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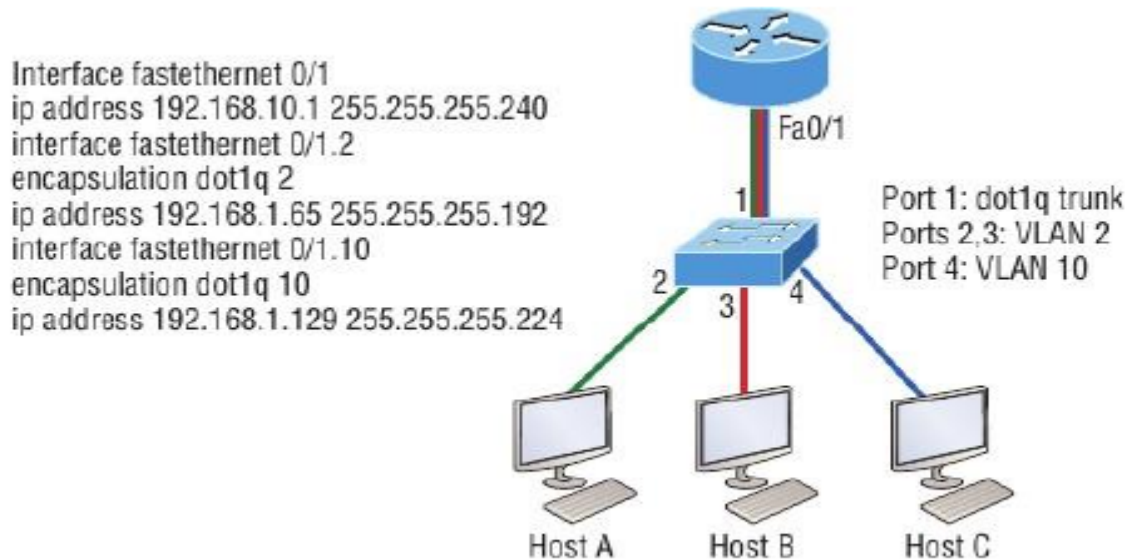
**Reg No :** 180905093

**Section :** CSE - B

**Roll No :** 19

## **CN LAB – 8 : STUDY OF VLAN**

**Q8.1)** Configure following inter-VLAN example in GNS3 and verify the working using Wireshark tool.



### **Solution :**

#### **R1**

R1#enable

R1#conf t

Enter configuration commands, one per line. End with CNTL/Z.

R1(config)#interface f0/1

R1(config-if)#ip address 30.30.30.1 255.255.255.0

R1(config-if)#no shutdown

R1(config-if)#

\*Mar 1 00:02:36.803: %LINK-3-UPDOWN: Interface FastEthernet0/1, changed state to up

\*Mar 1 00:02:37.803: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up

R1(config-if)#exit

R1(config)#int f0/1.2

R1(config-subif)#encapsulation dot1q 2

R1(config-subif)#ip add 1

\*Mar 1 00:05:47.287: %LINK-3-UPDOWN: Interface FastEthernet0/1, changed state to up

