COMPUTER NETWORKS LAB EVALUATION

Name : Vashuki Achari
Roll   : 102103503
Class :   2CO18

QUESTION 1 :

To divide the network into 2 subnets, we need to borrow one bit from the host portion of the address. This creates two possible subnets:
Subnet 1: 192.168.5.0/25
Subnet 2: 192.168.5.128/25
In binary, the original network address is:
11000000.10101000.00000101.00000000 /24
To create two subnets, we borrow one bit from the host portion of the address:
11000000.10101000.00000101.0 | 0000000 /25 (subnet 1)
11000000.10101000.00000101.1 | 0000000 /25 (subnet 2)

Subnet 1:
Network address: 192.168.5.0
Broadcast address: 192.168.5.127
Number of IP addresses: 128 (2^7 – 2)
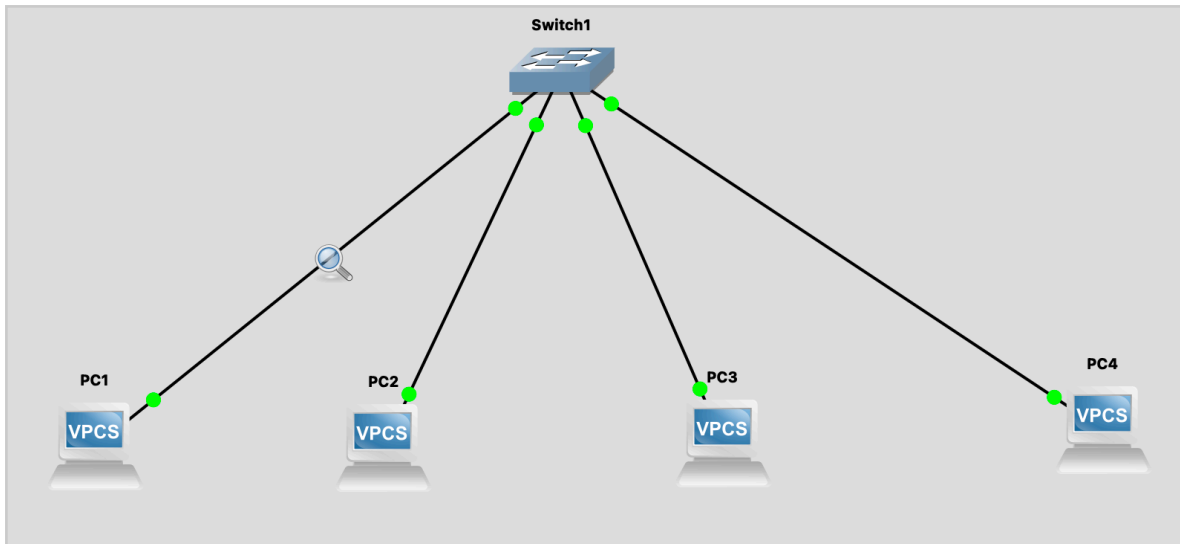Subnet mask: 255.255.255.128   OR   /25 in CIDR notation

Subnet 2:
Network address: 192.168.5.128
Broadcast address: 192.168.5.255
Number of IP addresses: 128 (2^7 – 2)
Subnet mask: 255.255.255.128   OR   /25 in CIDR notation

QUESTION 3 :

