Name:

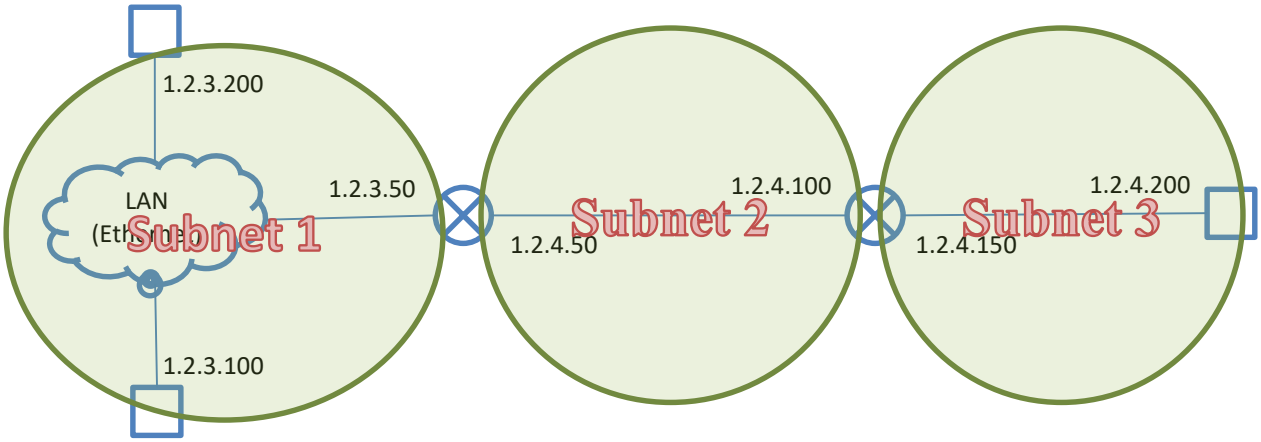
# Exercise 4

1. Suppose that an IP router has four interfaces, numbered 0 through 3, and it is currently using the forwarding table given below. Find the appropriate output interfaces for the packets with the following destination IP addresses.
   a. 1.0.0.1
      Matches with 1.0.0.0/16 => forward to interface 0
   b. 1.0.1.0
      Matches with 1.0.0.0/16 and 1.0.1.0/24 => /24 is the longest prefix => forward to interface 1
   c. 1.0.1.1
      Matches with 1.0.0.0/16 and 1.0.1.0/24 => /24 is the longest prefix => forward to interface 1
   d. 1.1.1.1
      Matches with 1.1.0.0/16 and 1.1.1.0/24 => /24 is the longest prefix => forward to interface 3

   **Forwarding table of the router:**

| Subnet Prefix / Mask | Interface |
|---|---|
| 1.0.0.0/16 | 0 |
| 1.0.1.0/24 | 1 |
| 1.1.0.0/16 | 2 |
| 1.1.1.0/24 | 3 |

2. Consider the following network with the IP addresses assigned to each host/router network interface.
   a. Identify subnets




   b. Assign subnet masks to each subnet you identified in part (a) to create an appropriate addressing scheme.
      Write the inteface addresses in the binary form & identify the common prefixes:
      (in the following, the common prefixes are highlighted)

| Subnet | Interface Address | Interface Address (binary) | Subnet Mask |
|---|---|---|---|
| Subnet 1 | 1.2.3.50<br>1.2.3.100<br>1.2.3.200 | 00000001.00000010.00000011.00110010<br>00000001.00000010.00000011.01100100<br>00000001.00000010.00000011.11001000 | /24 |
| Subnet 2 | 1.2.4.50<br>1.2.4.100 | 00000001.00000010.00000100.00110010<br>00000001.00000010.00000100.01100100 | /25 |
| Subnet 3 | 1.2.4.150<br>1.2.4.200 | 00000001.00000010.00000100.10010110<br>00000001.00000010.00000100.11001000 | /25 |