



FACULTY OF ENGINEERING & INFORMATION TECHNOLOGY

COMPUTER NETWORKS LAB **Exercise 1**

Section (1) CSE

Dr. Asem Salah & Mr. Eng. Iyas Alsuki

You have to return the solution before 8:30 am 26/5/2021

Use WinRAR or ZIP to compression the Assignments files

The compressed file must contain the followings:

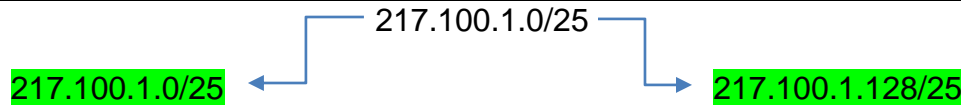
- This Word Doc file for the written answers/ and print screens
- Packet tracer file for the complete scenario.

Student Name: ...adan alalawni..... Student ID:...201811151.....

Q1) Suppose that you have been given the network scenario as shown in the picture, which consists of 3 routers, and each one is connected to a LAN segments with a different number of hosts as shown in the figure. You need to calculate the Variable Length Subnet Masking (VLSM) for the network to serve all hosts in a perfect manner and implement it in the packet tracer.

IP:217.100.1.0/24

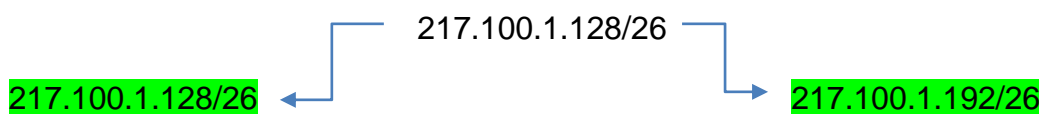
NO	#host	Block size	# borrowed bit	Subnet mask
1	99	128	1	255.255.255.128
2	45	64	2	255.255.255.192
3	12	16	4	255.255.255.240
4	2	4	6	255.255.255.252
5	2	4	6	255.255.255.252
6	2	4	6	255.255.255.252
7	1	4	6	255.255.255.252



First subnetwork: 217.100.1.0/25

VH IP : 217.100.1.(1-126)/25

BC IP : 217.100.1.127/25



Second subnetwork: 217.100.1.128/26



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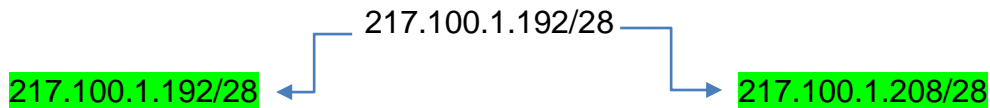
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VH IP : 217.100.1.(129-190)/26

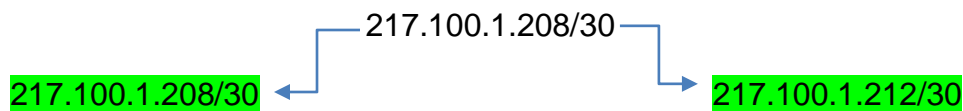
BC IP : 217.100.1.191/26



Third subnetwork: 217.100.1.192/28

VH IP : 217.100.1.(193-206)/28

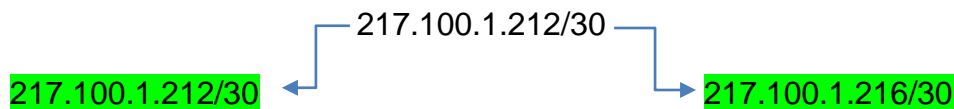
BC IP : 217.100.1.207/28



Fourth subnetwork: 217.100.1.208/30 (WAN link 1)

