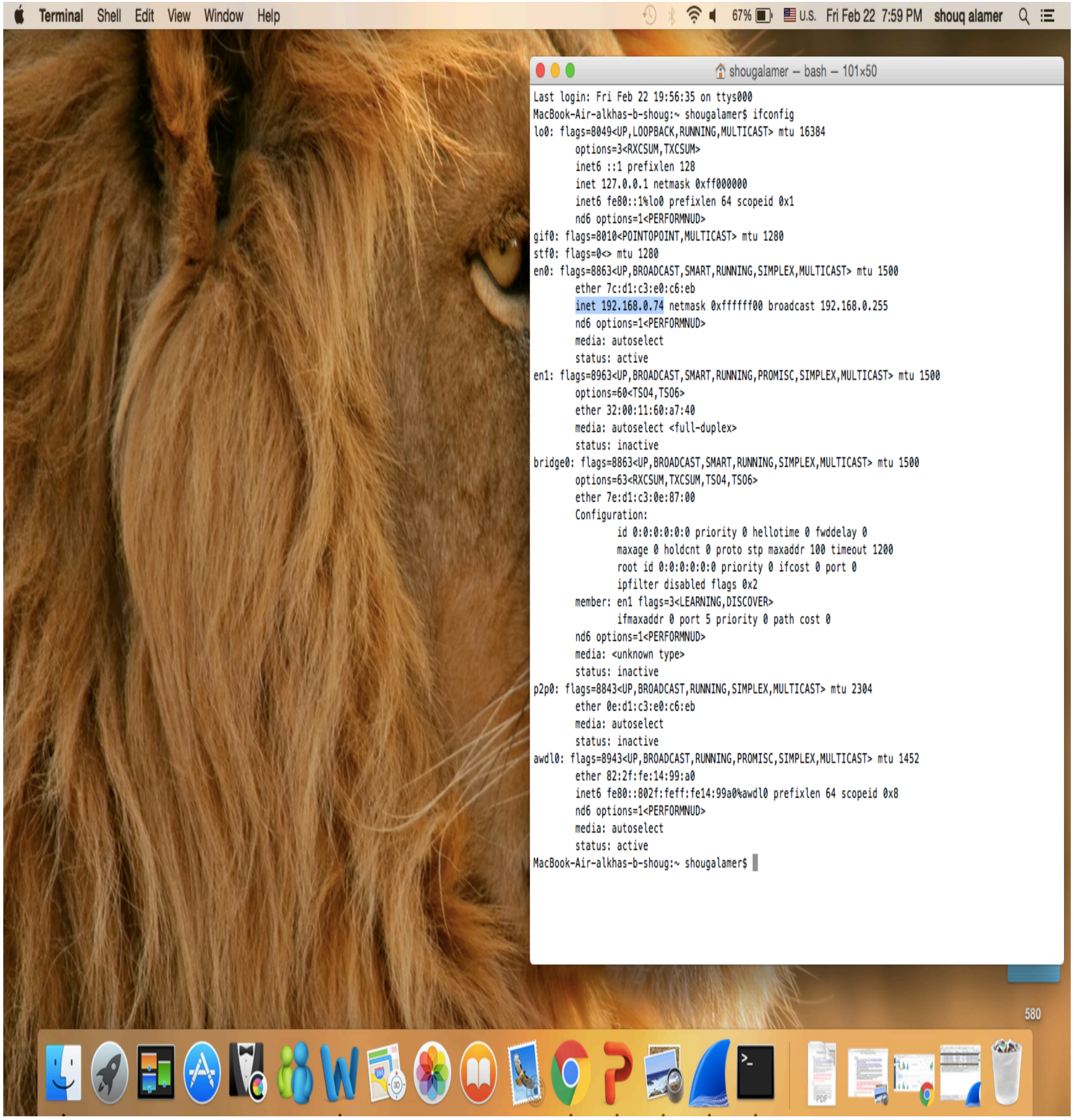
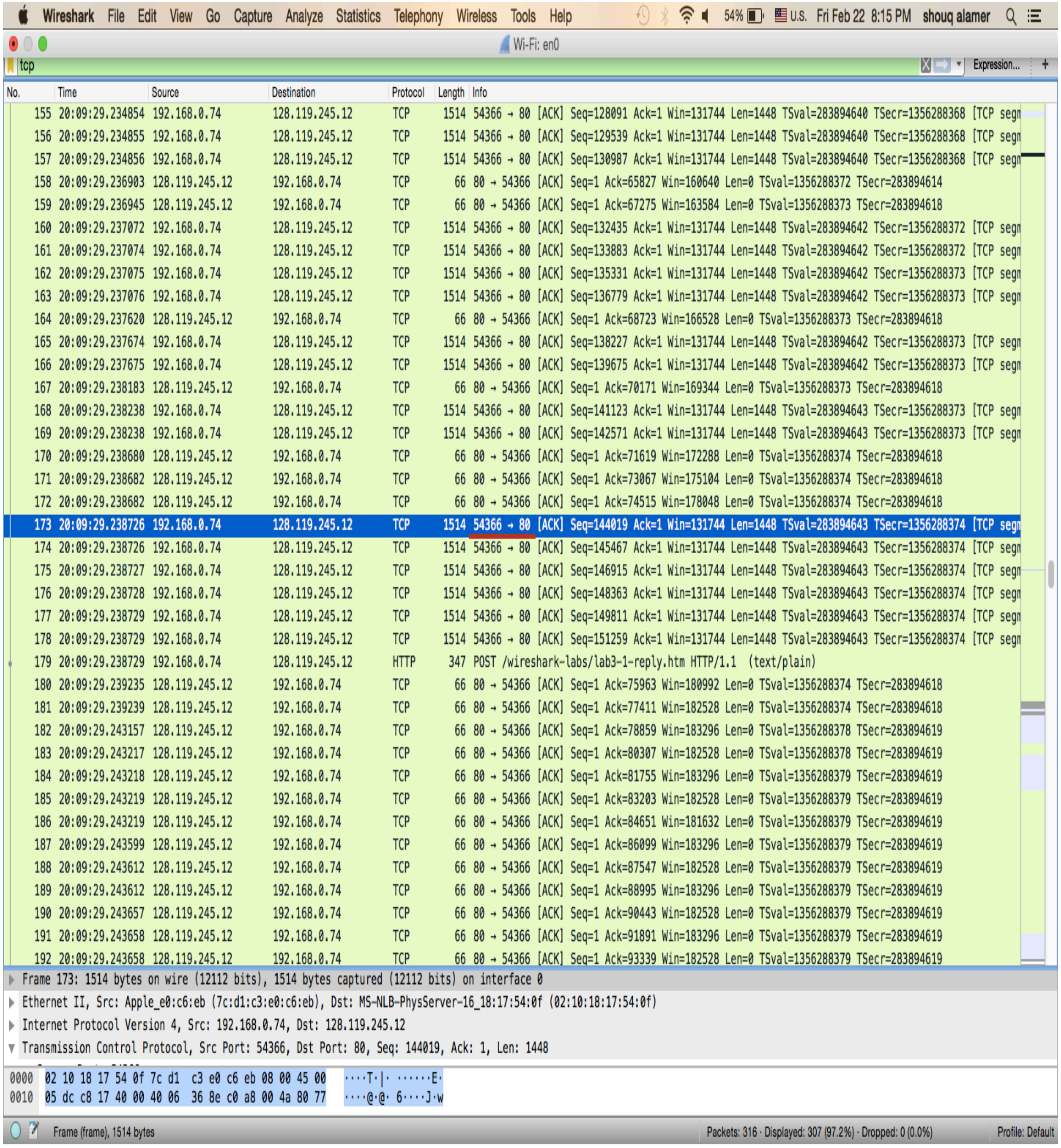


```
Last login: Fri Feb 22 19:56:35 on ttys000
MacBook-Air-alkhas-b-shoug:~ shougalamer$ ifconfig
lo0: flags=8049<UP,LOOPBACK,RUNNING,MULTICAST> mtu 16384
        options=3<RXCSUM,TXCSUM>
        inet6 ::1 prefixlen 128
        inet 127.0.0.1 netmask 0xff000000
        inet6 fe80::1%lo0 prefixlen 64 scopeid 0x1
        nd6 options=1<PERFORMNUD>
gif0: flags=8010<POINTOPOINT,MULTICAST> mtu 1280
stf0: flags=0<> mtu 1280
en0: flags=8863<UP,BROADCAST,SMART,RUNNING,SIMPLEX,MULTICAST> mtu 1500
        ether 7c:d1:c3:e0:c6:eb
        inet 192.168.0.74 netmask 0xffffff00 broadcast 192.168.0.255
        nd6 options=1<PERFORMNUD>
        media: autoselect
        status: active
en1: flags=8963<UP,BROADCAST,SMART,RUNNING,PROMISC,SIMPLEX,MULTICAST> mtu 1500
        options=60<TSO4,TSO6>
        ether 32:00:11:60:a7:40
        media: autoselect <full-duplex>
        status: inactive
bridge0: flags=8863<UP,BROADCAST,SMART,RUNNING,SIMPLEX,MULTICAST> mtu 1500
