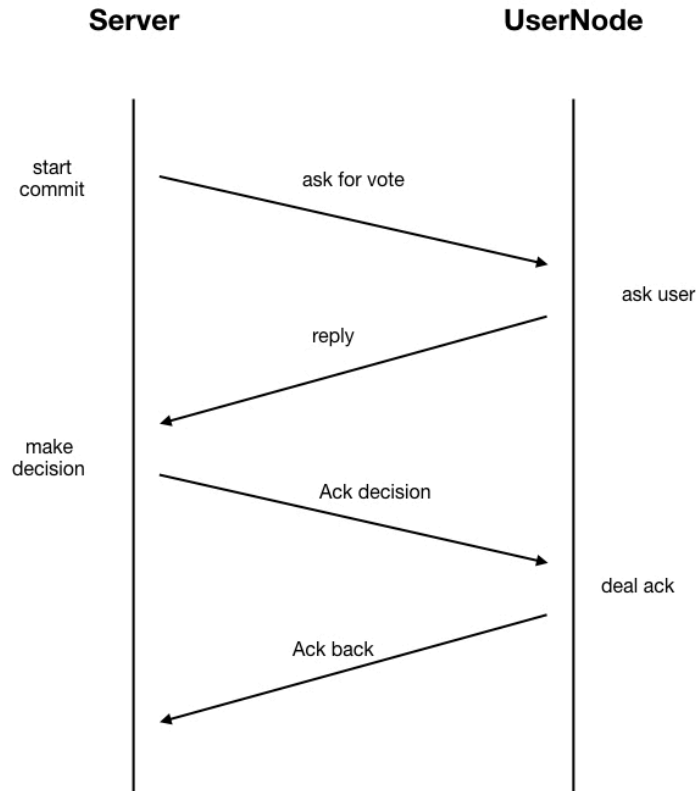


## Project 4

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Protocol:



Like the picture above, Server start a collage commission, it ask all involved nodes to vote, if user node vote yes, it lock the involved files, and return the reply. Server collect all reply, and decide should this commission succeed and save it or not and send Ack to nodes. If successful, nodes delete all involved files, or it unlock those files. After all, nodes give a ack to server indicate that it is done.

In my protocol, each collage will have 4 status, 0 - devote decision is not made, 1 - devote decision is made and its true, 2 - devote decision is made and its false, 3 - devote this collage in server has already received all ack back (fourth line in the figure above).

When ti comes to failure and message lose, my protocol will like these:

For Message lose

1. If didn't receive reply from UserNode for 6 seconds (the second line in the figure above), Server will fail this commission.
2. If didn't receive Ack back from UserNode for 6 seconds (the fourth line in the figure above), Sever will resend Ack decision (Third line in the figure above) again and again.

Here, I Used a runnable class named Timer and run it on a new thread to record the time.

For Node failure

Like I talked above, there are 4 status for collage in server. and 0 means it didn't saved, 1,2,3 mean it has already saved.

1. If Server fails at status 0, meaning decision has not already been made, when recover, we just abort it. and ack failure to all Nodes.
2. If Server fails at status 2, meaning decision is false, but not all nodes get ack, so when recover, we should send failure to all Nodes.
3. If Server fails at status 1, meaning decision is true, but not all nodes get ack, so we should send success to all Nodes.
4. If Server fails at status 3, meaning decision is made and all nodes get ack, so just abort it and do nothing.

In Server, I write log every time the status of a collage change, so when recover, Server can read the log and knows the final status of a collage.

and According to the protocol above, UserNode need to do nothing, don't need any timer or log. Because, if it fail before replying, Server can simply fail the collage, and if it fail before getting ack or sending ack back, Server will keep resend ack.