Switch1

PC1 PC2 PC3 PC4

```
● ● ●        Vashuki Achari — PC1 — telnet localhost 5001 — 80×26
IPv4 address/mask, gateway, DNS, and DHCP cleared

PC1> ip 192.168.1.1 /24 192.168.1.100
Checking for duplicate address...
PC1 : 192.168.1.1 255.255.255.0 gateway 192.168.1.100

PC1> show ip

NAME        : PC1[1]
IP/MASK     : 192.168.1.1/24
GATEWAY     : 192.168.1.100
DNS         :
MAC         : 00:50:79:66:68:00
LPORT       : 10008
RHOST:PORT  : 127.0.0.1:10009
MTU         : 1500

PC1> ping 192.168.1.4

84 bytes from 192.168.1.4 icmp_seq=1 ttl=64 time=0.657 ms
84 bytes from 192.168.1.4 icmp_seq=2 ttl=64 time=0.659 ms
84 bytes from 192.168.1.4 icmp_seq=3 ttl=64 time=0.970 ms
84 bytes from 192.168.1.4 icmp_seq=4 ttl=64 time=0.848 ms
84 bytes from 192.168.1.4 icmp_seq=5 ttl=64 time=0.957 ms

PC1>
```

```
● ● ●        Vashuki Achari — PC3 — telnet localhost 5005 — 80×26
PC3> ip 192.168.1.3 /24 192.168.1.100
Checking for duplicate address...
PC3 : 192.168.1.3 255.255.255.0 gateway 192.168.1.100

PC3> show ip

NAME        : PC3[1]
IP/MASK     : 192.168.1.3/24
GATEWAY     : 192.168.1.100
DNS         :
MAC         : 00:50:79:66:68:02
LPORT       : 10012
RHOST:PORT  : 127.0.0.1:10013
MTU         : 1500

PC3> ping 192.168.1.1

84 bytes from 192.168.1.1 icmp_seq=1 ttl=64 time=0.597 ms
84 bytes from 192.168.1.1 icmp_seq=2 ttl=64 time=0.762 ms
84 bytes from 192.168.1.1 icmp_seq=3 ttl=64 time=0.945 ms
84 bytes from 192.168.1.1 icmp_seq=4 ttl=64 time=1.036 ms
84 bytes from 192.168.1.1 icmp_seq=5 ttl=64 time=0.844 ms

PC3>
```

```
● ● ●        Vashuki Achari — PC2 — telnet localhost 5003 — 80×27
Executing the startup file

PC2> ip 192.168.1.2 /24 192.168.1.100
Checking for duplicate address...
PC2 : 192.168.1.2 255.255.255.0 gateway 192.168.1.100

PC2> show ip

NAME        : PC2[1]
IP/MASK     : 192.168.1.2/24
GATEWAY     : 192.168.1.100
DNS         :
MAC         : 00:50:79:66:68:01
LPORT       : 10010
RHOST:PORT  : 127.0.0.1:10011
MTU         : 1500

PC2> ping 192.168.1.3

84 bytes from 192.168.1.3 icmp_seq=1 ttl=64 time=0.630 ms
84 bytes from 192.168.1.3 icmp_seq=2 ttl=64 time=5.575 ms
84 bytes from 192.168.1.3 icmp_seq=3 ttl=64 time=1.074 ms
84 bytes from 192.168.1.3 icmp_seq=4 ttl=64 time=0.844 ms
84 bytes from 192.168.1.3 icmp_seq=5 ttl=64 time=0.885 ms

PC2>
```

```
● ● ●        Vashuki Achari — PC4 — telnet localhost 5007 — 80×27
PC4> 192.168.1.4 /24 192.168.1.100
Bad command: "192.168.1.4 /24 192.168.1.100". Use ? for help.

PC4> ip 192.168.1.4 /24 192.168.1.100
Checking for duplicate address...
PC4 : 192.168.1.4 255.255.255.0 gateway 192.168.1.100

PC4> show ip

NAME        : PC4[1]
IP/MASK     : 192.168.1.4/24
GATEWAY     : 192.168.1.100
DNS         :
MAC         : 00:50:79:66:68:03
LPORT       : 10014
RHOST:PORT  : 127.0.0.1:10015
MTU         : 1500

PC4> ping 192.168.1.2

84 bytes from 192.168.1.2 icmp_seq=1 ttl=64 time=1.626 ms
84 bytes from 192.168.1.2 icmp_seq=2 ttl=64 time=0.658 ms
84 bytes from 192.168.1.2 icmp_seq=3 ttl=64 time=0.690 ms
84 bytes from 192.168.1.2 icmp_seq=4 ttl=64 time=1.018 ms
84 bytes from 192.168.1.2 icmp_seq=5 ttl=64 time=0.981 ms

PC4>
```

No.	Time	Source	Destination	Protocol	Length	Info
14	29.222593	Private_66:68:01	Broadcast	ARP	64	Who has 192.168.1
15	29.224265	Private_66:68:02	Private_66:68:01	ARP	64	192.168.1.3 is at
16	29.225125	192.168.1.2	192.168.1.3	ICMP	98	Echo (ping) reque
17	29.225505	192.168.1.3	192.168.1.2	ICMP	98	Echo (ping) reply
18	30.234094	192.168.1.2	192.168.1.3	ICMP	98	Echo (ping) reque
19	30.234395	192.168.1.3	192.168.1.2	ICMP	98	Echo (ping) reply
20	31.236342	192.168.1.2	192.168.1.3	ICMP	98	Echo (ping) reque
21	31.236955	192.168.1.3	192.168.1.2	ICMP	98	Echo (ping) reply
22	32.238277	192.168.1.2	192.168.1.3	ICMP	98	Echo (ping) reque
23	32.238724	192.168.1.3	192.168.1.2	ICMP	98	Echo (ping) reply
24	33.240236	192.168.1.2	192.168.1.3	ICMP	98	Echo (ping) reque
25	33.240717	192.168.1.3	192.168.1.2	ICMP	98	Echo (ping) reply

```
Frame 1: 64 bytes on wire (512 bits), 64 bytes
Ethernet II, Src: Private_66:68:03 (00:50:79:66
Address Resolution Protocol (request)
0000 ff ff ff ff ff ff 00 50  79 66 68 03 0
0010 08 00 06 04 00 01 00 50  79 66 68 03 c
0020 ff ff ff ff ff ff c0 a8  01 02 00 00 0
0030 00 00 00 00 00 00 00 00  00 00 00 00 0
```