R1(config-subif)#ip add 10.10.10.1 255.255.255.0

R1(config-subif)#no shut

R1(config-subif)#exit

R1(config)#int f0/1.10

R1(config-subif)#encapsulation dot1q 10

R1(config-subif)#ip add 20.20.20.1 255.255.255.0

R1(config-subif)#no shut

R1(config-subif)#exit

R1(config)#end

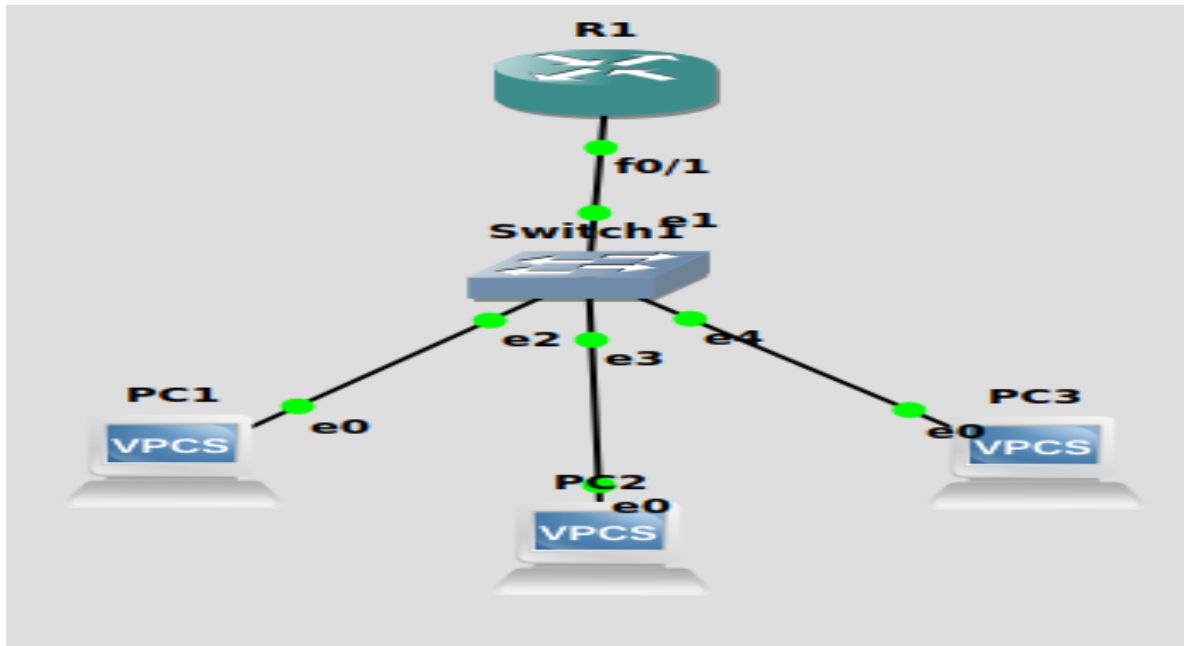
R1#

\*Mar 1 00:09:49.787: %SYS-5-CONFIG\_I: Configured from console by console

R1#write

Building configuration...

[OK]



PC - 1 :

```
PC1
File Edit View Search Terminal Help
Trying 127.0.0.1...
Connected to 127.0.0.1.
Escape character is '^]'.

Welcome to Virtual PC Simulator, version 0.6.1
Dedicated to Daling.
Build time: Apr  3 2018 13:45:00
Copyright (c) 2007-2014, Paul Meng (mirnshi@gmail.com)
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Source code and license can be found at vpcs.sf.net.
For more information, please visit wiki.freecode.com.cn.

Press '?' to get help.

Executing the startup file

PC1> ip 10.10.10.2/24 10.10.10.1
Checking for duplicate address...
PC1 : 10.10.10.2 255.255.255.0 gateway 10.10.10.1

PC1> ping 20.20.20.2
20.20.20.2 icmp_seq=1 timeout
84 bytes from 20.20.20.2 icmp_seq=2 ttl=63 time=11.092 ms
84 bytes from 20.20.20.2 icmp_seq=3 ttl=63 time=15.170 ms
84 bytes from 20.20.20.2 icmp_seq=4 ttl=63 time=14.949 ms
84 bytes from 20.20.20.2 icmp_seq=5 ttl=63 time=14.969 ms

PC1> ping 10.10.10.3
84 bytes from 10.10.10.3 icmp_seq=1 ttl=64 time=0.085 ms
84 bytes from 10.10.10.3 icmp_seq=2 ttl=64 time=0.440 ms
84 bytes from 10.10.10.3 icmp_seq=3 ttl=64 time=0.122 ms
84 bytes from 10.10.10.3 icmp_seq=4 ttl=64 time=0.177 ms
84 bytes from 10.10.10.3 icmp_seq=5 ttl=64 time=0.259 ms

PC1> |
```

## PC - 2 :

```
PC2

File Edit View Search Terminal Help

Welcome to Virtual PC Simulator, version 0.6.1
Dedicated to Daling.
Build time: Apr  3 2018 13:45:00
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Source code and license can be found at vpcs.sf.net.
For more information, please visit wiki.freecode.com.cn.

Press '?' to get help.

Executing the startup file

PC2> ip 10.10.10.3/24 10.10.10.1
Checking for duplicate address...
PC1 : 10.10.10.3 255.255.255.0 gateway 10.10.10.1

PC2> |
```