        options=63<RXCSUM,TXCSUM,TSO4,TSO6>
        ether 7e:d1:c3:0e:87:00
        Configuration:
                id 0:0:0:0:0:0 priority 0 hellotime 0 fwddelay 0
                maxage 0 holdcnt 0 proto stp maxaddr 100 timeout 1200
                root id 0:0:0:0:0:0 priority 0 ifcost 0 port 0
                ipfilter disabled flags 0x2
        member: en1 flags=3<LEARNING,DISCOVER>
                ifmaxaddr 0 port 5 priority 0 path cost 0
        nd6 options=1<PERFORMNUD>
        media: <unknown type>
        status: inactive
p2p0: flags=8843<UP,BROADCAST,RUNNING,SIMPLEX,MULTICAST> mtu 2304
        ether 0e:d1:c3:e0:c6:eb
        media: autoselect
        status: inactive
awdl0: flags=8943<UP,BROADCAST,RUNNING,PROMISC,SIMPLEX,MULTICAST> mtu 1452
        ether 82:2f:fe:14:99:a0
        inet6 fe80::802f:feff:fe14:99a0%awdl0 prefixlen 64 scopeid 0x8
        nd6 options=1<PERFORMNUD>
        media: autoselect
        status: active
MacBook-Air-alkhas-b-shoug:~ shougalamer$
```

