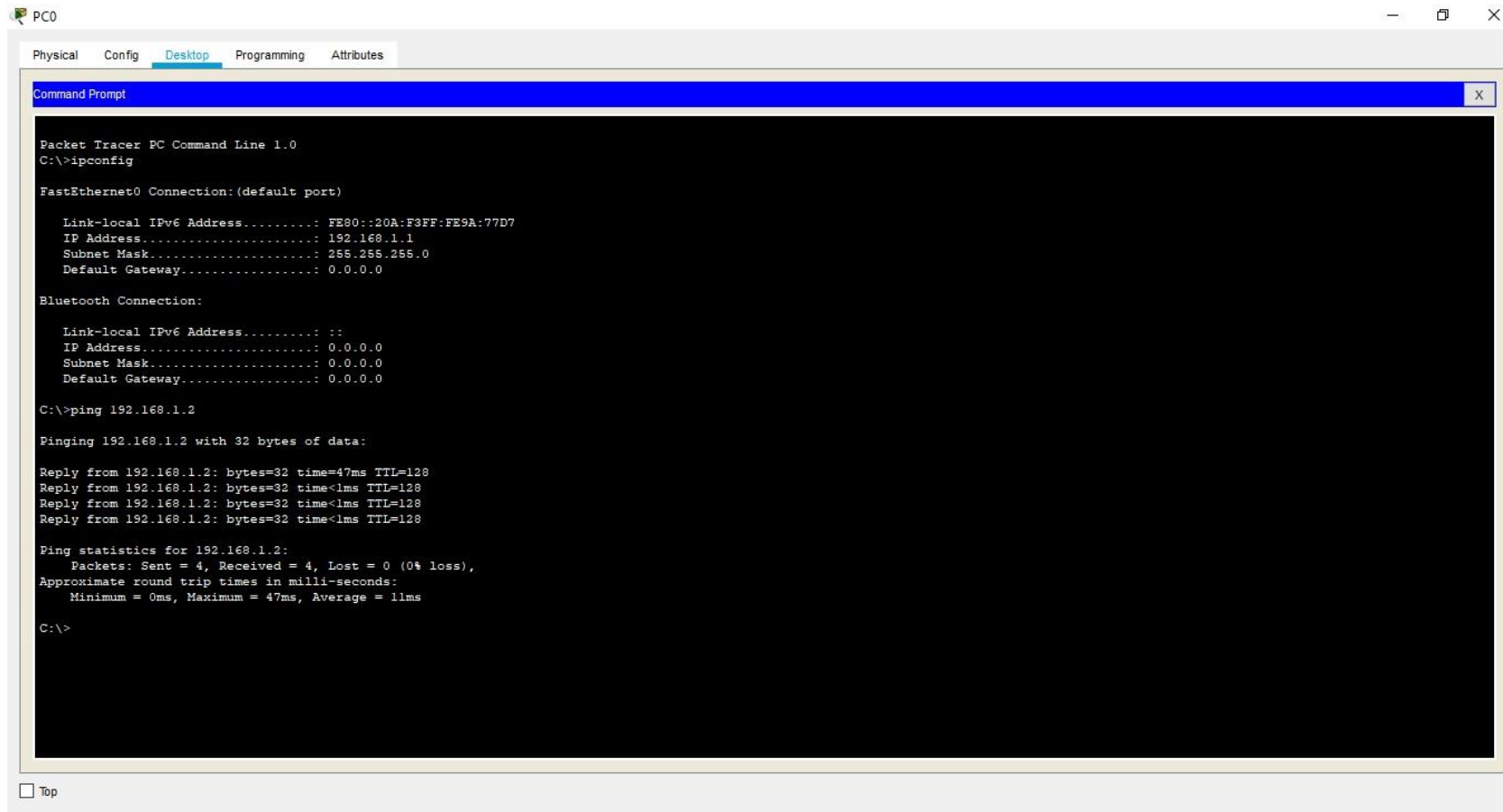


## 1. Show that PC0 can reach Laptop0 (screenshot)



The screenshot shows a Packet Tracer window for PC0. The 'Desktop' tab is selected, displaying a 'Command Prompt' window. The command prompt shows the output of the 'ipconfig' command, indicating that the FastEthernet0 interface is configured with IP 192.168.1.1 and subnet mask 255.255.255.0. The Default Gateway is 0.0.0.0. Below this, the output of the 'ping 192.168.1.2' command is shown, indicating successful connectivity with 4 successful replies and 0% loss.

```
Packet Tracer PC Command Line 1.0
C:\>ipconfig

FastEthernet0 Connection: (default port)

    Link-local IPv6 Address . . . . . : FE80::20A:F3FF:FE9A:77D7
    IP Address. . . . . : 192.168.1.1
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 0.0.0.0

Bluetooth Connection:

    Link-local IPv6 Address . . . . . : ::
    IP Address. . . . . : 0.0.0.0
    Subnet Mask . . . . . : 0.0.0.0
    Default Gateway . . . . . : 0.0.0.0

C:\>ping 192.168.1.2

Pinging 192.168.1.2 with 32 bytes of data:

Reply from 192.168.1.2: bytes=32 time=47ms TTL=128
Reply from 192.168.1.2: bytes=32 time<1ms TTL=128
Reply from 192.168.1.2: bytes=32 time<1ms TTL=128
