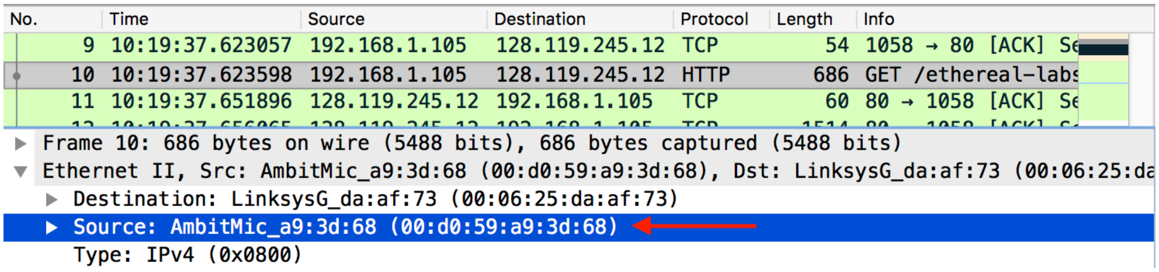
Class: CS-372
Term: Fall 2017
Author: Jon-Eric Cook
Date: December 3, 2017
Lab: #5

NOTE:
I was unable to run Wireshark live on my computer. Due to this, I downloaded the provided zip file and used the ***ethernet—etherreal-trace-1*** file to answer the questions of this lab.

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

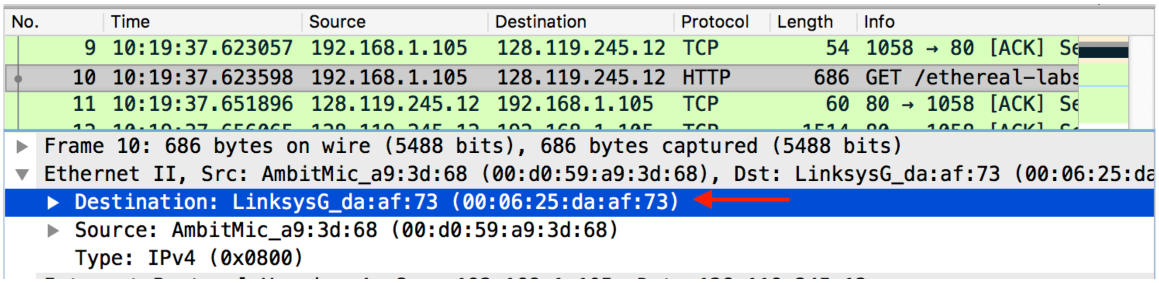
Answer:
00:d0:59:a9:3d:68
See screenshot below.



```
No.   Time             Source          Destination     Protocol  Length  Info
    9 10:19:37.623057  192.168.1.105   128.119.245.12  TCP           54  1058 → 80 [ACK] Se
   10 10:19:37.623598  192.168.1.105   128.119.245.12  HTTP         686  GET /ethereal-labs
   11 10:19:37.651896  128.119.245.12  192.168.1.105   TCP           60  80 → 1058 [ACK] Se
   12 10:19:37.656065  128.119.245.12  192.168.1.105   TCP         1514  80 → 1058 [ACK] Se
▶ Frame 10: 686 bytes on wire (5488 bits), 686 bytes captured (5488 bits)
▼ Ethernet II, Src: AmbitMic_a9:3d:68 (00:d0:59:a9:3d:68), Dst: LinksysG_da:af:73 (00:06:25:da
  ▶ Destination: LinksysG_da:af:73 (00:06:25:da:af:73)
  ▶ Source: AmbitMic_a9:3d:68 (00:d0:59:a9:3d:68)
    Type: IPv4 (0x0800)
```

2) What is the 48-bit destination address in the Ethernet fame? Is this the Ethernet address of gaia.cs.umass.edu? What device has this as its Ethernet address?

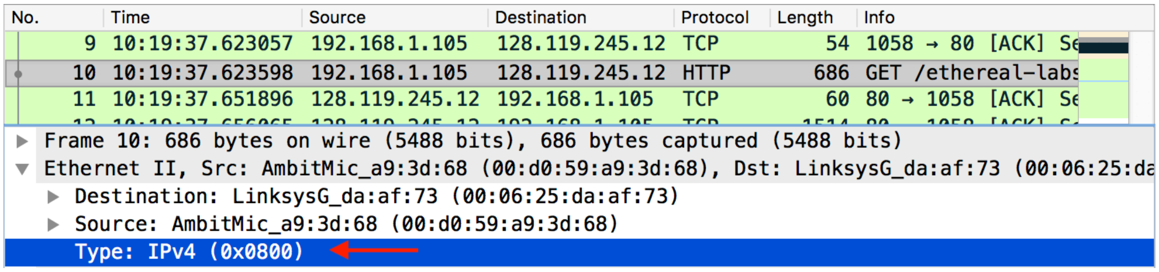
Answer:
00:06:25:da:af:73
No
It is the Mac address for my router or internet gateway address.
See screenshot below.



```
No.   Time             Source          Destination     Protocol  Length  Info
    9 10:19:37.623057  192.168.1.105   128.119.245.12  TCP           54  1058 → 80 [ACK] Se
   10 10:19:37.623598  192.168.1.105   128.119.245.12  HTTP         686  GET /ethereal-labs
   11 10:19:37.651896  128.119.245.12  192.168.1.105   TCP           60  80 → 1058 [ACK] Se
   12 10:19:37.656065  128.119.245.12  192.168.1.105   TCP         1514  80 → 1058 [ACK] Se
▶ Frame 10: 686 bytes on wire (5488 bits), 686 bytes captured (5488 bits)
▼ Ethernet II, Src: AmbitMic_a9:3d:68 (00:d0:59:a9:3d:68), Dst: LinksysG_da:af:73 (00:06:25:da
  ▶ Destination: LinksysG_da:af:73 (00:06:25:da:af:73)
  ▶ Source: AmbitMic_a9:3d:68 (00:d0:59:a9:3d:68)
    Type: IPv4 (0x0800)
▶ Internet Protocol Version 4, Src: 192.168.1.105, Dst: 128.119.245.12
```