VH IP : 217.100.1.(209-210)/30

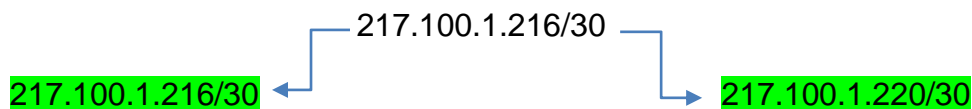
BC IP : 217.100.1.211/30



Fifth subnetwork: 217.100.1.212/30 (WAN link 2)

VH IP : 217.100.1.(213-214)/30

BC IP : 217.100.1.215/30



sixth subnetwork: 217.100.1.216/30 (WAN link 3)

VH IP : 217.100.1.(217-218)/30

BC IP : 217.100.1.219/30

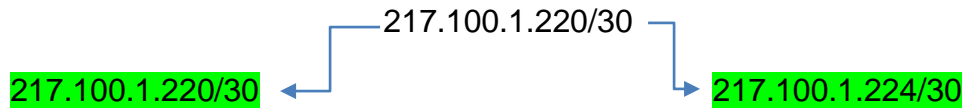


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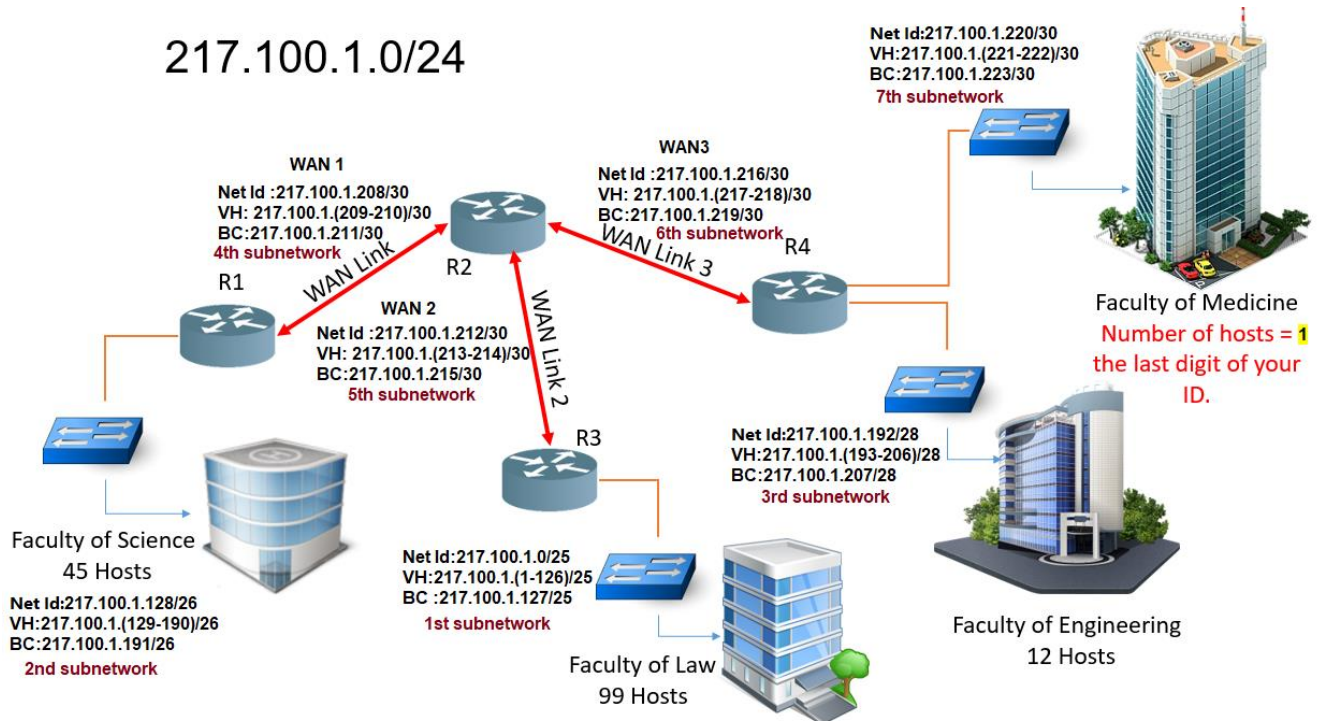
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seventh subnetwork: 217.100.1.220/30

