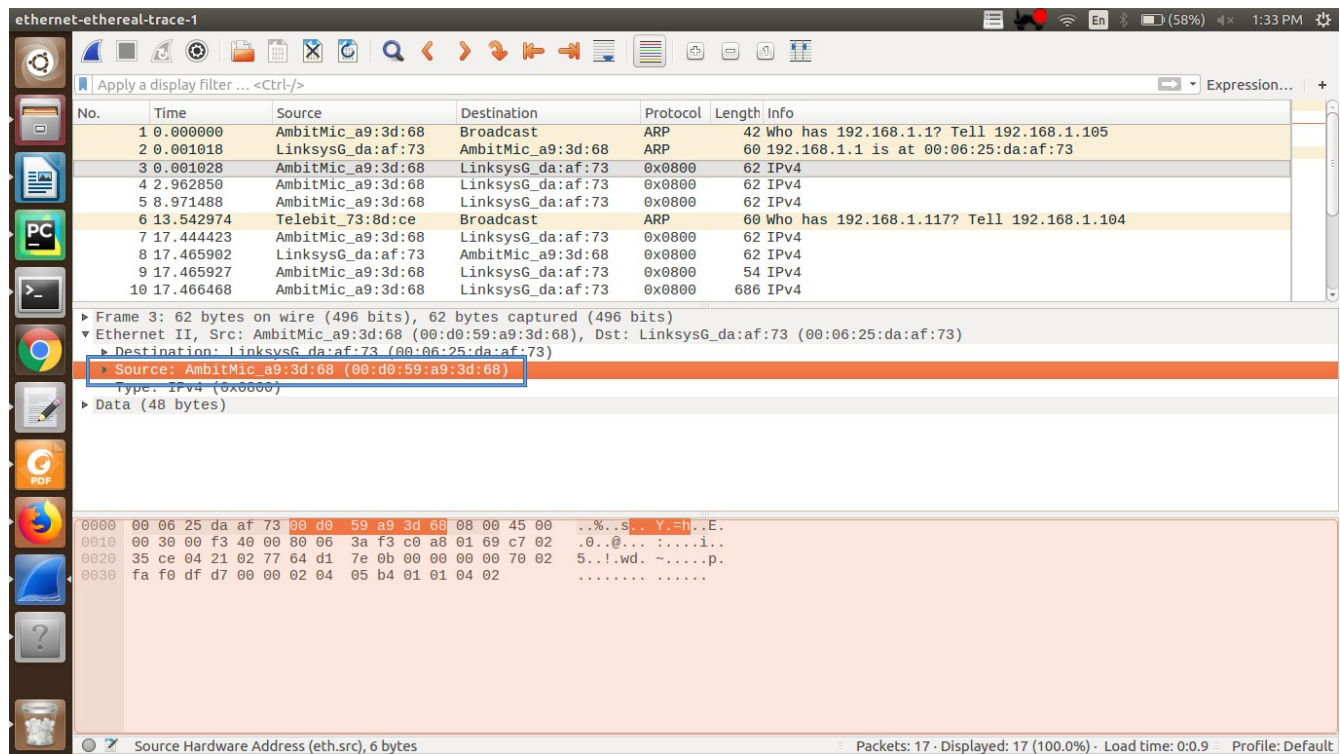Q1 - What is the 48-bit Ethernet address of your computer?
Ans: Ethernet Address of computer: 00:d0:59:a9:3d:68

Q2. 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?
Ans: 1) Destination address of ethernet frame: 00:06:25:da:af:73
2) No, this is not the ethernet address of gaia.cs.umass.edu.
3) It is the ethernet address of the LinkSys 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: a) Hexadecimal value in frame type field: 0x0800