1. What is the TCP port number used by your computer to communicate with gaia.cs.umass.edu?

34366



tcp

```
No.   Time             Source          Destination     Protocol Length Info
  155 20:09:29.234854 192.168.0.74    128.119.245.12  TCP      1514 54366 → 80 [ACK] Seq=128091 Ack=1 Win=131744 Len=1448 TSval=283894640 TSecr=1356288368 [TCP segm
  156 20:09:29.234855 192.168.0.74    128.119.245.12  TCP      1514 54366 → 80 [ACK] Seq=129539 Ack=1 Win=131744 Len=1448 TSval=283894640 TSecr=1356288368 [TCP segm
  157 20:09:29.234856 192.168.0.74    128.119.245.12  TCP      1514 54366 → 80 [ACK] Seq=130987 Ack=1 Win=131744 Len=1448 TSval=283894640 TSecr=1356288368 [TCP segm
  158 20:09:29.236903 128.119.245.12  192.168.0.74    TCP        66 80 → 54366 [ACK] Seq=1 Ack=65827 Win=160640 Len=0 TSval=1356288372 TSecr=283894614
  159 20:09:29.236945 128.119.245.12  192.168.0.74    TCP        66 80 → 54366 [ACK] Seq=1 Ack=67275 Win=163584 Len=0 TSval=1356288373 TSecr=283894618
  160 20:09:29.237072 192.168.0.74    128.119.245.12  TCP      1514 54366 → 80 [ACK] Seq=132435 Ack=1 Win=131744 Len=1448 TSval=283894642 TSecr=1356288372 [TCP segm
  161 20:09:29.237074 192.168.0.74    128.119.245.12  TCP      1514 54366 → 80 [ACK] Seq=133883 Ack=1 Win=131744 Len=1448 TSval=283894642 TSecr=1356288372 [TCP segm
  162 20:09:29.237075 192.168.0.74    128.119.245.12  TCP      1514 54366 → 80 [ACK] Seq=135331 Ack=1 Win=131744 Len=1448 TSval=283894642 TSecr=1356288373 [TCP segm
  163 20:09:29.237076 192.168.0.74    128.119.245.12  TCP      1514 54366 → 80 [ACK] Seq=136779 Ack=1 Win=131744 Len=1448 TSval=283894642 TSecr=1356288373 [TCP segm
  164 20:09:29.237620 128.119.245.12  192.168.0.74    TCP        66 80 → 54366 [ACK] Seq=1 Ack=68723 Win=166528 Len=0 TSval=1356288373 TSecr=283894618
  165 20:09:29.237674 192.168.0.74    128.119.245.12  TCP      1514 54366 → 80 [ACK] Seq=138227 Ack=1 Win=131744 Len=1448 TSval=283894642 TSecr=1356288373 [TCP segm
  166 20:09:29.237675 192.168.0.74    128.119.245.12  TCP      1514 54366 → 80 [ACK] Seq=139675 Ack=1 Win=131744 Len=1448 TSval=283894642 TSecr=1356288373 [TCP segm
  167 20:09:29.238183 128.119.245.12  192.168.0.74    TCP        66 80 → 54366 [ACK] Seq=1 Ack=70171 Win=169344 Len=0 TSval=1356288373 TSecr=283894618
  168 20:09:29.238238 192.168.0.74    128.119.245.12  TCP      1514 54366 → 80 [ACK] Seq=141123 Ack=1 Win=131744 Len=1448 TSval=283894643 TSecr=1356288373 [TCP segm
  169 20:09:29.238238 192.168.0.74    128.119.245.12  TCP      1514 54366 → 80 [ACK] Seq=142571 Ack=1 Win=131744 Len=1448 TSval=283894643 TSecr=1356288373 [TCP segm
  170 20:09:29.238680 128.119.245.12  192.168.0.74    TCP        66 80 → 54366 [ACK] Seq=1 Ack=71619 Win=172288 Len=0 TSval=1356288374 TSecr=283894618
  171 20:09:29.238682 128.119.245.12  192.168.0.74    TCP        66 80 → 54366 [ACK] Seq=1 Ack=73067 Win=175104 Len=0 TSval=1356288374 TSecr=283894618
  172 20:09:29.238682 128.119.245.12  192.168.0.74    TCP        66 80 → 54366 [ACK] Seq=1 Ack=74515 Win=178048 Len=0 TSval=1356288374 TSecr=283894618
  173 20:09:29.238726 192.168.0.74    128.119.245.12  TCP      1514 54366 → 80 [ACK] Seq=144019 Ack=1 Win=131744 Len=1448 TSval=283894643 TSecr=1356288374 [TCP segm
  174 20:09:29.238726 192.168.0.74    128.119.245.12  TCP      1514 54366 → 80 [ACK] Seq=145467 Ack=1 Win=131744 Len=1448 TSval=283894643 TSecr=1356288374 [TCP segm
  175 20:09:29.238727 192.168.0.74    128.119.245.12  TCP      1514 54366 → 80 [ACK] Seq=146915 Ack=1 Win=131744 Len=1448 TSval=283894643 TSecr=1356288374 [TCP segm
  176 20:09:29.238728 192.168.0.74    128.119.245.12  TCP      1514 54366 → 80 [ACK] Seq=148363 Ack=1 Win=131744 Len=1448 TSval=283894643 TSecr=1356288374 [TCP segm
  177 20:09:29.238729 192.168.0.74    128.119.245.12  TCP      1514 54366 → 80 [ACK] Seq=149811 Ack=1 Win=131744 Len=1448 TSval=283894643 TSecr=1356288374 [TCP segm
  178 20:09:29.238729 192.168.0.74    128.119.245.12  TCP      1514 54366 → 80 [ACK] Seq=151259 Ack=1 Win=131744 Len=1448 TSval=283894643 TSecr=1356288374 [TCP segm
  179 20:09:29.238729 192.168.0.74    128.119.245.12  HTTP      347 POST /wireshark-labs/lab3-1-reply.htm HTTP/1.1  (text/plain)
  180 20:09:29.239235 128.119.245.12  192.168.0.74    TCP        66 80 → 54366 [ACK] Seq=1 Ack=75963 Win=180992 Len=0 TSval=1356288374 TSecr=283894618
  181 20:09:29.239239 128.119.245.12  192.168.0.74    TCP        66 80 → 54366 [ACK] Seq=1 Ack=77411 Win=182528 Len=0 TSval=1356288374 TSecr=283894618
  182 20:09:29.243157 128.119.245.12  192.168.0.74    TCP        66 80 → 54366 [ACK] Seq=1 Ack=78859 Win=183296 Len=0 TSval=1356288378 TSecr=283894619
  183 20:09:29.243217 128.119.245.12  192.168.0.74    TCP        66 80 → 54366 [ACK] Seq=1 Ack=80307 Win=182528 Len=0 TSval=1356288378 TSecr=283894619
  184 20:09:29.243218 128.119.245.12  192.168.0.74    TCP        66 80 → 54366 [ACK] Seq=1 Ack=81755 Win=183296 Len=0 TSval=1356288379 TSecr=283894619
  185 20:09:29.243219 128.119.245.12  192.168.0.74    TCP        66 80 → 54366 [ACK] Seq=1 Ack=83203 Win=182528 Len=0 TSval=1356288379 TSecr=283894619
  186 20:09:29.243219 128.119.245.12  192.168.0.74    TCP        66 80 → 54366 [ACK] Seq=1 Ack=84651 Win=181632 Len=0 TSval=1356288379 TSecr=283894619
  187 20:09:29.243599 128.119.245.12  192.168.0.74    TCP        66 80 → 54366 [ACK] Seq=1 Ack=86099 Win=183296 Len=0 TSval=1356288379 TSecr=283894619
  188 20:09:29.243612 128.119.245.12  192.168.0.74    TCP        66 80 → 54366 [ACK] Seq=1 Ack=87547 Win=182528 Len=0 TSval=1356288379 TSecr=283894619
  189 20:09:29.243612 128.119.245.12  192.168.0.74    TCP        66 80 → 54366 [ACK] Seq=1 Ack=88995 Win=183296 Len=0 TSval=1356288379 TSecr=283894619
  190 20:09:29.243657 128.119.245.12  192.168.0.74    TCP        66 80 → 54366 [ACK] Seq=1 Ack=90443 Win=182528 Len=0 TSval=1356288379 TSecr=283894619
  191 20:09:29.243658 128.119.245.12  192.168.0.74    TCP        66 80 → 54366 [ACK] Seq=1 Ack=91891 Win=183296 Len=0 TSval=1356288379 TSecr=283894619
  192 20:09:29.243658 128.119.245.12  192.168.0.74    TCP        66 80 → 54366 [ACK] Seq=1 Ack=93339 Win=182528 Len=0 TSval=1356288379 TSecr=283894619
```

