Let’s Chat

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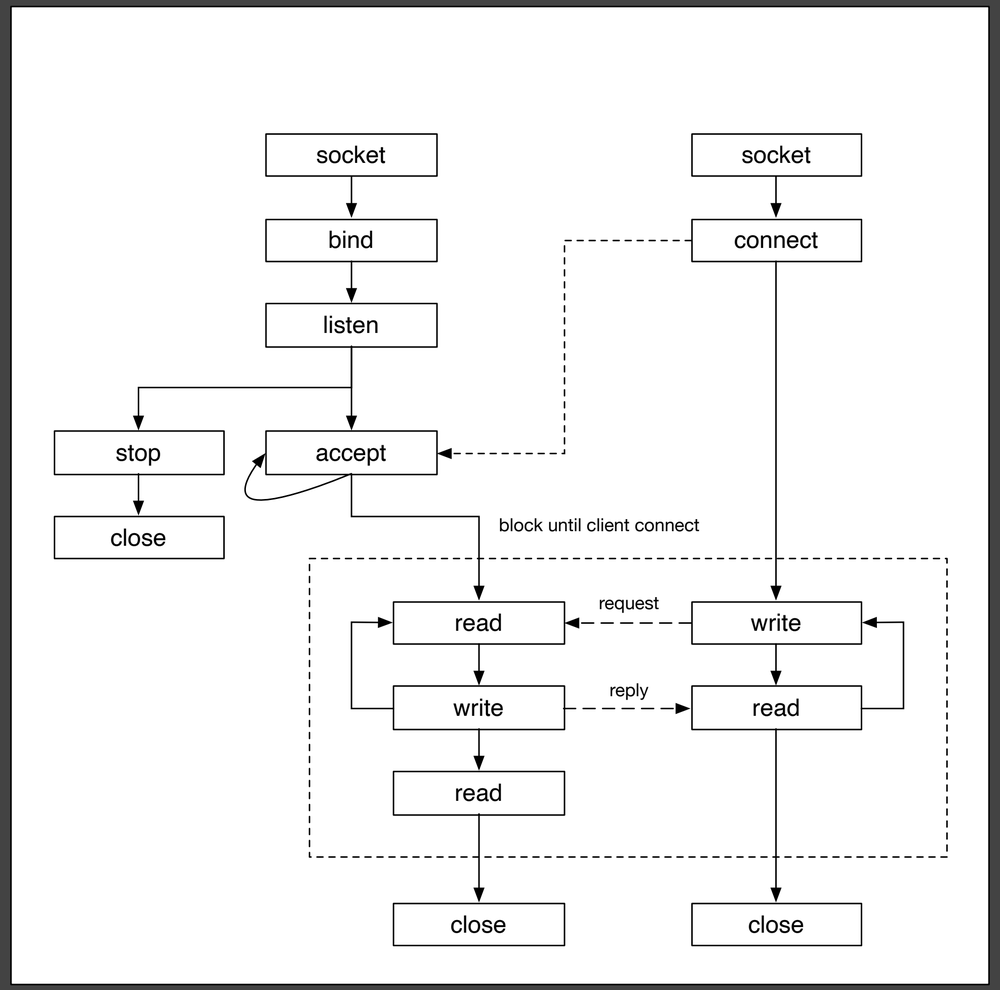
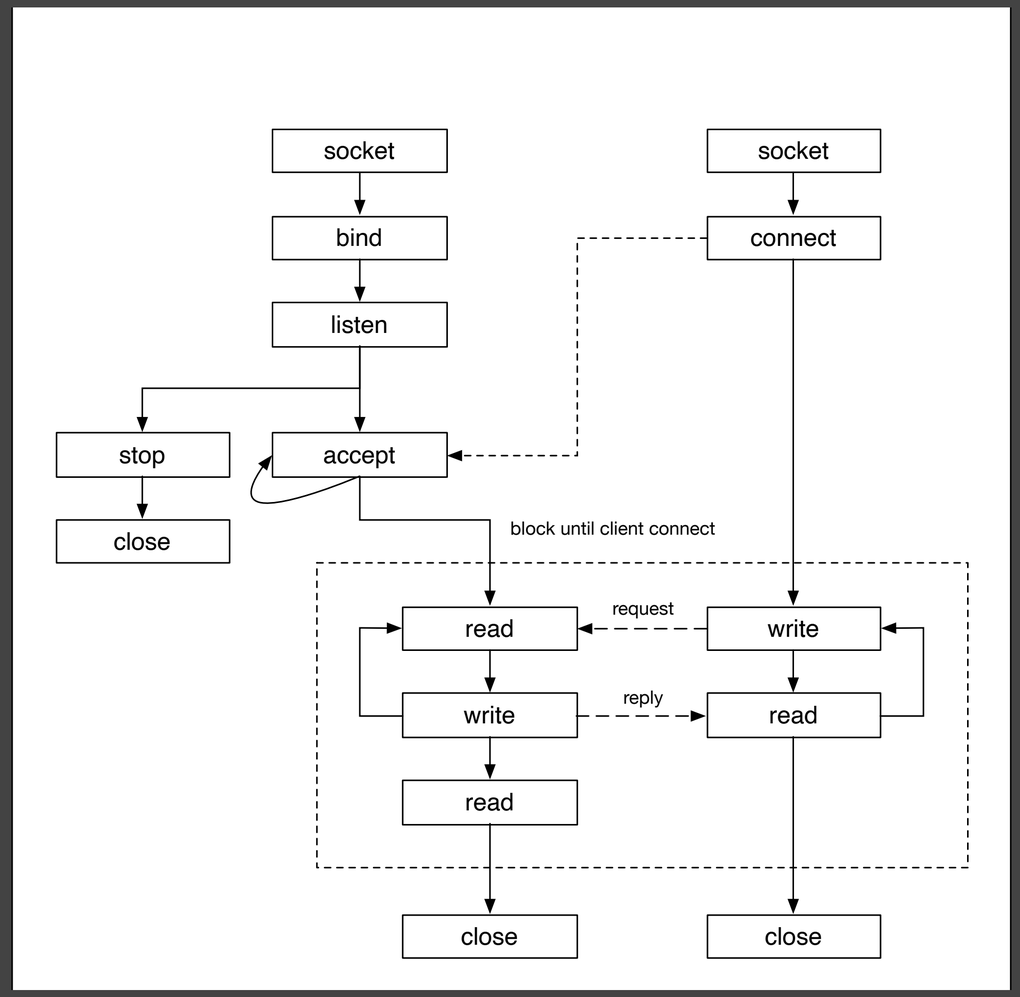
https://reurl.cc/r1ba1k

