



Exercises lab 3  
Computer Networking I (DVGB02)  
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1. Determine the range of IP addresses that is represented by the following CIDR IPv4 addresses.
    - a) 192.168.0.0/16
    - b) 192.168.128.0/17
    - c) 192.168.128.0/18
    - d) 192.168.128.0/8
  2. Determine the network ID and host ID for the following CIDR IPv4 addresses.
    - a) IP address: 192.168.0.64, Address mask: 255.255.0.0
    - b) IP address: 27.78.101.154, Address mask: 255.255.255.224
    - c) IP address: 172.134.56.34, Address mask: 255.255.128.0
    - d) IP address: 192.168.0.23, Address mask: 255.192.0.0
  3. Suggest a way to divide the network 10.128.192.0/25 into three subnets of which one subnet should be able to hold 60 hosts and the other two subnets should be able to contain 30 hosts.
  4. The forwarding table of a router is shown below.

Destination	Mask	Next hop
128.96.39.0	255.255.255.128	A
128.96.128.0	255.255.128.0	B
128.96.192.0	255.255.192.0	C
default		D

Determine the next hop for packets received by the router with the destination IP addresses as follows.

- a) 128.96.126.34
- b) 128.96.130.45

- c) 128.96.190.23
- d) 128.96.200.67
- e) 128.97.0.12

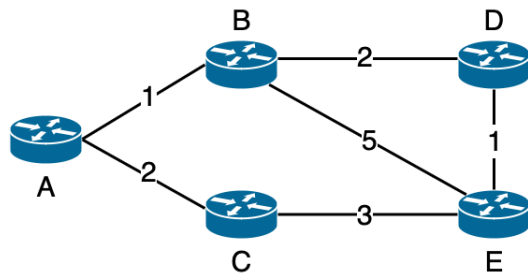
5. Consider a router, D, with three adjacent routers, A, B, and C. Router D uses distance vector routing and has the routing table depicted below. The table shows the shortest paths from the router to its known networks. For example, the shortest path from router D to a host on network 2 is six hops.

Destination	Number of Hops	Router
Network 2	6	A
Network 3	4	C
Network 4	3	A
Network 5	2	C
Network 6	3	B

The router receives the advertisement shown below from router C. Determine the routing table after it has been updated.

Destination	Number of Hops
Network 2	6
Network 3	4
Network 4	1
Network 5	2
Network 6	3

6. Use Dijkstra's shortest path first algorithm to determine the least cost path from router A to the other routers in the network depicted below. Show your solution in a table such as Table 5.1 in the textbook<sup>1</sup>. Also show the resulting shortest path graph.



End of Exercises

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<sup>1</sup>J. F. Kurose and K. W. Ross. *Computer Networking – A Top-Down Approach*, 8<sup>th</sup> edition