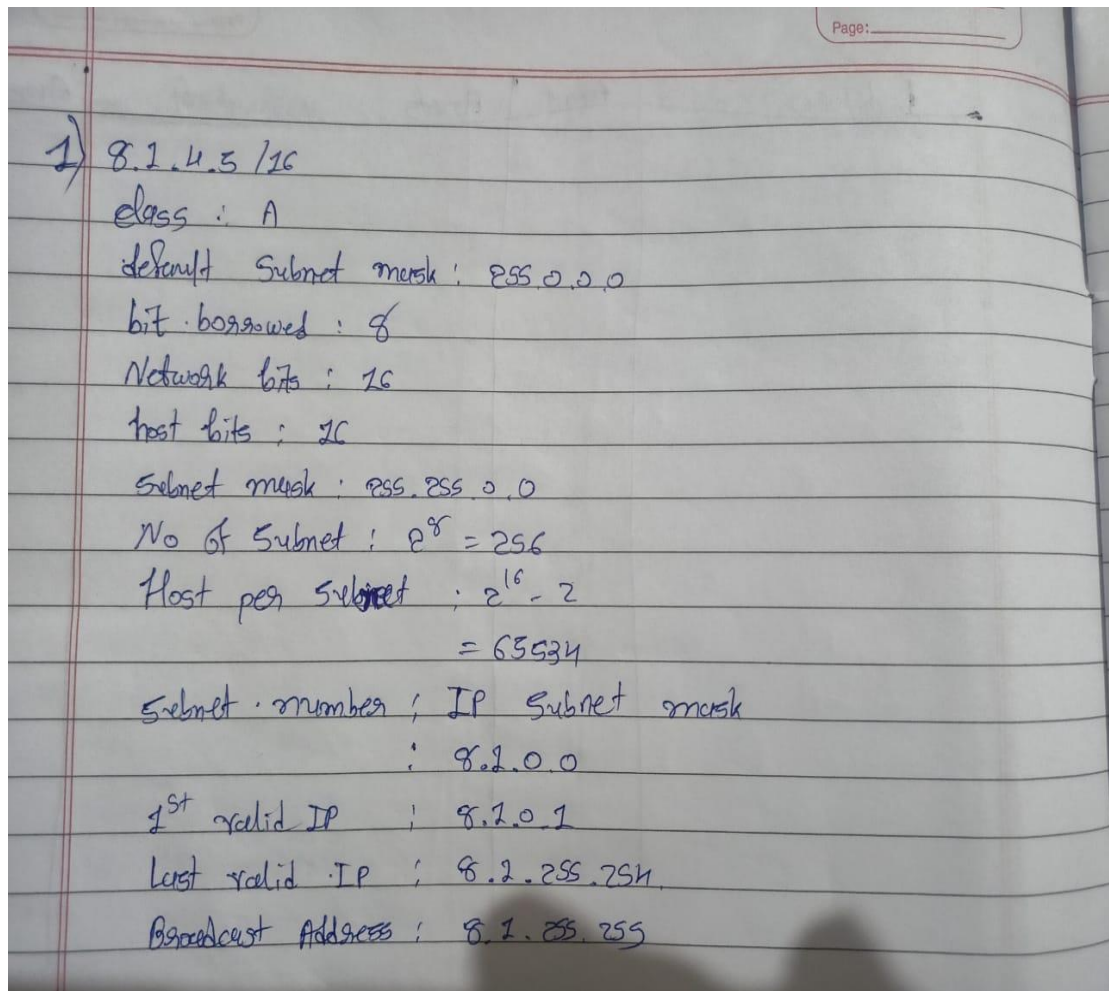


Date: 15/09/2024

Study of IP Addressing and sub-netting.

