

1.7.3 Problems

- P1-1.** What is the maximum number of characters or symbols that can be represented by Unicode?
- P1-2.** A color image uses 16 bits to represent a pixel. What is the maximum number of different colors that can be represented?
- P1-3.** Assume six devices are arranged in a mesh topology. How many cables are needed? How many ports are needed for each device?
- P1-4.** For each of the following four networks, discuss the consequences if a connection fails.
- a.** Five devices arranged in a mesh topology
 - b.** Five devices arranged in a star topology (not counting the hub)
 - c.** Five devices arranged in a bus topology
 - d.** Five devices arranged in a ring topology
- P1-5.** We have two computers connected by an Ethernet hub at home. Is this a LAN or a WAN? Explain the reason.
- P1-6.** In the ring topology in Figure 1.7, what happens if one of the stations is unplugged?
- P1-7.** In the bus topology in Figure 1.6, what happens if one of the stations is unplugged?
- P1-8.** Performance is inversely related to delay. When we use the Internet, which of the following applications are more sensitive to delay?
- a.** Sending an e-mail
 - b.** Copying a file
 - c.** Surfing the Internet
- P1-9.** When a party makes a local telephone call to another party, is this a point-to-point or multipoint connection? Explain the answer.
- P1-10.** Compare the telephone network and the Internet. What are the similarities? What are the differences?

1.8 SIMULATION EXPERIMENTS

1.8.1 Applets

One of the ways to show the network protocols in action or visually see the solution to some examples is through the use of interactive animation. We have created some Java applets to show some of the main concepts discussed in this chapter. It is strongly recommended that the students activate these applets on the book website and carefully examine the protocols in action. However, note that applets have been created only for some chapters, not all (see the book website).

1.8.2 Lab Assignments

Experiments with networks and network equipment can be done using at least two methods. In the first method, we can create an isolated networking laboratory and use