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## CHAPTER 21

# File Transfer: FTP and TFTP

### Exercises

1. If the control connection is accidentally severed during an FTP transfer, there would be no problem until the data transfer completed and the client attempted to send another command.
3. There should be limitations on anonymous FTP because it is unwise to grant the public complete access to a system. If the commands that an anonymous user could use were not limited, that user could do great damage to the file system (e.g., erase it completely).
5. See Figure 21.E5. Note that the well-known port number is **21**.

**Figure 21.E5** Solution to Exercise 5

Ephemeral port number		21	
Sequence number			
Acknowledgment number			
5	Reserved	Flags	Window size
Checksum		Urgent Pointer	
"C"	"O"	"M"	"M"
"A"	"N"	"D"	" "
"a"	"r"	"g"	"u"
"m"	"e"	"n"	"t"
"s"	CR	LF	

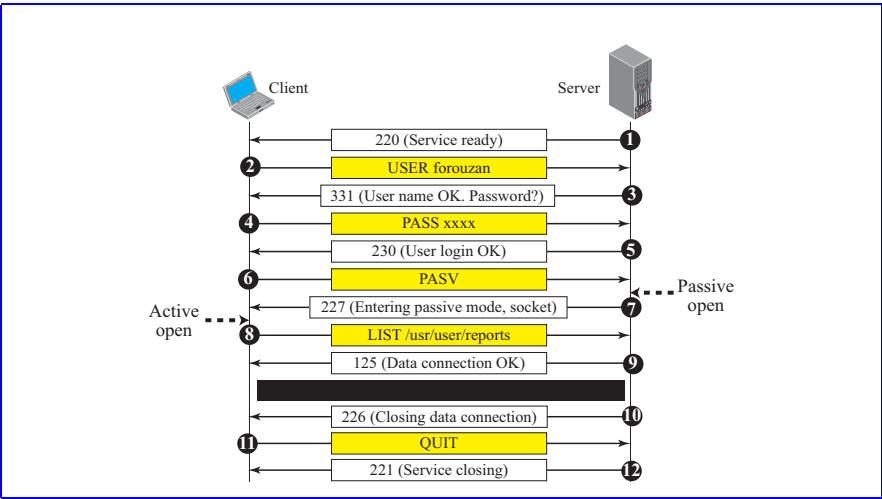
7. See Figure 21.E6. Note that the well-known port number is **20**.

**Figure 21.E6** Solution to Exercise 7

Ephemeral port number		20	
Sequence number			
Acknowledgment number			
5	Reserved	Flags	Window size
Checksum		Urgent Pointer	
DATA			

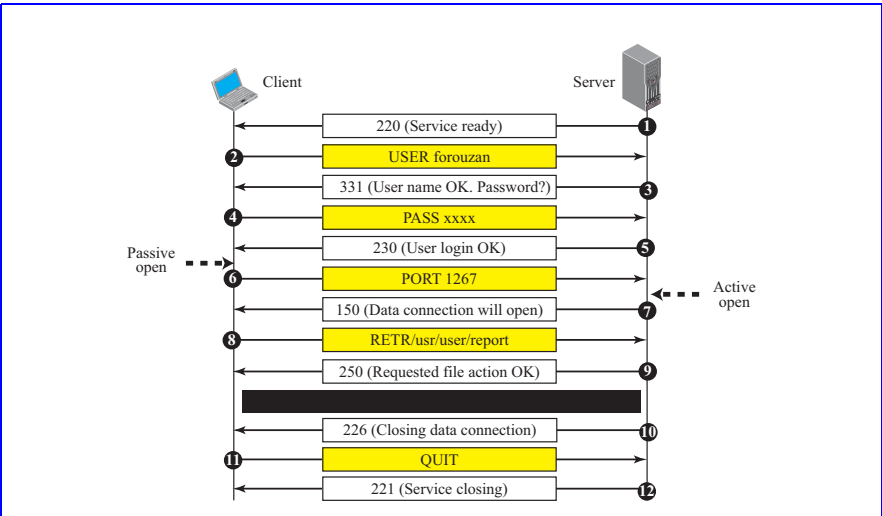
9. See Figure 21.E9.

