



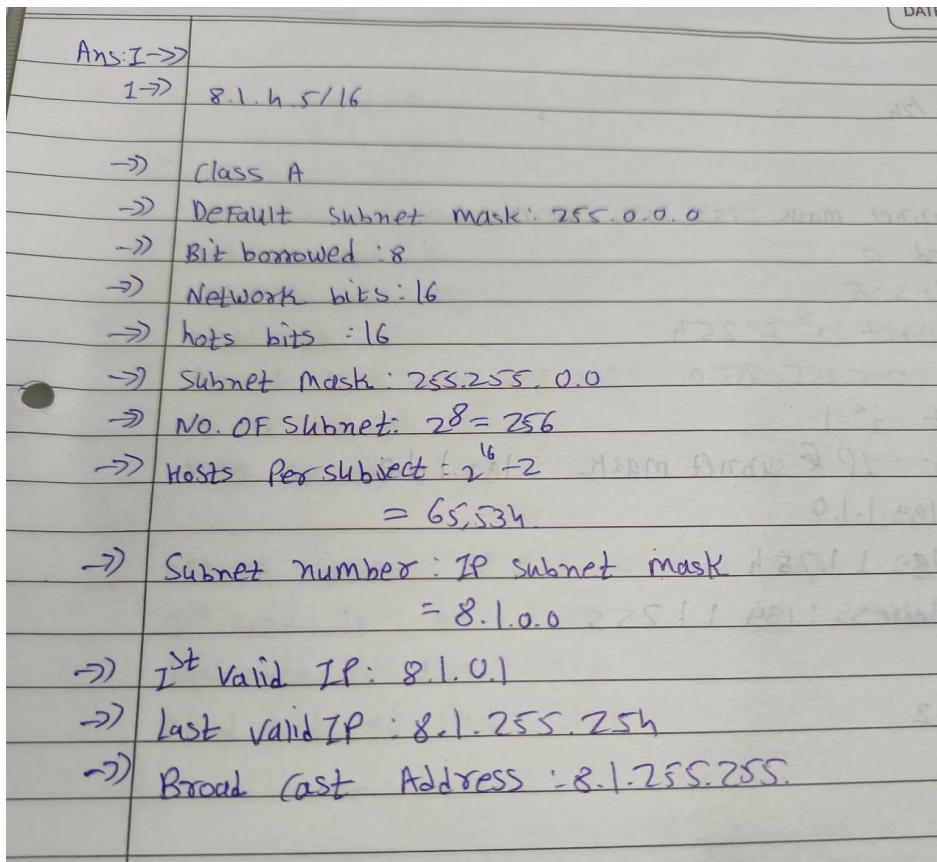
Date: 13/9/2024

Lab Practical #09:

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





Date: 02/10/2023

ii. 130.4.102.1/24

2.	130.4.102.1/24
→	Class: B
→	Default Subnet Mask: 255.255.0.0
→	Bit borrowed: 8, network bits: 24
→	Hosts bits: 8
→	Subnet Mask: 255.255.255.0
→	No. of Subnets: $2^8 = 256$
→	Hosts Per Subnet: $2^8 - 2 = 254$
→	Subnet no.: IP & Subnet Mask: 130.4.102.0
→	1 st Valid IP: 130.4.102.1
→	Last Valid IP: 130.4.102.254
→	Broadcast Address = 130.4.102.255



Date: 02/10/2023

iii. 199.1.1.1/24

PAGE NO.	DATE :
3	199.1.1.1/24
→	Class: C
→	Default subnet mask: 255.255.255.0
→	bit borrowed: 0
→	network bits: 8
→	hosts 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
→	1 st valid IP: 199.1.1.0
→	last valid IP: 199.1.1.254
→	Broad cast Address: 199.1.1.255



