CO323 - Lab 03
Dynamic Routing - RIP

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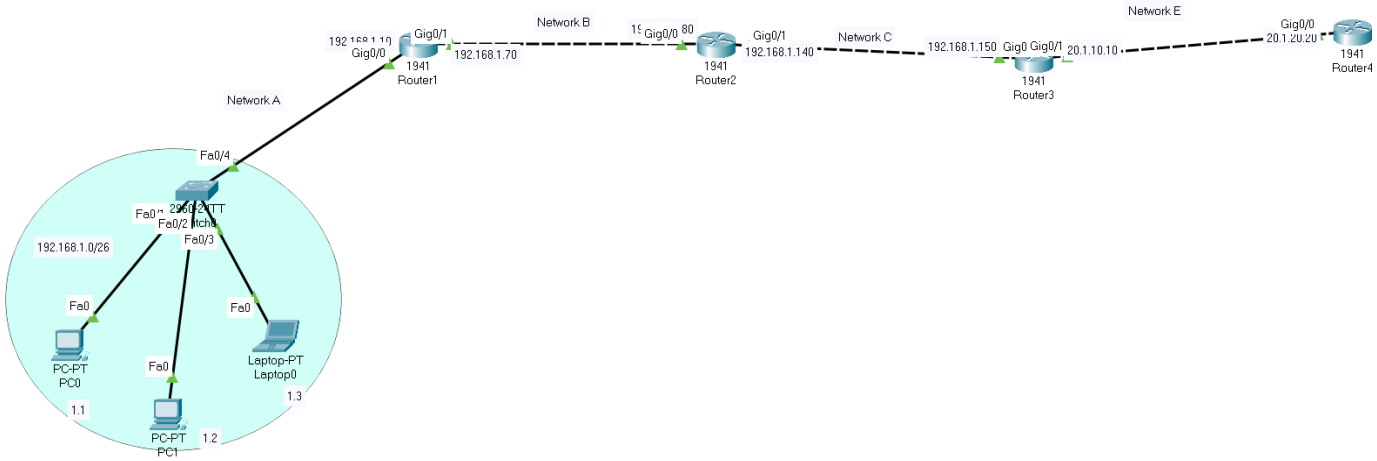