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

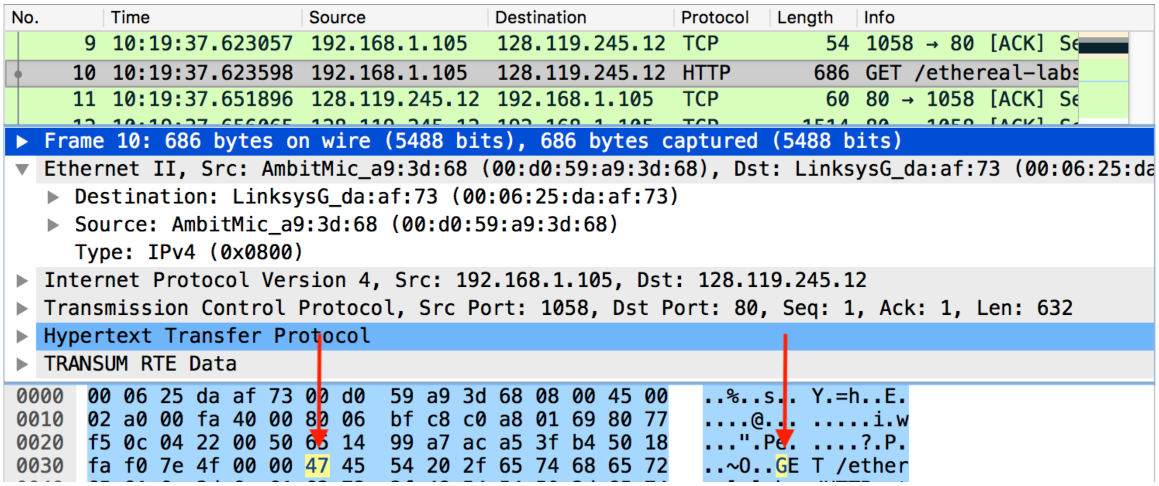
Answer:
IPv4 (0x0800)
See screenshot below.



```
No.   Time             Source          Destination     Protocol  Length  Info
   9  10:19:37.623057  192.168.1.105   128.119.245.12  TCP           54  1058 → 80 [ACK] Se
  10  10:19:37.623598  192.168.1.105   128.119.245.12  HTTP         686  GET /ethereal-labs
  11  10:19:37.651896  128.119.245.12  192.168.1.105   TCP           60  80 → 1058 [ACK] Se
▶ Frame 10: 686 bytes on wire (5488 bits), 686 bytes captured (5488 bits)
▼ Ethernet II, Src: AmbitMic_a9:3d:68 (00:d0:59:a9:3d:68), Dst: LinksysG_da:af:73 (00:06:25:da
    ▶ Destination: LinksysG_da:af:73 (00:06:25:da:af:73)
    ▶ Source: AmbitMic_a9:3d:68 (00:d0:59:a9:3d:68)
      Type: IPv4 (0x0800)
```

4) How many bytes from the very start of the Ethernet frame does the ASCII “G” in “GET” appear in the Ethernet frame?

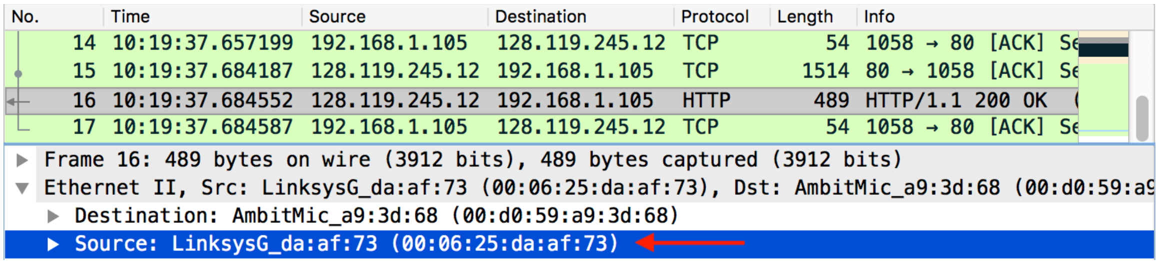
Answer:
54 bytes
See screenshot below.



```
No.   Time             Source          Destination     Protocol  Length  Info
   9  10:19:37.623057  192.168.1.105   128.119.245.12  TCP           54  1058 → 80 [ACK] Se
  10  10:19:37.623598  192.168.1.105   128.119.245.12  HTTP         686  GET /ethereal-labs
  11  10:19:37.651896  128.119.245.12  192.168.1.105   TCP           60  80 → 1058 [ACK] Se
▶ Frame 10: 686 bytes on wire (5488 bits), 686 bytes captured (5488 bits)
▼ Ethernet II, Src: AmbitMic_a9:3d:68 (00:d0:59:a9:3d:68), Dst: LinksysG_da:af:73 (00:06:25:da
    ▶ Destination: LinksysG_da:af:73 (00:06:25:da:af:73)
    ▶ Source: AmbitMic_a9:3d:68 (00:d0:59:a9:3d:68)
      Type: IPv4 (0x0800)
▶ Internet Protocol Version 4, Src: 192.168.1.105, Dst: 128.119.245.12
▶ Transmission Control Protocol, Src Port: 1058, Dst Port: 80, Seq: 1, Ack: 1, Len: 632
▶ Hypertext Transfer Protocol
▶ TRANSUM RTE Data
0000  00 06 25 da af 73 00 d0  59 a9 3d 68 08 00 45 00   ..%..s.. Y.=h..E.
0010  02 a0 00 fa 40 00 80 06  bf c8 c0 a8 01 69 80 77   ....@... .....i.w
0020  f5 0c 04 22 00 50 65 14  99 a7 ac a5 3f b4 50 18   ...".Pe. ....?.P.
0030  fa f0 7e 4f 00 00 47 45  54 20 2f 65 74 68 65 72   ..~O..GE T /ether
```

5) What is the value of the Ethernet source address? Is this the address of your computer, or of gaia.cs.umass.edu? What device has this as its Ethernet address?

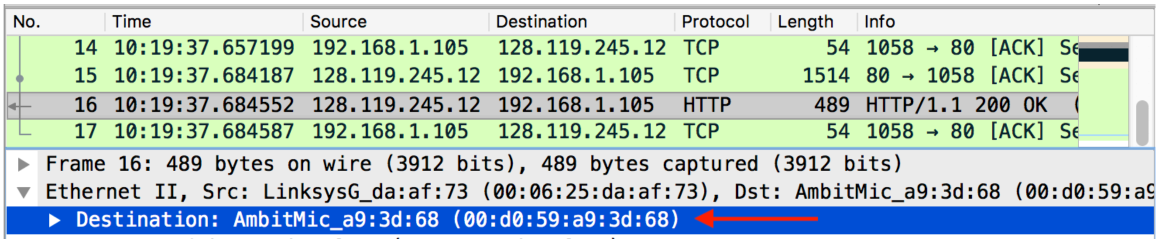
Answer:
00:06:25:da:af:73
Neither
My router has this as its Ethernet address.
See screenshot below.



```
No.   Time             Source          Destination     Protocol  Length  Info
  14  10:19:37.657199  192.168.1.105   128.119.245.12  TCP           54  1058 → 80 [ACK] Se
  15  10:19:37.684187  128.119.245.12  192.168.1.105   TCP         1514  80 → 1058 [ACK] Se
  16  10:19:37.684552  128.119.245.12  192.168.1.105   HTTP         489  HTTP/1.1 200 OK  (
  17  10:19:37.684587  192.168.1.105   128.119.245.12  TCP           54  1058 → 80 [ACK] Se
▶ Frame 16: 489 bytes on wire (3912 bits), 489 bytes captured (3912 bits)
▼ Ethernet II, Src: LinksysG_da:af:73 (00:06:25:da:af:73), Dst: AmbitMic_a9:3d:68 (00:d0:59:a9
    ▶ Destination: AmbitMic_a9:3d:68 (00:d0:59:a9:3d:68)
    ▶ Source: LinksysG_da:af:73 (00:06:25:da:af:73)
```