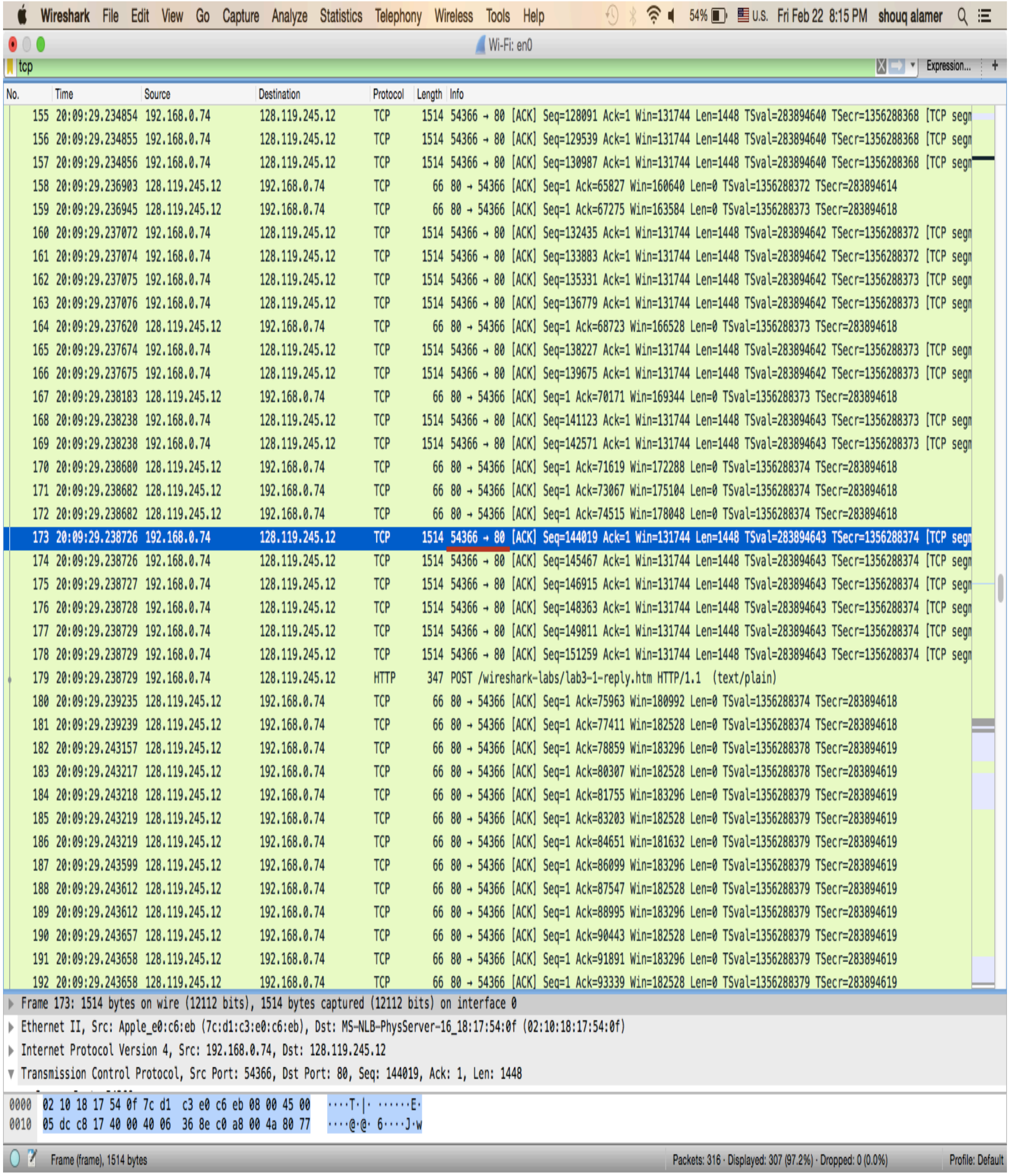
```
▶ Frame 173: 1514 bytes on wire (12112 bits), 1514 bytes captured (12112 bits) on interface 0
▶ Ethernet II, Src: Apple_e0:c6:eb (7c:d1:c3:e0:c6:eb), Dst: MS-NLB-PhysServer-16_18:17:54:0f (02:10:18:17:54:0f)
▶ Internet Protocol Version 4, Src: 192.168.0.74, Dst: 128.119.245.12
▼ Transmission Control Protocol, Src Port: 54366, Dst Port: 80, Seq: 144019, Ack: 1, Len: 1448
```

```
0000  02 10 18 17 54 0f 7c d1  c3 e0 c6 eb 08 00 45 00   ····T·|· ······E·
0010  05 dc c8 17 40 00 40 06  36 8e c0 a8 00 4a 80 77   ····@·@· 6····J·w
```

Frame (frame), 1514 bytes   Packets: 316 · Displayed: 307 (97.2%) · Dropped: 0 (0.0%)   Profile: Default

