Task 1:
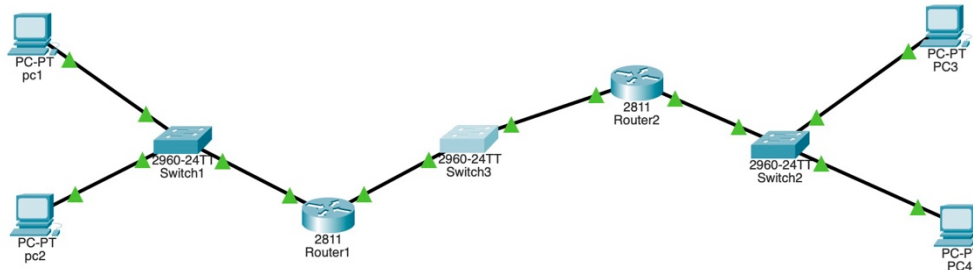
In task 1, PC1, 2, 3, 4 are connected using 3 switches and 2 routers. To build this network, we need to configure the IP addresses and gateways of 4 PC and the IP addresses of 3 switches.

● The network topology:

● Network configuration:

PC1:

Display Name	pc1
Interfaces	FastEthernet0

Gateway/DNS IPv4
○ DHCP
● Static
Default Gateway   192.168.1.1
DNS Server

FastEthernet0

Port Status	✔ On
Bandwidth	● 100 Mbps ○ 10 Mbps ✔ Auto
Duplex	○ Half Duplex ● Full Duplex ✔ Auto
MAC Address	00E0.A3DB.A1DB

IP Configuration
○ DHCP
● Static
IPv4 Address   192.168.1.10
Subnet Mask   255.255.255.0

IPv6 Configuration
○ Automatic
● Static
IPv6 Address   /
Link Local Address: FE80::2E0:A3FF:FEDB:A1DB

PC2:

Display Name pc2

Interfaces   FastEthernet0

Gateway/DNS IPv4
  ○ DHCP
  ● Static
Default Gateway 192.168.1.1
DNS Server

FastEthernet0

Port Status   ✔ On

Bandwidth   ○ 100 Mbps ○ 10 Mbps ✔ Auto

Duplex   ○ Half Duplex ● Full Duplex ✔ Auto

MAC Address   00E0.F777.C7E4

IP Configuration
  ○ DHCP
  ● Static
IPv4 Address   192.168.1.11
Subnet Mask   255.255.255.0

IPv6 Configuration
  ○ Automatic
  ● Static
IPv6 Address   /
Link Local Address: FE80::2E0:F7FF:FE77:C7E4

PC3:

	PC3	

Physical Config Desktop Programming Attributes

GLOBAL
Settings
Algorithm Settings
INTERFACE
FastEthernet0
Bluetooth

Global Settings

Display Name PC3

Interfaces   FastEthernet0

Gateway/DNS IPv4
  ○ DHCP
  ● Static
Default Gateway 192.168.3.1
DNS Server

PC3

Physical Config Desktop Programming Attributes

FastEthernet0

Port Status   ✔ On

Bandwidth   ○ 100 Mbps ○ 10 Mbps ✔ Auto

Duplex   ○ Half Duplex ● Full Duplex ✔ Auto

MAC Address   00E0.B007.0934

IP Configuration
  ○ DHCP
  ● Static
IPv4 Address   192.168.3.10
Subnet Mask   255.255.255.0

PC4:

Display Name: PC4

Interfaces: FastEthernet0

Gateway/DNS IPv4
- ○ DHCP
- ● Static

Default Gateway: 192.168.3.1

DNS Server:

FastEthernet0

Port Status: ☑ On

Bandwidth: ○ 100 Mbps ○ 10 Mbps ☑ Auto

Duplex: ○ Half Duplex ● Full Duplex ☑ Auto

MAC Address: 0001.96EA.3929

IP Configuration
- ○ DHCP
- ● Static

IPv4 Address: 192.168.3.11

Subnet Mask: 255.255.255.0

Router1:

Network Address

192.168.1.0/24 via 192.168.2.2

Router1

Physical | Config | CLI | Attributes

| Algorithm Settings |
| **ROUTING** |
| Static |
| RIP |
| **SWITCHING** |
| VLAN Database |
| **INTERFACE** |
| FastEthernet0/0 |
| FastEthernet0/1 |
| Serial0/3/0 |
| Serial0/3/1 |

FastEthernet0/0

Port Status: ☑ On

Bandwidth: ○ 100 Mbps ○ 10 Mbps ☑ Auto

Duplex: ○ Half Duplex ● Full Duplex ☑ Auto

MAC Address: 0002.176A.4701

IP Configuration

IPv4 Address: 192.168.1.1

Subnet Mask: 255.255.255.0

Tx Ring Limit: 10

	FastEthernet0/1	
Algorithm Settings		
ROUTING	Port Status	☑ On
Static	Bandwidth	⦿ 100 Mbps ◯ 10 Mbps ☑ Auto
RIP		
SWITCHING	Duplex	◯ Half Duplex ⦿ Full Duplex ☑ Auto
VLAN Database	MAC Address	0002.176A.4702
INTERFACE	IP Configuration	
FastEthernet0/0	IPv4 Address	192.168.2.1
FastEthernet0/1	Subnet Mask	255.255.255.0
Serial0/3/0		
Serial0/3/1	Tx Ring Limit	10

Router 2:

Network Address

192.168.3.0/24 via 192.168.2.1

	FastEthernet0/1	
GLOBAL		
Settings	Port Status	☑ On
Algorithm Settings	Bandwidth	⦿ 100 Mbps ◯ 10 Mbps ☑ Auto
ROUTING		
Static	Duplex	◯ Half Duplex ⦿ Full Duplex ☑ Auto
RIP	MAC Address	00E0.F771.0B02
SWITCHING	IP Configuration	
VLAN Database	IPv4 Address	192.168.3.1
INTERFACE	Subnet Mask	255.255.255.0
FastEthernet0/0		
FastEthernet0/1	Tx Ring Limit	10

	FastEthernet0/0	
GLOBAL		
Settings	Port Status	☑ On
Algorithm Settings	Bandwidth	⦿ 100 Mbps ◯ 10 Mbps ☑ Auto
ROUTING		
Static	Duplex	◯ Half Duplex ⦿ Full Duplex ☑ Auto
RIP	MAC Address	00E0.F771.0B01
SWITCHING	IP Configuration	
VLAN Database	IPv4 Address	192.168.2.2
INTERFACE	Subnet Mask	255.255.255.0
FastEthernet0/0		
FastEthernet0/1	Tx Ring Limit	10

- Network connectivity verification

pc1->pc2, pc3, pc4

```
C:\>ping 192.168.1.11

Pinging 192.168.1.11 with 32 bytes of data:

Reply from 192.168.1.11: bytes=32 time<1ms TTL=128
Reply from 192.168.1.11: bytes=32 time<1ms TTL=128
Reply from 192.168.1.11: bytes=32 time<1ms TTL=128
Reply from 192.168.1.11: bytes=32 time=1ms TTL=128

Ping statistics for 192.168.1.11:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

```
C:\>ping 192.168.3.10

Pinging 192.168.3.10 with 32 bytes of data:

Reply from 192.168.3.10: bytes=32 time<1ms TTL=126
Reply from 192.168.3.10: bytes=32 time=1ms TTL=126
Reply from 192.168.3.10: bytes=32 time<1ms TTL=126
Reply from 192.168.3.10: bytes=32 time<1ms TTL=126

Ping statistics for 192.168.3.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>
```

```
C:\>ping 192.168.3.11

Pinging 192.168.3.11 with 32 bytes of data:

Request timed out.
Reply from 192.168.3.11: bytes=32 time<1ms TTL=126
Reply from 192.168.3.11: bytes=32 time=1ms TTL=126
Reply from 192.168.3.11: bytes=32 time<1ms TTL=126

Ping statistics for 192.168.3.11:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

pc2->pc1, pc3, pc4

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.1.10

Pinging 192.168.1.10 with 32 bytes of data:

