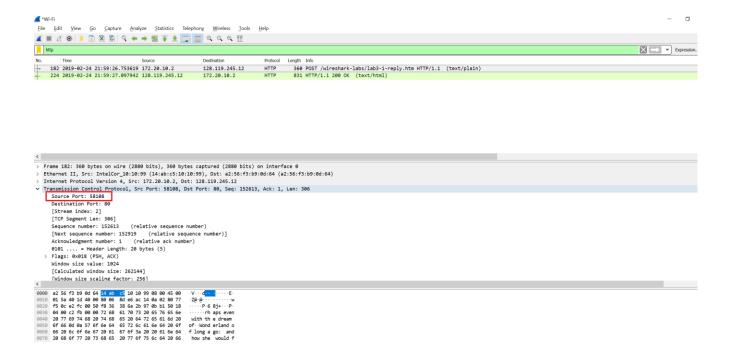
IP Address 172.20.10.2

```
Command Prompt
                                                                                                                                                            Connection-specific DNS Suffix . :
C:\Users\abarney>ipconfig
Windows IP Configuration
Ethernet adapter Ethernet:
   Media State . . . . . . . . . : Media disconnected Connection-specific DNS Suffix . :
Wireless LAN adapter Local Area Connection* 2:
   Media State . . . . . . . . . . . . . Media disconnected Connection-specific DNS Suffix . :
Wireless LAN adapter Wi-Fi:
   Connection-specific DNS Suffix :
IPv4 Address. . . . . . : 172.20.10.2
Subnet Mask . . . . . : 255.255.255.240
Default Gateway . . . : 172.20.10.1
                                                                                                                                                                               TECHCEN
LECT:
Wednesd
Ethernet adapter Bluetooth Network Connection:
   Media State . . . . . . . . . : Media disconnected Connection-specific DNS Suffix . :
                                                                                                                                                                            n LS-mi
C:\Users\abarney>_
                                                                                                                                                                     10:01 PM
                                                                                                                                                                     2/24/2019
```

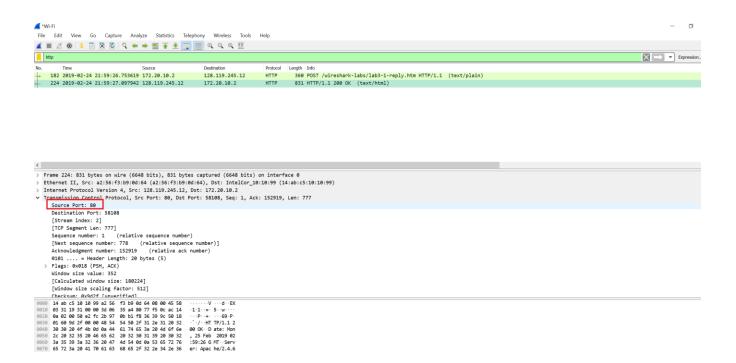
1. What is the TCP port number used by your computer to communicate with gaia.cs.umass.edu?

58108



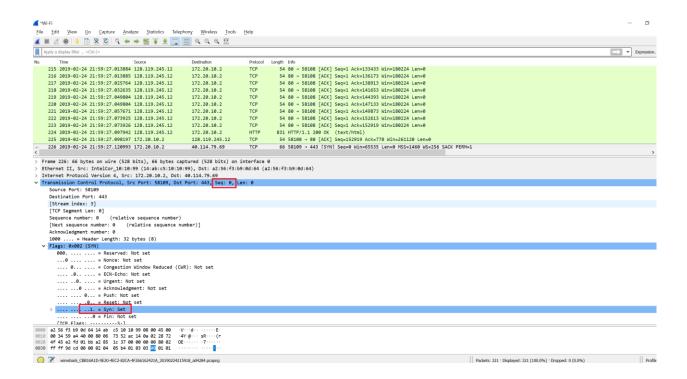
2. What is the TCP port number used by gaia.cs.umass.edu to communicate with your computer?

Port 80



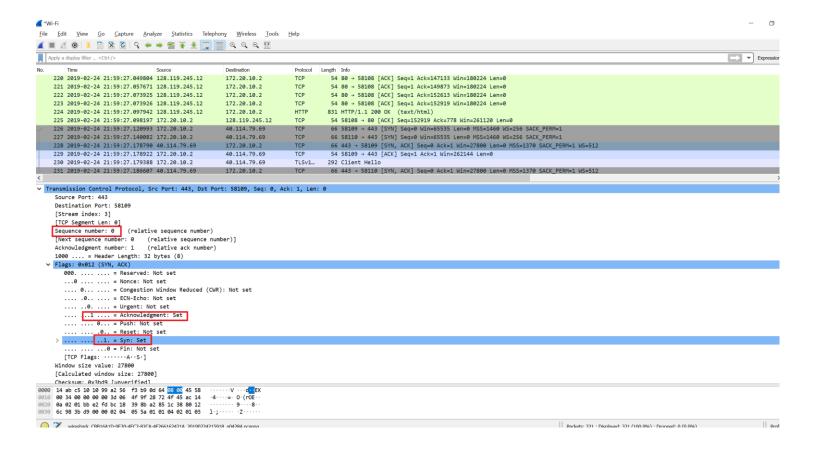
3. What is the sequence number of the TCP SYN segment that is used to initiate the TCP connection between your computer and gaia.cs.umass.edu? **0**