No.	Time	Source	Destination	Protocol	Length	Info
3	29.222798	Private_66:68:01	Broadcast	ARP	64	Who has 192.1
4	29.224073	Private_66:68:02	Private_66:68:01	ARP	64	192.168.1.3 i
5	29.225051	192.168.1.2	192.168.1.3	ICMP	98	Echo (ping) r
6	29.225363	192.168.1.3	192.168.1.2	ICMP	98	Echo (ping) r
7	30.234052	192.168.1.2	192.168.1.3	ICMP	98	Echo (ping) r
8	30.234257	192.168.1.3	192.168.1.2	ICMP	98	Echo (ping) r
9	31.236410	192.168.1.2	192.168.1.3	ICMP	98	Echo (ping) r
10	31.236794	192.168.1.3	192.168.1.2	ICMP	98	Echo (ping) r
11	32.238315	192.168.1.2	192.168.1.3	ICMP	98	Echo (ping) r
12	32.238584	192.168.1.3	192.168.1.2	ICMP	98	Echo (ping) r
13	33.240272	192.168.1.2	192.168.1.3	ICMP	98	Echo (ping) r
14	33.240577	192.168.1.3	192.168.1.2	ICMP	98	Echo (ping) r

```
Frame 1: 64 bytes on wire (512 bits), 64 bytes
Ethernet II, Src: Private_66:68:03 (00:50:79:66
Address Resolution Protocol (request)
0000 ff ff ff ff ff ff 00 50  79 66 68
0010 08 00 06 04 00 01 00 50  79 66 68
0020 ff ff ff ff ff ff c0 a8  01 02 00
0030 00 00 00 00 00 00 00 00  00 00 00
```

No.	Time	Source	Destination	Protocol	Length	Info
14	15.910100	Private_66:68:03	Private_66:68:00	ARP	64	192.168.1.4 is at
15	15.911704	192.168.1.1	192.168.1.4	ICMP	98	Echo (ping) reques
16	15.912035	192.168.1.4	192.168.1.1	ICMP	98	Echo (ping) reply
17	16.913786	192.168.1.1	192.168.1.4	ICMP	98	Echo (ping) reques
18	16.914018	192.168.1.4	192.168.1.1	ICMP	98	Echo (ping) reply
19	17.915296	192.168.1.1	192.168.1.4	ICMP	98	Echo (ping) reques
20	17.915654	192.168.1.4	192.168.1.1	ICMP	98	Echo (ping) reply
21	18.917025	192.168.1.1	192.168.1.4	ICMP	98	Echo (ping) reques
22	18.917280	192.168.1.4	192.168.1.1	ICMP	98	Echo (ping) reply
23	19.918227	192.168.1.1	192.168.1.4	ICMP	98	Echo (ping) reques
24	19.918597	192.168.1.4	192.168.1.1	ICMP	98	Echo (ping) reply
25	29.223471	Private_66:68:01	Broadcast	ARP	64	Who has 192.168.1.

```
Frame 1: 64 bytes on wire (512 bits), 64 bytes
Ethernet II, Src: Private_66:68:03 (00:50:79:66
Address Resolution Protocol (request)
0000 ff ff ff ff ff ff 00 50  79 66 68 03 00
0010 08 00 06 04 00 01 00 50  79 66 68 03 c0
0020 ff ff ff ff ff ff c0 a8  01 02 00 00 00
0030 00 00 00 00 00 00 00 00  00 00 00 00 00
```

No.	Time	Source	Destination	Protocol	Length	Info
15	401.447242	Private_66:68:03	Private_66:68:00	ARP	64	192.168.1.4 r
16	401.448700	192.168.1.1	192.168.1.4	ICMP	98	Echo (ping) r
17	401.449116	192.168.1.4	192.168.1.1	ICMP	98	Echo (ping) r
18	402.450754	192.168.1.1	192.168.1.4	ICMP	98	Echo (ping) r
19	402.451086	192.168.1.4	192.168.1.1	ICMP	98	Echo (ping) r
20	403.452175	192.168.1.1	192.168.1.4	ICMP	98	Echo (ping) r
21	403.452743	192.168.1.4	192.168.1.1	ICMP	98	Echo (ping) r
22	404.453912	192.168.1.1	192.168.1.4	ICMP	98	Echo (ping) r
23	404.454353	192.168.1.4	192.168.1.1	ICMP	98	Echo (ping) r
24	405.455196	192.168.1.1	192.168.1.4	ICMP	98	Echo (ping) r
25	405.455687	192.168.1.4	192.168.1.1	ICMP	98	Echo (ping) r
26	414.760279	Private_66:68:01	Broadcast	ARP	64	Who has 192.1

```
Frame 1: 64 bytes on wire (512 bits), 64 bytes
Ethernet II, Src: Private_66:68:02 (00:50:79:66
Address Resolution Protocol (request)
0000 ff ff ff ff ff ff 00 50  79 66 68
0010 08 00 06 04 00 01 00 50  79 66 68
0020 ff ff ff ff ff ff c0 a8  01 01 00
0030 00 00 00 00 00 00 00 00  00 00 00
```