Date: 02/10/2023

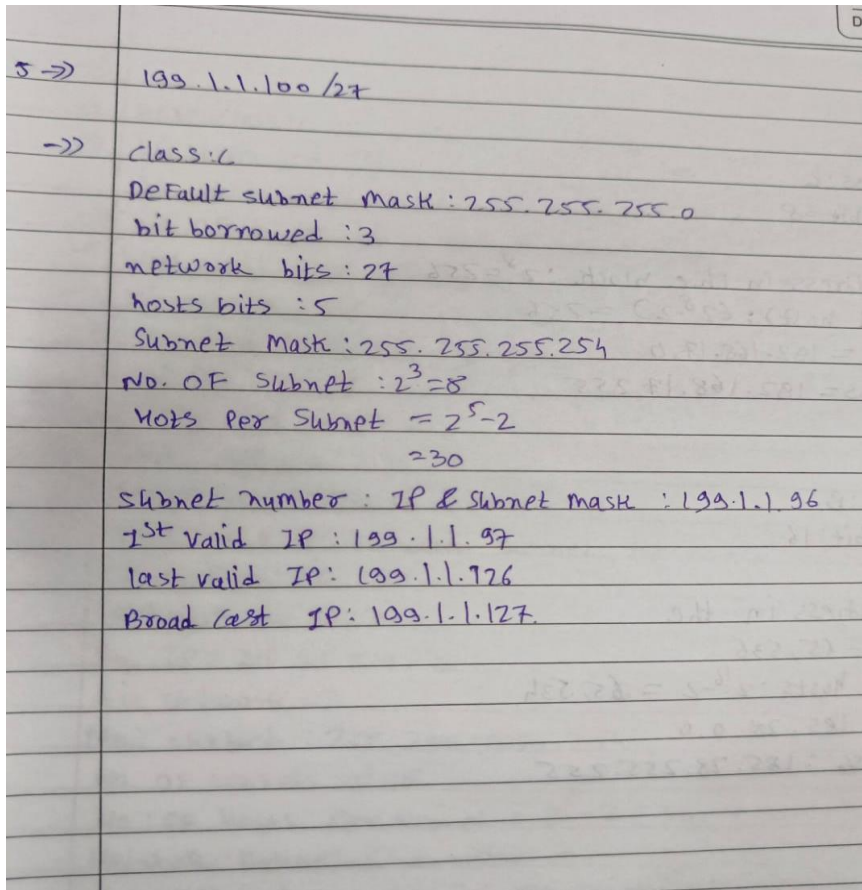
iv. 130.4.102.1/22

4→	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: 255.255.252.0
→	No. of Subnet: $2^6 = 64$
→	Hosts per Subnet: $2^{10} - 2 = 1022$
→	subnet number: IP & Subnet mask = 130.4.100.0
→	1 st valid IP: 130.4.100.1
→	Last Valid IP: 130.4.103.254
→	Broad Cast Address: 130.4.103.255