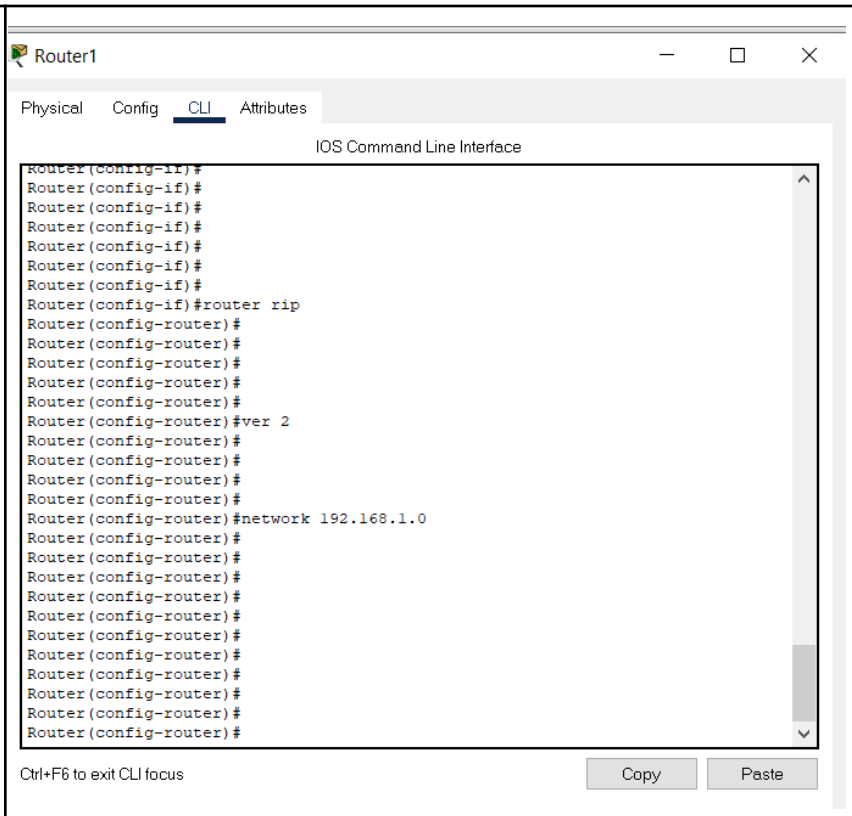
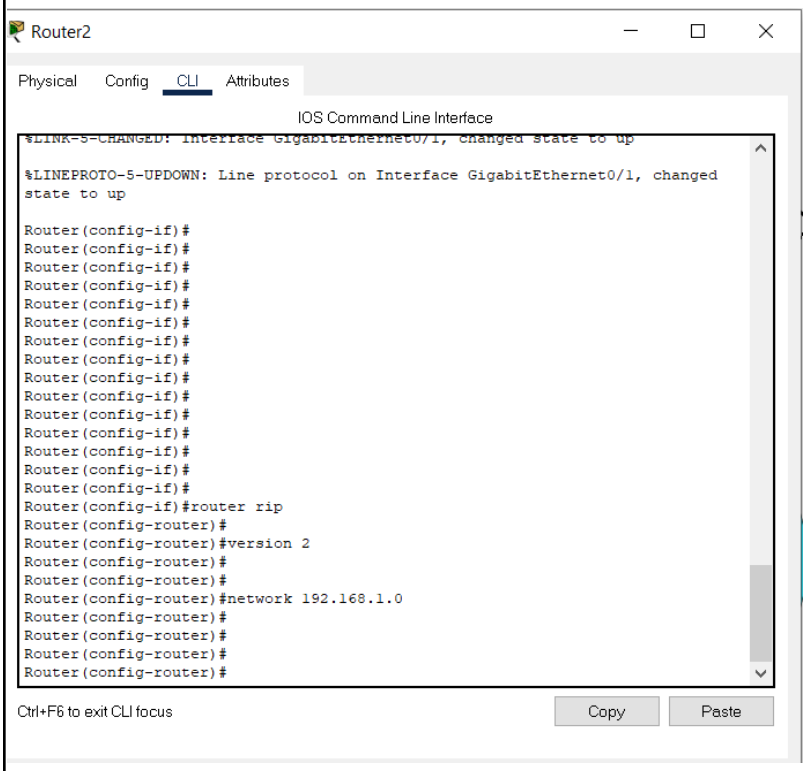
1. Specify the differences between RIPv1 and RIPv2.

