UNSW
AUSTRALIA

COMP9331 Computer Network and Applications

Assessment 1 Report

Student ID : z5110172

Student Name : Weitao Wang

1.Overview

Learning Objectives:

On completing this assignment you will gain sufficient expertise in the following skills:
1.Being able to design and implement message passing protocols over IP network.
2.Detailed understanding of how reliable transport protocols such as TCP function.
3.Socket programming for UDP transport protocol.

2.Brief introduce

In this assignment,I was assigned to implement the UDP and TCP knowledge to program a protocol which has the same function(fast-transmission, timeout, three ways handshake etc.) like TCP protocol.

First and foremost,I looked up the textbook and search some UDP and TCP knowledge on Internet to understand the logic and how the TCP works in a real world.

Then,I used the UDP socket programming to establish the function of three ways handshake, which is really important in TCP protocol.

After that ,I divided the data to some chunks and encode them to packets, which is consisted of the header and payload.The reason why I did this is, I want to imitate the process of TCP transmission in my program.

And the next step is to set the PLD module in my program ,and I spent lot of time to understand the logic behind of TCP protocol and how it works.Then,I using a buffer to store the packets and make it in order to be write in the object file.

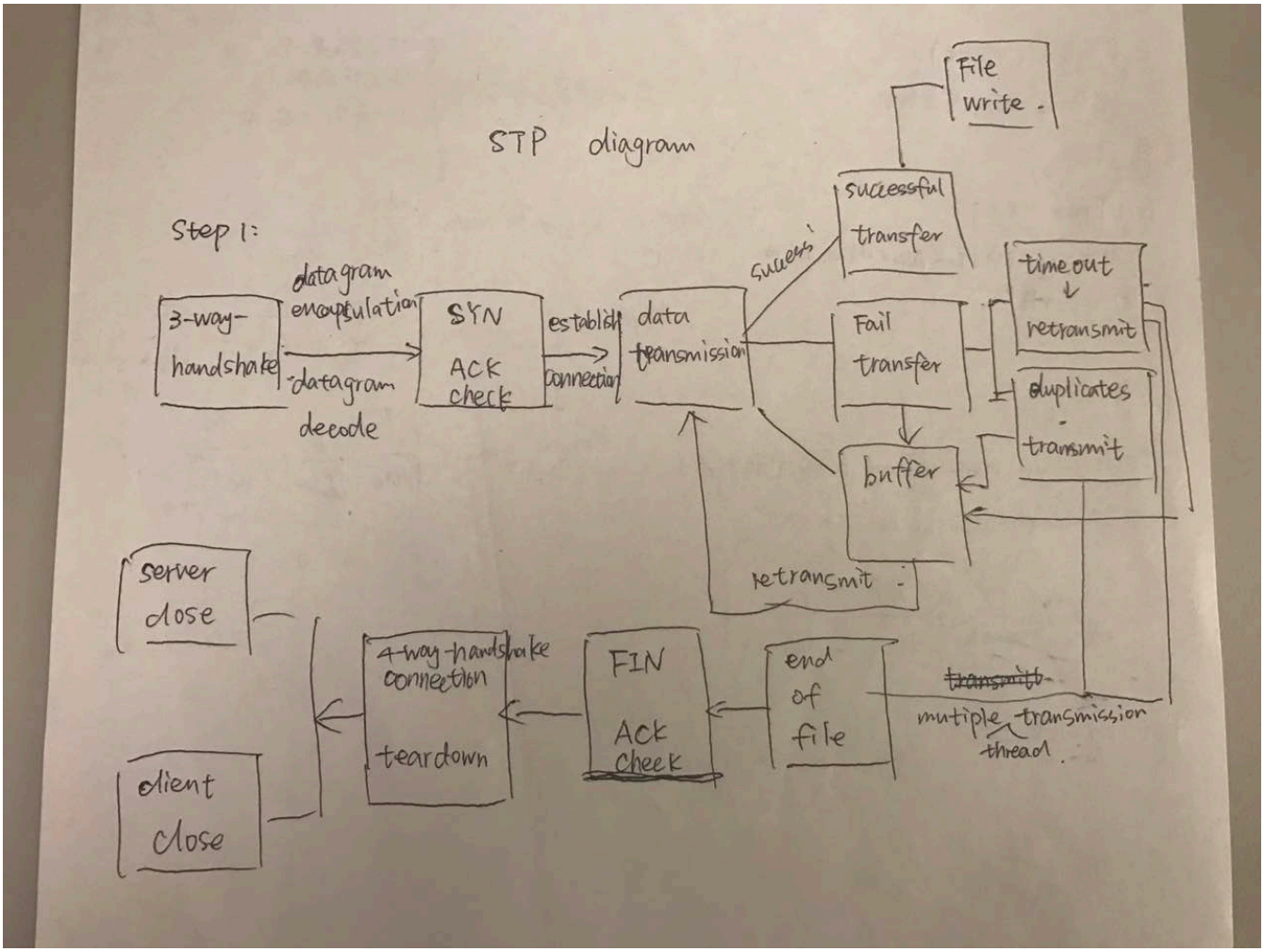
The most important part in my program is, I did use the fast retransmission and timeout retransmission to promise the order is right in the buffer and server.

Finally,I did create a four way handshake function to close the connection and get some statistics information after closing the socket and file.

A list of features that I I have successfully implemented:

(1) 3-hand-shake to establish the connection
(2) Data transmission
(3) fast-retransmission
(4) cumulative acknowledgment
(5) buffer
(6) timers
(7) sequence number, acknowledge number checking
(8) PLD module
(9) data encoding and decoding to/from packets
(10) 4-hand-shake to conclude the connection.

3.Detailed diagram



In this program, there are two python file that I wrote, which are server(receiver.py) and client(sender.py).

First, I used the UDP socket function to create two socket in every side. Then I encode the flags ,numbers and data to a packet.Then I did use the three-hand-shake to establish the connection.

Then when the packet dropped ,I use the buffer to store the packets which have been sent but not the right packet in order.Another reason I use buffer is that I can reduce the pressure in the receiver side.At the same time ,I use the timeout and duplicates to control the order is right.

Finally, when the whole file has been sent to the receiver port, I use the TCP feature,4 way handshake to teardown the connection.