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

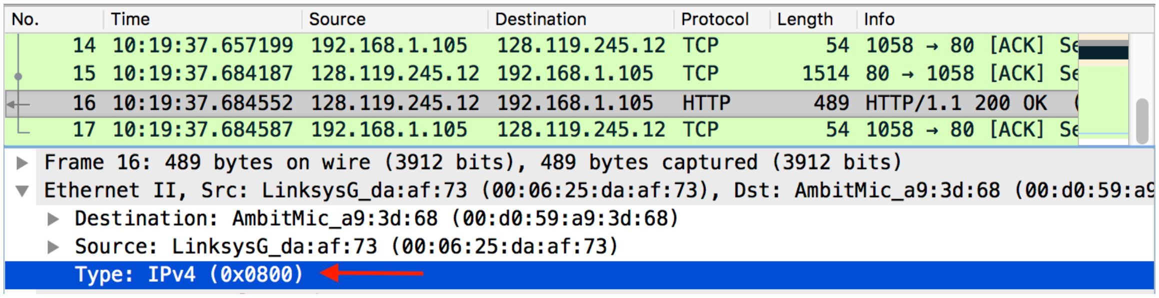
Answer:
00:d0:59:a9:3d:68
Yes
See screenshot below.



```
No.   Time             Source          Destination     Protocol  Length  Info
   14 10:19:37.657199  192.168.1.105   128.119.245.12  TCP           54  1058 → 80 [ACK] Se
   15 10:19:37.684187  128.119.245.12  192.168.1.105   TCP         1514  80 → 1058 [ACK] Se
   16 10:19:37.684552  128.119.245.12  192.168.1.105   HTTP         489  HTTP/1.1 200 OK  (
   17 10:19:37.684587  192.168.1.105   128.119.245.12  TCP           54  1058 → 80 [ACK] Se
▶ Frame 16: 489 bytes on wire (3912 bits), 489 bytes captured (3912 bits)
▼ Ethernet II, Src: LinksysG_da:af:73 (00:06:25:da:af:73), Dst: AmbitMic_a9:3d:68 (00:d0:59:a9
  ▶ Destination: AmbitMic_a9:3d:68 (00:d0:59:a9:3d:68)
```

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

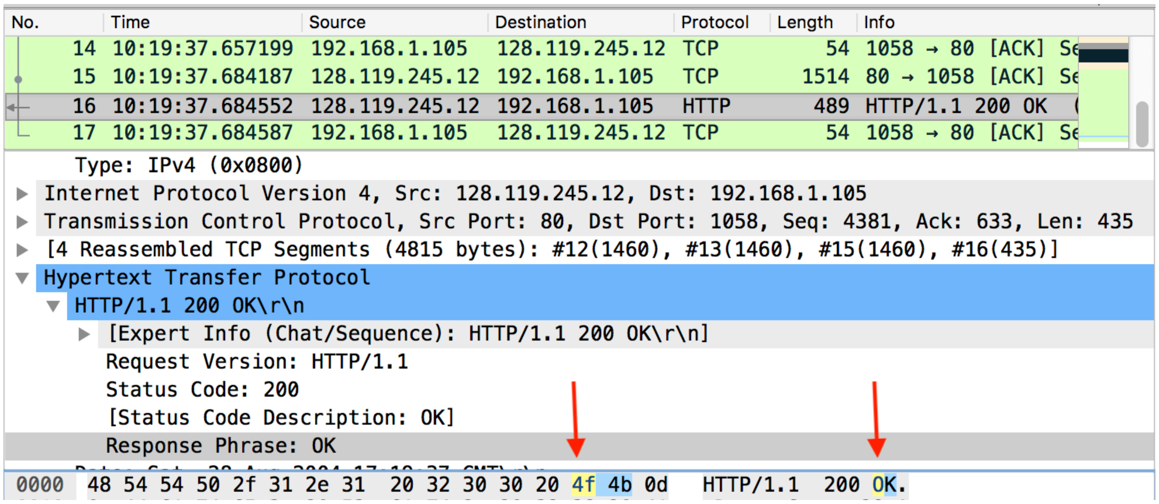
Answer:
Type: IPv4 (0x0800)
See screenshot below.



```
No.   Time             Source          Destination     Protocol  Length  Info
   14 10:19:37.657199  192.168.1.105   128.119.245.12  TCP           54  1058 → 80 [ACK] Se
   15 10:19:37.684187  128.119.245.12  192.168.1.105   TCP         1514  80 → 1058 [ACK] Se
   16 10:19:37.684552  128.119.245.12  192.168.1.105   HTTP         489  HTTP/1.1 200 OK  (
   17 10:19:37.684587  192.168.1.105   128.119.245.12  TCP           54  1058 → 80 [ACK] Se
▶ Frame 16: 489 bytes on wire (3912 bits), 489 bytes captured (3912 bits)
▼ Ethernet II, Src: LinksysG_da:af:73 (00:06:25:da:af:73), Dst: AmbitMic_a9:3d:68 (00:d0:59:a9
  ▶ Destination: AmbitMic_a9:3d:68 (00:d0:59:a9:3d:68)
  ▶ Source: LinksysG_da:af:73 (00:06:25:da:af:73)
    Type: IPv4 (0x0800)
```

8) How many bytes from the very start of the Ethernet frame does the ASCII “O” in “OK” appear in the Ethernet frame?

Answer:
4f
See screenshot below.