Reply from 192.168.1.10: bytes=32 time<1ms TTL=128
Reply from 192.168.1.10: bytes=32 time=1ms TTL=128
Reply from 192.168.1.10: bytes=32 time<1ms TTL=128
Reply from 192.168.1.10: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.1.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

```
C:\>ping 192.168.3.10

Pinging 192.168.3.10 with 32 bytes of data:

Reply from 192.168.3.10: bytes=32 time<1ms TTL=126
Reply from 192.168.3.10: bytes=32 time<1ms TTL=126
Reply from 192.168.3.10: bytes=32 time<1ms TTL=126
Reply from 192.168.3.10: bytes=32 time<1ms TTL=126

Ping statistics for 192.168.3.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

```
C:\>ping 192.168.3.11

Pinging 192.168.3.11 with 32 bytes of data:

Reply from 192.168.3.11: bytes=32 time=26ms TTL=126
Reply from 192.168.3.11: bytes=32 time<1ms TTL=126
Reply from 192.168.3.11: bytes=32 time<1ms TTL=126
Reply from 192.168.3.11: bytes=32 time<1ms TTL=126

Ping statistics for 192.168.3.11:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 26ms, Average = 6ms
```

pc3->pc1, pc2, pc4

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.1.10

Pinging 192.168.1.10 with 32 bytes of data:

Reply from 192.168.1.10: bytes=32 time=1ms TTL=126
Reply from 192.168.1.10: bytes=32 time<1ms TTL=126
Reply from 192.168.1.10: bytes=32 time=1ms TTL=126
Reply from 192.168.1.10: bytes=32 time<1ms TTL=126

Ping statistics for 192.168.1.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

```
C:\>ping 192.168.1.11

Pinging 192.168.1.11 with 32 bytes of data:

Reply from 192.168.1.11: bytes=32 time<1ms TTL=126
Reply from 192.168.1.11: bytes=32 time=1ms TTL=126
Reply from 192.168.1.11: bytes=32 time<1ms TTL=126
Reply from 192.168.1.11: bytes=32 time<1ms TTL=126

Ping statistics for 192.168.1.11:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

```
C:\>ping 192.168.3.11

Pinging 192.168.3.11 with 32 bytes of data:

Reply from 192.168.3.11: bytes=32 time<1ms TTL=128
Reply from 192.168.3.11: bytes=32 time<1ms TTL=128
Reply from 192.168.3.11: bytes=32 time<1ms TTL=128
Reply from 192.168.3.11: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.3.11:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

pc4->pc1, pc2, pc3

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.1.10

Pinging 192.168.1.10 with 32 bytes of data:

Reply from 192.168.1.10: bytes=32 time<1ms TTL=126
Reply from 192.168.1.10: bytes=32 time<1ms TTL=126
Reply from 192.168.1.10: bytes=32 time<1ms TTL=126
Reply from 192.168.1.10: bytes=32 time<1ms TTL=126
```

```
C:\>ping 192.168.1.11

Pinging 192.168.1.11 with 32 bytes of data:

Reply from 192.168.1.11: bytes=32 time<1ms TTL=126
Reply from 192.168.1.11: bytes=32 time<1ms TTL=126
Reply from 192.168.1.11: bytes=32 time=1ms TTL=126
Reply from 192.168.1.11: bytes=32 time<1ms TTL=126

Ping statistics for 192.168.1.11:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

```
C:\>ping 192.168.3.10

Pinging 192.168.3.10 with 32 bytes of data:

Reply from 192.168.3.10: bytes=32 time<1ms TTL=128
Reply from 192.168.3.10: bytes=32 time<1ms TTL=128
Reply from 192.168.3.10: bytes=32 time<1ms TTL=128
Reply from 192.168.3.10: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.3.10:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```
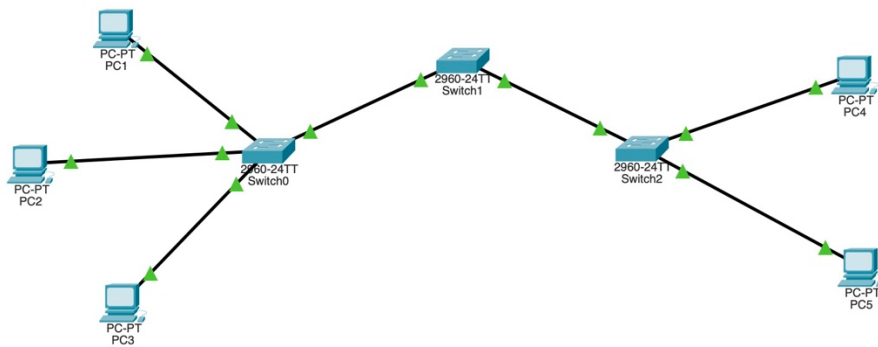
Task 2:

In task 2, there are 2 virtual networks (VLAN 10 and VLAN 20) formed by pc1,2,4 and pc3,5 respectively.

● The network topology:

● Network configuration:

PC1:

IP Configuration
- DHCP
- ● Static

IPv4 Address   192.12.10.11

Subnet Mask   255.255.255.0

IPv6 Configuration
- Automatic
- ● Static

IPv6 Address   /

Link Local Address: FE80::201:64FF:FE69:4E1B

PC2:

IP Configuration
- DHCP
- ● Static

IPv4 Address   192.12.10.12

Subnet Mask   255.255.255.0

IPv6 Configuration
- Automatic
- ● Static

IPv6 Address   /

Link Local Address: FE80::2E0:8FFF:FE5A:A5D8

PC3:

IP Configuration
- DHCP
- ● Static

IPv4 Address   192.12.20.13

Subnet Mask   255.255.255.0

IPv6 Configuration
- Automatic
- ● Static

IPv6 Address   /

Link Local Address: FE80::2E0:F9FF:FEC4:1505

PC4:

IP Configuration
- DHCP
- ● Static

IPv4 Address   192.12.10.14

Subnet Mask   255.255.255.0

IPv6 Configuration
- Automatic
- ● Static

IPv6 Address   /

Link Local Address: FE80::2E0:A3FF:FEC6:531

PC5:

```
IP Configuration
    DHCP
  ● Static
IPv4 Address                    192.12.20.15
Subnet Mask                     255.255.255.0

IPv6 Configuration
    Automatic
  ● Static
IPv6 Address                                          /
Link Local Address: FE80::209:7CFF:FEA0:E0D7
```

After configuring the PCs, create VLAN using the command "vlan 10" and "vlan 20"
Switch 1:
For fa0/4, which connects switch 2, changing the mode to trunk and choosing both VLAN 10 and VLAN 20.

For fa0/1 (connecting PC1), set mode as "Access" and VLAN as 10.

For fa0/2 (connecting PC2), set mode as "Access" and VLAN as 10.

For fa0/3 (connecting PC2), set mode as "Access" and VLAN as 20.

Switch 2:
For fa0/1 and fa0/2 which connects switch 1 and 3, changing the mode to trunk and choosing both VLAN 10 and VLAN 20.

FastEthernet0/1

GLOBAL	
Settings	
Algorithm Settings	
SWITCHING	
VLAN Database	
INTERFACE	
FastEthernet0/1	
FastEthernet0/2	
FastEthernet0/3	
FastEthernet0/4	
FastEthernet0/5	

Port Status — ✓ On

Bandwidth — ○ 100 Mbps ○ 10 Mbps ✓ Auto

Duplex — ○ Half Duplex ● Full Duplex ✓ Auto

Trunk ⇕   VLAN   2-1001 ▾

Tx Ring Limit   10

☐ 1:default
✓ 10:VLAN0010
✓ 20:VLAN0020

Equivalent IOS Commands

```
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2013 by Cisco Systems, Inc.
Compiled Wed 26-Jun-13 02:49 by mnguyen


Press RETURN to get started!

%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up

%LINK-5-CHANGED: Interface FastEthernet0/2, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to up

Switch>enable
Switch#
Switch#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#interface FastEthernet0/1
Switch(config-if)#
```

☐ Top

FastEthernet0/2

GLOBAL	
Settings	
Algorithm Settings	
SWITCHING	
VLAN Database	
INTERFACE	
FastEthernet0/1	
FastEthernet0/2	
FastEthernet0/3	
FastEthernet0/4	
FastEthernet0/5	