b) It corresponds to IPv4 network layer protocol

4. How many bytes from the very start of the Ethernet frame does the ASCII "G" in "GET" appear in the Ethernet frame?
Ans: 54 bytes
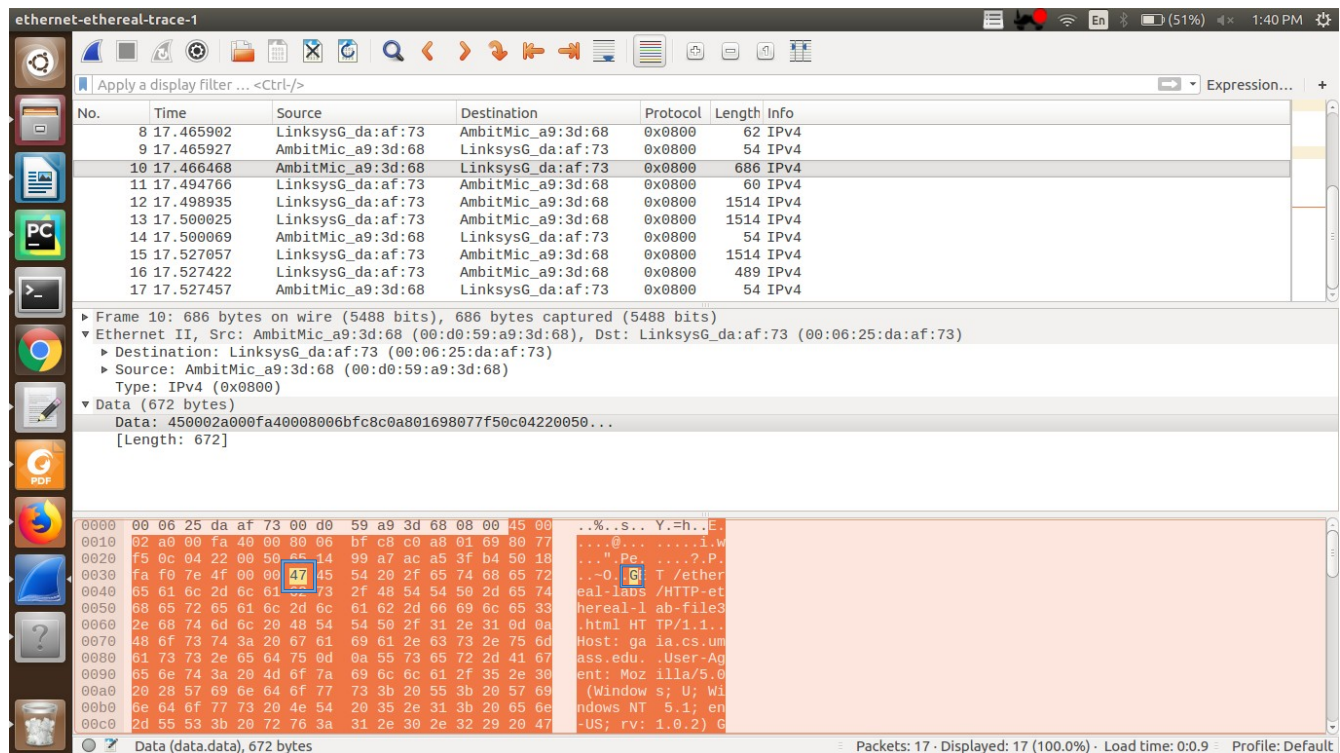
5. What is the value of the Ethernet source address? Is this the address of your computer, or of gaia.cs.umass.edu (Hint: the answer is no). What device has this as its Ethernet address?
Ans: 1) Ethernet Source Address: 00:06:25:da:af:73
2) No, this is not the IP address of gaia.cs.umass.edu
3) No, it is the IP address of gateway router

6. What is the destination address in the Ethernet frame? Is this the Ethernet address
of your computer?
Ans: Destination address of the ethernet frame: 00:d0:59:a9:3d:68, Yes this is the 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: 1) Hexadecimal value of type field: 0x0080
2) It corresponds to the IPv4 network layer protocol
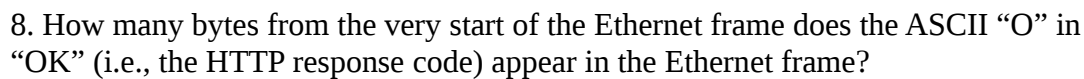
8. How many bytes from the very start of the Ethernet frame does the ASCII "O" in
"OK" (i.e., the HTTP response code) appear in the Ethernet frame?
Ans: "O" appears 52 bytes from the start of the ethernet frame.