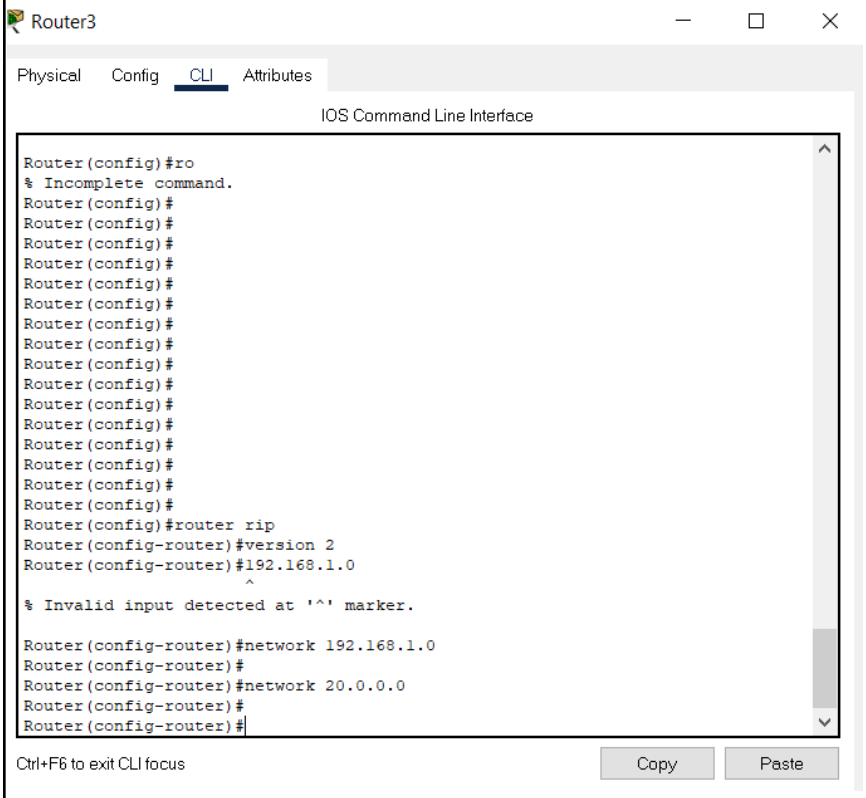
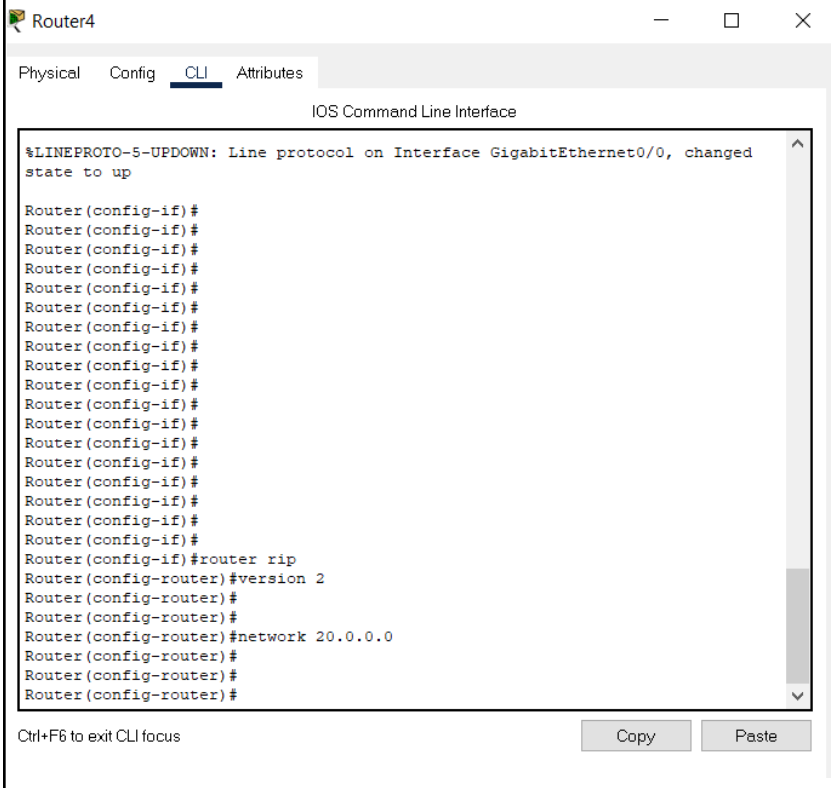
Ripv1	Ripv2
1.uses classful routing.	Uses classless and classful routing.
2.periodic routing updates do not carry subnet information.	2.perodic routing updates carry subnet mask and network address.
3.does not support VLSM.	Supports VLSM.
4.less secure.	more secure.
5.does not support authentication.	supports authentication.
6.uses broadcasting for updates.	use multicasting for updates