2. What is the TCP port number used by gaia.cs.umass.edu to communicate with your computer?

80


Wireshark File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help
54% U.S. Fri Feb 22 8:15 PM shouq alamer
Wi-Fi: en0
Expression... +

```
tcp
```

```
No.   Time            Source          Destination     Protocol Length Info
  155 20:09:29.234854 192.168.0.74    128.119.245.12  TCP      1514 54366 → 80 [ACK] Seq=128091 Ack=1 Win=131744 Len=1448 TSval=283894640 TSecr=1356288368 [TCP segm
  156 20:09:29.234855 192.168.0.74    128.119.245.12  TCP      1514 54366 → 80 [ACK] Seq=129539 Ack=1 Win=131744 Len=1448 TSval=283894640 TSecr=1356288368 [TCP segm
  157 20:09:29.234856 192.168.0.74    128.119.245.12  TCP      1514 54366 → 80 [ACK] Seq=130987 Ack=1 Win=131744 Len=1448 TSval=283894640 TSecr=1356288368 [TCP segm
  158 20:09:29.236903 128.119.245.12  192.168.0.74    TCP        66 80 → 54366 [ACK] Seq=1 Ack=65827 Win=160640 Len=0 TSval=1356288372 TSecr=283894614
  159 20:09:29.236945 128.119.245.12  192.168.0.74    TCP        66 80 → 54366 [ACK] Seq=1 Ack=67275 Win=163584 Len=0 TSval=1356288373 TSecr=283894618
  160 20:09:29.237072 192.168.0.74    128.119.245.12  TCP      1514 54366 → 80 [ACK] Seq=132435 Ack=1 Win=131744 Len=1448 TSval=283894642 TSecr=1356288372 [TCP segm
  161 20:09:29.237074 192.168.0.74    128.119.245.12  TCP      1514 54366 → 80 [ACK] Seq=133883 Ack=1 Win=131744 Len=1448 TSval=283894642 TSecr=1356288372 [TCP segm
  162 20:09:29.237075 192.168.0.74    128.119.245.12  TCP      1514 54366 → 80 [ACK] Seq=135331 Ack=1 Win=131744 Len=1448 TSval=283894642 TSecr=1356288373 [TCP segm
  163 20:09:29.237076 192.168.0.74    128.119.245.12  TCP      1514 54366 → 80 [ACK] Seq=136779 Ack=1 Win=131744 Len=1448 TSval=283894642 TSecr=1356288373 [TCP segm
  164 20:09:29.237620 128.119.245.12  192.168.0.74    TCP        66 80 → 54366 [ACK] Seq=1 Ack=68723 Win=166528 Len=0 TSval=1356288373 TSecr=283894618
  165 20:09:29.237674 192.168.0.74    128.119.245.12  TCP      1514 54366 → 80 [ACK] Seq=138227 Ack=1 Win=131744 Len=1448 TSval=283894642 TSecr=1356288373 [TCP segm
  166 20:09:29.237675 192.168.0.74    128.119.245.12  TCP      1514 54366 → 80 [ACK] Seq=139675 Ack=1 Win=131744 Len=1448 TSval=283894642 TSecr=1356288373 [TCP segm
  167 20:09:29.238183 128.119.245.12  192.168.0.74    TCP        66 80 → 54366 [ACK] Seq=1 Ack=70171 Win=169344 Len=0 TSval=1356288373 TSecr=283894618
  168 20:09:29.238238 192.168.0.74    128.119.245.12  TCP      1514 54366 → 80 [ACK] Seq=141123 Ack=1 Win=131744 Len=1448 TSval=283894643 TSecr=1356288373 [TCP segm
  169 20:09:29.238238 192.168.0.74    128.119.245.12  TCP      1514 54366 → 80 [ACK] Seq=142571 Ack=1 Win=131744 Len=1448 TSval=283894643 TSecr=1356288373 [TCP segm
  170 20:09:29.238680 128.119.245.12  192.168.0.74    TCP        66 80 → 54366 [ACK] Seq=1 Ack=71619 Win=172288 Len=0 TSval=1356288374 TSecr=283894618
  171 20:09:29.238682 128.119.245.12  192.168.0.74    TCP        66 80 → 54366 [ACK] Seq=1 Ack=73067 Win=175104 Len=0 TSval=1356288374 TSecr=283894618
  172 20:09:29.238682 128.119.245.12  192.168.0.74    TCP        66 80 → 54366 [ACK] Seq=1 Ack=74515 Win=178048 Len=0 TSval=1356288374 TSecr=283894618
  173 20:09:29.238726 192.168.0.74    128.119.245.12  TCP      1514 54366 → 80 [ACK] Seq=144019 Ack=1 Win=131744 Len=1448 TSval=283894643 TSecr=1356288374 [TCP segm
  174 20:09:29.238726 192.168.0.74    128.119.245.12  TCP      1514 54366 → 80 [ACK] Seq=145467 Ack=1 Win=131744 Len=1448 TSval=283894643 TSecr=1356288374 [TCP segm
  175 20:09:29.238727 192.168.0.74    128.119.245.12  TCP      1514 54366 → 80 [ACK] Seq=146915 Ack=1 Win=131744 Len=1448 TSval=283894643 TSecr=1356288374 [TCP segm
  176 20:09:29.238728 192.168.0.74    128.119.245.12  TCP      1514 54366 → 80 [ACK] Seq=148363 Ack=1 Win=131744 Len=1448 TSval=283894643 TSecr=1356288374 [TCP segm
  177 20:09:29.238729 192.168.0.74    128.119.245.12  TCP      1514 54366 → 80 [ACK] Seq=149811 Ack=1 Win=131744 Len=1448 TSval=283894643 TSecr=1356288374 [TCP segm
  178 20:09:29.238729 192.168.0.74    128.119.245.12  TCP      1514 54366 → 80 [ACK] Seq=151259 Ack=1 Win=131744 Len=1448 TSval=283894643 TSecr=1356288374 [TCP segm
  179 20:09:29.238729 192.168.0.74    128.119.245.12  HTTP      347 POST /wireshark-labs/lab3-1-reply.htm HTTP/1.1  (text/plain)
  180 20:09:29.239235 128.119.245.12  192.168.0.74    TCP        66 80 → 54366 [ACK] Seq=1 Ack=75963 Win=180992 Len=0 TSval=1356288374 TSecr=283894618
  181 20:09:29.239239 128.119.245.12  192.168.0.74    TCP        66 80 → 54366 [ACK] Seq=1 Ack=77411 Win=182528 Len=0 TSval=1356288374 TSecr=283894618
  182 20:09:29.243157 128.119.245.12  192.168.0.74    TCP        66 80 → 54366 [ACK] Seq=1 Ack=78859 Win=183296 Len=0 TSval=1356288378 TSecr=283894619
  183 20:09:29.243217 128.119.245.12  192.168.0.74    TCP        66 80 → 54366 [ACK] Seq=1 Ack=80307 Win=182528 Len=0 TSval=1356288378 TSecr=283894619
  184 20:09:29.243218 128.119.245.12  192.168.0.74    TCP        66 80 → 54366 [ACK] Seq=1 Ack=81755 Win=183296 Len=0 TSval=1356288379 TSecr=283894619
  185 20:09:29.243219 128.119.245.12  192.168.0.74    TCP        66 80 → 54366 [ACK] Seq=1 Ack=83203 Win=182528 Len=0 TSval=1356288379 TSecr=283894619
  186 20:09:29.243219 128.119.245.12  192.168.0.74    TCP        66 80 → 54366 [ACK] Seq=1 Ack=84651 Win=181632 Len=0 TSval=1356288379 TSecr=283894619
  187 20:09:29.243599 128.119.245.12  192.168.0.74    TCP        66 80 → 54366 [ACK] Seq=1 Ack=86099 Win=183296 Len=0 TSval=1356288379 TSecr=283894619
  188 20:09:29.243612 128.119.245.12  192.168.0.74    TCP        66 80 → 54366 [ACK] Seq=1 Ack=87547 Win=182528 Len=0 TSval=1356288379 TSecr=283894619
  189 20:09:29.243612 128.119.245.12  192.168.0.74    TCP        66 80 → 54366 [ACK] Seq=1 Ack=88995 Win=183296 Len=0 TSval=1356288379 TSecr=283894619
  190 20:09:29.243657 128.119.245.12  192.168.0.74    TCP        66 80 → 54366 [ACK] Seq=1 Ack=90443 Win=182528 Len=0 TSval=1356288379 TSecr=283894619
  191 20:09:29.243658 128.119.245.12  192.168.0.74    TCP        66 80 → 54366 [ACK] Seq=1 Ack=91891 Win=183296 Len=0 TSval=1356288379 TSecr=283894619
  192 20:09:29.243658 128.119.245.12  192.168.0.74    TCP        66 80 → 54366 [ACK] Seq=1 Ack=93339 Win=182528 Len=0 TSval=1356288379 TSecr=283894619
```

