

Answers to 2PC and DHT exercises

Answers to 2PC exercises

Q1

- a) Yes. No server has executed the transaction since the TC hasn't sent any commit messages yet. Thus it's still OK to abort. The TC should send abort messages to the servers and an abort-done message to the client.
- b) No. Server A might be unable to execute the transaction. Perhaps server A sent a prepare-abort that the network lost or delayed, or perhaps server A has crashed.

Q2

Yes. The TC must have sent commit messages to all the nodes, so it's OK for server C to pretend it received the message.

Q3

- a) It's not correct for C to either abort or commit in this case; it must wait until it can contact the TC and find out whether the TC decided to abort or commit.
- b) TC sent commit messages to the nodes and commit-done to the client, node A received the commit and executed, the network lost the commit messages to the other two servers, then TC and A crash.

Answers to DHT exercises

Q4

- a) N38
- b) N21
- c) N56
- d) N1

Q5

a)

Distance	1	2	4	8	16	32	
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Node	21	21	21	32	32	48	

b)

Distance	1	2	4	8	16	32	
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Node	56	56	56	1	8	21	

Q6

- a) N14 → N21 → N32 → N14
- b) N8 → N42 → N1 → N8 → N8
- c) N51 → N21 → N38 → N42 → N48 → N51