

Computer Networks
2nd Year, 1st Semester

Tutorial 5

1. Explain the TCP/IP model corresponds with the layers of OSI model. Use a diagram. Show the protocols running on each TCP/IP layers.
2. An HLEN value of decimal 12 means,
 - i. What is the header length in bytes?
 - ii. What is the length of 'options' field?
3. What is the value of the total length field if the header is 28 Bytes and data field 400Bytes?
4. What is the length of the data field when HLEN value 14 and total length value of 40000?
5. Which fields of the IP header change from router to router?
6. Calculate the HLEN value if the total length is 1200 Bytes, 1176 of which is data from the upper layers.
7. Can the value of the header length be less than 20? When is it exactly 20?
8. An IP datagram has arrived with the following information in the header (in hexadecimal):
45 00 00 54 00 03 00 00 20 06 00 00 7C 4E 03 02 B4 0E 0F 02
 - i. Are there any options?
 - ii. Is the packet fragmented?
 - iii. What is the size of the data?
 - iv. How many more routers can the packet travel to?
 - v. What is the identification number of the packet?
 - vi. What is the type of Service?
9. A datagram is fragmented into three smaller datagrams / fragments. Which of the following is true?
 - a) The *do not fragment* bit is set to 1 for all three datagrams.
 - b) The *more fragment* bit is set to 0 for all three datagrams.
 - c) The identification field is the same for all three datagrams.
 - d) The offset field is the same for all three datagrams.
 - e) None of the above.
10. If the fragmentation offset has a value of 100 (in decimal), it means that _____.
 - a) The datagram has not been fragmented.
 - b) The datagram is 100 Bytes in size.
 - c) The first byte of the datagram is byte 100.
 - d) The first byte of the datagram is byte 800.
11. The checksum in the IP packet covers _____.
 - a) Just the header
 - b) Just the data
 - c) The header and the data
 - d) Just the source and the destination addresses