Reply from 192.168.1.2: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.1.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 47ms, Average = 11ms

C:\>
```

## 2. Show that Laptop0 can reach PC0 (screenshot)

Laptop0

Physical Config Desktop Programming Attributes

Command Prompt

```
Packet Tracer PC Command Line 1.0
C:\>ipconfig

FastEthernet0 Connection: (default port)

    Link-local IPv6 Address . . . . . : FE80::260:2FFF:FE80:6CS1
    IP Address. . . . . : 192.168.1.2
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 0.0.0.0

Bluetooth Connection:

    Link-local IPv6 Address . . . . . : ::
    IP Address. . . . . : 0.0.0.0
    Subnet Mask . . . . . : 0.0.0.0
    Default Gateway . . . . . : 0.0.0.0

C:\>ping 192.168.1.1

Pinging 192.168.1.1 with 32 bytes of data:

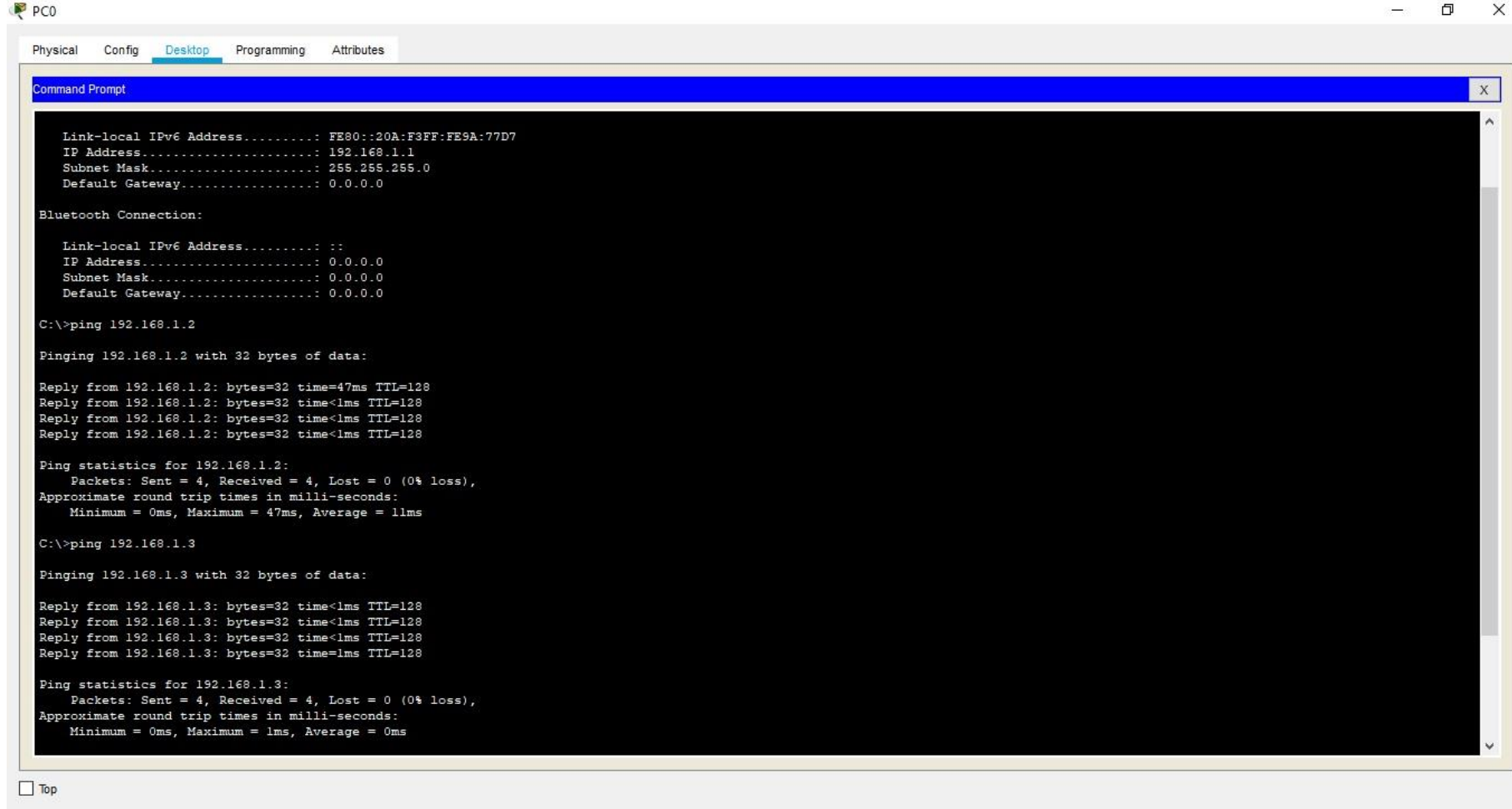
Reply from 192.168.1.1: bytes=32 time<1ms TTL=128
Reply from 192.168.1.1: bytes=32 time<1ms TTL=128
Reply from 192.168.1.1: bytes=32 time<1ms TTL=128
Reply from 192.168.1.1: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.1.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

☐ Top

3. Show the status of trying to reach PC1 from PC0, and explain reasons of the status.



The screenshot shows a PC0 Desktop window with a Command Prompt open. The Command Prompt displays the following network configuration for the PC:

```
Link-local IPv6 Address..... FE80::20A:F3FF:FE9A:77D7
IP Address..... 192.168.1.1
Subnet Mask..... 255.255.255.0
Default Gateway..... 0.0.0.0
```

Below the configuration, it shows a Bluetooth connection status:

```
Bluetooth Connection:
Link-local IPv6 Address..... ::
IP Address..... 0.0.0.0
Subnet Mask..... 0.0.0.0
Default Gateway..... 0.0.0.0
```

The user then runs the command `C:\>ping 192.168.1.2`, which results in four successful replies from 192.168.1.2 with 32 bytes of data, each taking less than 1ms. The ping statistics show 4 packets sent, 4 received, and 0% loss, with an average round trip time of 11ms.

Next, the user runs the command `C:\>ping 192.168.1.3`, which also results in four successful replies from 192.168.1.3 with 32 bytes of data, each taking less than 1ms. The ping statistics show 4 packets sent, 4 received, and 0% loss, with an average round trip time of 0ms.

At the bottom left of the Command Prompt window, there is a checkbox labeled "Top".

The ping is successful because the computers are connected within the same network through the switch.

**4.What does the /24 value at the end of the IP addresses (i.e. 192.168.1.1/24) indicate?**

The /24 indicates the subnet mask.

**5.Why do we need to specify a mask address?**

The mask address specifies the range of IP addresses in the network, and is needed by a device to decide whether it is sending data to another device on the same or different subnet.

**6.The IP addresses assigned to the systems (PC0, Laptop0 and PC1) are private or public? How did you identify them?**

The IP addresses assigned to the systems are private because they fall within the range of 192.168.0.0 – 192.168.255.255 which denote private IP addresses.

**7.Briefly explain the 7 layer of the OSI model**

Application – what most users see and is closest to the end user, applications which users interact with directly

Presentation – represents the area that is independent of data representation at the application layer

Session – functions at this layer involve setup, coordination, and termination for devices to speak to one another

Transport – handles the coordination of the data transfer between end systems and host

Network – responsible for packet forwarding

Data Link – provides node-to-node data transfer, and also handles error correction from the physical layer

Physical – the electrical and physical representation of the system

**8.What does ICMP mean and how it works?**

ICMP means Internet Control Message Protocol, it creates and sends messages to source IP addresses which indicates that a router, service, or host cannot be reached for packet delivery.

**9.How the ARP protocol is used by the systems?**

When pinging an IP address, the system will turn the IP address into a MAC address and store the following information into an ARP look-up table. When sending data, the system first consults this table to see if the MAC address is known. If the IP address is not found in the ARP look-up table, the system sends a broadcast packet to the network and the device with the requested IP address replies with an ARP packet.

**10.Can you identify the vendor of this MAC address: d4-81-d7-00-00-43? Explain the steps you follow.**

The MAC addresses are assigned by the vendor or manufacturers. So, by googling 'MAC vendor identifier' you will be presented with tools to identify the vendor of a MAC address. I used macvendors.com, entered in the MAC address 'd4-81-d7-00-00-43' and it specified the vendor to be Dell Inc.