2. Draw similar network topology given in Figure 01, using packet tracer and do the IP configurations for each of the devices (PCs, router ports) considering Table 01.

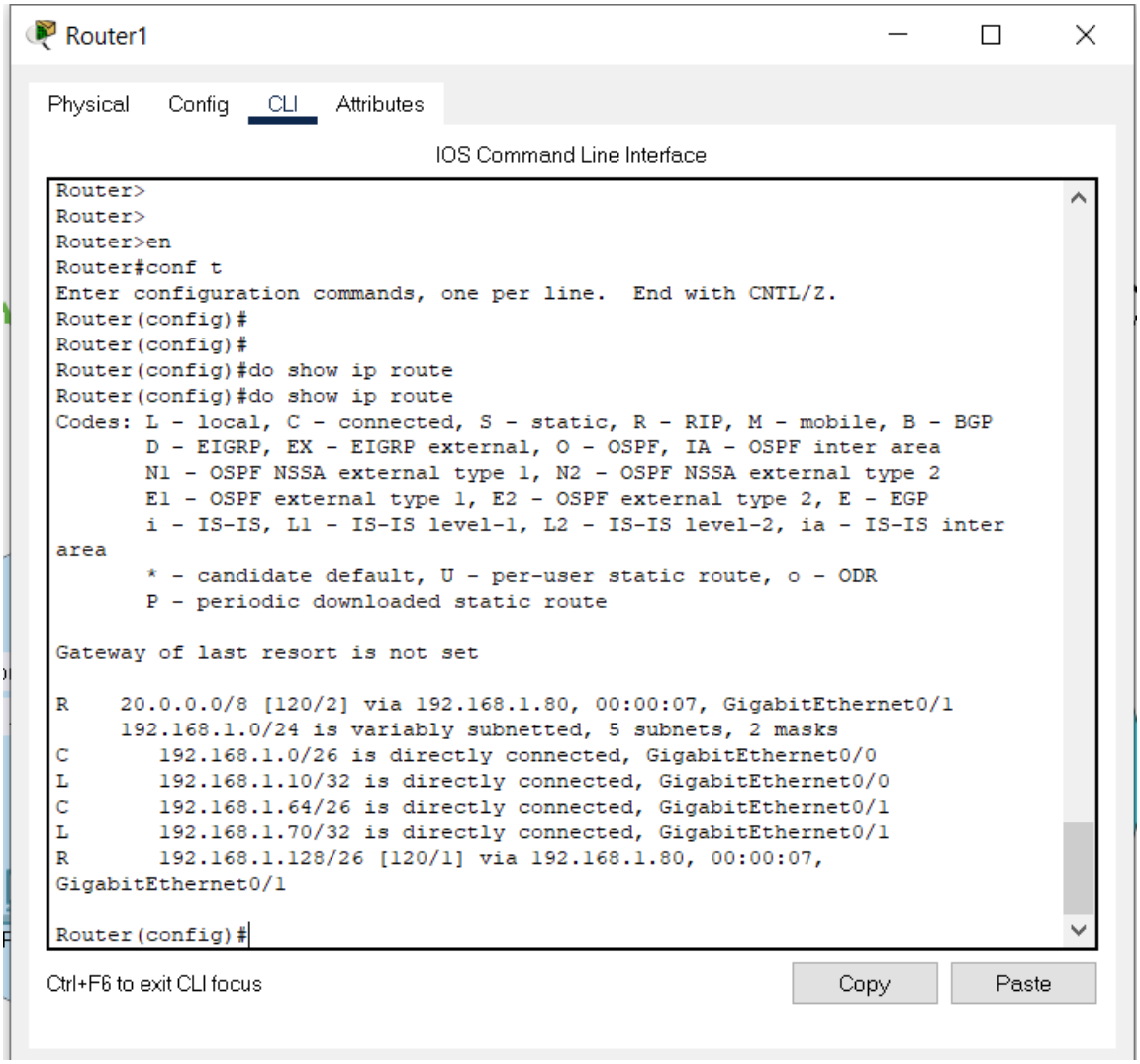
3. Configure RIP for each of the routers. Include screenshots of your CLI windows into the report (clearly indicate the network configurations).



