Computer Network Assignment

On

Getting Familiar With Your Network

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1 My IP Address

```
C:\Users\Roshan>ipconfig

Windows IP Configuration



Ethernet adapter Ethernet:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :

Ethernet adapter Ethernet 2:

   Connection-specific DNS Suffix  . :
   Link-local IPv6 Address . . . . . : fe80::725d:f06c:987d:d1b3
      %17
   IPv4 Address. . . . . . . . . . . : 192.168.56.1
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . :

Ethernet adapter Ethernet 3:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :

Unknown adapter OpenVPN Data Channel Offload for NordVPN:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :

Wireless LAN adapter Local Area Connection* 1:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :
```

```
Wireless LAN adapter Local Area Connection* 2:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :

Wireless LAN adapter Wi-Fi:

   Connection-specific DNS Suffix  . :
   IPv4 Address. . . . . . . . . . . : 192.168.1.67
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . : 192.168.1.254

Ethernet adapter Bluetooth Network Connection:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix  . :
```

From the above output, it is clear that my active network interface is `Wi-Fi`. It has IP Address `192.168.1.67`.

Parameter	**Value**
IP Address	`192.168.1.67`

2 Subnet Mask

From the terminal output, we can see the subnet mask for my network is `255.255.255.0`.

Parameter	**Value**
Subnet Mask	`255.255.255.0`

3 Network Address

To calculate the network address, we need to perform a bitwise AND operation between our IP address and your subnet mask.

The network address and subnet mask for my network are:

- **Network Address:** `192.168.1.67`
- **Subnet Mask:** `255.255.255.0`

Converting these dot values to binary and performing the AND operation we get:

```
11000000.10101000.00000001.01000011
AND
11111111.11111111.11111111.00000000
-----------------------------------
11000000.10101000.00000001.00000000
```

Converting it back to dot notation, we get `192.168.1.0`.

4 How Many Nodes Can Your Network Support?

To calculate the number of nodes that a network can support given a network address and a subnet mask, we need to determine the number of host bits available.

The number of host bits is calculated as the total number of bits in an IP address (32 for IPv4) minus the number of bits used for the network.

Given the subnet mask `255.255.255.0`, we can determine the number of available host addresses as follows:

- The subnet mask `255.255.255.0` in binary is `11111111.11111111.11111111.00000000`.
- This means there are 24 network bits and $32 - 24 = 8$ host bits.
- The number of possible host addresses is $2^8 - 2 = 256 - 2 = 254$.

Therefore, the network can support **254 nodes**.

Conclusion

To summarize the findings:

Section	**Findings**
My IP Address	192.168.1.67
Subnet Mask	255.255.255.0
Network Address	192.168.1.0
Nodes Supported	254