Practical Assignment #09:

1. Find default subnet marks, network bits, host bits, hosts per subnet, no of subnets, subnet number, 1st valid IP address, last valid IP address, and broadcast address.
 - i. 8.1.4.5/16



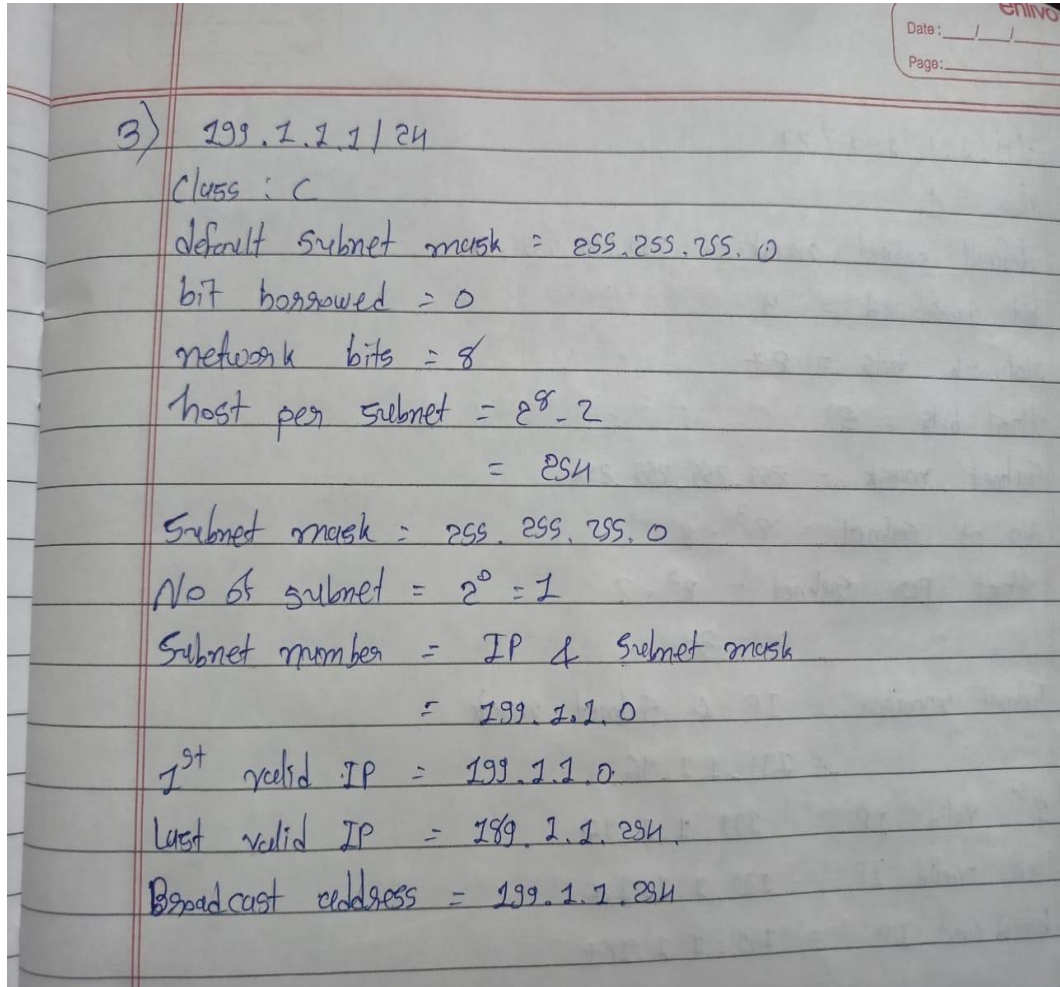


ii. 130.4.102.1/24

2 Enrollment No: - **22010101443**

Date: 15/09/2024