VH IP : 217.100.1.(221-222)/30

BC IP : 217.100.1.223/30



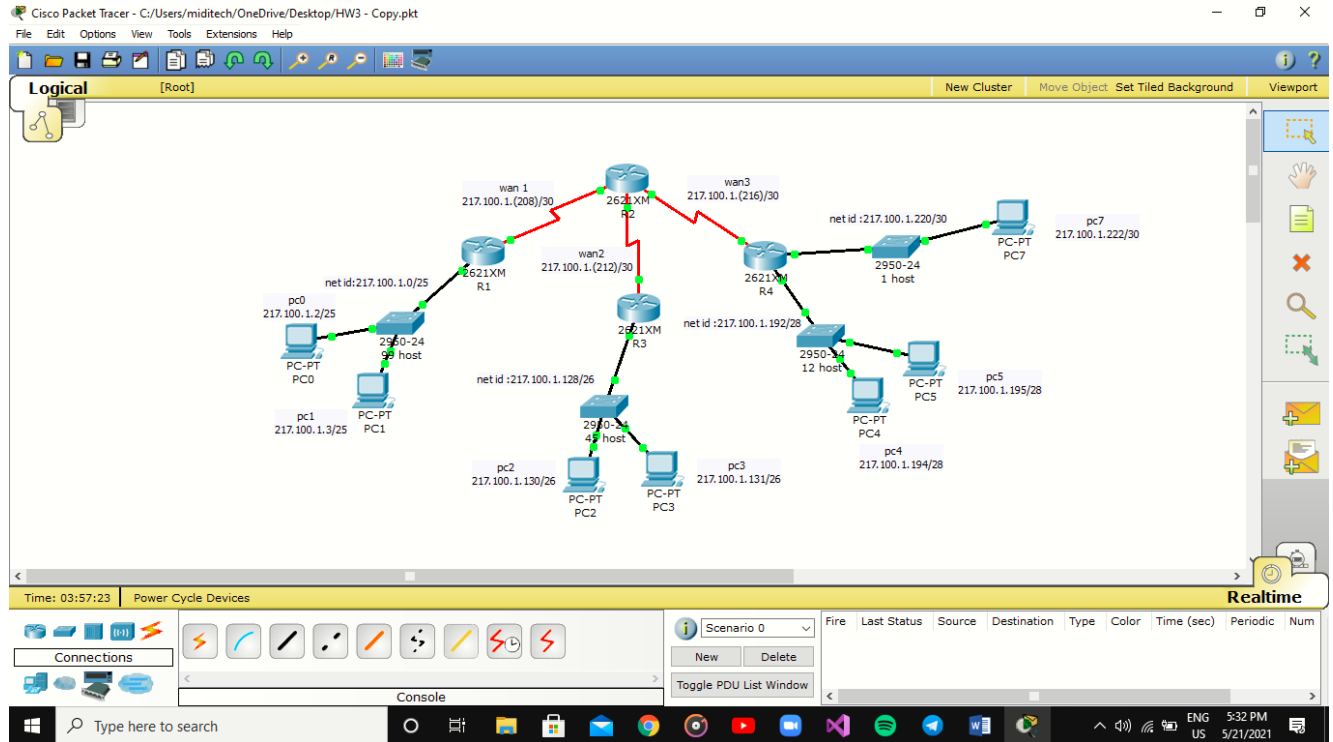


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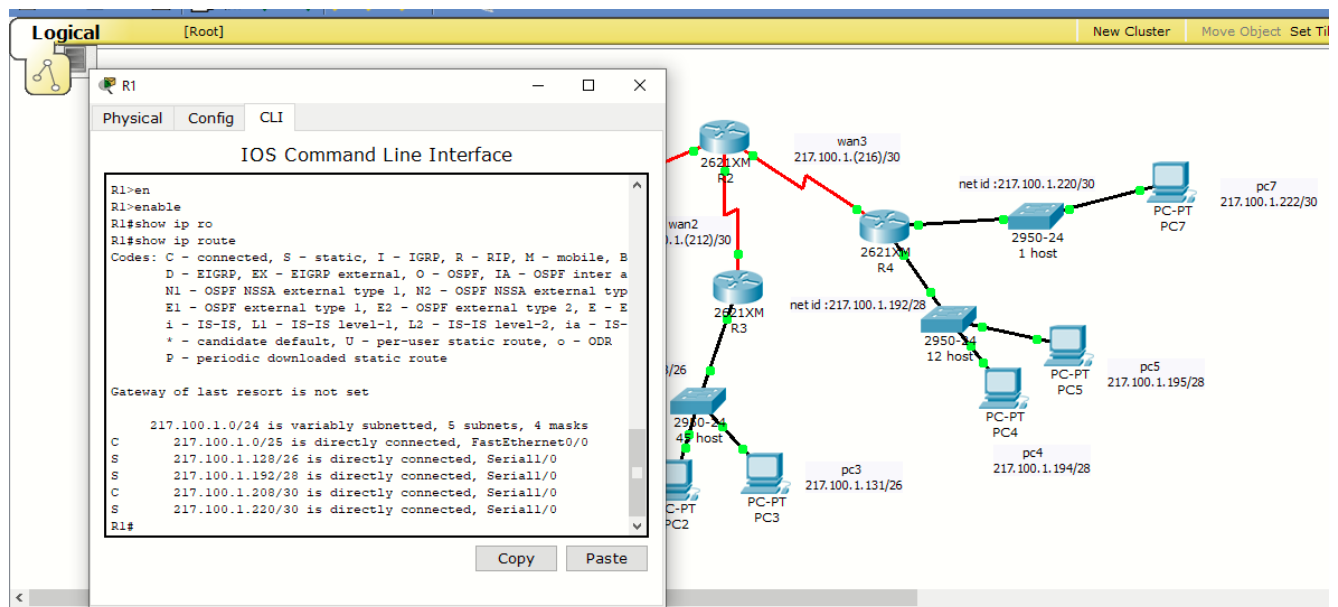
