

**Name:** Fatima Malik

**Sap ID:** 40089

**Semester:** BSCS-6

**Course:** Computer Networks

**Lab 6**

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

Convert the IP address 222.1.1.20 with the subnet mask 255.255.255.192 into CIDR (Classless Inter-Domain Routing) notation:

1. **Subnet mask:** 255.255.255.192 in binary is:

11111111.11111111.11111111.11000000

There are 26 bits set to 1 in the subnet mask, so the CIDR notation will be **/26**.

1. **IP Address:** The IP address remains 222.1.1.20.

Thus, the CIDR notation for the IP address 222.1.1.20 with the subnet mask 255.255.255.192 is:

222.1.1.20/26

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

Convert the IP address 135.1.1.25 with the subnet mask 255.255.248.0 into CIDR notation:

1. **Subnet mask:** 255.255.248.0 in binary is:

11111111.11111111.11111000.00000000

There are 21 bits set to 1 in the subnet mask, so the CIDR notation will be **/21**.

1. **IP Address:** The IP address remains 135.1.1.25.

Thus, the CIDR notation for the IP address 135.1.1.25 with the subnet mask 255.255.248.0 is:

135.1.1.25/21

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

A **Class C network address** has a default subnet mask of **255.255.255.0**, which is equivalent to **/24** in CIDR notation.

For a **Class C** network:

* The subnet mask **/24** leaves **8 bits** for host addresses.
* The number of possible IP addresses is 28=256.
* However, 2 addresses are reserved: one for the **network address** and one for the **broadcast address**.

So, the number of usable host addresses is:

256−2=254

Thus, with a Class C network address of **201.1.1.0**, you can have **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**

**1. Subnet Mask: 255.255.0.0 (/16)**

* This subnet mask provides **16 bits** for host addresses.
* Number of hosts per network: 216=65,534 hosts.
* While this supports far more than 100 hosts, it creates only **1 subnet** (no additional networks).

**Conclusion:** This mask doesn't work as it doesn't create multiple networks.

**2. Subnet Mask: 255.255.255.0 (/24)**

* This provides **8 bits** for host addresses.
* Number of hosts per network: 28−2=254 hosts.
* Number of networks: The remaining **8 bits** from the Class A address can be used for subnetting, allowing 28=256 subnets.

**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?**

With a **Class B network address** of **129.1.0.0** and a **subnet mask of 255.255.255.0 (/24)**:

**Number of Networks:**

* Class B has a default subnet mask of **255.255.0.0 (/16)**.
* By using **255.255.255.0 (/24)**, you've borrowed **8 bits** from the host portion for subnetting.
* The number of networks you can have is 28=256 networks.

**Number of Hosts per Network:**

* The subnet mask **/24** leaves **8 bits** for host addresses.
* The number of usable hosts per network is 28−2=254 hosts (subtracting 2 for the network and broadcast addresses).

**So,**

* You can have **256 networks**.
* Each network can support **254 hosts**.