Coordinator and 7 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.

   - [ ] The Coordinator has written ABORT in its logs
   - [ ] The Coordinator sent PREPARE to all Participants and received 6 YES votes but hasn't yet heard from the seventh node
   - [ ] The Coordinator sent COMMIT to all Participants and received 6 ACKs but hasn't yet heard from the seventh node
   - [ ] A Participant has written ABORT in its log
   - [ ] A Participant has written COMMIT in its log
   - [ ] A Participant has voted YES

7. **6) Which of the following operators are monotonic? In other words, which of these operators will cause data to be eventually consistent on a distributed database?**
   Check all that apply.

   - [ ] f(x, y) = min(x, y)
   - [ ] f(x, y) = x + y
   - [ ] f(x, y) = x XOR y
   - [ ] f(x, y) = set_difference(x, y)