**Figure 21.E9** *Solution to Exercise 9*



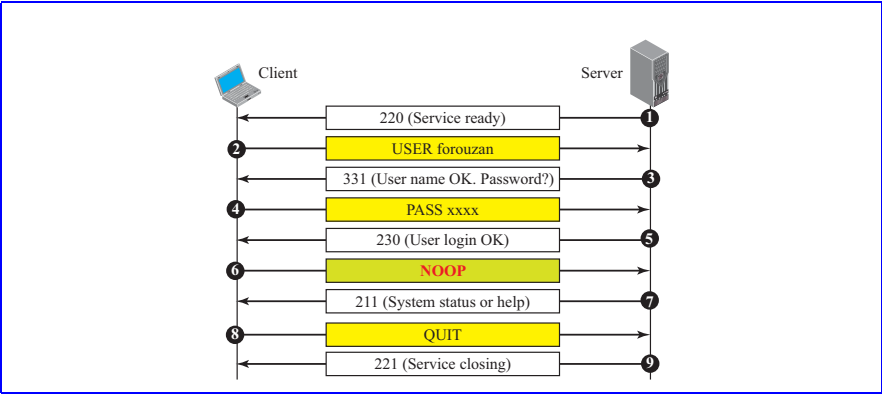
11. See Figure 21.E11.

**Figure 21.E11** *Solution to Exercise 11*



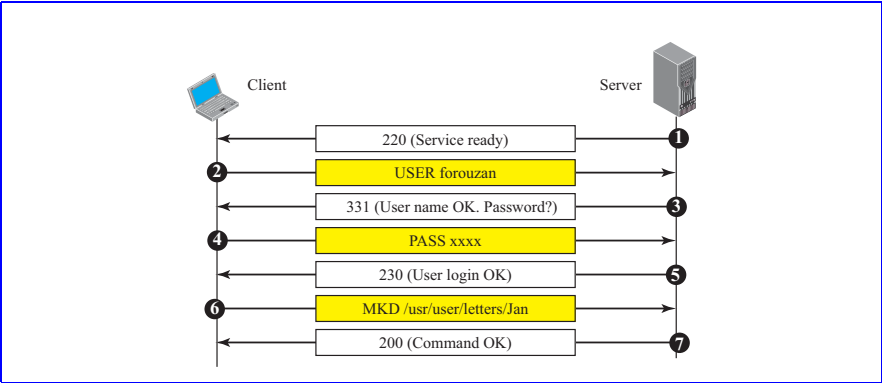
13. See Figure 21.E13.

**Figure 21.E13** *Solution to Exercise 13*



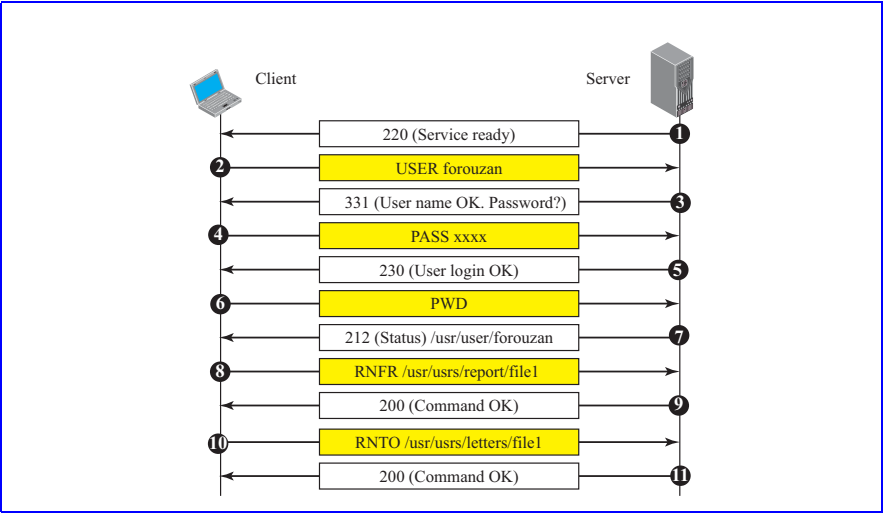
15. See Figure 21.E15.

**Figure 21.E15** *Solution to Exercise 15*



17. See Figure 21.E17.

Figure 21.E17 Solution to Exercise 17



19. TFTP needs to use RRQ and WRQ messages for connection establishment and to let the server know what kind of service is required. These functions are served by various commands in FTP using the FTP control connection.

21. See Figure 21.E21. The user datagram is 26 bytes.

Figure 21.E21 Solution to Exercise 21

Ephemeral port number		69	
26		Checksum	
2		"R"	"e"
"p"	"o"	"r"	"t"
0	"n"	"e"	"t"
"a"	"s"	"c"	"i"
"i"	0		

23. See Figure 21.E23.

Figure 21.E23    *Solution to Exercise 23*

