

Problem 1. True or False?

- a. Host A is sending Host B a large file over a TCP connection. Assume Host B has no data to send Host A, then Host B will not send ACKs to Host A.
- b. Suppose Host A is sending a large file to Host B over a TCP connection. If the sequence number of a segment of this connection is m , then the sequence number for the subsequent segment will necessarily be $m+1$.
- c. Suppose Host A sends one segment with sequence number 38 and 4 bytes of data over a TCP connection to Host B. In this same segment the acknowledgement number is necessarily 42.
- d. The size of TCP rwnd never changes throughout the duration of the connection.
- e. Suppose Host A is sending Host B a large file over a TCP connection. The number of unacked bytes that A sends should not exceed the size of the receiver buffer.
- f. The TCP segment has a field in its header for rwnd.
- g. Suppose that the last SampleRTT in a TCP connection is equal to 1 sec. The current value of TimeoutInterval for the connection will necessarily be > 1 sec.

P2. Consider sending a 1,600-byte datagram into a link that has an MTU of 500 bytes. Suppose the original datagram is stamped with the identification number 291. How many fragments are generated? What are the values in the various fields in the IP datagrams generated related to fragmentation? Hint: the offset value shall be specified in units of 8-bytes chunks.

	length =1600	ID =291	fragflag =0	offset =0	
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P3. What is HOL blocking? Does it occur in input port or output ports?

P4. Consider a datagram network using 32-bit host addresses. Suppose a router has four links, numbered 0 through 3, and packets are to be forwarded to the link interfaces as follows:

<u>Destination Address Range</u>	<u>Link Interface</u>
11100000 00000000 00000000 00000000 through 11100000 11111111 11111111 11111111	0
11100001 00000000 00000000 00000000 through 11100001 00000000 11111111 11111111	1
11100001 00000001 00000000 00000000 through 11100001 11111111 11111111 11111111	2
otherwise	3

a) Provide a forwarding table with four entries, using longest prefix match and forwarding the packets to the correct interfaces.

b) Describe how you determine the proper link interfaces for datagrams with destination IP addresses:

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11001000 100010001 01010001 01010101
11100001 00000000 11000011 00111100
11100001 10000000 00010001 01110111
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