Assignment report

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Implement steps

1. **PingServer**
   A thread class which is used to accept UDP ping request, and send response back to request peer, it also records the first predecessor, and second predecessor.
2. **PingClient**
   A thread class which is used to send UDP ping request to successor1 and successor2, and accept response from them. At the same, it is used to test if Peer is alive, and decide is it necessary to change successor.
3. **TCP_server**
   A thread class which is used to deal with all TCP request, like quit, join, change successor, data insertion and data retrieval.
4. **Input_command**
   A function used to send TCP request, like quit, join, change successor, data insertion and data retrieval
5. **Main function**
   There are two parts of my main function. Depending on the compile command, if it is initial, run the step1 to step3's thread object, and the run step4. If the compile command is join, send join request, and get the peer's information and do the same thing as initial peer.

how to compile:

sometimes error like this(the image below) will occur, it will influence my tcp server and client. I don't know why, I think this is the problem with VNC, because problem like this does not happen on my own machine. But most of the time it works fine. Please make sure close the windows and compile again until no errors like this. Also, I make a video in my google drive to show you how my code works.

https://drive.google.com/file/d/1AhcsnOgUrgiArzUAuwWrKkcsE6nvuKCK/view?usp=sharing
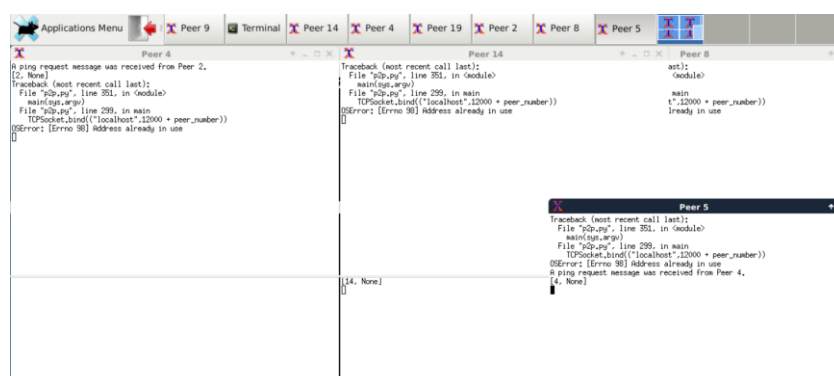
Improvements:

The way I implement p2p network is repeated in some parts. Because this multi thread programming, all threads will share this program. If I have time, I can make the code simpler.