## PC - 3 :

```
PC3

File Edit View Search Terminal Help

Welcome to Virtual PC Simulator, version 0.6.1
Dedicated to Daling.
Build time: Apr  3 2018 13:45:00
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Source code and license can be found at vpcs.sf.net.
For more information, please visit wiki.freecode.com.cn.

Press '?' to get help.

Executing the startup file

PC3> ip 20.20.20.2/24 20.20.20.1
Checking for duplicate address...
PC1 : 20.20.20.2 255.255.255.0 gateway 20.20.20.1

PC3> |
```

## **PC1**

PC1> ip 10.10.10.2/24 10.10.10.1

Checking for duplicate address...

PC1 : 10.10.10.2 255.255.255.0 gateway 10.10.10.1

## **PC1> ping 20.20.20.2**

20.20.20.2 icmp\_seq=1 timeout

84 bytes from 20.20.20.2 icmp\_seq=2 ttl=63 time=11.092 ms

84 bytes from 20.20.20.2 icmp\_seq=3 ttl=63 time=15.170 ms

84 bytes from 20.20.20.2 icmp\_seq=4 ttl=63 time=14.949 ms

84 bytes from 20.20.20.2 icmp\_seq=5 ttl=63 time=14.969 ms

## **PC1> ping 10.10.10.3**

84 bytes from 10.10.10.3 icmp\_seq=1 ttl=64 time=0.085 ms

84 bytes from 10.10.10.3 icmp\_seq=2 ttl=64 time=0.440 ms

84 bytes from 10.10.10.3 icmp\_seq=3 ttl=64 time=0.122 ms

84 bytes from 10.10.10.3 icmp\_seq=4 ttl=64 time=0.177 ms

84 bytes from 10.10.10.3 icmp\_seq=5 ttl=64 time=0.259 ms

## **PC2**

PC2> ip 10.10.10.3/24 10.10.10.1

Checking for duplicate address...

PC1 : 10.10.10.3 255.255.255.0 gateway 10.10.10.1

## PC3

PC3> ip 20.20.20.2/24 20.20.20.1

Checking for duplicate address...

PC1 : 20.20.20.2 255.255.255.0 gateway 20.20.20.1

## R1#

```
File Edit View Search Terminal Help
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2010 by Cisco Systems, Inc.
Compiled Wed 18-Aug-10 08:18 by prod_rel_team
*Mar 1 00:00:04.059: %SNMP-5-COLDSTART: SNMP agent on host R1 is undergoing a cold start
*Mar 1 00:00:04.075: %LINEPROTO-5-UPDOWN: Line protocol on Interface IPv6-mpls, changed state to up
*Mar 1 00:00:04.715: %LINK-5-CHANGED: Interface FastEthernet0/0, changed state to administratively down
*Mar 1 00:00:04.795: %LINK-5-CHANGED: Interface FastEthernet0/1, changed state to administratively down
*Mar 1 00:00:05.715: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to down
*Mar 1 00:00:05.795: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to down
R1#enable
R1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#interface f0/1
R1(config-if)#ip address 30.30.30.1 255.255.255.0
R1(config-if)#no shutdown
R1(config-if)#
*Mar 1 00:02:36.803: %LINK-3-UPDOWN: Interface FastEthernet0/1, changed state to up
*Mar 1 00:02:37.803: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
R1(config-if)#exit
R1(config)#int f0/1.2
R1(config-subif)#encapsulation dot1q 2
R1(config-subif)#ip add 1
*Mar 1 00:05:47.287: %LINK-3-UPDOWN: Interface FastEthernet0/1, changed state to up
R1(config-subif)#ip add 10.10.10.1 255.255.255.0
R1(config-subif)#no shut
R1(config-subif)#exit
R1(config)#int f0/1.10
R1(config-subif)#encapsulation dot1q 10
R1(config-subif)#ip add 20.20.20.1 255.255.255.0
R1(config-subif)#no shut
R1(config-subif)#exit
R1(config)#end
R1#w
*Mar 1 00:09:49.787: %SYS-5-CONFIG_I: Configured from console by console
R1#write
Building configuration...
[OK]
R1#
```

## Capturing packets through Wireshark :

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

Apply a display filter ... <Ctrl-/> Expression...