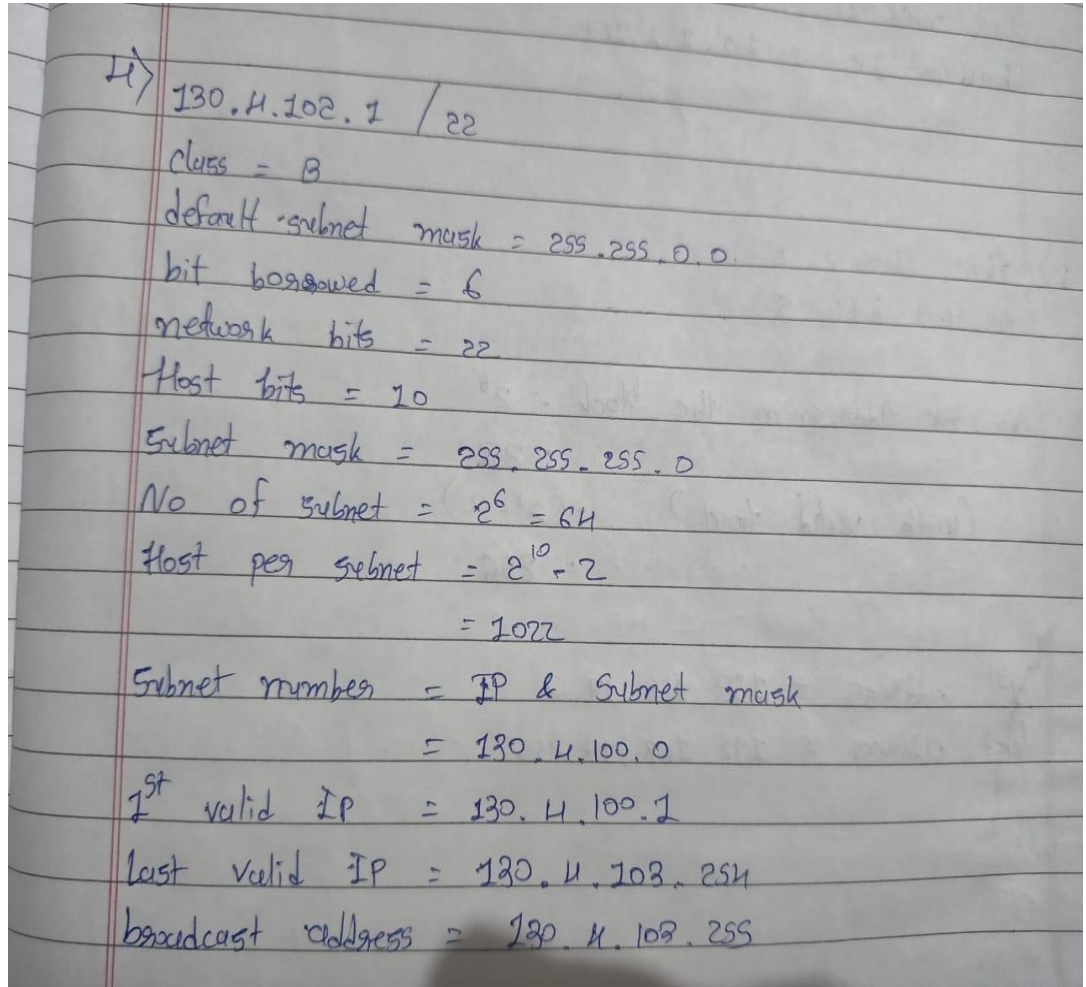
iii. 199.1.1.1/24



3) 199.1.1.1/24
Class : C
default subnet mask = 255.255.255.0
bit borrowed = 0
network bits = 8
host per subnet = $2^8 - 2$
= 254
Subnet mask = 255.255.255.0
No of subnet = $2^0 = 1$
Subnet number = IP & Subnet mask
= 199.1.1.0
1st valid IP = 199.1.1.1
Last valid IP = 199.1.1.254
Broadcast address = 199.1.1.255