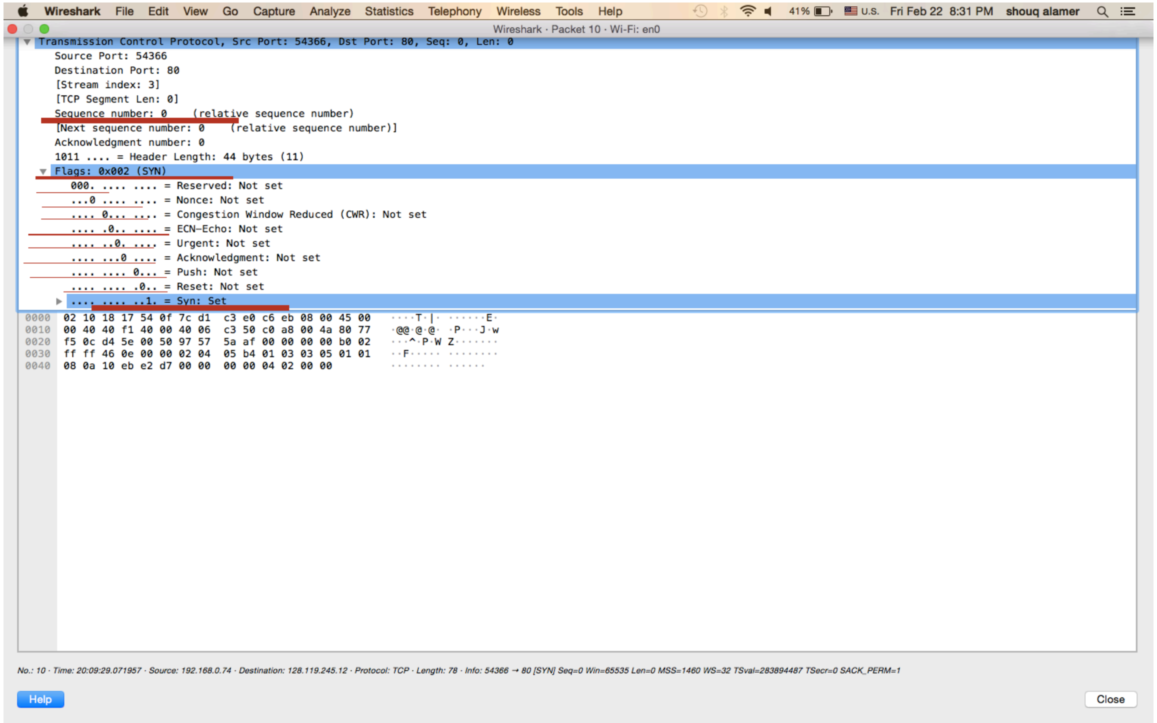
```
▶ Frame 173: 1514 bytes on wire (12112 bits), 1514 bytes captured (12112 bits) on interface 0
▶ Ethernet II, Src: Apple_e0:c6:eb (7c:d1:c3:e0:c6:eb), Dst: MS-NLB-PhysServer-16_18:17:54:0f (02:10:18:17:54:0f)
▶ Internet Protocol Version 4, Src: 192.168.0.74, Dst: 128.119.245.12
▼ Transmission Control Protocol, Src Port: 54366, Dst Port: 80, Seq: 144019, Ack: 1, Len: 1448
```

```
0000  02 10 18 17 54 0f 7c d1  c3 e0 c6 eb 08 00 45 00   ····T·|· ······E·
0010  05 dc c8 17 40 00 40 06  36 8e c0 a8 00 4a 80 77   ····@·@· 6····J·w
```

```
Frame (frame), 1514 bytes          Packets: 316 · Displayed: 307 (97.2%) · Dropped: 0 (0.0%)          Profile: Default
```

3. What is the sequence number of the TCP SYN segment that is used to initiate the TCP connection between your computer and gaia.cs.umass.edu? What is it in the segment that identifies the segment as a SYN segment?

Sequence number 0. Flags for SYN in Set to 1 and everything else set to 0 (not set)

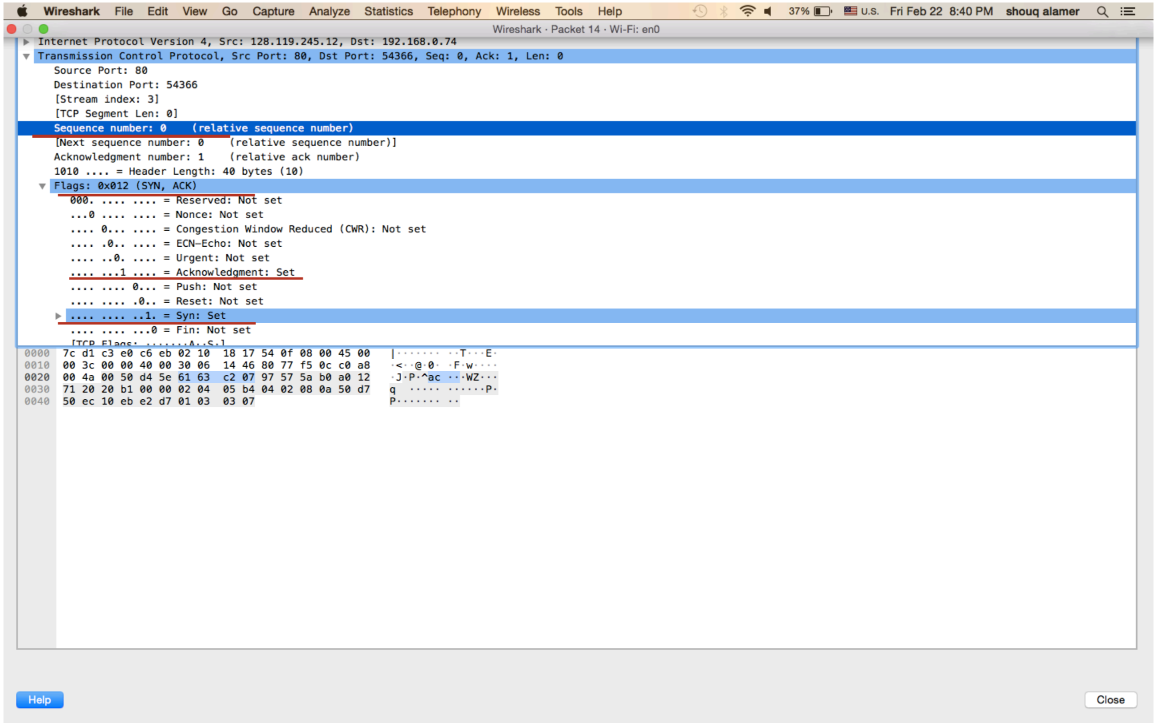


```
▼ Transmission Control Protocol, Src Port: 54366, Dst Port: 80, Seq: 0, Len: 0
    Source Port: 54366
    Destination Port: 80
    [Stream index: 3]
    [TCP Segment Len: 0]
    Sequence number: 0    (relative sequence number)
    [Next sequence number: 0    (relative sequence number)]
    Acknowledgment number: 0
    1011 .... = Header Length: 44 bytes (11)
  ▼ Flags: 0x002 (SYN)
      000. .... .... = Reserved: Not set
      ...0 .... .... = Nonce: Not set
      .... 0... .... = Congestion Window Reduced (CWR): Not set
      .... .0.. .... = ECN-Echo: Not set
      .... ..0. .... = Urgent: Not set
      .... ...0 .... = Acknowledgment: Not set
      .... .... 0... = Push: Not set
      .... .... .0.. = Reset: Not set
    ▶ .... .... ..1. = Syn: Set
0000  02 10 18 17 54 0f 7c d1  c3 e0 c6 eb 08 00 45 00   ····T·|· ······E·
0010  00 40 40 f1 40 00 40 06  c3 50 c0 a8 00 4a 80 77   ·@@·@·@· ·P···J·w
0020  f5 0c d4 5e 00 50 97 57  5a af 00 00 00 00 b0 02   ···^·P·W Z·······
0030  ff ff 46 0e 00 00 02 04  05 b4 01 03 03 05 01 01   ··F····· ········
0040  08 0a 10 eb e2 d7 00 00  00 00 04 02 00 00         ········ ······
```

