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Computer Networking Principles

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Homework 4

1. Address range values:

* Class A: 1 to 126
* Class B: 128 to 191
* Class C: 192 to 223
* Class D: 224 to 239
* Class E: 240 to 254

1. a) 128.64.12.12 – belongs to Class B because its first octet values is within the range of Class B.

b) 224.1.1.1- belongs to Class D since its first octet values is within range.

c) 1.1.1.1 – belongs to Class A because its octet values is in range.

d) 200.1.1.1 – belongs to Class C because its octet vales is within range of Class C.

1. The prefixes for the address 255.255.255.252 is 11111111.11111111.11111111.11111100
2. 256 subnets are needed to number 128 subnets because although 2^7 does equal to 128 subnets, it does not allow room for reserved hosts.
3. We need 7 bits to number 128 hosts per subnet.
4. Subnet mask of 172.16.0.0 = 255.255.0.0

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| --- | --- | --- | --- | --- | --- |
| IP address | Class | Number of Octets | Number of Host Octets | Network ID | Network Broadcast Address |
| 1.12.1.1 | A | 4 | 3 | 1.0.0.0 | 1.255.255.255 |
| 128.16.6.1 | B | 4 | 2 | 128.16.0.0 | 128.16.255.255 |
| 200.31.2.19 | C | 4 | 1 | 200.31.2.0 | 200.31.2.255 |
| 192.11.1.12 | C | 4 | 1 | 192.11.1.0 | 192.11.1.255 |
| 126.5.7.9 | A | 4 | 3 | 126.0.0.0 | 126.255.255.255 |

1. The main difference between classful and classless addressing is that classful addressing is divided into 3 parts: network, subnets, and hosts. Meanwhile, classless addressing divided addresses only into 2 parts: subnets and host.
2. IP address: 192.2.1.61, subnet mask: 255.255.255.0
3. 11111111.11111111.11111111.0 /24
4. N = 24 since it’s a Class C and Class C is the first three octets.
5. S = 8, H = 0
6. 6 hosts per subnet
7. Number of subnets = 256
8. Network address: 192.168.18.0
9. 6 subnet bits
10. 16,382 bits
11. 255.255.255.0
12. /7
13. Ranges from 1 - 126