# Answers to Even-Numbered Exercises

# 9

*from page 410*

1. Describe the similarities and differences among these utilities:

   a. scp and ftp

   b. ssh and telnet

   c. rsh and ssh

2. Assuming that rwho is disabled on the systems on your LAN, describe two ways to find out who is logged in on some of the other machines attached to your network.

   Use rsh, ssh, or telnet to connect to and run w or who on each host.
   Use finger.
   Login on console of each host and run w or who.

3. Explain the client/server model, and give three examples of services that take advantage of this model on GNU/Linux systems.

4. What is the difference between a diskless and a dataless workstation? Name some advantages and disadvantages of each.

   A diskless workstation has no disk at all; it is completely network- or memory-based. A dataless workstation has a small disk that holds the operating system.

Because a disk is one of the least reliable pieces of hardware (because of moving parts), a diskless workstation is more reliable than a workstation that has a disk.

A dataless workstation typically has less startup overhead.

A dataless workstation requires slightly more maintenance because the local operating system needs to be kept up-to-date. On a diskless workstation all operating system changes take place on a central server.

5. A software implementation of chess was developed by GNU and is free software. How can you use the Internet to find a copy and download it to your system?

6. What is the difference between the World Wide Web and the Internet?

   The Internet is a network of networks. The World Wide Web is an application that uses the Internet to link collections of Web pages and data via hyperlinks.

7. If you have access to the World Wide Web, answer the following:

   a. What browser do you use?

   b. What is the URL of the author of this book's home page? How many links does it have?

   c. Does your browser allow you to create bookmarks? If so, how do you create a bookmark? How can you delete one?

8. Explain what happens if you transfer a binary file while running `ftp` in ASCII mode. What happens if you transfer an ASCII file in binary mode?

   When you transfer a binary file in ASCII mode, bit sequences that appear as `NEWLINES` may be corrupted and translated when the two architectures are different (for example, NT and GNU/Linux).

   Transferring an ASCII file in binary mode generally does not create a problem. However, with an NT server and a GNU/Linux client, the end of line sequences will not be translated (seldom a problem for modern editors).

9. Give one advantage and two disadvantages of using a wireless network.

## Advanced Exercises

10. Suppose that the link between routers 1 and 2 is down in the Internet shown in Figure 9-1 on page 359. What happens if someone at Site C sends a message to a user on a workstation attached to the Ethernet cable at Site A? What happens if the router at Site A is down? What does this tell you about designing network configurations?

    Instead of traffic going from Site C to Router 1 to Router 2 and then to site A, traffic goes from Site C to Router 1 to Router 3 to Router 2 and then to Site A.

    Network configurations are flexible and adaptive if redundancy has been designed in from the start.

11. If you have a class B network and want to divide it into subnets, each with 126 hosts, what subnet mask should you use? How many networks will be available? What are the four addresses (broadcast and network number) for the network starting at 131.204.18?

12. Suppose that you have 300 hosts and want to have no more than about 50 hosts per subnet. What size address block should you request from your ISP? How many class C-equivalent addresses would you need? How many subnets would you have left over from your allocation?

    The next largest subnet above 50 that is a power of 2 is 64 addresses. 300/50 is 6, so 6 subnets of 64 would be about 2 class C equivalent networks. The subnet mask is 255.255.255.192 or /26. There would be two subnets left over.

13. On your machine find two daemons running that are not listed in this chapter, and explain what purpose they serve.

    Review what services/daemons are automatically started on your system, and consider which you might turn off. Are there any services/daemons in the list that starts on page 394 that you would consider adding?