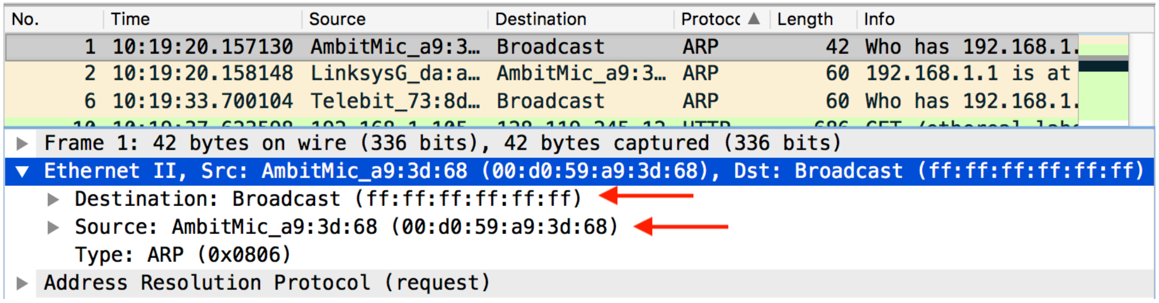
```
No.   Time             Source          Destination     Protocol  Length  Info
   14 10:19:37.657199  192.168.1.105   128.119.245.12  TCP           54  1058 → 80 [ACK] Se
   15 10:19:37.684187  128.119.245.12  192.168.1.105   TCP         1514  80 → 1058 [ACK] Se
   16 10:19:37.684552  128.119.245.12  192.168.1.105   HTTP         489  HTTP/1.1 200 OK  (
   17 10:19:37.684587  192.168.1.105   128.119.245.12  TCP           54  1058 → 80 [ACK] Se
    Type: IPv4 (0x0800)
▶ Internet Protocol Version 4, Src: 128.119.245.12, Dst: 192.168.1.105
▶ Transmission Control Protocol, Src Port: 80, Dst Port: 1058, Seq: 4381, Ack: 633, Len: 435
▶ [4 Reassembled TCP Segments (4815 bytes): #12(1460), #13(1460), #15(1460), #16(435)]
▼ Hypertext Transfer Protocol
  ▼ HTTP/1.1 200 OK\r\n
    ▶ [Expert Info (Chat/Sequence): HTTP/1.1 200 OK\r\n]
      Request Version: HTTP/1.1
      Status Code: 200
      [Status Code Description: OK]
      Response Phrase: OK
0000  48 54 54 50 2f 31 2e 31  20 32 30 30 20 4f 4b 0d   HTTP/1.1  200 OK.
```

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

Answer:
I was unable to run Wireshark live on my computer. Due to this, I downloaded the provided zip file and used the ***ethernet—etherreal-trace-1*** file to answer the questions of this lab.

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

Answer:
Source: 00:d0:59:a9:3d:68
Destination: ff:ff:ff:ff:ff:ff
See screenshot below.

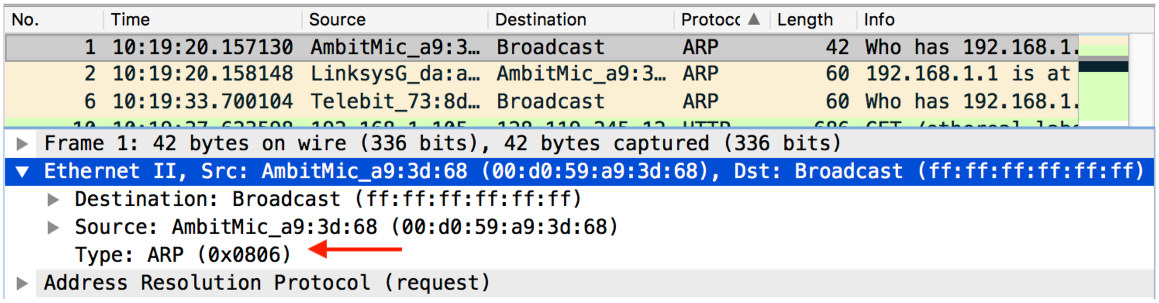


No.	Time	Source	Destination	Protocc ▲	Length	Info
1	10:19:20.157130	AmbitMic_a9:3…	Broadcast	ARP	42	Who has 192.168.1.
2	10:19:20.158148	LinksysG_da:a…	AmbitMic_a9:3…	ARP	60	192.168.1.1 is at
6	10:19:33.700104	Telebit_73:8d…	Broadcast	ARP	60	Who has 192.168.1.

```
▶ Frame 1: 42 bytes on wire (336 bits), 42 bytes captured (336 bits)
▼ Ethernet II, Src: AmbitMic_a9:3d:68 (00:d0:59:a9:3d:68), Dst: Broadcast (ff:ff:ff:ff:ff:ff)
    ▶ Destination: Broadcast (ff:ff:ff:ff:ff:ff)
    ▶ Source: AmbitMic_a9:3d:68 (00:d0:59:a9:3d:68)
      Type: ARP (0x0806)
▶ Address Resolution Protocol (request)
```

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

Answer:
Type: ARP (0x0806)
See screenshot below.

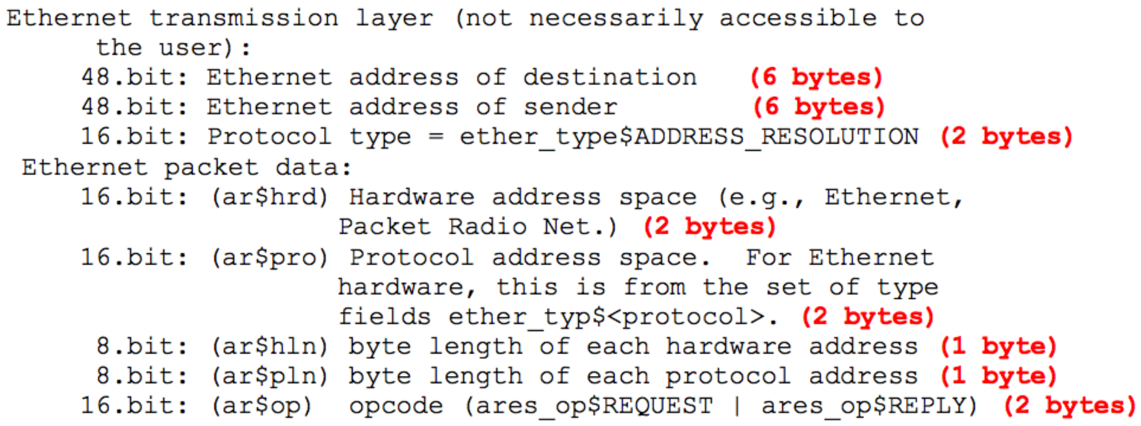


No.	Time	Source	Destination	Protocc ▲	Length	Info
1	10:19:20.157130	AmbitMic_a9:3…	Broadcast	ARP	42	Who has 192.168.1.
2	10:19:20.158148	LinksysG_da:a…	AmbitMic_a9:3…	ARP	60	192.168.1.1 is at
6	10:19:33.700104	Telebit_73:8d…	Broadcast	ARP	60	Who has 192.168.1.

```
▶ Frame 1: 42 bytes on wire (336 bits), 42 bytes captured (336 bits)
▼ Ethernet II, Src: AmbitMic_a9:3d:68 (00:d0:59:a9:3d:68), Dst: Broadcast (ff:ff:ff:ff:ff:ff)
    ▶ Destination: Broadcast (ff:ff:ff:ff:ff:ff)
    ▶ Source: AmbitMic_a9:3d:68 (00:d0:59:a9:3d:68)
      Type: ARP (0x0806)
▶ Address Resolution Protocol (request)
```

12)
A) How many bytes from the very beginning of the Ethernet frame does the ARP opcode field begin?