rip on router1	
rip on router2:	

rip on router3	
rip on router4	

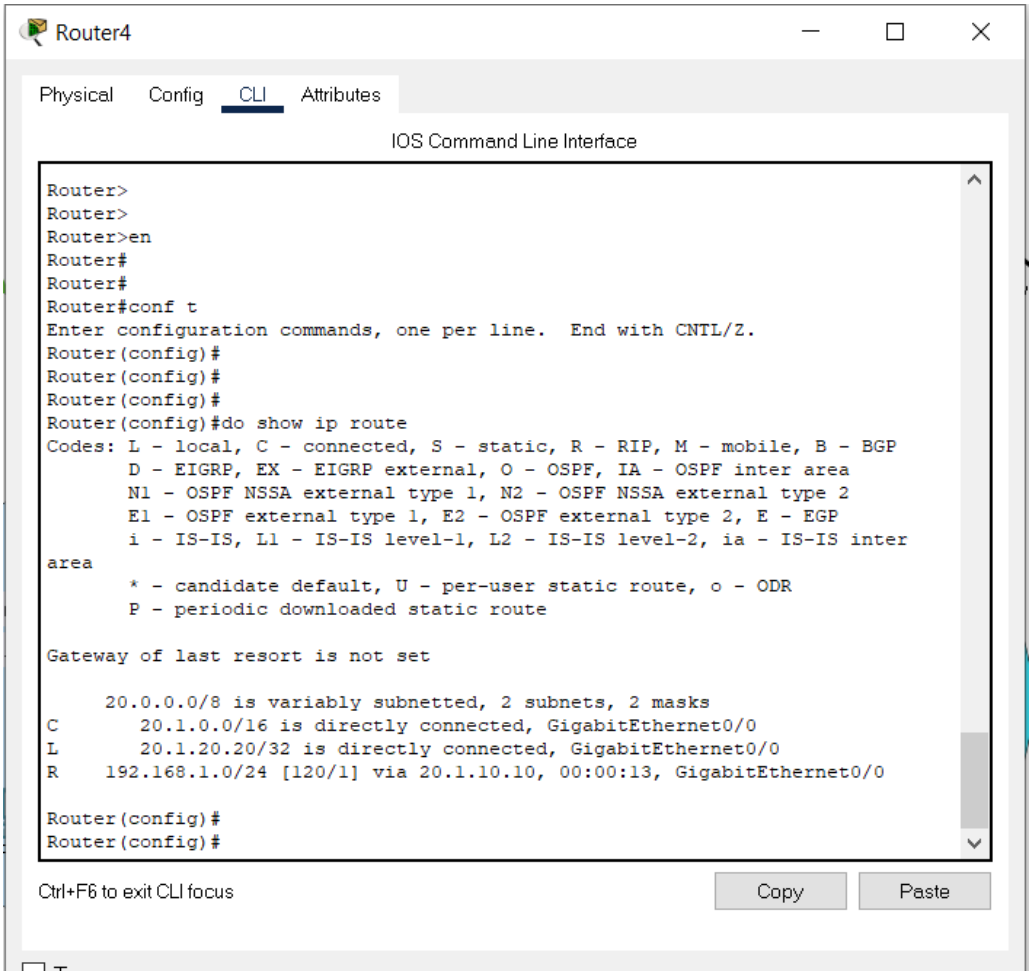
4. Print the routing table in the router R1. Explain each parameter indicated in the routing table for the routes that it has learnt through RIP.



-R:that entry is learnt using rip routing
-20.0.0.0/8[120/2]:this means there is 20.0.0.0/8 network 2 hops away and it can be reached using GigabitEthernet0/1 port. That port is assigned to 192.168.1.80 ip address.120 is the admin distance which indicates the trustworthiness of the entry.If admin distance is lower, then the entry is more trustworthy.And it has also learnt 192.168.1.0/24 is variably subnetted.