Port Status — ✓ On

Bandwidth — ○ 100 Mbps ○ 10 Mbps ✓ Auto

Duplex — ○ Half Duplex ● Full Duplex ✓ Auto

Trunk ⇕   VLAN   2-1001 ▾

Tx Ring Limit   10

☐ 1:default
✓ 10:VLAN0010
✓ 20:VLAN0020

Equivalent IOS Commands

```
Press RETURN to get started!

%LINK-5-CHANGED: Interface FastEthernet0/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up

%LINK-5-CHANGED: Interface FastEthernet0/2, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to up

Switch>enable
Switch#
Switch#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#interface FastEthernet0/1
Switch(config-if)#
Switch(config-if)#exit
Switch(config)#interface FastEthernet0/2
Switch(config-if)#
```
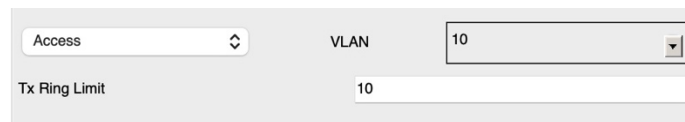
☐ Top

Switch 3:

For fa0/1 which connects switch 3, changing the mode to trunk and choosing both VLAN 10 and VLAN 20.
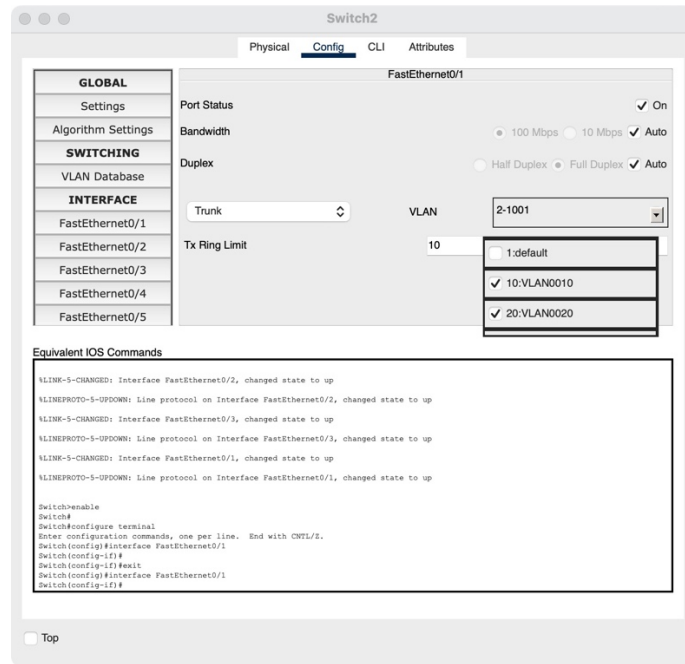
For fa0/2 which connects switch 3, changing the mode to "Access" and choosing VLAN 10.

For fa0/3 which connects switch 3, changing the mode to "Access" and choosing VLAN 20.

● Network connectivity verification:

VLAN 10:

PC1->PC2

PC1->PC4

```
C:\>ping 192.12.10.14

Pinging 192.12.10.14 with 32 bytes of data:

Reply from 192.12.10.14: bytes=32 time=35ms TTL=128
Reply from 192.12.10.14: bytes=32 time=1ms TTL=128
Reply from 192.12.10.14: bytes=32 time<1ms TTL=128
Reply from 192.12.10.14: bytes=32 time=1ms TTL=128

Ping statistics for 192.12.10.14:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 35ms, Average = 9ms
```

PC2->PC4:

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.12.10.14

Pinging 192.12.10.14 with 32 bytes of data:

Reply from 192.12.10.14: bytes=32 time=1ms TTL=128
Reply from 192.12.10.14: bytes=32 time<1ms TTL=128
Reply from 192.12.10.14: bytes=32 time<1ms TTL=128
Reply from 192.12.10.14: bytes=32 time=17ms TTL=128

Ping statistics for 192.12.10.14:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 17ms, Average = 4ms
```

PC2->PC1:

```
C:\>ping 192.12.10.11

Pinging 192.12.10.11 with 32 bytes of data:

Reply from 192.12.10.11: bytes=32 time<1ms TTL=128
Reply from 192.12.10.11: bytes=32 time=1ms TTL=128
Reply from 192.12.10.11: bytes=32 time<1ms TTL=128
Reply from 192.12.10.11: bytes=32 time=1ms TTL=128

Ping statistics for 192.12.10.11:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

PC4->PC1:

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.12.10.11

Pinging 192.12.10.11 with 32 bytes of data:

Reply from 192.12.10.11: bytes=32 time<1ms TTL=128
Reply from 192.12.10.11: bytes=32 time<1ms TTL=128
Reply from 192.12.10.11: bytes=32 time<1ms TTL=128
Reply from 192.12.10.11: bytes=32 time<1ms TTL=128

Ping statistics for 192.12.10.11:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

PC4->PC2:

```
C:\>ping 192.12.10.12

Pinging 192.12.10.12 with 32 bytes of data:

Reply from 192.12.10.12: bytes=32 time<1ms TTL=128
Reply from 192.12.10.12: bytes=32 time<1ms TTL=128
Reply from 192.12.10.12: bytes=32 time=1ms TTL=128
Reply from 192.12.10.12: bytes=32 time=1ms TTL=128

Ping statistics for 192.12.10.12:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

Since PC3 and PC5 are not belong to VLAN 10, therefore, PC1, PC2, PC4 cannot connect to PC3 and PC5. As a result, the following connection results should all be failed.

PC1->PC3:

```
C:\>ping 192.12.20.13

Pinging 192.12.20.13 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 192.12.20.13:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>
```

PC2->PC3:

```
C:\>ping 192.12.20.13

Pinging 192.12.20.13 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 192.12.20.13:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

PC4->PC3:

```
C:\>ping 192.12.20.13

Pinging 192.12.20.13 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 192.12.20.13:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

PC1->PC5:

```
C:\>ping 192.12.20.15

Pinging 192.12.20.15 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 192.12.20.15:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>
```

PC2->PC5:

```
C:\>ping 192.12.20.15

Pinging 192.12.20.15 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 192.12.20.15:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>
```

PC4->PC5:

```
C:\>ping 192.12,20.15
Ping request could not find host 192.12,20.15. Please check the name and try again.
C:\>ping 192.12.20.15

Pinging 192.12.20.15 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 192.12.20.15:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

VLAN 20:
PC3->PC5:

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.12.20.15

Pinging 192.12.20.15 with 32 bytes of data:

Reply from 192.12.20.15: bytes=32 time<1ms TTL=128
Reply from 192.12.20.15: bytes=32 time=1ms TTL=128
Reply from 192.12.20.15: bytes=32 time=1ms TTL=128
Reply from 192.12.20.15: bytes=32 time<1ms TTL=128

Ping statistics for 192.12.20.15:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

PC5->PC3:

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.12.20.13

Pinging 192.12.20.13 with 32 bytes of data:

Reply from 192.12.20.13: bytes=32 time<1ms TTL=128
Reply from 192.12.20.13: bytes=32 time=1ms TTL=128
Reply from 192.12.20.13: bytes=32 time=1ms TTL=128
Reply from 192.12.20.13: bytes=32 time=1ms TTL=128

Ping statistics for 192.12.20.13:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

Since PC1, PC2, PC4 are not belong to VLAN 20, therefore, PC3, PC5 cannot connect to PC1, PC2, PC4. As a result, the following connection results should all be failed.
PC3->PC1:

```
C:\>ping 192.12.10.11

Pinging 192.12.10.11 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 192.12.10.11:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

PC3->PC2:

```
C:\>ping 192.12.10.12

Pinging 192.12.10.12 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 192.12.10.12:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

PC3->PC4:

```
C:\>ping 192.12.10.14

Pinging 192.12.10.14 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 192.12.10.14:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>
```

PC5->PC1:

```
C:\>ping 192.12.10.11

Pinging 192.12.10.11 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 192.12.10.11:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

PC5->PC2:

```
C:\>ping 192.12.10.12

Pinging 192.12.10.12 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 192.12.10.12:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>
```

PC5->PC4:

```
C:\>ping 192.12.10.14

Pinging 192.12.10.14 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 192.12.10.14:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>
```