1. You are given the following network topology: (14pts.)

- Router is set as a default router for both HostA and HostB.
- HostA and HostB's ARP tables are cleared, the router ARP tables are **not** cleared (i.e., removing the need of two transmissions to router – no packet dropping).
- Then HostB pings HostA

a. Below find a list of packets that may or may not be transmitted, on each LAN as indicated, when the HostB pings HostA. For each frame/packet, indicate if it was or was not transmitted on the indicated LAN (True or False).
b. For those that you determine were transmitted (i.e., TRUE), arrange in order of transmission, i.e., indicate the sequence of packet transmission events as they play out on the two LANs.
c. Fill in the fields of the various frames/packets transmitted, e.g., Ethernet source and destination addresses, IP source and destination addresses, etc. for the frames/packets that traverse the two LANs. (Use the following notation for your answer: HostA_eth0, or Router_eth1, HostA_IP, HostB_IP, etc., for broadcast use the hexadecimal notation). Assume the Router interface on LAN1 is eth0 and IP address is IP1 and on LAN2 it is eth1 and IP2

[Transmissions on LAN1]

**ARP Request: sent? True or False**
- eth_src = 
- eth_dst = 
- sender_ip = 
- target_ip =

**ARP Reply: sent? True or False**
- eth_src = 
- eth_dst = 
- sender_ip = 
- target_ip =

**ICMP Echo Request: sent? True or False**
- eth_src = 
- eth_dest = 
- ip_src = 
- ip_dest =

**ICMP Echo Reply: sent? True or False**
- eth_src = 
- eth_dest = 
- ip_src = 
- ip_dest =
[Transmissions on LAN2]

**ARP Request: sent? True or False**
eth_src =
eth_dst =
sender_ip =
target ip =

**ARP Reply: sent? True or False**
eth_src =
eth_dst =
sender_ip =
target ip =

**ICMP Echo Request: sent? True or False**
eth_src =
eth_dest =
ip_src =
ip_dest =

**ICMP Echo Reply: sent? True or False**
eth_src =
eth_dest =
ip_src =
ip_dest =
1. A datagram is sent from Host A on LAN1 to Host B on LAN2 via a bridge B as shown in the figure below. Assume that all ARP caches, routing tables and forwarding tables are up to date. Draw the Ethernet and IP headers of the packet as it flows from Host A over LAN1 via the bridge B and over LAN2 to Host2. Use Eth_HostA, IP_HostA, Eth_Bridge, IP_Bridge, etc. for your addressing scheme. (2pts.)

![Cisco Bridge Diagram](image)

2. Now assume that instead of a bridge we have a router R instead connecting the two LANs as shown below. Repeat problem 11 above with the same assumptions. (2pts.)

![Cisco Router Diagram](image)