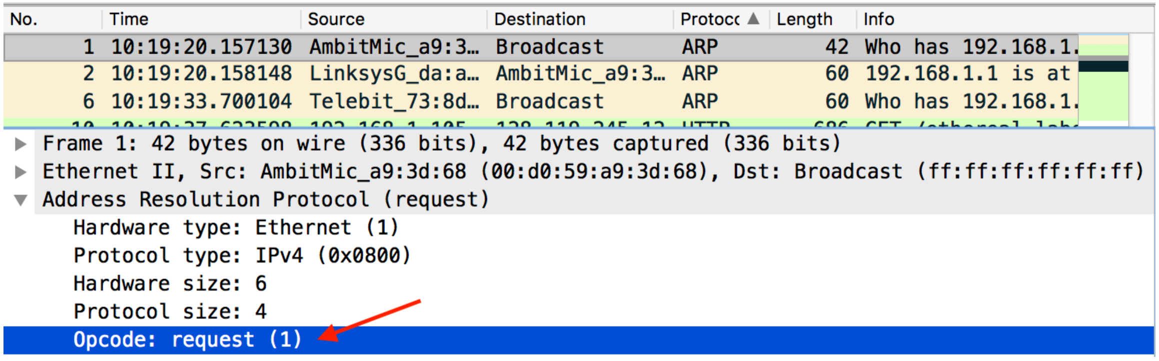
Answer:
20 bytes
See screenshot below.



```
Ethernet transmission layer (not necessarily accessible to
      the user):
     48.bit: Ethernet address of destination   (6 bytes)
     48.bit: Ethernet address of sender         (6 bytes)
     16.bit: Protocol type = ether_type$ADDRESS_RESOLUTION (2 bytes)
 Ethernet packet data:
     16.bit: (ar$hrd) Hardware address space (e.g., Ethernet,
                      Packet Radio Net.)  (2 bytes)
     16.bit: (ar$pro) Protocol address space.  For Ethernet
                      hardware, this is from the set of type
                      fields ether_typ$<protocol>.  (2 bytes)
      8.bit: (ar$hln) byte length of each hardware address (1 byte)
      8.bit: (ar$pln) byte length of each protocol address (1 byte)
     16.bit: (ar$op)  opcode (ares_op$REQUEST | ares_op$REPLY)  (2 bytes)
```

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?

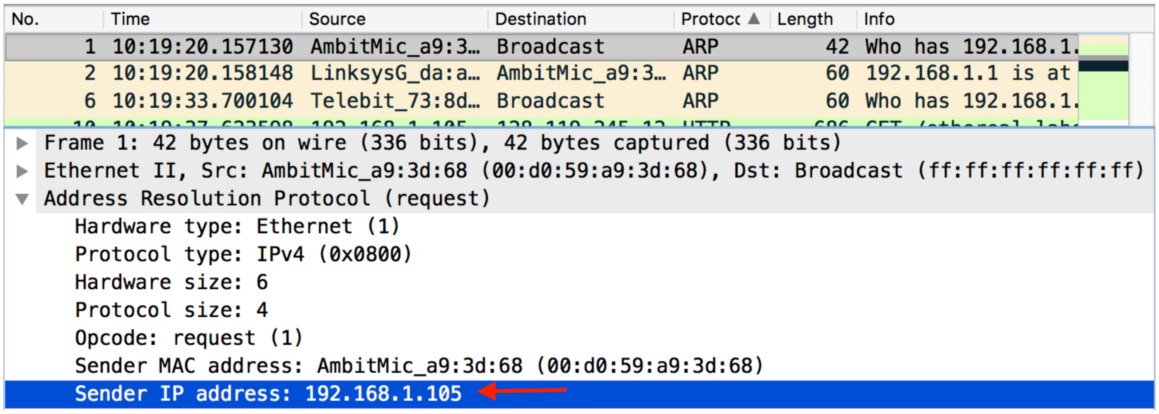
Answer:
Opcode: request (1)
See screenshot below.



```
No.   Time              Source            Destination       Protocc ▲ Length  Info
    1 10:19:20.157130  AmbitMic_a9:3…  Broadcast         ARP            42  Who has 192.168.1.
    2 10:19:20.158148  LinksysG_da:a…  AmbitMic_a9:3…  ARP            60  192.168.1.1 is at
    6 10:19:33.700104  Telebit_73:8d…  Broadcast         ARP            60  Who has 192.168.1.
   10 10:19:37.633598  192.168.1.105   128.119.245.12    HTTP          686  GET /ethereal-lab
▶ Frame 1: 42 bytes on wire (336 bits), 42 bytes captured (336 bits)
▶ Ethernet II, Src: AmbitMic_a9:3d:68 (00:d0:59:a9:3d:68), Dst: Broadcast (ff:ff:ff:ff:ff:ff)
▼ Address Resolution Protocol (request)
    Hardware type: Ethernet (1)
    Protocol type: IPv4 (0x0800)
    Hardware size: 6
    Protocol size: 4
    Opcode: request (1)
```

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

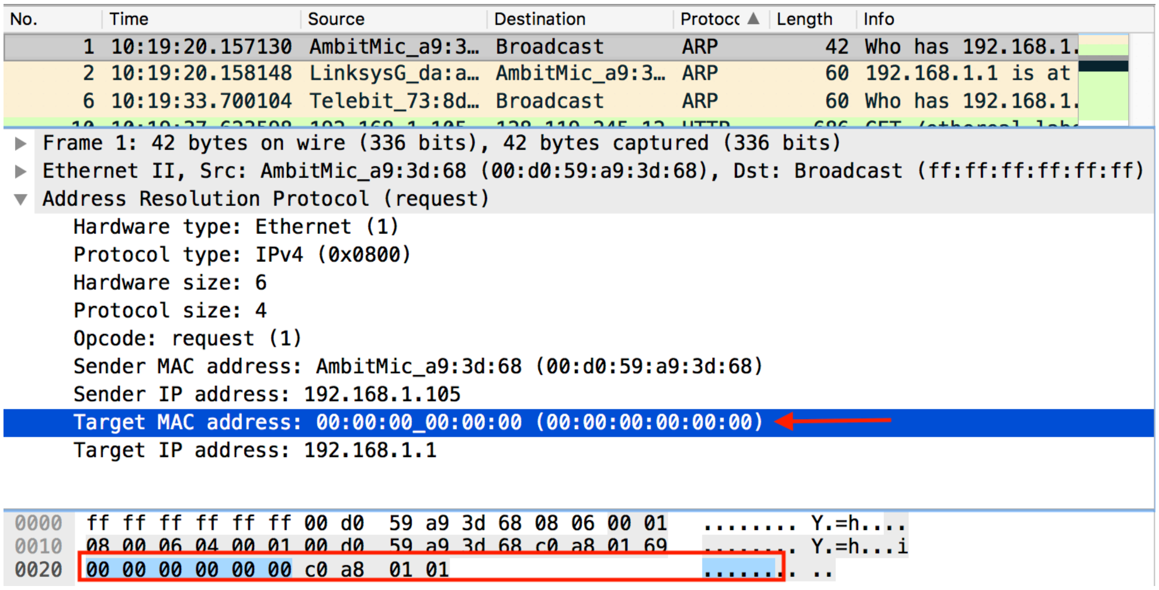
Answer:
Yes - 192.168.1.105
See screenshot below.



```
No.   Time             Source            Destination       Protocol  Length  Info
  1   10:19:20.157130  AmbitMic_a9:3…    Broadcast         ARP           42  Who has 192.168.1.
  2   10:19:20.158148  LinksysG_da:a…    AmbitMic_a9:3…    ARP           60  192.168.1.1 is at
  6   10:19:33.700104  Telebit_73:8d…    Broadcast         ARP           60  Who has 192.168.1.
 10   10:19:37.632598  192.168.1.105     128.119.245.12    HTTP         686  GET /ethereal-lab
▶ Frame 1: 42 bytes on wire (336 bits), 42 bytes captured (336 bits)
▶ Ethernet II, Src: AmbitMic_a9:3d:68 (00:d0:59:a9:3d:68), Dst: Broadcast (ff:ff:ff:ff:ff:ff)
▼ Address Resolution Protocol (request)
    Hardware type: Ethernet (1)
    Protocol type: IPv4 (0x0800)
    Hardware size: 6
    Protocol size: 4
    Opcode: request (1)
    Sender MAC address: AmbitMic_a9:3d:68 (00:d0:59:a9:3d:68)
    Sender IP address: 192.168.1.105
```