Flow


socket
bind
listen
stop
accept
close
socket
connect
block until client connect
read
request
write
write
reply
read
read
close
close

STEP 1

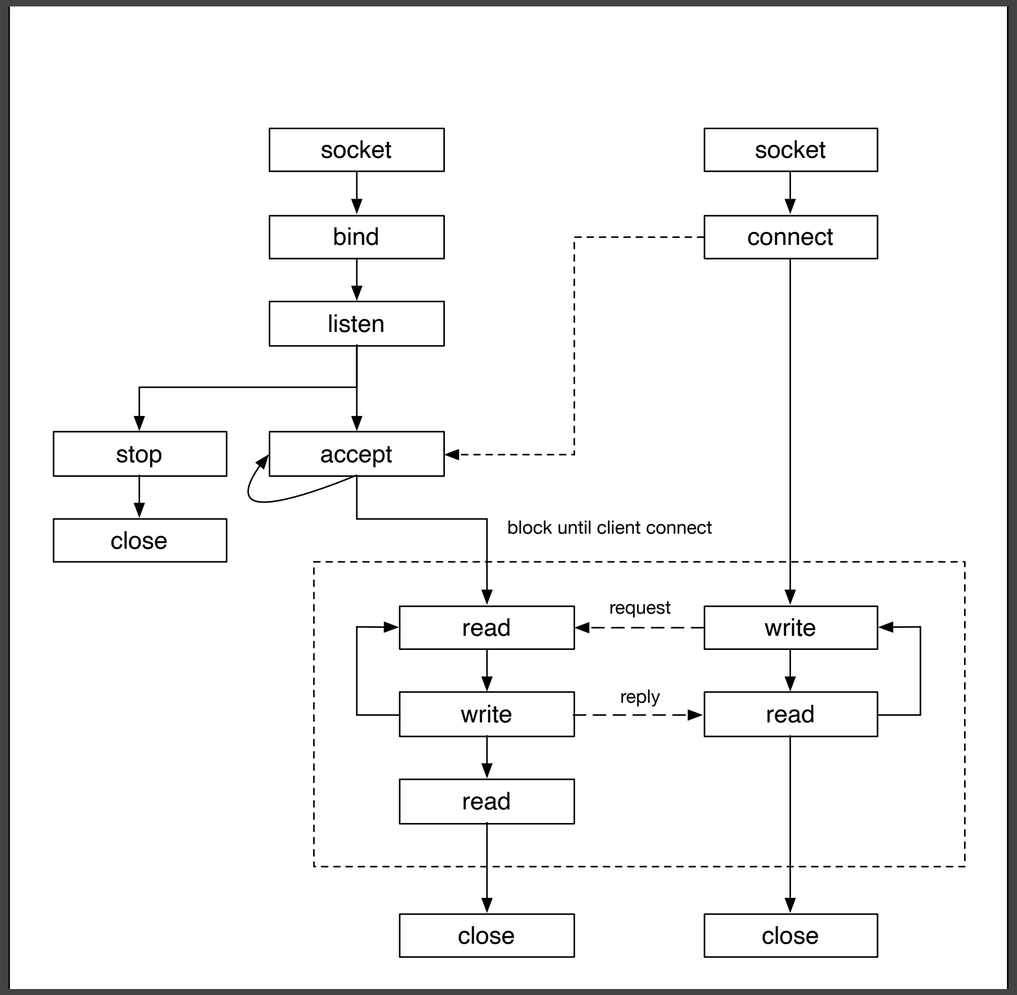
- Using C# TcpSocket Library
  - TcpListener
  - TcpClient
- Create Connection
  - Server
    - create TcpListener bind & start
      - 127.0.0.1/0.0.0.0, 4099
    - accept & print “Client has connected”
  - Client
    - create TcpClient and connect
      - 127.0.0.1, 4099



