5. When packet A reaches its destination, it sends out an acknowledgement, if the lifetime does not allow for acknowledgements to expire then the sender could think it can use A again, then it receives the acknowledgement from the 1st A and thinks the 2nd A packet successfully reached its destination.

6. This would make deadlocks possible. Host 1 sends host 2 a TPDU containing its chosen sequence number. Host 2 receives the TPDU and sends an acknowledgment containing its own sequence number, but the acknowledgement is lost. Host 2 is now open but Host 1 has not received the acknowledgement. Now host 1 receives a TPDU from host 2 and that acknowledgement is also lost. Both hosts are now open but their expected sequence numbers do not match.

7. No protocol exists that will allow the blues to win. Both blue armies will always hesitate because they do not know if the final messages they sent each other were received.

14. UDP is necessary because it adds the source and destination ports. Without the port fields the transport layer would not know what to do with the packets.

16. 128 bytes=1024bits, signals in fiber optic cable move at 200,000 km a second

100km/(200,000km/s)=0.0005s

0.0005s \* 2= 0.001s <- Time between the request being sent and the acknowledgement being received

1024 bits/0.001s = 1,024,000 bits per second

(1,024,000b/s)/10^6=1 Mb/s

(1Mb/s)/(1Gb/s)=.001=.1% efficiency

17.

18. One problem with using process IDs is they are specific to an operating system so using process IDs would make the protocols dependent on that OS. Also a process can communicate across multiple channels, a single ID wouldn’t allow you to tell those channels apart.

20. The datagrams will be reassembled when TCP deals with them but they may be out of order.