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R1:





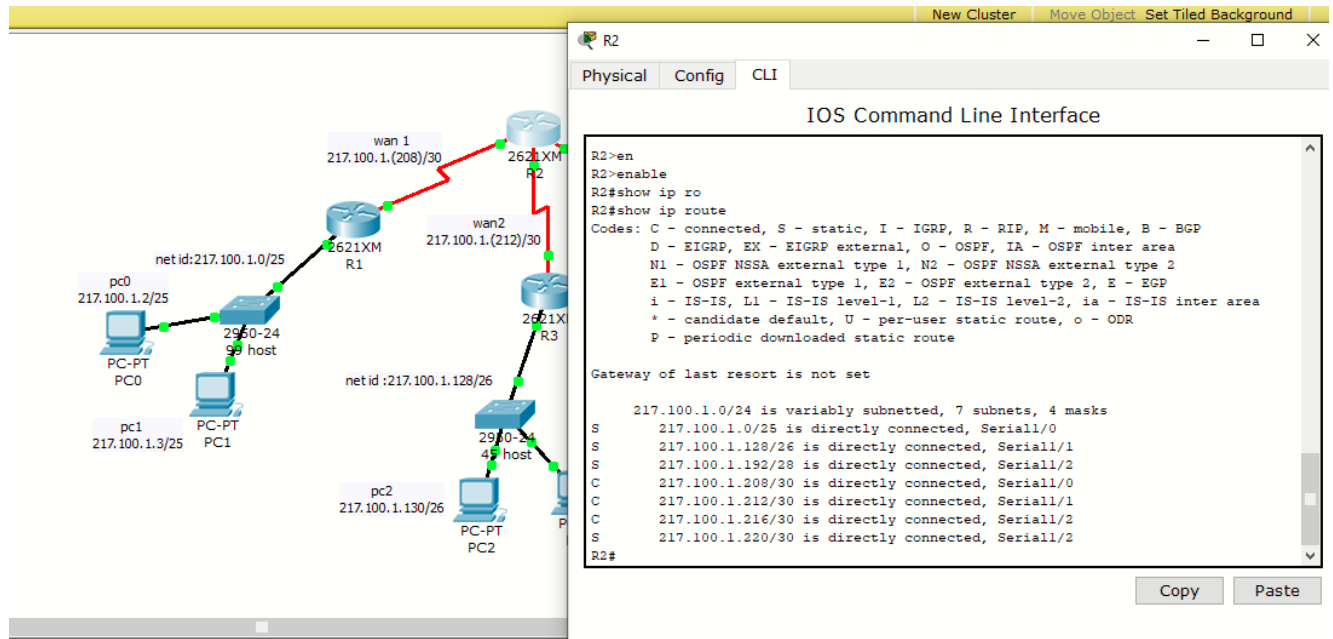
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R2:



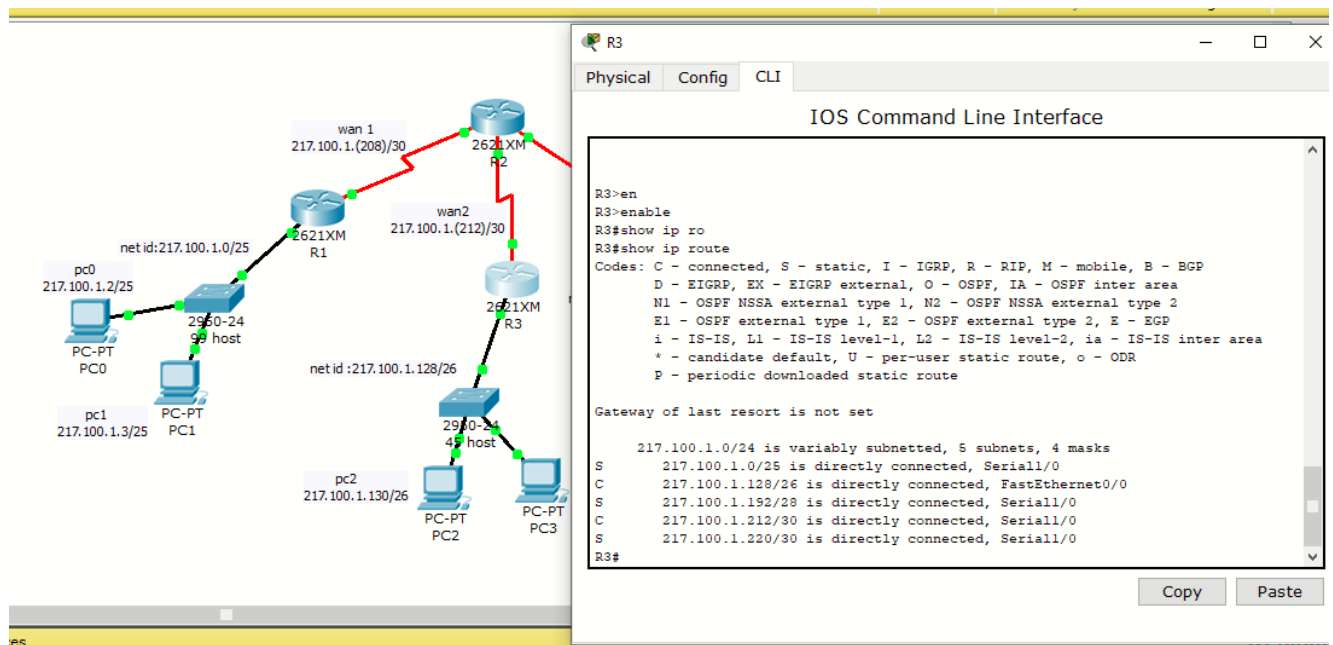
The network diagram shows a topology with three routers: R1 (2621XM), R2 (2621XM), and R3 (2621XM). R1 is connected to R2 via a WAN link (wan1) with IP 217.100.1.(208)/30. R2 is connected to R3 via a WAN link (wan2) with IP 217.100.1.(212)/30. R1 is connected to a LAN with two PCs: PC0 (217.100.1.2/25) and PC1 (217.100.1.3/25). R3 is connected to a LAN with two PCs: PC2 (217.100.1.130/26) and PC3 (217.100.1.131/26). The CLI for R2 shows the following commands and output:

```
R2>en
R2>enable
R2#show ip ro
R2#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
* - candidate default, U - per-user static route, o - ODR
P - periodic downloaded static route

Gateway of last resort is not set

217.100.1.0/24 is variably subnetted, 7 subnets, 4 masks
S    217.100.1.0/25 is directly connected, Serial1/0
S    217.100.1.128/26 is directly connected, Serial1/1
S    217.100.1.192/28 is directly connected, Serial1/2
C    217.100.1.208/30 is directly connected, Serial1/0
C    217.100.1.212/30 is directly connected, Serial1/1
C    217.100.1.216/30 is directly connected, Serial1/2
S    217.100.1.220/30 is directly connected, Serial1/2
R2#
```