Date: 15/09/2024

iv. 130.4.102.1/22

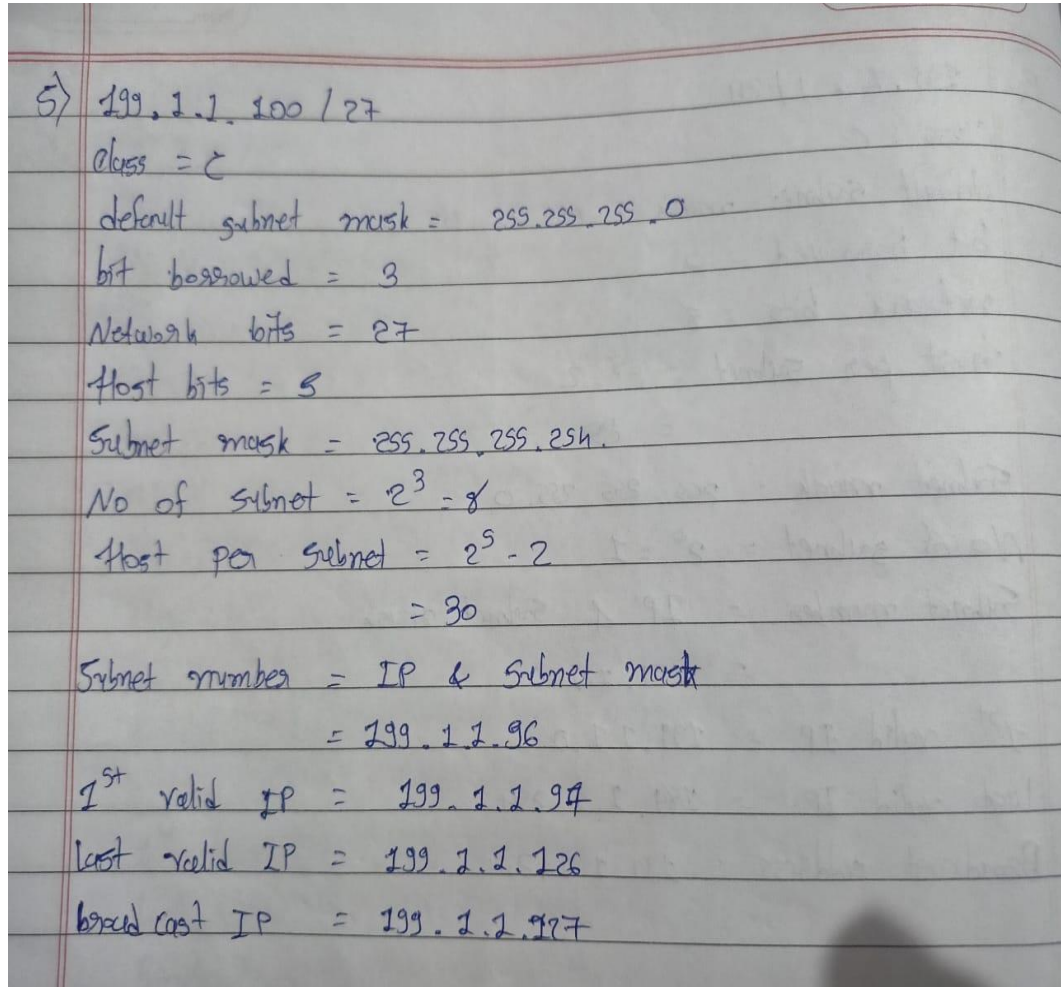


Handwritten calculations for IP subnetting of 130.4.102.1/22:

- 130.4.102.1 / 22
- class = B
- default subnet mask = 255.255.0.0
- bit borrowed = 6
- network bits = 22
- Host bits = 10
- Subnet mask = 255.255.255.0
- No of subnet = $2^6 = 64$
- Host per subnet = $2^{10} - 2$
- = 1022
- Subnet number = IP & Subnet mask
- = 130.4.100.0
- 1st valid IP = 130.4.100.1
- last valid IP = 130.4.103.254
- broadcast address = 130.4.103.255

