第一章作业如下：

1-1. Five routers are to be connected in a point-to-point subnet . Between each pair of routers, the designers may put a high-speed line, a medium-speed line, a low-speed line, or no line. If it takes 100 ms of computer time to generate and inspect each topology, how long will it take to inspect all of them?  
  
1-2. What are two reasons for using layered protocols? What is one possible disadvantage of using layered protocols?  
  
1-3. What is the principal difference between connectionless communication and connection-oriented communication? Give one example of a protocol that uses  
(i) connectionless communication  
(ii) connection-oriented communication  
  
1-4. In some networks, the data link layer handles transmission errors by requesting that damaged frames be retransmitted. If the probability of a frame's being damaged is p, what is the mean number of transmissions required to send a frame? Assume that acknowledgements are never lost.  
  
1-5. A system has an n-layer protocol hierarchy. Applications generate messages of length M bytes. At each of the layers, an h-byte header is added. What fraction of the network bandwidth is filled with headers?

1-6. What is the main difference between TCP and UDP?  
  
1-7. When a file is transferred between two computers, two acknowledgement strategies are possible. In the first one, the file is chopped up into packets, which are individually acknowledged by the receiver, but the file transfer as a whole is not acknowledged. In the second one, the packets are not acknowledged individually, but the entire file is acknowledged when it arrives. Discuss these two approaches.

1-8. An image is 1024 X 768 pixels with 3 bytes/pixel. Assume the image is uncompressed. How long does it take to transmit it over a 56-kbps modem channel?  
Over a 1-Mbps cable modem?  
Over a 10-Mbps Ethernet?   
Over 100-Mbps Ethernet?  
Over gigabit Ethernet?  
  
1-9. Suppose the algorithms used to implement the operations at layer k is changed. How does this impact operations at layers k − 1 and k + 1?

1-10. Suppose there is a change in the service (set of operations) provided by layer k. How does this impact services at layers k-1 and k+1?