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## Module Practice and Quiz

5.3.1

### What did I learn in this module?



#### Binary Number System

Binary is a numbering system that consists of the numbers 0 and 1 called bits. In contrast, the decimal numbering system consists of 10 digits consisting of the numbers 0 – 9. Binary is important for us to understand because hosts, servers, and network devices use binary addressing, specifically, binary IPv4 addresses, to identify each other. You must know binary addressing and how to convert between binary and dotted decimal IPv4 addresses. This topic presented a few ways to convert decimal to binary and binary to decimal.

#### Hexadecimal Number System

Just as decimal is a base ten number system, hexadecimal is a base sixteen system. The base sixteen number system uses the numbers 0 to 9 and the letters A to F. The hexadecimal numbering system is used in networking to represent IPv6 addresses and Ethernet MAC addresses. IPv6 addresses are 128 bits in length and every 4 bits is represented by a single hexadecimal digit; for a total of 32 hexadecimal values. To convert hexadecimal to decimal, you must first convert the hexadecimal to binary, then convert the binary to decimal. To convert decimal to hexadecimal, you must also first convert the decimal to binary.

5.3.2

### Module Quiz - Number Systems



1. What is the binary representation for the decimal number 173?

- 10100111
- 10110101
- 10100101
- 10101101

2. Given the binary address of 11101100 00010001 00001100 000001010, which address does this represent in dotted decimal format?

- 234.16.12.10
- 236.17.12.10
- 236.17.12.6
- 234.17.10.9

3. How many binary bits exist within an IPv6 address?

- 64
- 256
- 128
- 32
- 48

4. What is the binary equivalent of the decimal number 232?

- 11110010
- 10011000
- 11101000
- 11000110

5. Which two statements are correct about IPv4 and IPv6 addresses? (Choose two.)

- IPv4 addresses are 128 bits in length.
- IPv4 addresses are represented by hexadecimal numbers.
- IPv4 addresses are 32 bits in length.
- IPv6 addresses are 32 bits in length.
- IPv6 addresses are 64 bits in length.
- IPv6 addresses are represented by hexadecimal numbers.

6. Which IPv4 address format was created for ease of use by people and is expressed as 201.192.1.14?

- dotted decimal
- binary
- hexadecimal
- ASCII

7. What is the dotted decimal representation of the IPv4 address 11001011.00000000.01110001.11010011?

- 192.0.2.199
- 198.51.100.201
- 209.165.201.223
- 203.0.113.211

8. What is the decimal equivalent of the binary number 10010101?

- 168
- 157
- 192
- 149

9. What is the decimal equivalent of the hex number 0x3F?

- 63
- 77
- 87
- 93

10. What is the dotted decimal representation of the IPv4 address which is represented as the binary string 00001010.01100100.00001010.00000001?

- 10.100.21.1
- 100.21.10.1
- 10.10.20.1
- 100.10.11.1

11. What is the decimal equivalent of 0xC9?

- 185
- 200
- 201
- 199

12. Which is a valid hexadecimal number?

- g
- j
- h
- f

13. What is the binary representation of 0xCA?

- 11001010
- 11010101
- 11011010
- 10111010

14. How many bits are in an IPv4 address?

- 32
- 128
- 256
- 64

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