-192.168.1.128/26[120/1]:it has also learnt this network exists in one hop away across 192.168.1.80.

5. Explain the “Auto Summarization” issue of RIP using the routing table of R4 router. Mention under what kind of situations this occurs and suggest a solution to resolve this issue in RIP. Reconfigure R3 with your suggested solution. Observe the new routing table at R4.



-Rip entry says that there is a network 192.168.1.0/24 one hop away from R4.That means 192.168.1.0/26 , 192.168.64.0/26 and 192.168.128.0/26 are super netted to 192.168.1.0/24. This is done by Router3 to minimize the number of entries in the routing table or Router 4. This is done by router 3 because that is the router which bisects two networks. This is called an auto summarization problem.

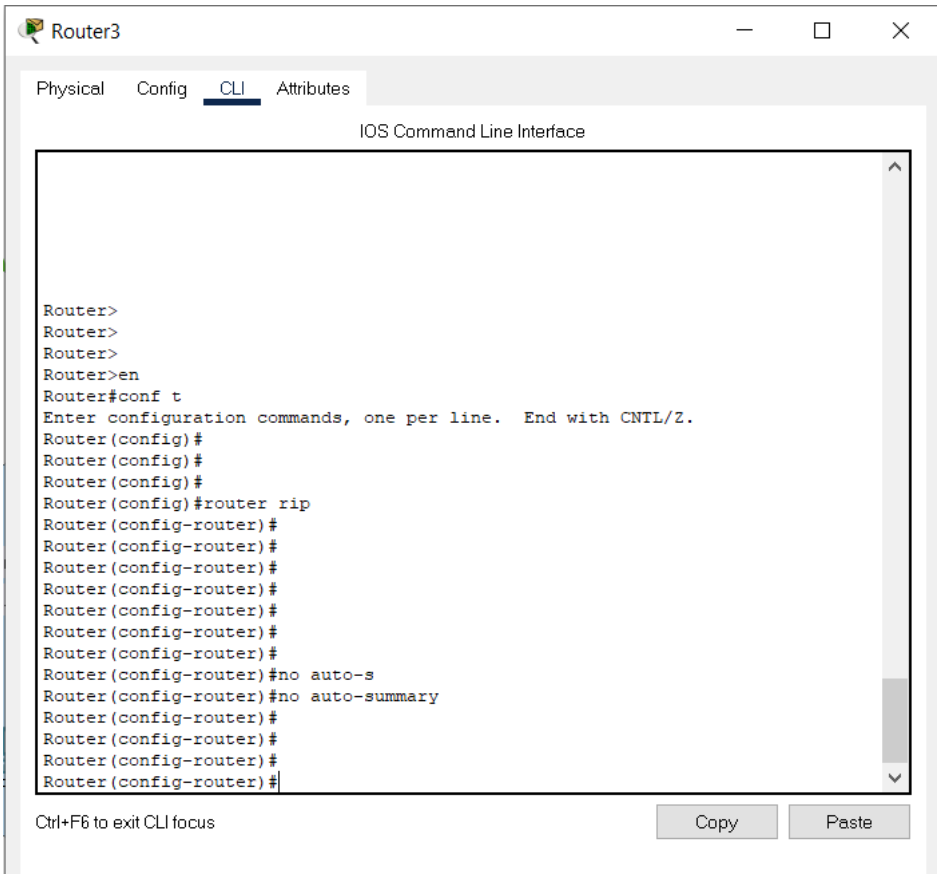
-This is actually bad sometimes.This supernetting, tricks the router 4 into thinking that there exists a network which is 192.168.1.192/26 but there is no actual network with that network address.

-If router 4 receives a packet for 192.168.1.220/26 which is in 192.168.1.192 network, router 4 forward that packet to router3.But there is no such network configured, router 3 drops the packet.Therefore this auto summarization generates unnecessary traffic and therefore interrupts the optimization of the network.