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

Ans: Source: 00:d0:59:a9:3d:68

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: a) Type: 0x0806
b) It corresponds to ARP protocol
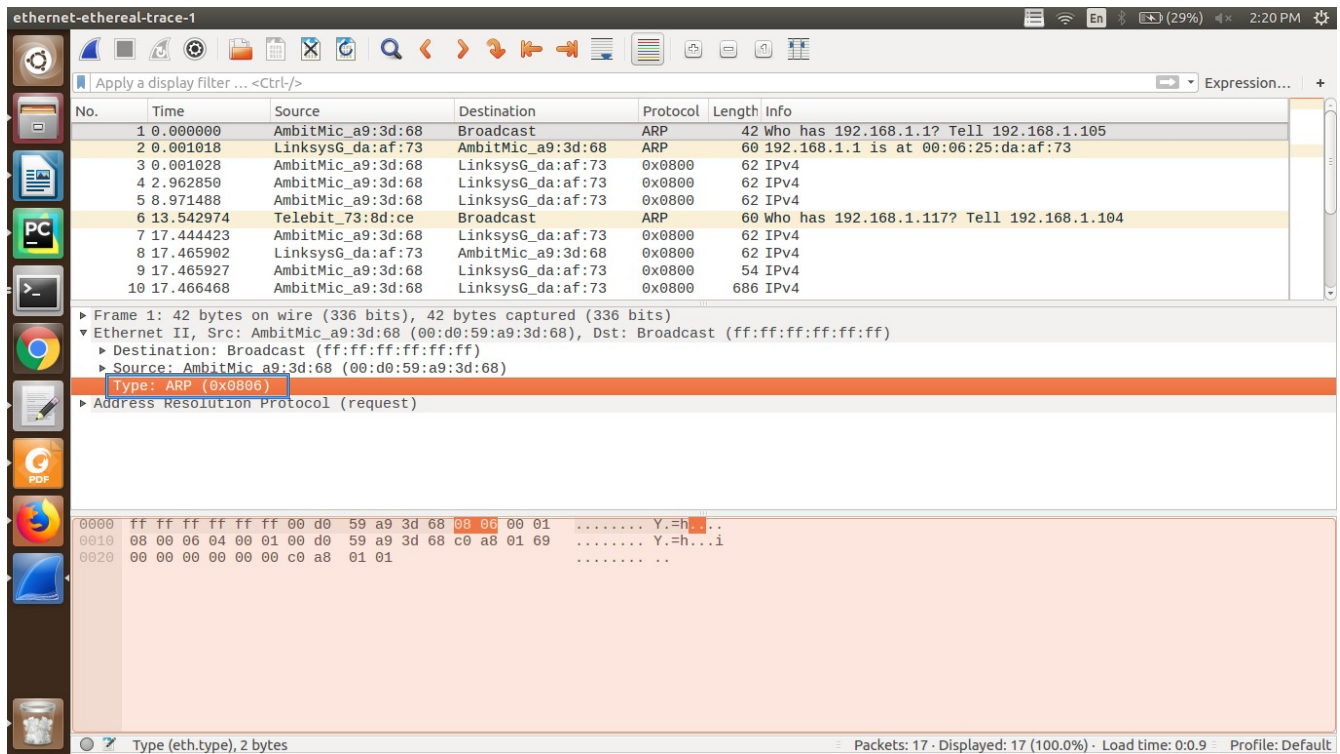
12) a) How many bytes from the very beginning of the Ethernet frame does the ARP opcode field begin?
Ans: 20 bytes from the beginning of the ethernet frame

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 OpCode field is 1.

c) Does the ARP message contain the IP address of the sender?
Ans: Yes, the ARP message contain 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: In the Target IP address field of the ARP request The field "Target MAC address" is set to 00:00:00:00:00:00 to question the machine whose corresponding IP address (192.168.1.1) is being queried.

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: The ARP Opcode for the given ethernet frame begins at 20th byte.

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: Value of Opcode in the ARP payload part: 0x002 (Reply)

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: The Answer to the earlier ARP request appear in the Sender MAC address of the ARP field i.e. 00:06:25:da:af:73

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

Ans: Source address in the Ethernet frame: 00:06:25:da:af:73

Destination Address in the Ethernet frame: 00:d0:59:a9:3d:68

Q15) Why is there no ARP reply (sent in response to the ARP request in packet 6) in the packet trace? Ans: Because we are not at the sender and the reply of the ARP request is sent to the Sender , which in this case is 00:80:ad:73:8d:ce. Whereas our computer has sender address 00:d0:59:a9:3d:68.