STEP 2

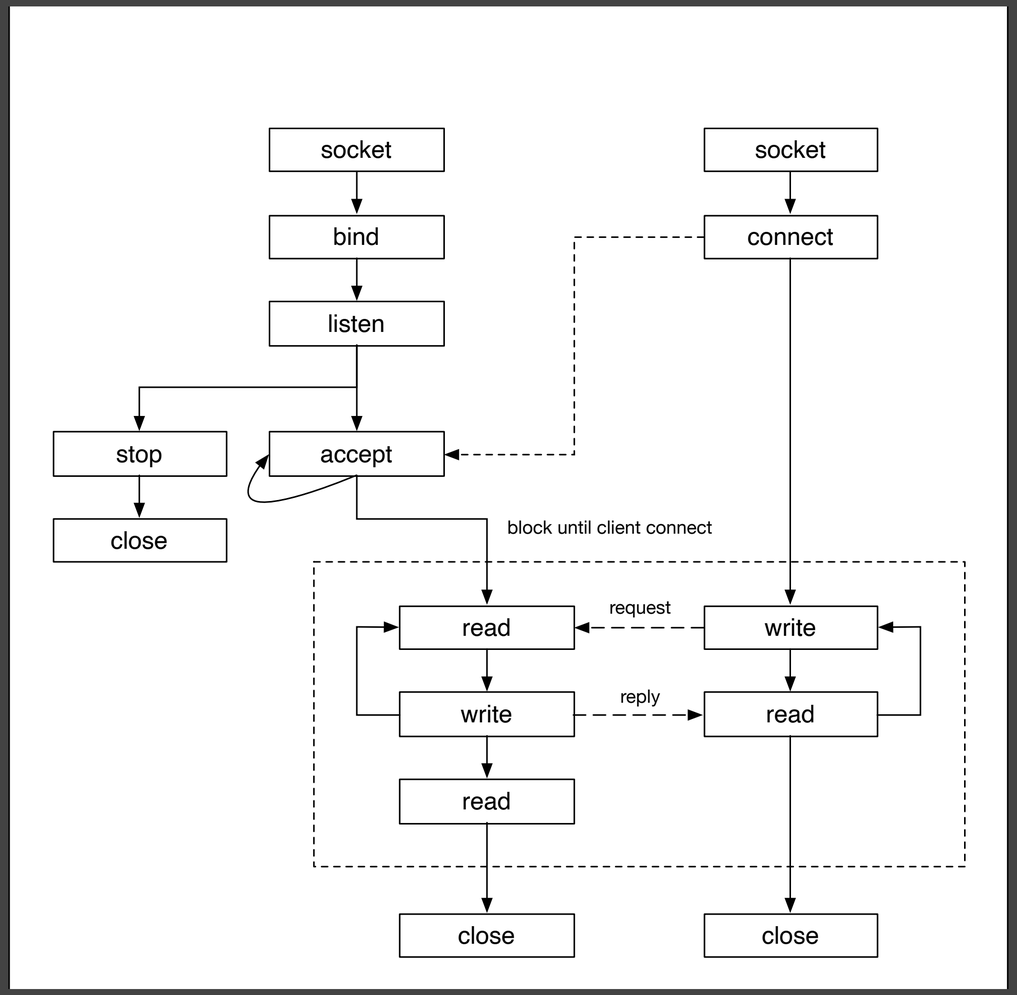
- Client send message to Server
  - Add function: Send(TcpClient, string)
    - string to Byte[]
    - Write to TcpClient stream
  - Call send(client, “msg”) after connected

- Server read message
  - Add a function: Receive(TcpClient)
    - Read from TcpClient stream
    - Byte[] to string
    - print the message
  - Call Receive(client) after accepted



