By NI TING

After we finished our code design and basic communication test, we tried to connect to another group, and then we tested whether we implemented all the basic functionality required by the protocol. From the designer’s point of view, our protocol basically implements all the basic connection-oriented functions of transmission and communication. Nobody can be deny the fact that Internet network layer services are not reliable, IP does not guarantee the delivery of datagrams, does not guarantee the orderly delivery of datagrams, nor does it guarantee the integrity of the data in the datagram. Therefore, I spent so much time to discuss the reliability of the protocol with my group members and then we need to send reliable messages according to our protocol design, and we complete reliable communication with other nodes.

Reliability is ensured by applying sequence numbers and checksums in the reliability layer. By specifying sequence number for each message and requiring the receiver to remember the segments to detect repetitions and to prevent unnecessary retransmission. The checksum ensures that the packet will never be modified. The sequence number is used to give each packet's order. This layer of the overtime mechanism can be effectively avoiding the loss of data packets. In other words, the sender did not receive the corresponding packet acknowledgment in time and the resend operation will be triggered.

During the process of the protocol design and implementation, in my opinion, the most two important fields in a segment are the sequence number and acknowledge number. These two fields are the key part of the protocol for reliable transport services. At the same time, we can correctly identify the message type.

Through continuous testing and modification, this protocol can provide two or more users with a reliable way to transfer information and files. It implements a reliable flow control message protocol. The packet can be forwarded correctly. It can implement the datagram forwarding routing protocol. Providing lookup table and forwarding table to deal with. It can be choose to provide multicast forwarding and routing services.

According to the Internet protocol design, In order to reduce the complexity of the protocol design and debugging process, we have adopted the principle of protocol layering. Each layer to achieve correct functions, each layer is built on its lower layer. At the same time, this principle also allows different team members to focus on one level over a period of time without having to worry about the lower level of implementation. This method not only improves group work efficiency and saves time, but also makes the refinement of functions easier to achieve. Therefore, it is a good experience for me to understand the structure of an Internet protocol, how to design a reliable protocol and implement it.