D) Where in the ARP request does the “question” appear - the Ethernet address of the machine whose corresponding IP address is being queried?

Answer:
In the Target MAC address field in the form of 00:00:00:00:00:00
See screenshot below.

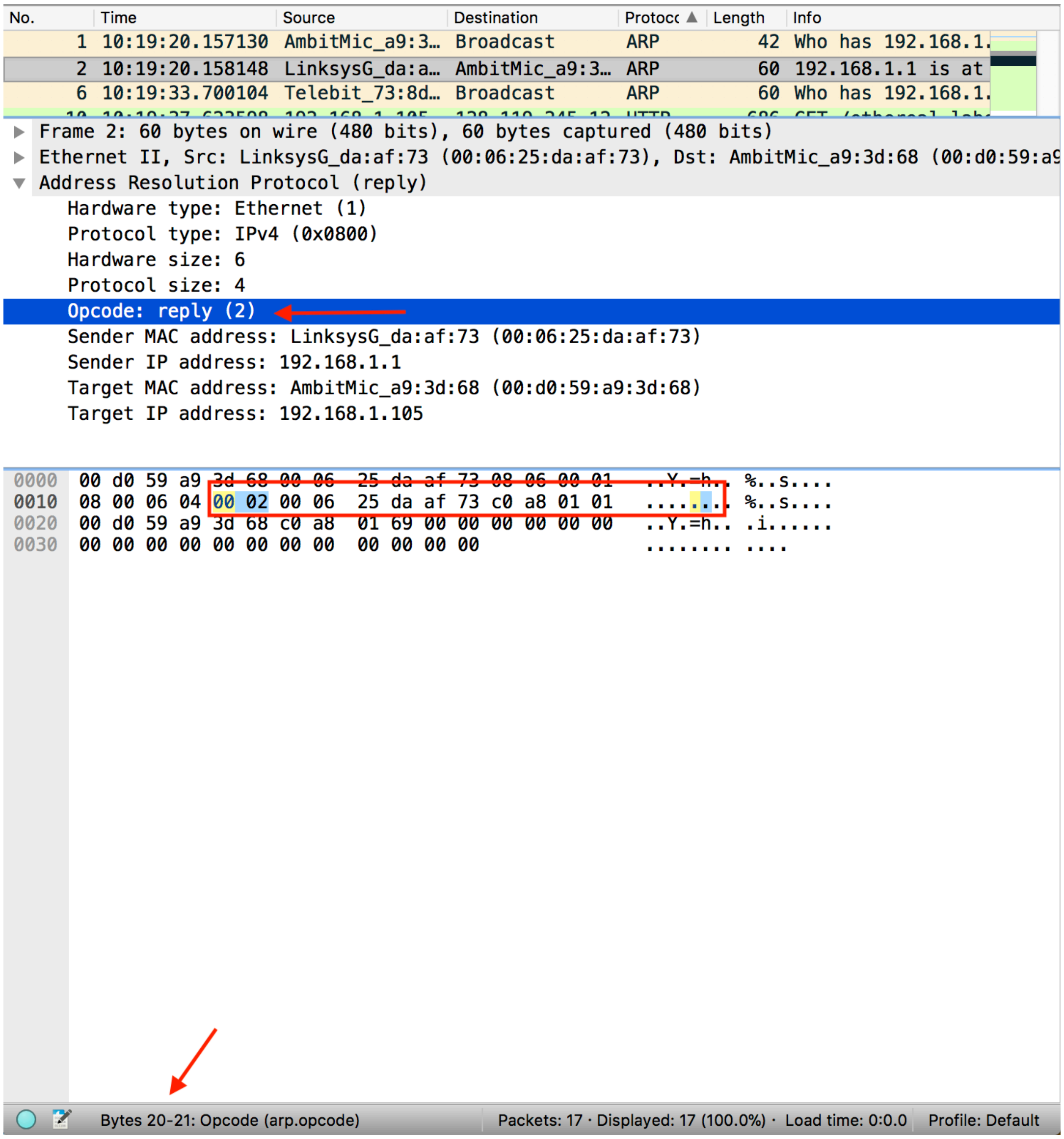


```
No.   Time             Source            Destination       Protocol  Length  Info
  1   10:19:20.157130  AmbitMic_a9:3…    Broadcast         ARP           42  Who has 192.168.1.
  2   10:19:20.158148  LinksysG_da:a…    AmbitMic_a9:3…    ARP           60  192.168.1.1 is at
  6   10:19:33.700104  Telebit_73:8d…    Broadcast         ARP           60  Who has 192.168.1.
 10   10:19:37.632598  192.168.1.105     128.119.245.12    HTTP         686  GET /ethereal-lab
▶ Frame 1: 42 bytes on wire (336 bits), 42 bytes captured (336 bits)
▶ Ethernet II, Src: AmbitMic_a9:3d:68 (00:d0:59:a9:3d:68), Dst: Broadcast (ff:ff:ff:ff:ff:ff)
▼ Address Resolution Protocol (request)
    Hardware type: Ethernet (1)
    Protocol type: IPv4 (0x0800)
    Hardware size: 6
    Protocol size: 4
    Opcode: request (1)
    Sender MAC address: AmbitMic_a9:3d:68 (00:d0:59:a9:3d:68)
    Sender IP address: 192.168.1.105
    Target MAC address: 00:00:00_00:00:00 (00:00:00:00:00:00)
    Target IP address: 192.168.1.1

0000  ff ff ff ff ff ff 00 d0  59 a9 3d 68 08 06 00 01   ........ Y.=h....
0010  08 00 06 04 00 01 00 d0  59 a9 3d 68 c0 a8 01 69   ........ Y.=h...i
0020  00 00 00 00 00 00 c0 a8  01 01                     ........ ..
```

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?