No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000	Private_66:68:00	Broadcast	ARP	64	Who has 10.10.10.1? Tell 10.10.10.2 [ETHERNET FRAME CHECK SEQUENCE INCORRECT]
2	0.002918	c4:01:23:5f:00:01	Private_66:68:00	ARP	60	10.10.10.1 is at c4:01:23:5f:00:01
3	0.003034	10.10.10.2	20.20.20.2	ICMP	98	Echo (ping) request id=0x9c37, seq=1/256, ttl=64 (reply in 5)
4	2.003454	10.10.10.2	20.20.20.2	ICMP	98	Echo (ping) request id=0x9e37, seq=2/512, ttl=64 (reply in 6)
5	3.019264	20.20.20.2	10.10.10.2	ICMP	98	Echo (ping) reply id=0x9c37, seq=1/256, ttl=63 (request in 3)
6	3.029342	20.20.20.2	10.10.10.2	ICMP	98	Echo (ping) reply id=0x9e37, seq=2/512, ttl=63 (request in 4)
7	4.003767	10.10.10.2	20.20.20.2	ICMP	98	Echo (ping) request id=0xa037, seq=3/768, ttl=64 (reply in 8)
8	4.014582	20.20.20.2	10.10.10.2	ICMP	98	Echo (ping) reply id=0xa037, seq=3/768, ttl=63 (request in 7)
9	5.015406	10.10.10.2	20.20.20.2	ICMP	98	Echo (ping) request id=0xa137, seq=4/1024, ttl=64 (reply in 10)
10	5.030093	20.20.20.2	10.10.10.2	ICMP	98	Echo (ping) reply id=0xa137, seq=4/1024, ttl=63 (request in 9)
11	6.031196	10.10.10.2	20.20.20.2	ICMP	98	Echo (ping) request id=0xa237, seq=5/1280, ttl=64 (reply in 12)
12	6.045486	20.20.20.2	10.10.10.2	ICMP	98	Echo (ping) reply id=0xa237, seq=5/1280, ttl=63 (request in 11)

Frame 3: 98 bytes on wire (784 bits), 98 bytes captured (784 bits) on interface 0

Ethernet II, Src: Private\_66:68:00 (00:50:79:66:68:00), Dst: c4:01:23:5f:00:01 (c4:01:23:5f:00:01)

- Destination: c4:01:23:5f:00:01 (c4:01:23:5f:00:01)
- Source: Private\_66:68:00 (00:50:79:66:68:00)
- Type: IPv4 (0x0800)

Internet Protocol Version 4, Src: 10.10.10.2, Dst: 20.20.20.2

Internet Control Message Protocol

- Type: 8 (Echo (ping) request)
- Code: 0
- Checksum: 0x83d3 [correct]
- [Checksum Status: Good]
- Identifier (BE): 39991 (0x9c37)
- Identifier (LE): 14236 (0x379c)
- Sequence number (BE): 1 (0x0001)
- Sequence number (LE): 256 (0x0100)
- [\[Response frame: 5\]](#)

Data (56 bytes)

- Data: 00090a0b0c0d0e0f101112131415161718191a1b1c1d1e1f...
- [Length: 56]