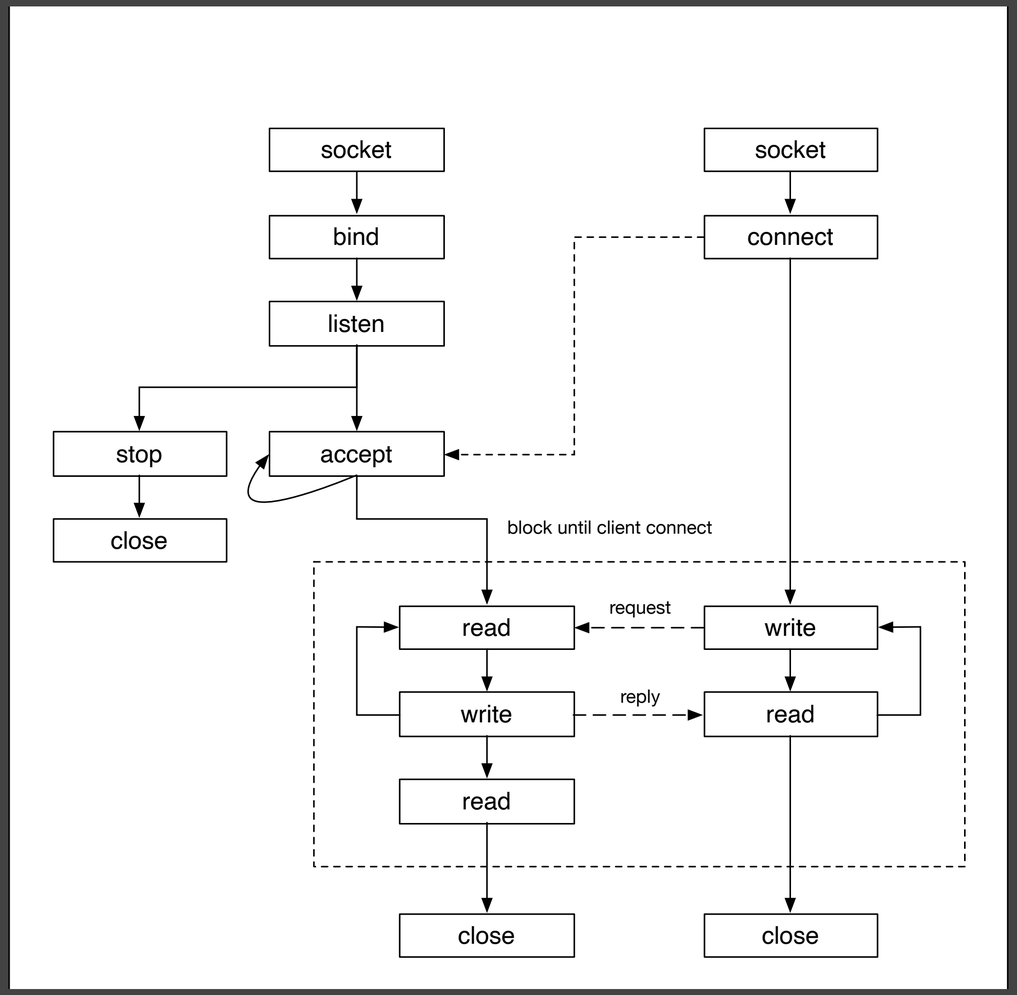
STEP 3

- **Accept Multiple Clients**
  - Server add while loop to accept client



STEP 4A

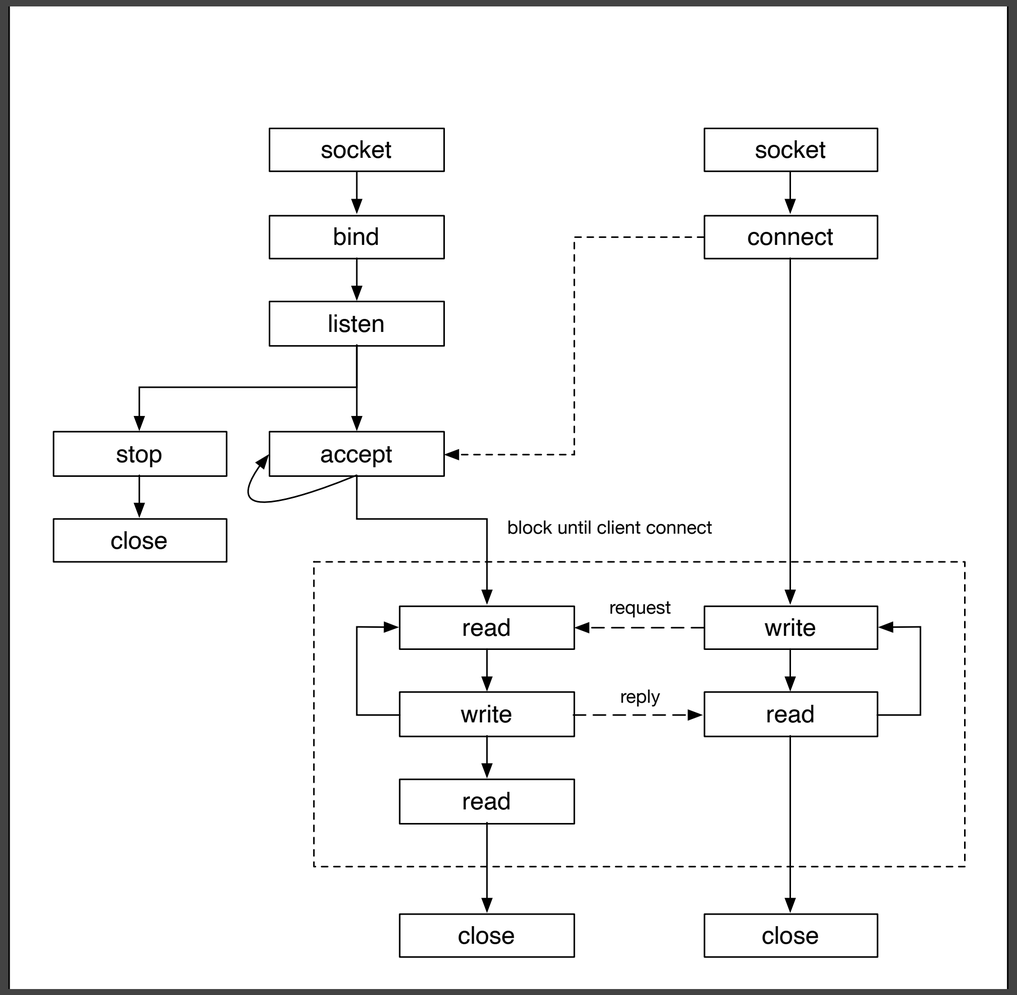
- Server
  - remove Receive() after accepted
  - add HashSet to store accepted TcpClient
  - add a function: HandleMessages()
    - Lock the hashSet and Read() each TcpClient’s stream in hashSet
    - Check TcpClient’s *available* propriety to see whether it should call Read() or not
  - create a Thread and pass HandleMessages function in the constructor and start.



