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Course: Computer Networks Lab Program: BSCS-6

Lab C

**Task 1**: Write the IP address 222.1.1.20 mask 255.255.255.192 in CIDR.

# Subnet Mask to Binary:

* The subnet mask **255.255.255.192** in binary is:

o 255: 11111111

o 255: 11111111

o 255: 11111111

o 192: 11000000

# Count the 1s:

* There are 26 bits set to 1 in the binary representation (8 + 8 + 8 + 2).

The IP address 222.1.1.20 with a subnet mask of 255.255.255.192 can be expressed in CIDR notation as **222.1.1.20/26**

**Task 2:** Write is the IP address 135.1.1.25 mask 255.255. 248.0 in CIDR notation. The **subnet mask** 255.255.248.0 in binary is:

* 255: 11111111
* 255: 11111111
* 248: 11111000
* 0: 00000000

# Count the 1s:

* There are 26 bits set to 1 in the binary representation (8 + 8 + 5 + 0).

It can be expressed in CIDR notation as 135.1.1.25/21. The "/21" indicates that the first 21 bits are used for the network part of the address.

**Task 3:** You have been allocated a class C network address of 201.1.1.0 how may hosts can you have?

Answer: In a Class C network, the default subnet mask is **255.255.255.0**, which allows for a total of **256 addresses** (from 201.1.1.0 to 201.1.1.255).

**Total Addresses**: 256

**Network Address**: 1 (201.1.1.0)

**Broadcast Address**: 1 (201.1.1.255)

A class C address has 8 bits of the host which will give 28 -2 =**254 hosts**

**Task 4:** You have been allocated a class A network address of 21.0.0.0. You need create at least 10 networks and each network will support a maximum of 100 hosts. Would the following two subnet masks Work.

255.255.0.0 and or 255.255.255.0

**Answer**: Yes, both would work

# Mask 255.255.0.0:

* **Subnet Bits**: 8 bits for the subnet.
* **Number of Subnets**: 28=2562^8 = 25628=256 subnets, which accommodates more than 10 networks.
* **Host Bits**: 16 bits for hosts.
* **Number of Hosts**: 216−2=65,5342^{16} - 2 = 65,534216−2=65,534 usable hosts, well above the requirement of 100 hosts per network.

# Mask 255.255.255.0:

* **Subnet Bits**: 16 bits for the subnet.
* **Number of Subnets**: 216=65,5362^{16} = 65,536216=65,536 subnets, easily allowing for 10 networks.
* **Host Bits**: 8 bits for hosts.
* **Number of Hosts**: 28−2=2542^8 - 2 = 25428−2=254 usable hosts, which is sufficient for 100 hosts per netwo

Both subnet masks (255.255.0.0 and 255.255.255.0) would work.

**Task 5:** You have been allocated a Class B network address of 129.1.0.0. You have subnetted it using the subnet mask 255.255.255.0 How many networks can you Have and how many hosts can you place on each network?

Answer:

**Subnet Mask**: 255.255.255.0 (or /24)

**Class B Default Mask**: 255.255.0.0 (or /16)

# Number of Networks:

The number of subnets can be calculated using the formula: Number of Networks=2n

Now,

28=256 networks

**Number of Hosts per Network**: 28−2=256−2=254 usable hosts per network