R3:



The network diagram is the same as in the R2 section. The CLI for R3 shows the following commands and output:

```
R3>en
R3>enable
R3#show ip ro
R3#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
* - candidate default, U - per-user static route, o - ODR
P - periodic downloaded static route

Gateway of last resort is not set

217.100.1.0/24 is variably subnetted, 5 subnets, 4 masks
S    217.100.1.0/25 is directly connected, Serial1/0
C    217.100.1.128/26 is directly connected, FastEthernet0/0
S    217.100.1.192/28 is directly connected, Serial1/0
C    217.100.1.212/30 is directly connected, Serial1/0
S    217.100.1.220/30 is directly connected, Serial1/0
R3#
```



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R4:

IOS Command Line Interface

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/0, changed state to up

R4>en
R4>enable
R4#show ip ro
R4#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
        D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
        N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
        E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
        i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
        * - candidate default, U - per-user static route, o - ODR
        P - periodic downloaded static route

Gateway of last resort is not set

    217.100.1.0/24 is variably subnetted, 5 subnets, 4 masks
S       217.100.1.0/25 is directly connected, Serial1/0
S       217.100.1.128/26 is directly connected, Serial1/0
C       217.100.1.192/28 is directly connected, FastEthernet0/0
C       217.100.1.216/30 is directly connected, Serial1/0
C       217.100.1.220/30 is directly connected, FastEthernet0/1
R4#
```

Fire

Fire	Last Status	Source	Destination	Type	Color	Time (sec)	Periodic	Num	Edit	Delete
Successful	PC3	PC5	ICMP	0.000	N	0	(edit)	(delete)		
Successful	PC0	PC1	ICMP	0.000	N	1	(edit)	(delete)		
Successful	PC1	R2	ICMP	0.000	N	2	(edit)	(delete)		
Successful	PC3	R3	ICMP	0.000	N	3	(edit)	(delete)		
Successful	PC7	PC3	ICMP	0.000	N	4	(edit)	(delete)		
Successful	PC5	PC1	ICMP	0.000	N	5	(edit)	(delete)		
Successful	PC2	PC4	ICMP	0.000	N	6	(edit)	(delete)		
Successful	R4	R2	ICMP	0.000	N	7	(edit)	(delete)		

Time: 04:12:15 Power Cycle Devices

Scenario 0

New Delete

Toggle PDU List Window