PC1

File Edit View Search Terminal Help

```
PC1> ping 10.10.10.3
84 bytes from 10.10.10.3 icmp_seq=1 ttl=64 time=0.085 ms
84 bytes from 10.10.10.3 icmp_seq=2 ttl=64 time=0.440 ms
84 bytes from 10.10.10.3 icmp_seq=3 ttl=64 time=0.122 ms
84 bytes from 10.10.10.3 icmp_seq=4 ttl=64 time=0.177 ms
84 bytes from 10.10.10.3 icmp_seq=5 ttl=64 time=0.259 ms

PC1> ping 20.20.20.2
20.20.20.2 icmp_seq=1 timeout
20.20.20.2 icmp_seq=2 timeout
84 bytes from 20.20.20.2 icmp_seq=3 ttl=63 time=10.902 ms
84 bytes from 20.20.20.2 icmp_seq=4 ttl=63 time=14.803 ms
84 bytes from 20.20.20.2 icmp_seq=5 ttl=63 time=14.408 ms

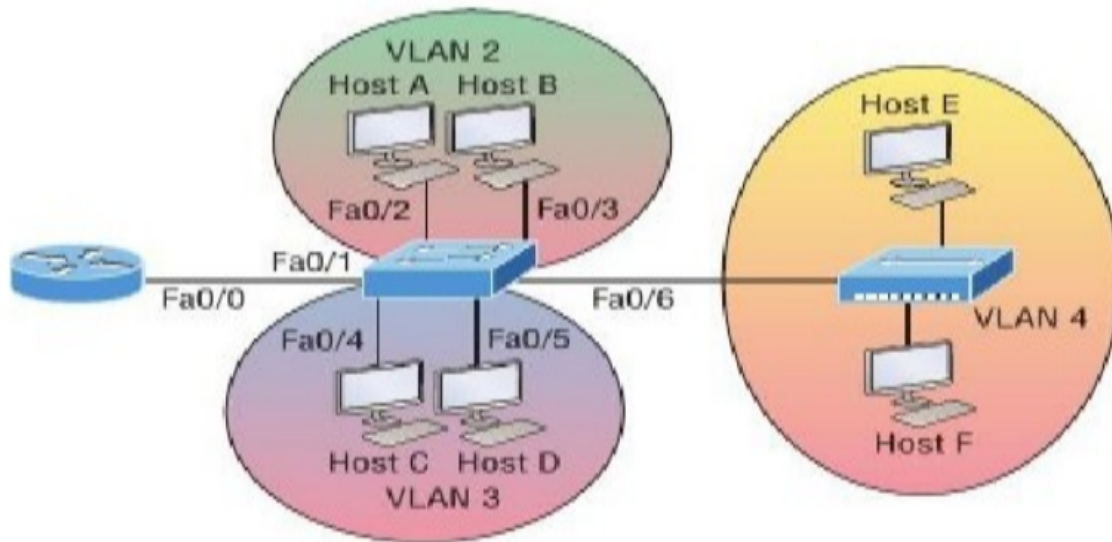
PC1>
```

0000 c4 01 23 5f 00 01 00 50 79 66 68 00 08 00 45 00 ..#...P yfh...E.

0010 00 54 37 9c 00 00 40 01 06 ec 0a 0a 0a 02 14 14 .T7...@. ....

Ready to load or capture Packets: 12 · Displayed: 12 (100.0%) Profile: Default

**Q8.2)** Configure following inter-VLAN example in GNS3 and verify the working using Wireshark tool.



**R1**

```
R1#enable
```

```
R1#conf t
```

Enter configuration commands, one per line. End with CNTL/Z.

```
R1(config)#int f0/0
```

```
R1(config-if)#ip address 30.30.30.1 255.255.255.0
```

```
R1(config-if)#no shut
```

```
R1(config-if)#
```

```
*Mar 1 00:00:40.811: %LINK-3-UPDOWN: Interface FastEthernet0/0, changed state to up
```

```
*Mar 1 00:00:41.811: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
```

```
R1(config-if)#do wr
```



Building configuration...

[OK]

R1(config-if)#exit

R1(config)#int f0/0.1

R1(config-subif)#encapsulation dot1q 1

R1(config-subif)#

\*Mar 1 00:01:10.523: %LINK-3-UPDOWN: Interface FastEthernet0/0, changed state to up