STEP 4B

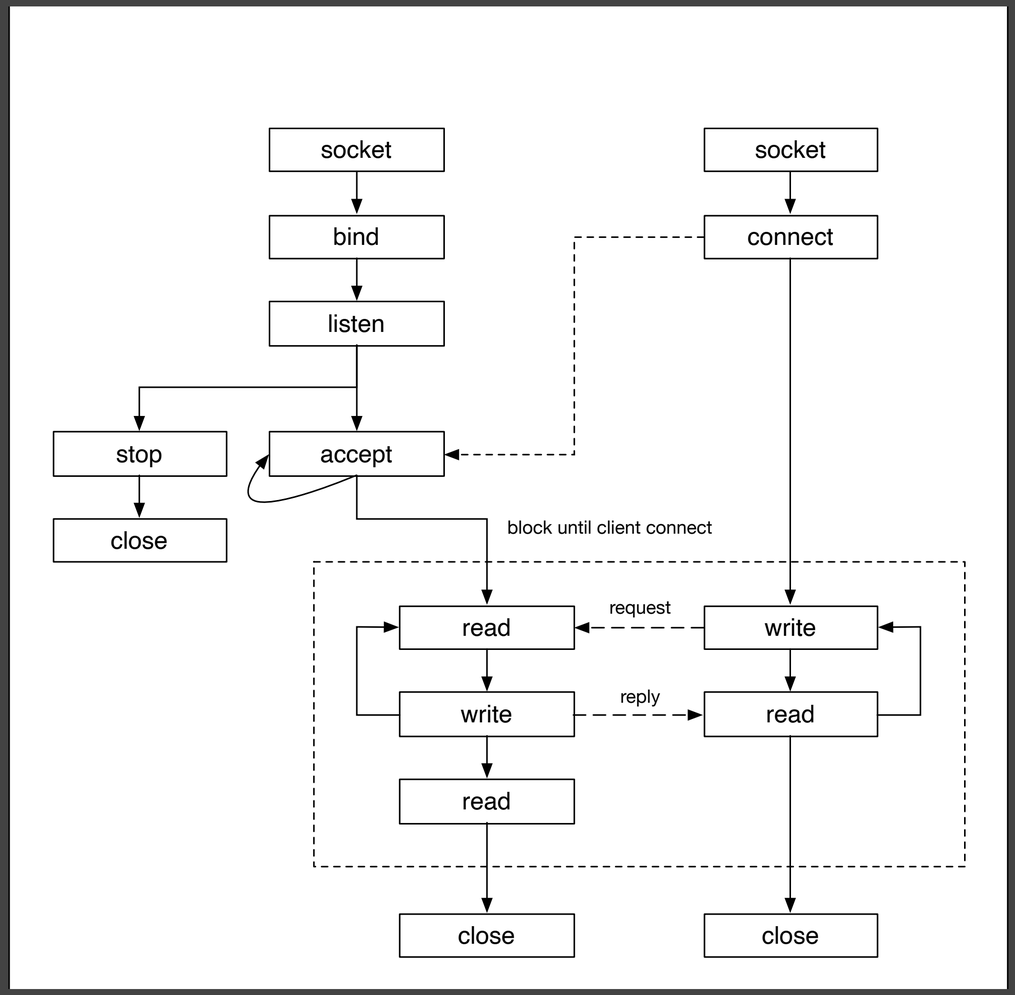
- Client
  - add while loop to ReadLine a message and send
  - print what you sent