Answer:
20 bytes
See screenshot below.



```
No.     Time              Source              Destination         Protocc ▲  Length  Info
     1  10:19:20.157130   AmbitMic_a9:3…      Broadcast           ARP            42  Who has 192.168.1.
     2  10:19:20.158148   LinksysG_da:a…      AmbitMic_a9:3…      ARP            60  192.168.1.1 is at
     6  10:19:33.700104   Telebit_73:8d…      Broadcast           ARP            60  Who has 192.168.1.
    10  10:19:37.633598   192.168.1.105       128.119.245.12      HTTP          686  GET /ethereal-lab
```

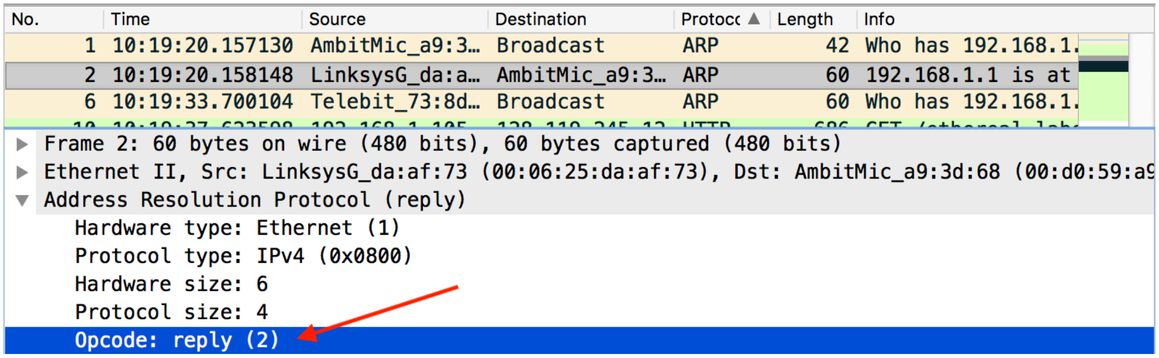
```
▶ Frame 2: 60 bytes on wire (480 bits), 60 bytes captured (480 bits)
▶ Ethernet II, Src: LinksysG_da:af:73 (00:06:25:da:af:73), Dst: AmbitMic_a9:3d:68 (00:d0:59:a9
▼ Address Resolution Protocol (reply)
    Hardware type: Ethernet (1)
    Protocol type: IPv4 (0x0800)
    Hardware size: 6
    Protocol size: 4
    Opcode: reply (2)
    Sender MAC address: LinksysG_da:af:73 (00:06:25:da:af:73)
    Sender IP address: 192.168.1.1
    Target MAC address: AmbitMic_a9:3d:68 (00:d0:59:a9:3d:68)
    Target IP address: 192.168.1.105
```

```
0000  00 d0 59 a9 3d 68 00 06  25 da af 73 08 06 00 01   ..Y.=h.. %..s....
0010  08 00 06 04 00 02 00 06  25 da af 73 c0 a8 01 01   ........ %..s....
0020  00 d0 59 a9 3d 68 c0 a8  01 69 00 00 00 00 00 00   ..Y.=h.. .i......
0030  00 00 00 00 00 00 00 00  00 00 00 00               ........ ....
```

Bytes 20-21: Opcode (arp.opcode)   Packets: 17 · Displayed: 17 (100.0%) · Load time: 0:0.0   Profile: Default

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?

Answer:
Opcode: reply (2)
See screenshot below.