No.: 10 · Time: 20:09:29.071957 · Source: 192.168.0.74 · Destination: 128.119.245.12 · Protocol: TCP · Length: 78 · Info: 54366 → 80 [SYN] Seq=0 Win=65535 Len=0 MSS=1460 WS=32 TSval=283894487 TSecr=0 SACK_PERM=1

4. What is the sequence number of the SYNACK segment sent by gaia.cs.umass.edu to the client computer in reply to the SYN? - You must dig deep and find the ACK from gaia.cs.umass.edu.

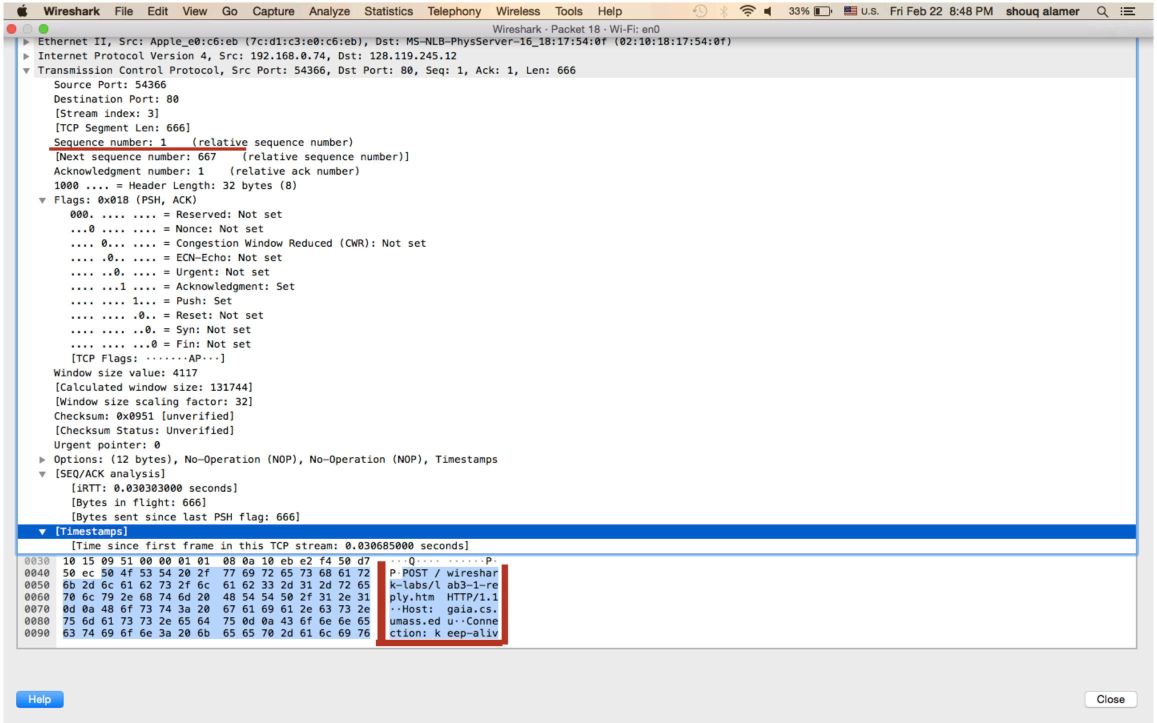
Sequence number 0 Flags for ACknowledgement and SYN set to 1 and everything else set to 0


Wireshark File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help
37% U.S. Fri Feb 22 8:40 PM shouq alamer
Wireshark · Packet 14 · Wi-Fi: en0
Help
Close

```
▶ Internet Protocol Version 4, Src: 128.119.245.12, Dst: 192.168.0.74
▼ Transmission Control Protocol, Src Port: 80, Dst Port: 54366, Seq: 0, Ack: 1, Len: 0
    Source Port: 80
    Destination Port: 54366
    [Stream index: 3]
    [TCP Segment Len: 0]
    Sequence number: 0    (relative sequence number)
    [Next sequence number: 0    (relative sequence number)]
    Acknowledgment number: 1    (relative ack number)
    1010 .... = Header Length: 40 bytes (10)
  ▼ Flags: 0x012 (SYN, ACK)
      000. .... .... = Reserved: Not set
      ...0 .... .... = Nonce: Not set
      .... 0... .... = Congestion Window Reduced (CWR): Not set
      .... .0.. .... = ECN-Echo: Not set
      .... ..0. .... = Urgent: Not set
      .... ...1 .... = Acknowledgment: Set
      .... .... 0... = Push: Not set
      .... .... .0.. = Reset: Not set
    ▶ .... .... ..1. = Syn: Set
      .... .... ...0 = Fin: Not set
      [TCP Flags: ·······A··S·]
0000  7c d1 c3 e0 c6 eb 02 10  18 17 54 0f 08 00 45 00   |······· ··T···E·
0010  00 3c 00 00 40 00 30 06  14 46 80 77 f5 0c c0 a8   ·<··@·0· ·F·w····
0020  00 4a 00 50 d4 5e 61 63  c2 07 97 57 5a b0 a0 12   ·J·P·^ac ···WZ···
0030  71 20 20 b1 00 00 02 04  05 b4 04 02 08 0a 50 d7   q  ····· ······P·
0040  50 ec 10 eb e2 d7 01 03  03 07                     P······· ··
```

5. What is the sequence number of the TCP segment containing the HTTP POST command? Note: that to find the POST command, you’ll need to dig into the packet content field at the bottom of the Wireshark window, looking for a segment with a “POST” within its DATA field.