Now server can receive multiple clients' messages



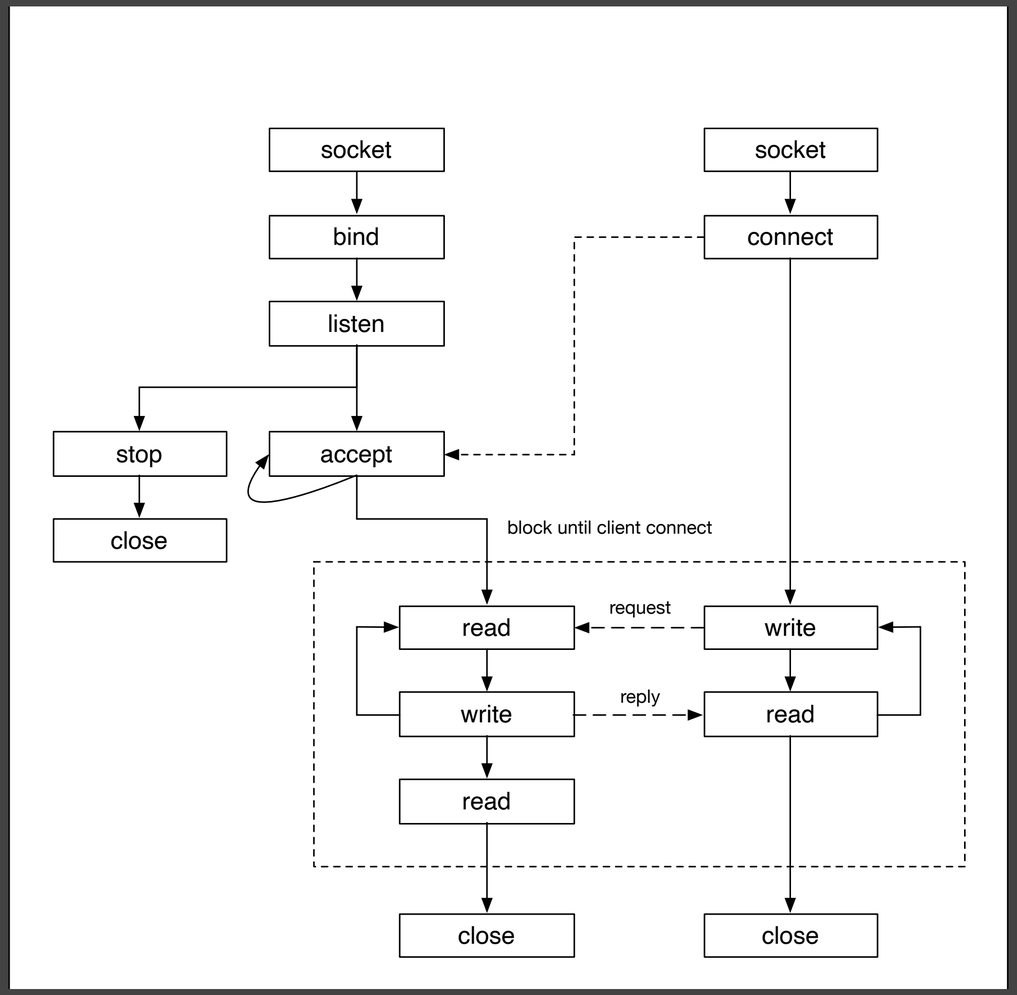
STEP 5

- Extract to ChatServer and ChatClient class
  - Server
    - use TcpClient’s RemoteEndPoint as clientId
    - change using Dictionary<string, TcpClient> to store accepted clients



