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Homework 3 – Pages 199-201: 1, 2, 3, 6, 7, 9, 14, 15, 19, 21, 37 and 47

1. Protocols are rules for activities conducted on the network. One example of a protocol is the Carrier Sense, Multiple Access with Collision Detection (CSMA/CD) which dictates that each message be broadcast to all machines on the bus. Another example is the Network News Transfer Protocol (NNTP), which is used by newsreader applications for contacting the news servers. A last example is the File Transfer Protocol (FTP), which allows applications to list and copy files across a network.

2. The client/server model defines the basic roles played by the processes as either a client which makes requests of other processes, or a server which satisfies the requests made by clients. The server must also execute continuously to stay prepared for its clients at any time.

3. The peer-to-peer model involves processes that provide service to and receive service from each other. These processes usually only execute on a temporary basis.

6. The CSMA/CD protocol is not applicable in a wireless network because a machine may be unable to detect that its transmissions are colliding with those of another. The signals from the different machines are also blocked from each other by objects or distance even though they can all communicate with the central AP – a problem known as the hidden terminal problem.

7. A machine waits until the bus is silent, and at this time it begins transmitting across the network while continuing to monitor the bus. If another machine also begins transmitting, both machines detect the clash and pause for an independently random period of time before transmitting again.

9. A repeater is a device that passes signals back and forth between the two original buses (usually amplified) without considering the meaning of the signals while a hub is a very short bus that relays any received signal back to all the machines connected to it rather than just between two.

14a. 00000101.00010010.00100011 is encodes as 5.18.35

14b. 10000000.00100000 is encoded as 128.32

14c. 00110000.00011000 is encoded as 48.24

15. 0.0 is represented by 0000000000000000

19. 26.19.1 is represented by 000110100001001100000001

21. 8.12.20.13 is represented by 00001000000011000001010000001101

37. Two examples of client-side activities on the web include requesting file downloads and accessing restricted websites. Two examples of server-side activities include allowing download requests and allowing clients to access restricted websites.

47. A proxy server is a software unit that acts as an intermediary between a client and a server with the goal of shielding the client from adverse actions of the server. As a result and an advantage, the server has no way of knowing that the proxy server is not the actual client nor of the actual client’s existence. In addition, the server has no way of learning about the intranet’s internal features. Another advantage of proxy servers is that the proxy servers can filter all the messages sent from the server to the client.