Sequence number 1


Wireshark File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help
33% U.S. Fri Feb 22 8:48 PM shouq alamer
Wireshark · Packet 18 · Wi-Fi: en0
Help
Close

```
▶ Ethernet II, Src: Apple_e0:c6:eb (7c:d1:c3:e0:c6:eb), Dst: MS-NLB-PhysServer-16_18:17:54:0f (02:10:18:17:54:0f)
▶ Internet Protocol Version 4, Src: 192.168.0.74, Dst: 128.119.245.12
▼ Transmission Control Protocol, Src Port: 54366, Dst Port: 80, Seq: 1, Ack: 1, Len: 666
    Source Port: 54366
    Destination Port: 80
    [Stream index: 3]
    [TCP Segment Len: 666]
    Sequence number: 1    (relative sequence number)
    [Next sequence number: 667    (relative sequence number)]
    Acknowledgment number: 1    (relative ack number)
    1000 .... = Header Length: 32 bytes (8)
  ▼ Flags: 0x018 (PSH, ACK)
      000. .... .... = Reserved: Not set
      ...0 .... .... = Nonce: Not set
      .... 0... .... = Congestion Window Reduced (CWR): Not set
      .... .0.. .... = ECN-Echo: Not set
      .... ..0. .... = Urgent: Not set
      .... ...1 .... = Acknowledgment: Set
      .... .... 1... = Push: Set
      .... .... .0.. = Reset: Not set
      .... .... ..0. = Syn: Not set
      .... .... ...0 = Fin: Not set
      [TCP Flags: ·······AP···]
    Window size value: 4117
    [Calculated window size: 131744]
    [Window size scaling factor: 32]
    Checksum: 0x0951 [unverified]
    [Checksum Status: Unverified]
    Urgent pointer: 0
  ▶ Options: (12 bytes), No-Operation (NOP), No-Operation (NOP), Timestamps
  ▼ [SEQ/ACK analysis]
      [iRTT: 0.030303000 seconds]
      [Bytes in flight: 666]
      [Bytes sent since last PSH flag: 666]
  ▼ [Timestamps]
      [Time since first frame in this TCP stream: 0.030685000 seconds]
0030  10 15 09 51 00 00 01 01  08 0a 10 eb e2 f4 50 d7   ···Q···· ······P·
0040  50 ec 50 4f 53 54 20 2f  77 69 72 65 73 68 61 72   P·POST / wireshar
0050  6b 2d 6c 61 62 73 2f 6c  61 62 33 2d 31 2d 72 65   k-labs/l ab3-1-re
0060  70 6c 79 2e 68 74 6d 20  48 54 54 50 2f 31 2e 31   ply.htm  HTTP/1.1
0070  0d 0a 48 6f 73 74 3a 20  67 61 69 61 2e 63 73 2e   ··Host:  gaia.cs.
0080  75 6d 61 73 73 2e 65 64  75 0d 0a 43 6f 6e 6e 65   umass.ed u··Conne
0090  63 74 69 6f 6e 3a 20 6b  65 65 70 2d 61 6c 69 76   ction: k eep-aliv
```

OK

/var/folders/2p/1gs3fhtn08ncl7wj3dnnprn00000gn/T//wireshark_en0_20190222200927_PbJqE6.pcapng 316 total packets, 307 shown

```
No.     Time               Source                Destination           Protocol Length Info
    219 20:09:29.271295    128.119.245.12        192.168.0.74          HTTP     843    HTTP/1.1 
200 OK  (text/html)
Frame 219: 843 bytes on wire (6744 bits), 843 bytes captured (6744 bits) on interface 0
Ethernet II, Src: MS-NLB-PhysServer-16_18:17:54:0f (02:10:18:17:54:0f), Dst: Apple_e0:c6:eb 
(7c:d1:c3:e0:c6:eb)
Internet Protocol Version 4, Src: 128.119.245.12, Dst: 192.168.0.74
Transmission Control Protocol, Src Port: 80, Dst Port: 54366, Seq: 1, Ack: 152988, Len: 777
Hypertext Transfer Protocol
    HTTP/1.1 200 OK\r\n
        [Expert Info (Chat/Sequence): HTTP/1.1 200 OK\r\n]
        Response Version: HTTP/1.1
        Status Code: 200
        [Status Code Description: OK]
        Response Phrase: OK
    Date: Sat, 23 Feb 2019 01:09:27 GMT\r\n
    Server: Apache/2.4.6 (CentOS) OpenSSL/1.0.2k-fips PHP/5.4.16 mod_perl/2.0.10 Perl/v5.16.3\r\n
    Last-Modified: Sat, 23 Oct 2010 11:38:58 GMT\r\n
    ETag: "1a2-4934734677880"\r\n
    Accept-Ranges: bytes\r\n
    Content-Length: 418\r\n
    Keep-Alive: timeout=5, max=100\r\n
    Connection: Keep-Alive\r\n
    Content-Type: text/html; charset=UTF-8\r\n
    \r\n
    [HTTP response 1/1]
    [Time since request: 0.032566000 seconds]
    [Request in frame: 179]
    File Data: 418 bytes
Line-based text data: text/html (11 lines)
    <TITLE>Upload page for TCP Ethereal Lab</TITLE>\n
    <body bgcolor="#FFFFFF">\n
    <p><font face="Arial, Helvetica, sans-serif" size="4"> Congratulations! <br> </font>\n
    \n
    <P><font face="Arial, Helvetica, sans-serif"> You've now transferred a copy of alice.txt ffrom 
\n
    your computer to \n
    gaia.cs.umass.edu.  You should now stop Wireshark packet capture. It's time to start analyzing 
the captured Wireshark packets! </font>\n
    \n
    </FORM>\n
    \n
    \n
```