1. What is the 48-bit Ethernet address of your computer?

ANS:

Ethernet address of my computer: 20:68:9d:82:74:f2

2. What is the 48-bit destination address in the Ethernet frame? Is this the Ethernet address of gaia.cs.umass.edu? (Hint: the answer is no). What device has this as its Ethernet address? [Note: this is an important question, and one that students sometimes get wrong. Re-read pages 468-469 in the text and make sure you understand the answer here.]

ANS:

Ethernet destination address (6c:b0:ce:99:ea:ca) is not the Ethernet address of gaia.cs.umass.edu. It is the address of my NETGEAR router, which is the link used to get off the subnet.

3. Give the hexadecimal value for the two-byte Frame type field. What upper layer protocol does this correspond to?

ANS:

The hex value for the Frame type field is 0x0800. The bit that is valued to 1 says to not fragment the set.

4. How many bytes from the very start of the Ethernet frame does the ASCII "G" in "GET" appear in the Ethernet frame?

ANS:

The ASCII "G" appears 52 bytes from the start of the ethernet frame. There are 14 B Ethernet frame, and then 20 bytes of IP header followed by 20 bytes of TCP header before the HTTP data is encountered.

5. What is the value of the Ethernet source address? Is this the address of your computer, or of gaia.cs.umass.edu (Hint: the answer is no). What device has this as its Ethernet address?

ANS:

The source address 00:0c:41:45:90:a8 is neither the Ethernet address of gaia.cs.umass.edu nor the address of my computer. It is the address of my Netgear router, which is the link used to get onto my subnet.

6. What is the destination address in the Ethernet frame? Is this the Ethernet address of your computer?

ANS:

The destination address 20:68:9d:82:74:f2 is Ethernet address of my computer.

7. Give the hexadecimal value for the two-byte Frame type field. What upper layer protocol does this correspond to?

ANS:

The hex value for the Frame type field is 0x0800.

8. How many bytes from the very start of the Ethernet frame does the ASCII "O" in "OK" (i.e., the HTTP response code) appear in the Ethernet frame?

ANS:

The o in the ok starts after 104 bits or 13 bytes.

9. Write down the contents of your computer's ARP cache. What is the meaning of each column value?

ANS:

The first column is the internet address of the computer then its physical address and finally what type it is and it is dynamic.

10. What are the hexadecimal values for the source and destination addresses in the Ethernet frame containing the ARP request message?

ANS:

Source: dc:71:44:8b:7e:75, Destination: ff:ff:ff:ff:ff:ff

11. Give the hexadecimal value for the two-byte Ethernet Frame type field. What upper layer protocol does this correspond to?

ANS:

0x0806

12. Download the ARP specification from ftp://ftp.rfc-editor.org/in-notes/std/std37.txt. A readable, detailed discussion of ARP is also at http://www.erg.abdn.ac.uk/users/gorry/course/inet-pages/arp.html.
    a) How many bytes from the very beginning of the Ethernet frame does the ARP opcode field begin?

    ANS:

    It begins 42 bytes from the beginning of the Ethernet frame

    b) What is the value of the opcode field within the ARP-payload part of the Ethernet frame in which an ARP request is made?

    ANS:

    The value of the opcode field within the ARP-payload is 0x0001

c) Does the ARP message contain the IP address of the sender?

ANS:

Yes, the ARP message contains the IP address of the sender.

d) Where in the ARP request does the "question" appear – the Ethernet address of the machine whose corresponding IP address is being queried?

ANS:

The question appears in the mac destination address.

13. Now find the ARP reply that was sent in response to the ARP request.
   a) How many bytes from the very beginning of the Ethernet frame does the ARP opcode field begin?

ANS:

It is 10 bytes from the beginning

b) What is the value of the opcode field within the ARP-payload part of the Ethernet frame in which an ARP response is made?

ANS:

Its 2.

c) Where in the ARP message does the "answer" to the earlier ARP request appear – the IP address of the machine having the Ethernet address whose corresponding IP address is being queried?

ANS:

Sender MAC address: Intel_1e:94:3a (00:11:11:1e:94:3a)

14. What are the hexadecimal values for the source and destination addresses in the Ethernet frame containing the ARP reply message?

ANS:

Source:Intel_1e:94:3a(00:11:11:1e:94:3a) Destination: Belkin_53:95:77 (00:11:50:53:95:77)

15. Open the ethernet-ethereal-trace-1 trace file in http://gaia.cs.umass.edu/wireshark-labs/wireshark-traces.zip. The first and second ARP packets in this trace correspond to an ARP request sent by the computer running Wireshark, and the ARP reply sent to the computer running Wireshark by the computer with the ARP-requested Ethernet address. But there is yet another computer on this network, as indicated by packet 6 – another ARP request. Why is there no ARP reply (sent in response to the ARP request in packet 6) in the packet trace?

ANS:

Since the ip address of the computer and arp request do not match. The computer will not receive the request.