QUESTION 5 :

connection between pc and router

```
*Mar  1 00:00:08.195: %LINEPROTO-5-UPDOWN: Line protocol on Interface VoIP-Null0
, changed state to up
*Mar  1 00:00:08.199: %LINK-3-UPDOWN: Interface Serial0/0, changed state to up
*Mar  1 00:00:08.203: %LINK-3-UPDOWN: Interface Serial0/1, changed state to up
*Mar  1 00:00:08.207: %LINEPROTO-5-UPDOWN: Line protocol on Interface IPv6-mpls,
 changed state to up
*Mar  1 00:00:08.835: %SYS-5-CONFIG_I: Configured from memory by console
*Mar  1 00:00:09.303: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0,
 changed state to down
*Mar  1 00:00:09.303: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1,
 changed state to down
*Mar  1 00:00:09.303: %LINK-5-CHANGED: Interface FastEthernet0/1, changed state
to administratively down
*Mar  1 00:00:09.307: %LINK-5-CHANGED: Interface FastEthernet0/0, changed state
to administratively down
*Mar  1 00:00:09.699: %SYS-5-RESTART: System restarted --
Cisco IOS Software, 3700 Software (C3725-ADVENTERPRISEK9-M), Version 12.4(15)T7,
 RELEASE SOFTWARE (fc3)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2008 by Cisco Systems, Inc.
Compiled Wed 13-Aug-08 21:36 by prod_rel_team
*Mar  1 00:00:09.731: %SNMP-5-COLDSTART: SNMP agent on host R1 is undergoing a c
old start
*Mar  1 00:00:10.035: %CRYPTO-6-ISAKMP_ON_OFF: ISAKMP is OFF
*Mar  1 00:00:10.035: %CRYPTO-6-GDOI_ON_OFF: GDOI is OFF
*Mar  1 00:00:10.395: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
et0/1, changed state to down
*Mar  1 00:00:10.395: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
et0/0, changed state to down
*Mar  1 00:00:10.843: %LINK-5-CHANGED: Interface Serial0/0, changed state to adm
inistratively down
*Mar  1 00:00:10.855: %LINK-5-CHANGED: Interface Serial0/1, changed state to adm
inistratively down
R1#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
R1(config)#
R1(config)#interface fa 0/0
R1(config-if)# ip address 10.128.20.254 255.255.0.0
R1(config-if)#no shutdown
R1(config-if)#
*Mar  1 00:05:59.043: %LINK-3-UPDOWN: Interface FastEthernet0/0, changed state t
o up
*Mar  1 00:06:00.043: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
et0/0, changed state to up
R1(config-if)#
```

```
Trying ::1...
Connected to localhost.
Escape character is '^]'.

Welcome to Virtual PC Simulator, version 0.8.2
Dedicated to Daling.
Build time: Aug 23 2021 03:18:07
Copyright (c) 2007-2015, Paul Meng (mirnshi@gmail.com)
All rights reserved.

VPCS is free software, distributed under the terms of the "BSD" licence.
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 10.128.20.2 /16 10.128.20.254
Checking for duplicate address...
PC1 : 10.128.20.2 255.255.0.0 gateway 10.128.20.254

PC1> show ip

NAME        : PC1[1]
IP/MASK     : 10.128.20.2/16
GATEWAY     : 10.128.20.254
DNS         :
MAC         : 00:50:79:66:68:03
LPORT       : 10004
RHOST:PORT  : 127.0.0.1:10005
MTU         : 1500

PC1> ping 10.128.20.254

10.128.20.254 icmp_seq=1 timeout
84 bytes from 10.128.20.254 icmp_seq=2 ttl=255 time=25.137 ms
84 bytes from 10.128.20.254 icmp_seq=3 ttl=255 time=11.945 ms
84 bytes from 10.128.20.254 icmp_seq=4 ttl=255 time=7.346 ms
84 bytes from 10.128.20.254 icmp_seq=5 ttl=255 time=15.189 ms

PC1>
```