R1(config-subif)#ip address 10.10.10.1 255.255.255.0

R1(config-subif)#no shut

R1(config-subif)#exit

R1(config)#int f0/0.2

R1(config-subif)#encapsulation dot1q 2

R1(config-subif)#ip address 20.20.20.1 255.255.255.0

R1(config-subif)#no shut

R1(config-subif)#exit

R1(config)#exit

R1#

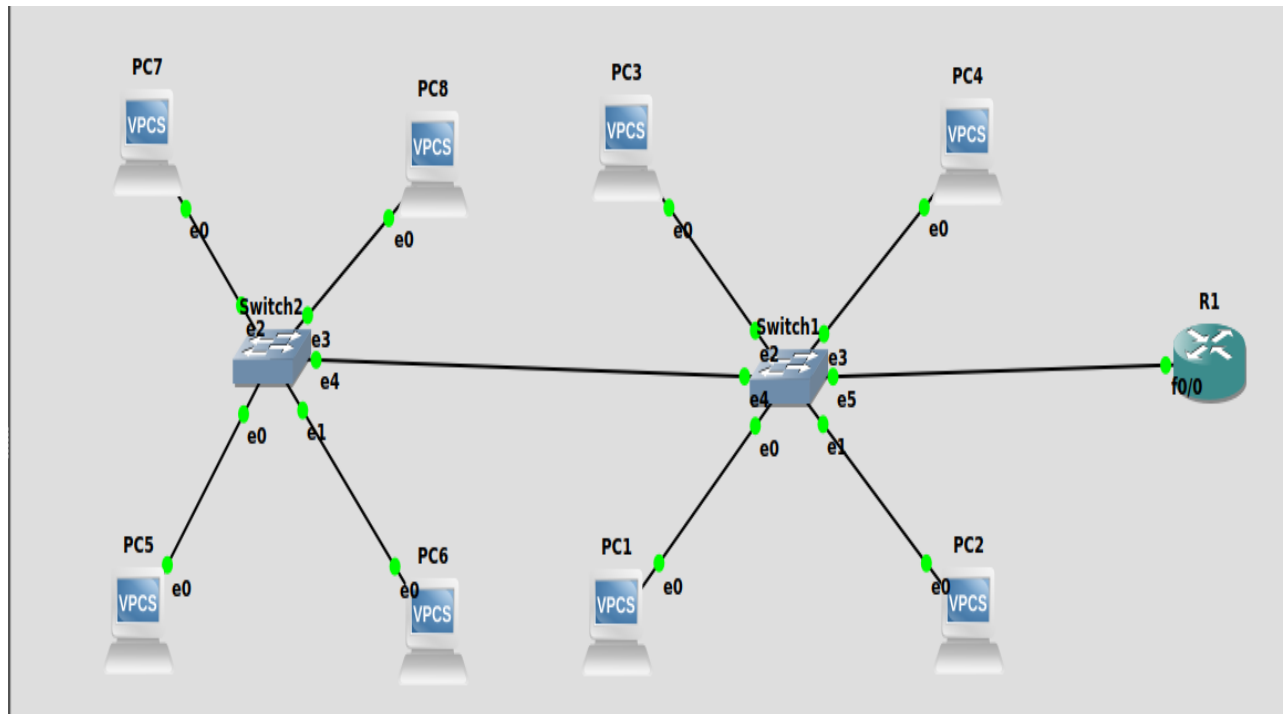
\*Mar 1 00:02:08.619: %SYS-5-CONFIG\_I: Configured from console by console

R1#write

Building configuration...

[OK]

R1#



```
PC6
File Edit View Search Terminal Help
PC6> ip 10.10.10.5/25 10.10.10.1
Checking for duplicate address...
PC1 : 10.10.10.5 255.255.255.128 gateway 10.10.10.1
PC6> show ip
NAME          : PC6[1]
IP/MASK       : 10.10.10.5/25
GATEWAY      : 10.10.10.1
DNS          :
MAC          : 00:50:79:66:68:05
LPORT       : 10014
RHOST:PORT   : 127.0.0.1:10015
MTU         : 1500
PC6> ping 20.20.20.3
20.20.20.3 icmp_seq=1 timeout
84 bytes from 20.20.20.3 icmp_seq=2 ttl=63 time=21.976 ms
84 bytes from 20.20.20.3 icmp_seq=3 ttl=63 time=16.651 ms
84 bytes from 20.20.20.3 icmp_seq=4 ttl=63 time=16.507 ms
84 bytes from 20.20.20.3 icmp_seq=5 ttl=63 time=16.471 ms
PC6> 
```