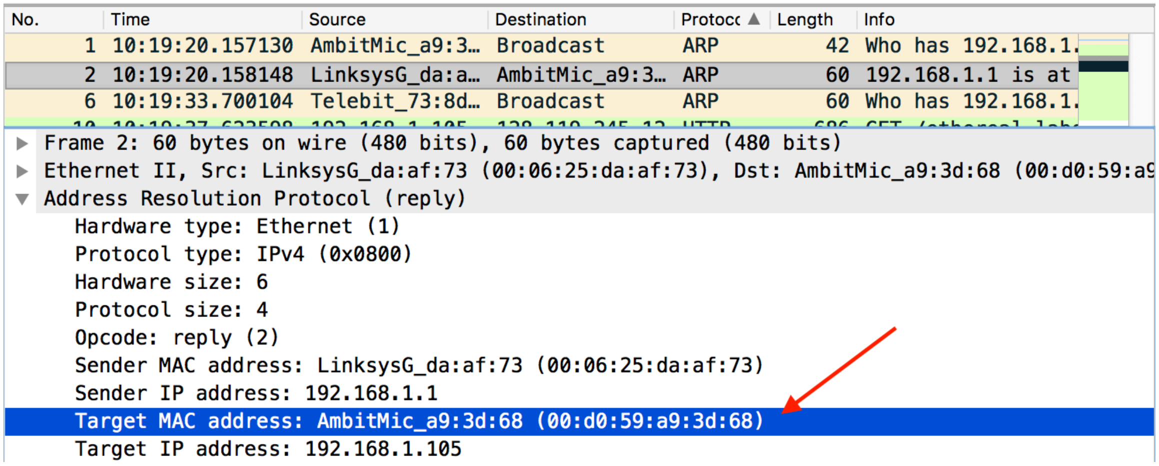


No.	Time	Source	Destination	Protocc ▲	Length	Info
1	10:19:20.157130	AmbitMic_a9:3…	Broadcast	ARP	42	Who has 192.168.1.
2	10:19:20.158148	LinksysG_da:a…	AmbitMic_a9:3…	ARP	60	192.168.1.1 is at
6	10:19:33.700104	Telebit_73:8d…	Broadcast	ARP	60	Who has 192.168.1.
10	10:19:37.633598	192.168.1.105	128.119.245.12	HTTP	686	GET /ethereal-lab

```
▶ Frame 2: 60 bytes on wire (480 bits), 60 bytes captured (480 bits)
▶ Ethernet II, Src: LinksysG_da:af:73 (00:06:25:da:af:73), Dst: AmbitMic_a9:3d:68 (00:d0:59:a9
▼ Address Resolution Protocol (reply)
    Hardware type: Ethernet (1)
    Protocol type: IPv4 (0x0800)
    Hardware size: 6
    Protocol size: 4
    Opcode: reply (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?

Answer:
The Target MAC address was queried from 00:00:00:00:00:00 to 00:d0:59:a9:3d:68.
Also, the Target IP address changed from 192.168.1.1 to 192.168.1.105.
See screenshot below.

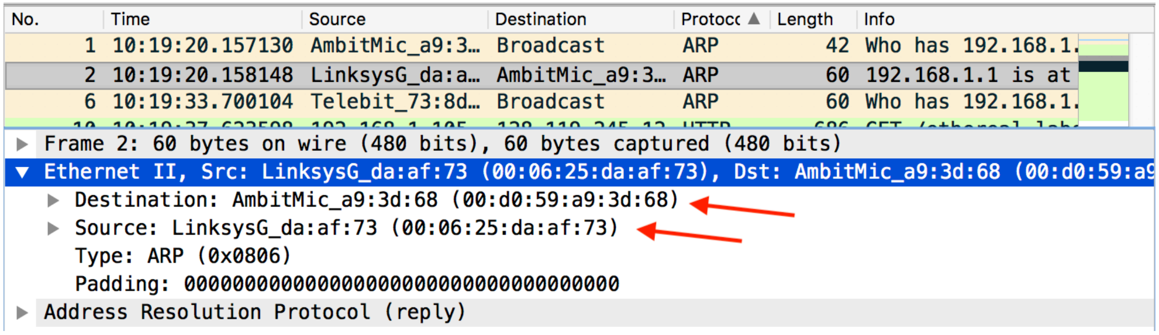


No.	Time	Source	Destination	Protocc ▲	Length	Info
1	10:19:20.157130	AmbitMic_a9:3…	Broadcast	ARP	42	Who has 192.168.1.
2	10:19:20.158148	LinksysG_da:a…	AmbitMic_a9:3…	ARP	60	192.168.1.1 is at
6	10:19:33.700104	Telebit_73:8d…	Broadcast	ARP	60	Who has 192.168.1.
10	10:19:37.633598	192.168.1.105	128.119.245.12	HTTP	686	GET /ethereal-lab

```
▶ Frame 2: 60 bytes on wire (480 bits), 60 bytes captured (480 bits)
▶ Ethernet II, Src: LinksysG_da:af:73 (00:06:25:da:af:73), Dst: AmbitMic_a9:3d:68 (00:d0:59:a9
▼ Address Resolution Protocol (reply)
    Hardware type: Ethernet (1)
    Protocol type: IPv4 (0x0800)
    Hardware size: 6
    Protocol size: 4
    Opcode: reply (2)
    Sender MAC address: LinksysG_da:af:73 (00:06:25:da:af:73)
    Sender IP address: 192.168.1.1
    Target MAC address: AmbitMic_a9:3d:68 (00:d0:59:a9:3d:68)
    Target IP address: 192.168.1.105
```

14) What is the hexadecimal values for the source and destination address in the Ethernet frame containing the ARP reply message?

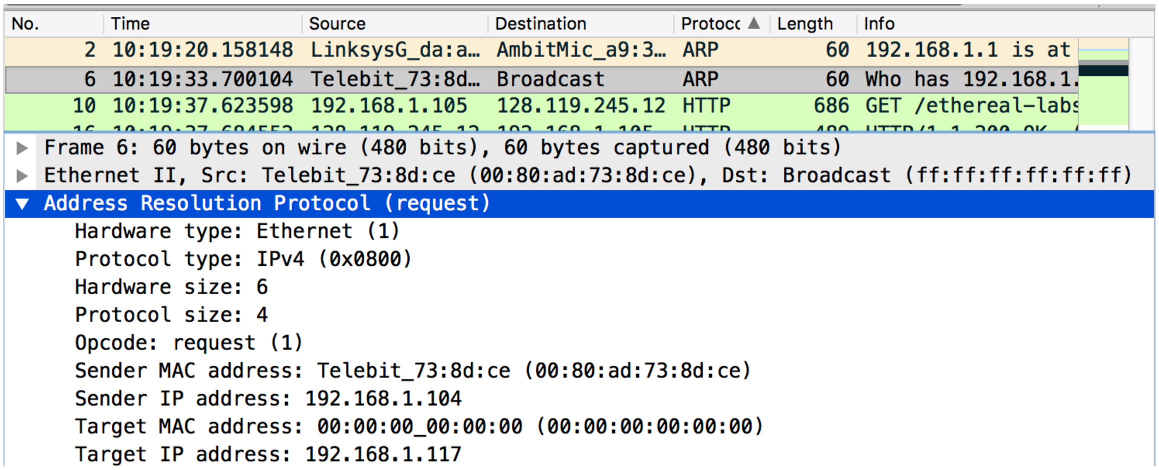
Answer:
Source: 00:06:25:da:af:73
Destination: 00:d0:59:a9:3d:68
See screenshot below.



```
No.   Time              Source           Destination      Protocc ▲  Length  Info
   1  10:19:20.157130  AmbitMic_a9:3…   Broadcast        ARP            42  Who has 192.168.1.
   2  10:19:20.158148  LinksysG_da:a…   AmbitMic_a9:3…   ARP            60  192.168.1.1 is at
   6  10:19:33.700104  Telebit_73:8d…   Broadcast        ARP            60  Who has 192.168.1.
▶ Frame 2: 60 bytes on wire (480 bits), 60 bytes captured (480 bits)
▼ Ethernet II, Src: LinksysG_da:af:73 (00:06:25:da:af:73), Dst: AmbitMic_a9:3d:68 (00:d0:59:a9
  ▶ Destination: AmbitMic_a9:3d:68 (00:d0:59:a9:3d:68)
  ▶ Source: LinksysG_da:af:73 (00:06:25:da:af:73)
    Type: ARP (0x0806)
    Padding: 000000000000000000000000000000000000
▶ Address Resolution Protocol (reply)
```

15) Why is there no ARP reply (sent in response to the ARP request in packet 6) in the packet trace?

Answer:
The target IP address is within the same subnet that the router has already mapped in its ARP table.
See screenshot below.



```
No.   Time              Source           Destination      Protocc ▲  Length  Info
   2  10:19:20.158148  LinksysG_da:a…   AmbitMic_a9:3…   ARP            60  192.168.1.1 is at
   6  10:19:33.700104  Telebit_73:8d…   Broadcast        ARP            60  Who has 192.168.1.
  10  10:19:37.623598  192.168.1.105    128.119.245.12   HTTP          686  GET /ethereal-labs
▶ Frame 6: 60 bytes on wire (480 bits), 60 bytes captured (480 bits)
▶ Ethernet II, Src: Telebit_73:8d:ce (00:80:ad:73:8d:ce), Dst: Broadcast (ff:ff:ff:ff:ff:ff)
▼ Address Resolution Protocol (request)
    Hardware type: Ethernet (1)
    Protocol type: IPv4 (0x0800)
    Hardware size: 6
    Protocol size: 4
    Opcode: request (1)
    Sender MAC address: Telebit_73:8d:ce (00:80:ad:73:8d:ce)
    Sender IP address: 192.168.1.104
    Target MAC address: 00:00:00_00:00:00 (00:00:00:00:00:00)
    Target IP address: 192.168.1.117
```