Date: 02/10/2023

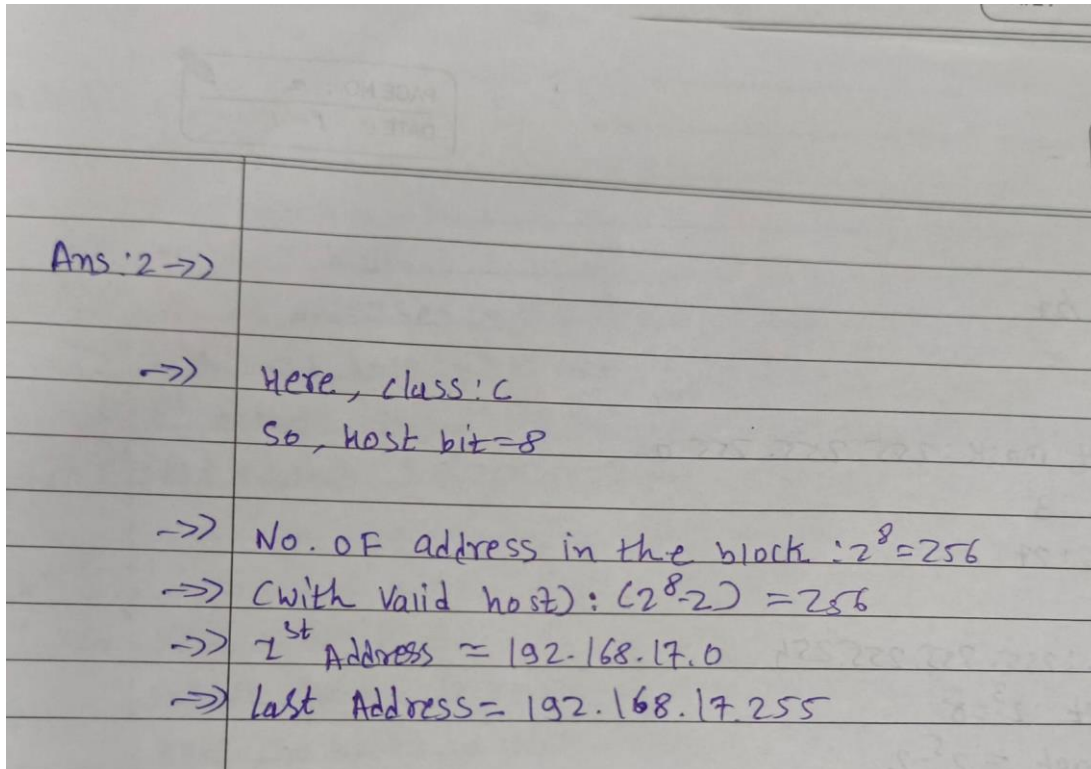
v. 199.1.1.100/27





Date: 02/10/2023

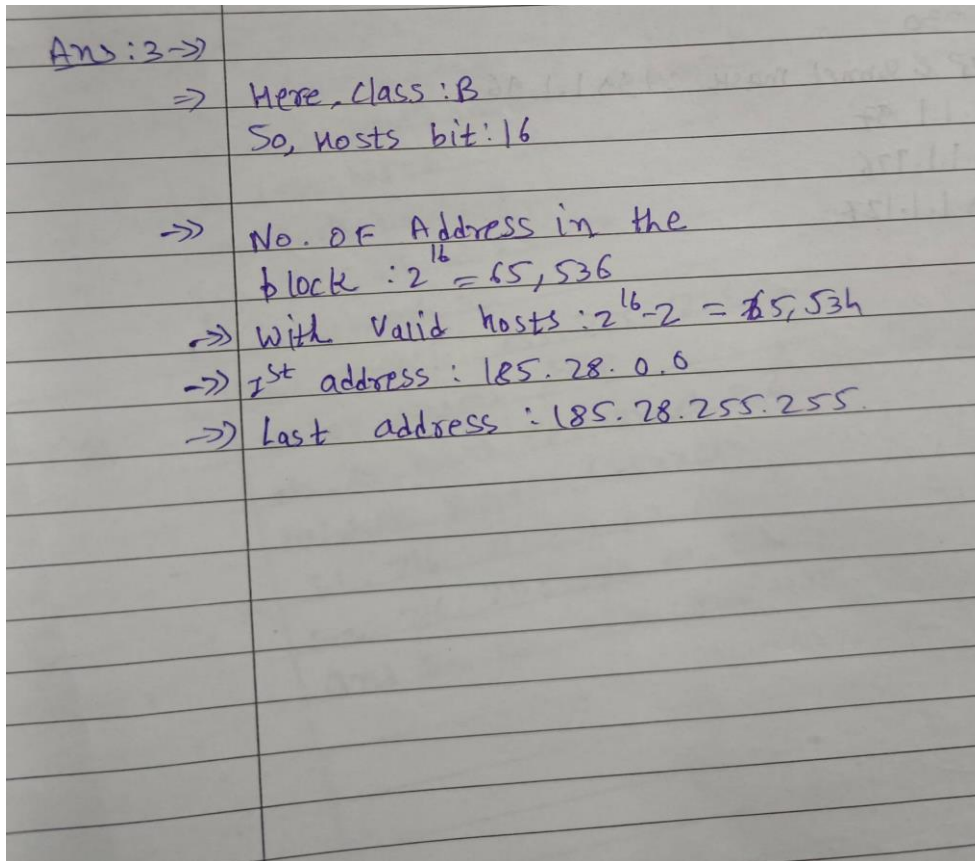
2. A host in a class C network has been assigned an IP address 192.168.17.9. Find the number of addresses in the block, the first address, and the last address.