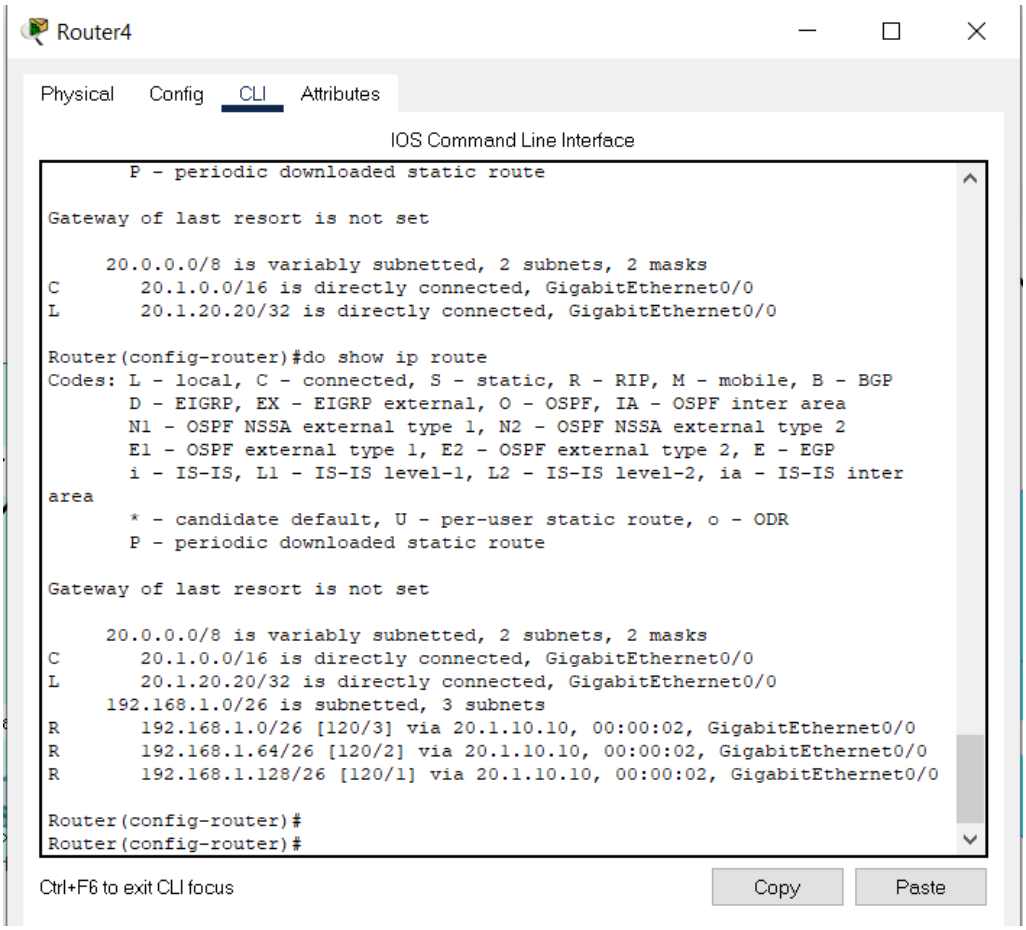
-This occurs when the maximum number of networks are not configured when using CIDR for some network.

Ex: for 192.168.1.0/24⇒ there are 4 subnets of /26, which are 192.168.1.0, 192.168.64.0, 192.168.128.0, 192.168.1.192. But only three of those are configured without 192.168.1.192. Therefore the maximum number of networks for /24 network is not configured.

-This can be resolved if we turn off auto summarization in the dissecting router when the maximum number of networks are not configured.



-Now router 4 doesn't show the supernetted network.Instead it shows the 3 subnets.



6. Mention two other limitations of RIP (Except Auto Summarization)

-Loops

:This is also known as counting to infinity problem

-Distance Vector

:Only looks at the distance but not the link state(speed)