

Assignment: IP forwarding

Problem 1. Describe how class A, B, and C IP addresses are recognized in a binary representation of IP addresses ?

Problem 2.

- a) Why is a subnet of all zeros or all ones cannot be used in a classful routing environment?
- b) How many subnets are available if a class C address has six bits of subnetting? How many host addresses are available per subnet. (Hint: The problem statement of (a) contains a part of your answer.)

Problem 3. How would you express the entire Class B address space as a single CIDR advertisement?

Problem 4. Aggregate the following set of four /24 IP network addresses to the highest degree possible.

212.56.132.0/24
212.56.133.0/24
212.56.134.0/24
212.56.135.0/24

Problem 5. (10 points) IP Routing Tables

Consider the following routing table:

Network Destination	Next Hop
142.150.64.0/20	A
142.150.71.128/28	B
142.150.71.128/30	D
142.150.0.0/16	C

- a. (5 Points) Assume that a router receives an IP datagram with destination 142.150.71.132. Determine the next hop of the IP datagram that is selected by the router? Explain your answer.
- b. (3 Points) Add a routing table entry to the table above which enforces that all IP datagrams with destination 142.150.71.132 have "A" as Next Hop. For all other IP destination addresses, the Next Hop should not change.
- c. (2 Points) Add a routing table entry to the table above which enforces that all IP datagrams whose destination address does not match any of the entries in the table, are forwarded to next hop "C". (The network destination for this entry must be provided as a network prefix)