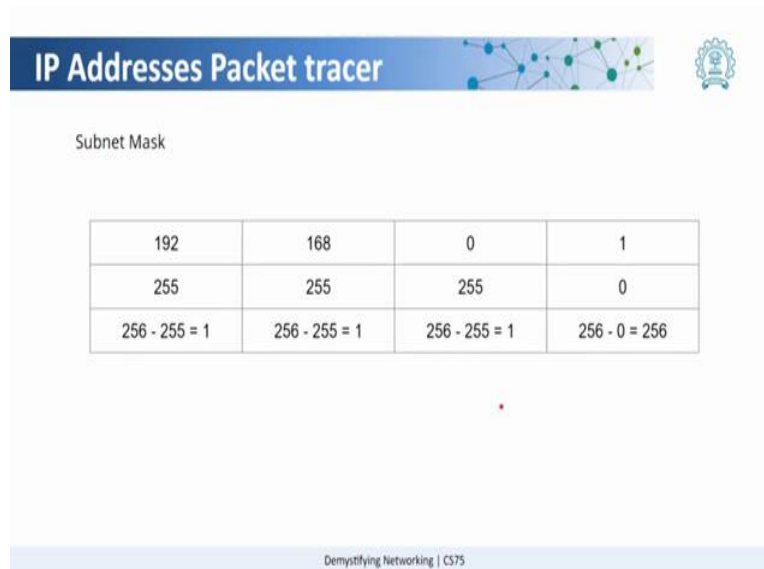


Demystifying Networking
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Lecture – 26
Creating a network with Sub-net mask

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The slide is titled "IP Addresses Packet tracer" and features a network diagram icon and the IIT Bombay logo. Below the title, the text "Subnet Mask" is displayed. A table shows the calculation of the number of hosts per octet for a given IP address and subnet mask.

192	168	0	1
255	255	255	0
$256 - 255 = 1$	$256 - 255 = 1$	$256 - 255 = 1$	$256 - 0 = 256$

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So basically, the subnet mask determines, I mean, which IPs belong to one network. For example, we saw 255 255 255 0 as the subnet mask for the IP address 192 168 0 1. So, how do you get to know which are the other IP addresses in the same network? As we know that, 256 are the total numbers that can be represented in this one or in this one octet, as we call it, so, if your network mask is 255, so the number of representations you can use for that particular network is 256 minus 255 that is 1. So, you could use only 1 representation, which means 192. Similarly, if we have 255 in three places, that means, all the IP addresses will begin with 192 168 and 0 belong to the same network. But here what we have, we have a 0. 0 means we can have 256 representations that would be 0 to 255 in the same network.

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The slide is titled "IP Addresses Packet tracer" and features a network diagram icon and a university logo. It displays a "Subnet Mask" table with the following values:

192	168	0	1
255	255	255	0
192	168	0	0 to 255

Below the table, it specifies:

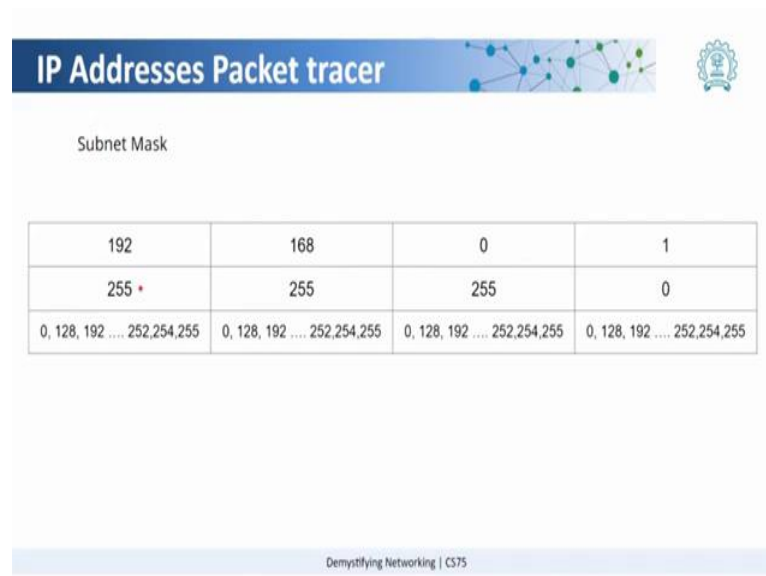
First Address: 192.168.0.0 (Network Address)
Last Address: 192.168.0.255 (Broadcast Address)

The footer of the slide reads "Demystifying Networking | CS75".

So, what does that mean? That means, any address with 192 168 0 which were the single numbers allowed and the last octet from 0 to 255 belong to the same network. So, whenever a network is created, by default 2 IP addresses are reserved, which is the first and the last IP address. So, here the first IP address is '192.168.0.0' and the last one '.255'.

What we see here, is the first one which is called the network address, is used to identify the network and the last is called the broadcast address. The total number of IP addresses that you could use are all the IP addresses between 0 to 255. With the net mask of 255 255 255 0 what you can say is, all the IP addresses between 192.168.0.0 and 192.168.0.255 belong to the same network.

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The slide is titled "IP Addresses Packet tracer" and features a network diagram icon and a university logo. Below the title, the text "Subnet Mask" is displayed. A table lists four values for each of the four octets of a subnet mask: 192, 168, 0, and 1. The second row shows the corresponding values 255, 255, 255, and 0. The third row shows the range of possible values for each octet: 0, 128, 192, ..., 252, 254, 255. A footer at the bottom reads "Demystifying Networking | CS75".

192	168	0	1
255 *	255	255	0
0, 128, 192 ... 252,254,255	0, 128, 192 ... 252,254,255	0, 128, 192 ... 252,254,255	0, 128, 192 ... 252,254,255

So, what are the numbers that the subnet mask can take? As we saw, in case of IP addresses this could take anything between 0 to 255, but in case of subnet mask, it is different. So, a subnet mask can take any of the values between 0, 128, 192 so on to 252, 254 and 255.