Date: 15/09/2024

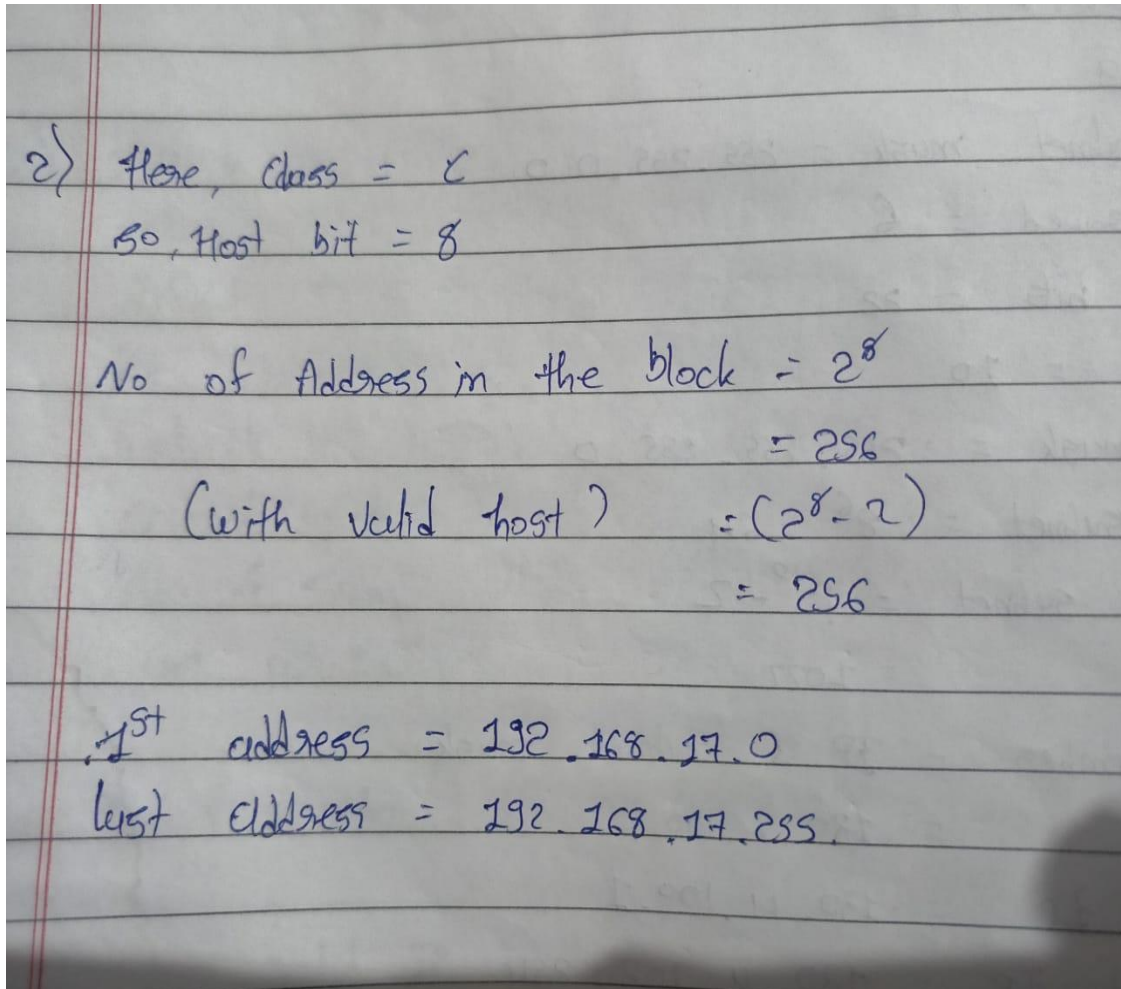
v. 199.1.1.100/27



5) 199.1.1.100 / 27
class = C
default subnet mask = 255.255.255.0
bit borrowed = 3
Network bits = 27
Host bits = 5
Subnet mask = 255.255.255.254
No of subnet = $2^3 = 8$
Host per subnet = $2^5 - 2$
= 30
Subnet number = IP & Subnet mask
= 199.1.1.96
1st valid IP = 199.1.1.97
last valid IP = 199.1.1.126
broadcast IP = 199.1.1.127

Date: 15/09/2024

2. A host in a class C network has been assigned an IP address 192.168.17.9. Find the number of addresses in the block, the first address, and the last address.