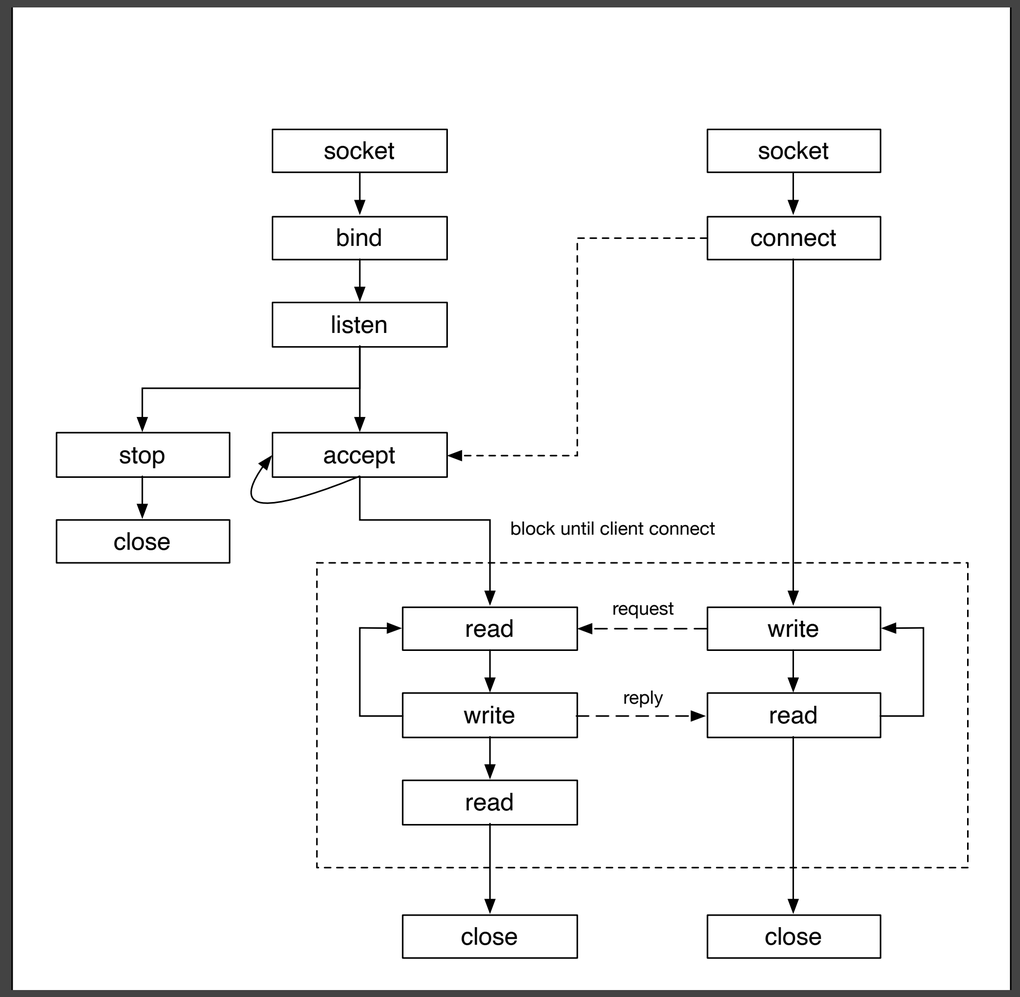
STEP 6

- login flow
  - change send data format
  - using “LOGIN:” “MESSAGE:” to define data type



STEP 7

- Server
  - add Broadcast() function to send client message to other clients
  - check TcpClient connected propertiy and remove disconnected client and close it
- Client
  - add HandleReceiveMessages() to receive other clients message



WHAT'S THE PROBLEM IN THIS CHATROOM DEMO?

- An event/structure to replace sending string
- Thread termination
- TcpClient close
- Lock issue
- CPU cost by "while" / blocking API
- Memory footprint