

**1. Explain your implementation of sequence and acknowledge numbers. Why do both sender and receiver maintain separate sequence and acknowledgment numbers? (3 points)**

Both sender and receiver maintain separate sequence and acknowledgment numbers because they use these numbers to track the progress of the data transfer from both ends. The client can use its sequence and acknowledgment numbers to compare with the servers request to receive a segment again, in case of packet loss or corrupt data during the transfer.

**2. Explain and justify the additional header fields you needed to add compared to part 1 for this implementation. (3 points)**

I made use of the same set of header fields as in part 1. In part 1 I implemented the ability to track packet loss as well, even though the messages were only a single packet for a complete message. However, to accomplish the ping, pong messages in part 1. The acknowledge and sequence numbers could have been removed, as well as the message length field.

**3. How would the performance of this file transfer have been affected if we did not use separate welcoming and connection sockets? (4 points)**

The server would not be able to support multiple connections without having multiple pre planned ports for the sockets. By having separate welcoming and connection sockets, we can generate connection sockets as needed, while using the single welcoming sockets for any new clients requesting connections.