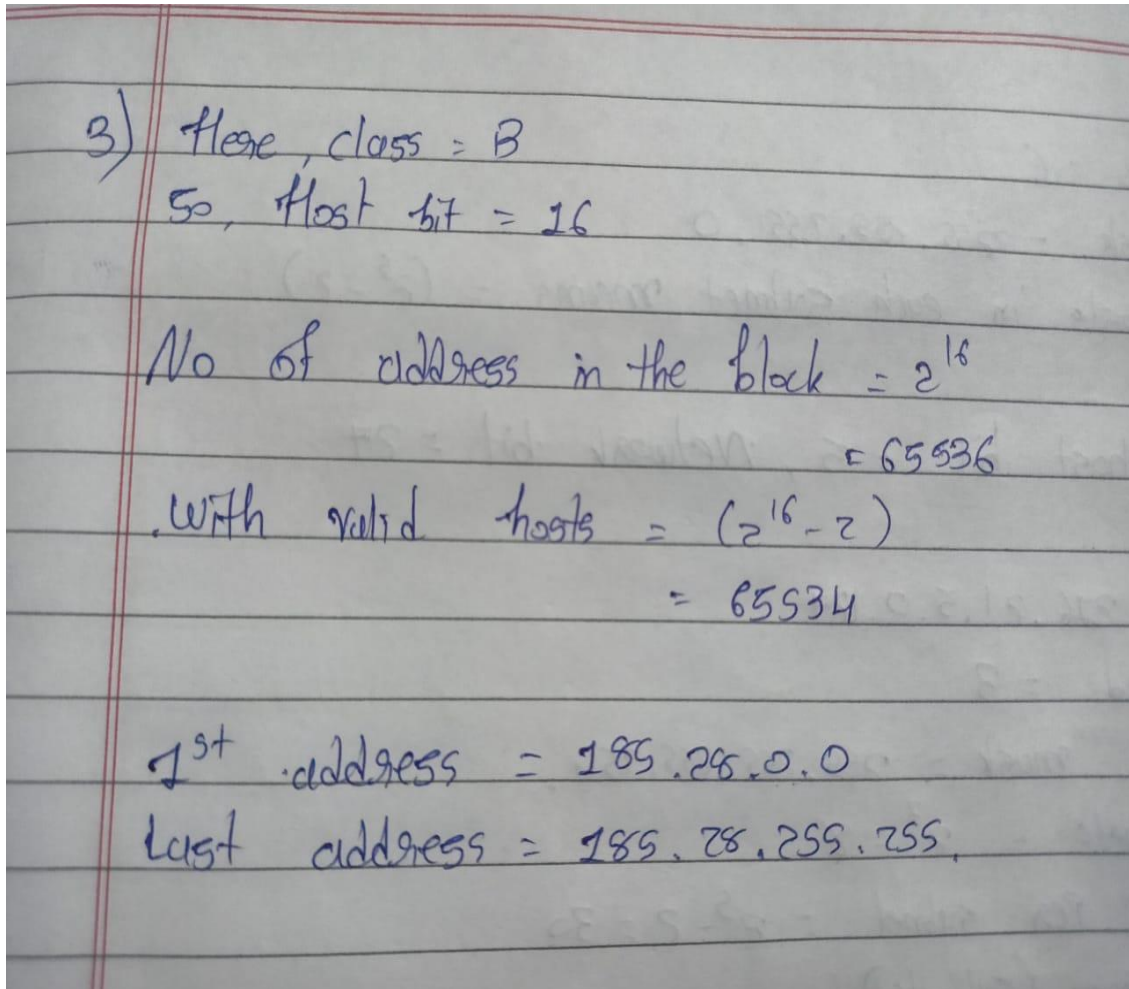
2) Here, class = C
So, Host bit = 8

No of Address in the block = 2^8
= 256
(with valid host) = $(2^8 - 2)$
= 254

1st address = 192.168.17.0
last address = 192.168.17.255

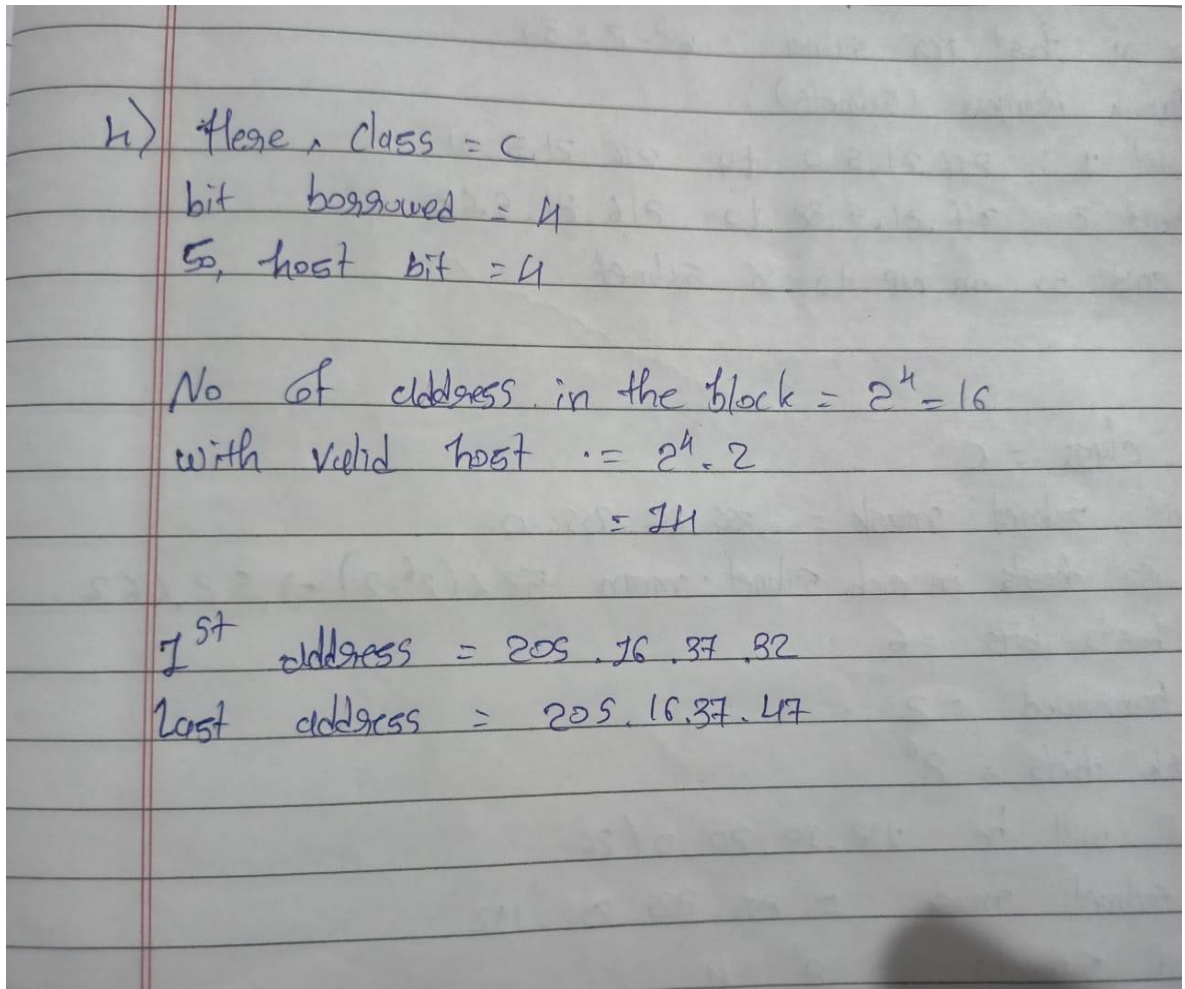
Date: 15/09/2024

3. An address in a block is given as 185.28.17.9. Find the number of addresses in the block, the first address, and the last address.



Date: 15/09/2024

4. A block of addresses is granted to a small organization. We know that one of the addresses is 205.16.37.39/28. What is the first address, last address, number of addresses in a block.



Date: 15/09/2024

5. Subnet the IP address 216.21.5.0 into 30 hosts in each subnet. Find Class, Default Mask, Bit Borrowed, New subnet mask, No. of Hosts & Subnet, Network Ranges (Subnets).

5) Here, class = C
default mask = 255.255.255.0
Here, 30 hosts in each subnet means = $(2^5 - 2)$
So, host bit = 5, Network bit = 27
So, IP = 216.21.5.0.127
bit borrowed = 3
new subnet mask = 255.255.255.254
No of subnets = $2^3 = 8$
No of host per subnet = $2^5 - 2 = 30$
Network Ranges (Subnets):
Subnet 1: 216.21.5.0 to 216.21.5.31
Subnet 2: 216.21.5.32 to 216.21.5.63
and so on up to 8 subnet.

Date: 15/09/2024

6. Subnet the IP address 192.10.20.0 into 52 hosts in each subnet. Find Class, Default Mask, Bit Borrowed, New subnet mask, No. of Hosts & Subnet, Network Ranges (Subnets).

G) Here, class = C
default subnet mask = 255.255.255.0
Here, 52 hosts in each subnet. mean $52 < (2^6 - 2) \Rightarrow 52 < 62$
So, hosts bits = 6
bit borrowed = 2
Network bits = 2^6
So, IP will be 192.10.20.0/26
New subnet mask = 255.255.255.192
No of subnets = $2^2 = 4$
No of valid hosts per subnet = $2^6 - 2 = 62$

Network Ranges (Subnets) :
Subnet 1: 192.10.20.0 to 192.10.20.63
Subnet 2: 192.10.20.64 to 192.10.20.127
and so on up to 4 subnet.