Raivat Alwar, Ritesh Patro
Project 4 Discussion Questions

Discussion Questions:

1. The chat client and server application as described above uses a single transport connection in each direction per client. A different design would use a transport connection per command and reply. Describe the pros and cons of these two designs.
    a. One transport connection for each direction:
        i. Pros: The time taken to completion of command and reply would be faster due to each time of payload having its own connection.
        ii. Cons: Depending on the sequence numbers and acks of the payloads, it is possible for data packets to be dropped / lost thus making the connection less reliable.
    b. Single transport connection for both command & reply
        i. Pros: Connection would not get cut for the message being sent due to only one command or reply being able to be sent at a time.
        ii. Cons: Time taken for completion of the command and reply would be longer as only one connection is open.
2. Describe which features of your transport protocol are a good fit for the chat client and CSE 160 - Fall 2023 University of California, Merced server application, and which are not. Are the features that are not a good fit simply unnecessary, or are they problematic, and why? If problematic, how can we best deal with them?
    a. Good fits:
        i. Some things that our transport protocol allows us to do is transmit both numbers and strings. This can allow us to be able to transmit data , website links, messages, etc. and receive them in an efficient manner.
    b. Problematic:
        i. Some things that can be seen as problematic in our implementation is that we can only guarantee that 254 bytes will be sent and received. The reason for this is due to the sequence number in TinyOS only allowing us to go to a value of 256 not inclusive. To fix this issue, we can make it so that whenever the sequence gets to be above 256, we wrap the sequence around thus allowing us to send an “infinite” amount of data packets.
3. Even if you did not implement the extra credit application, read its protocol specification. Describe which features of your transport protocol are a good fit for the web server application, and which are not. Are the features that are not a good fit simply unnecessary, or are they problematic, and why? If problematic, how can we best deal with them?
    a. Good fits
        i. In our implementation of the transport protocol is that we are able to access and route to multiple different nodes in a network while transmitting some data in these packets.

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4. Describe one way in which you would like to improve your design.
    a. The easiest way we can improve the design of my program is to fix the wrap around feature for sequence numbers I mentioned in question 2. By allowing the sequence numbers to “reset” we can enable more packets to be transmitted thereby allowing our message to be longer.