Date: 02/10/2023

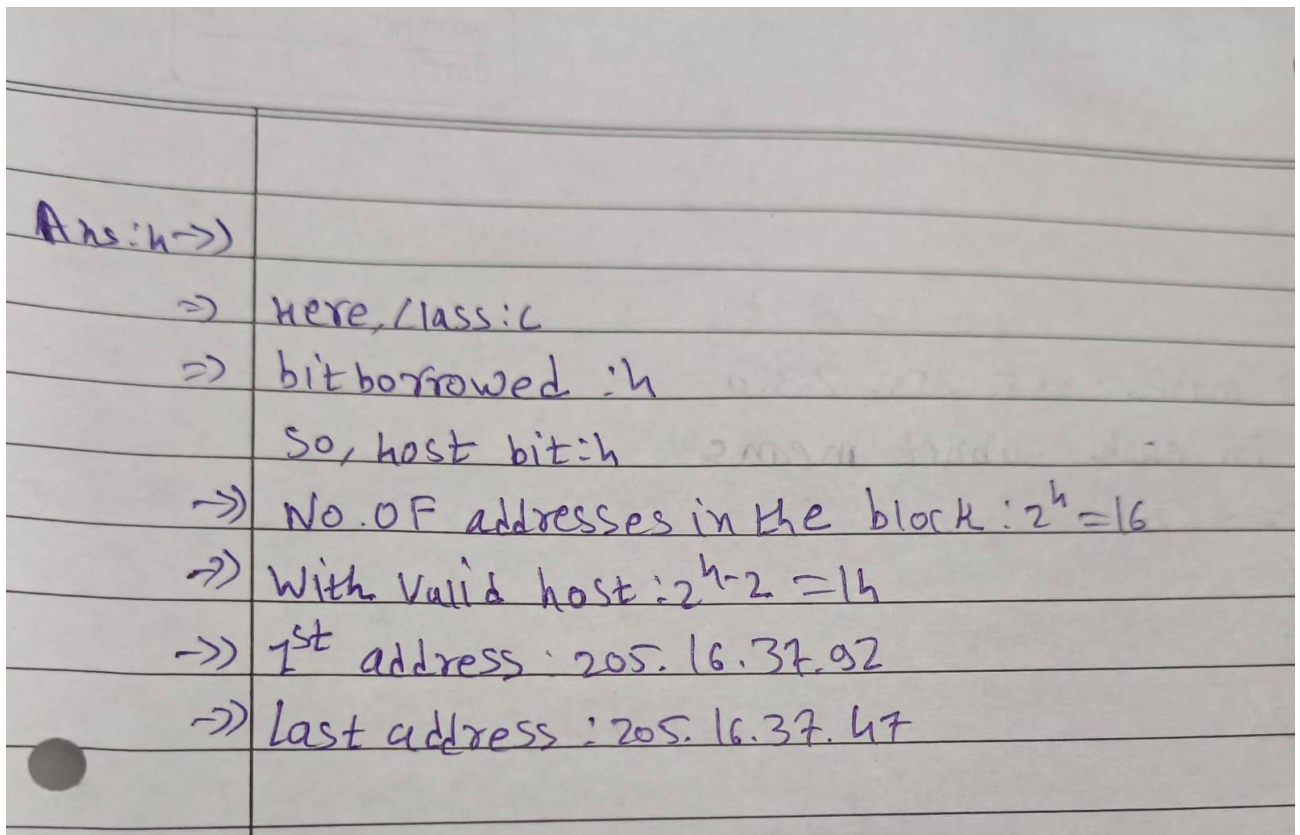
3. An address in a block is given as 185.28.17.9. Find the number of addresses in the block, the first address, and the last address.





Date: 02/10/2023

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: 02/10/2023

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).

Ans: \Rightarrow

\Rightarrow 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 / 27

bit Network = 3

New subnet: 255.255.255.254

No. of subnets: $2^3 = 8$

No. of hosts per subnet = $2^5 - 2 = 30$

Network Ranges (subnets):

S1: 216.21.5.0 to 216.21.5.31

S2: 216.21.5.32 to 216.21.5.63

And so on up to 8 subnets.



Date: 02/10/2023

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)

Ans: 6 \rightarrow

\Rightarrow here, class: C

\Rightarrow Default subnet mask: 255.255.255.0

here, 52 hosts in each subnet means

$52 < (2^6 - 2) \Rightarrow 52 < 62$

So, hosts bits = 6

bit borrowed = 2

Network bits = 26

So, IP will be 192.10.20.0/26

New subnet: 255.255.255.192

No of subnet = $2^2 = 4$

No of valid hosts per subnet: $2^6 - 2 = 62$

\Rightarrow Network Ranges (subnets):

S₁ = 192.10.20.0 to 192.10.20.63

S₂ = 192.10.20.64 to 192.10.20.127

and so on upto 4 subnet.