What is it in the segment that identifies the segment as a SYN segment? The Syn Flag is set to 1



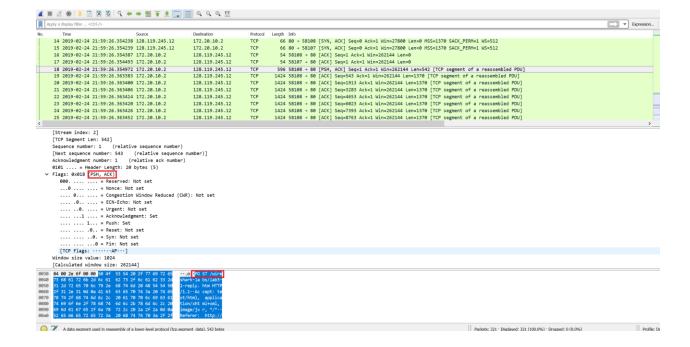
4. What is the sequence number of the SYNACK segment sent by gaia.cs.umass.edu to the client computer in reply to the SYN? - You must dig deep and find the ACK from gaia.cs.umass.edu.

Sequence number 0



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.

No 18.



```
Destination
172.20.10.2
                                                                            Protocol Length Info
HTTP 831 HTTP,
   Time Source 224 2019-02-24 21:59:27.097942 128.119.245.12
      Time
                                                                                            831 HTTP/1.1 200 OK (text/html)
Frame 224: 831 bytes on wire (6648 bits), 831 bytes captured (6648 bits) on interface 0
Ethernet II, Src: a2:56:f3:b9:0d:64 (a2:56:f3:b9:0d:64), Dst: IntelCor_10:10:99 (14:ab:c5:10:10:99)
Internet Protocol Version 4, Src: 128.119.245.12, Dst: 172.20.10.2
   0100 .... = Version: 4
    .... 0101 = Header Length: 20 bytes (5)
    Differentiated Services Field: 0x58 (DSCP: AF23, ECN: Not-ECT)
    Total Length: 817
    Identification: 0x1931 (6449)
    Flags: 0x0000
    Time to live: 61
    Protocol: TCP (6)
    Header checksum: 0x35a4 [validation disabled]
    [Header checksum status: Unverified]
    Source: 128.119.245.12
    Destination: 172,20,10,2
Transmission Control Protocol, Src Port: 80, Dst Port: 58108, Seq: 1, Ack: 152919, Len: 777
    Source Port: 80
    Destination Port: 58108
    [Stream index: 2]
    [TCP Segment Len: 777]
    Sequence number: 1 (relative sequence number)
[Next sequence number: 778 (relative sequence number)]
Acknowledgment number: 152919 (relative ack number)
    0101 .... = Header Length: 20 bytes (5)
    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
        .... = Acknowledgment: Set
        .... 1... = Push: Set
        .... .... .0.. = Reset: Not set
        .... .... ..0. = Syn: Not set
         .... .... ...0 = Fin: Not set
        [TCP Flags: ·····AP···]
    Window size value: 352
    [Calculated window size: 180224]
    [Window size scaling factor: 512]
    Checksum: 0x9d2f [unverified]
    [Checksum Status: Unverified]
    Urgent pointer: 0
    [SEQ/ACK analysis]
        [iRTT: 0.055917000 seconds]
        [Bytes in flight: 777]
        [Bytes sent since last PSH flag: 777]
    [Timestamps]
    TCP payload (777 bytes)
Hypertext Transfer Protocol
    HTTP/1.1 200 OK\r\n
    Date: Mon, 25 Feb 2019 02:59:26 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: 0.344323000 seconds]
    [Request in frame: 182]
    File Data: 418 bytes
Line-based text data: text/html (11 lines)
```

```
Protocol Length Info
       Time
                                          Source
                                                                  Destination
   226 2019-02-24 21:59:27.120993 172.20.10.2
                                                                                                            58109 → 443 [SYN] Seq=0 Win=65535 Len=0
                                                                  40.114.79.69
                                                                                           TCP
                                                                                                    66
ISS=1460 WS=256 SACK_PERM=1
rame 226: 66 bytes on wire (528 bits), 66 bytes captured (528 bits) on interface 0
Ethernet II, Src: IntelCor_10:10:99 (14:ab:c5:10:10:99), Dst: a2:56:f3:b9:0d:64 (a2:56:f3:b9:0d:64)
Internet Protocol Version 4, Src: 172.20.10.2, Dst: 40.114.79.69
   0100 .... = Version: 4
.... 0101 = Header Length: 20 bytes (5)
    Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT)
    Total Length: 52
    Identification: 0x59a4 (22948)
   Flags: 0x4000, Don't fragment
Time to live: 128
    Protocol: TCP (6)
   Header checksum: 0x7352 [validation disabled]
[Header checksum status: Unverified]
Source: 172.20.10.2
    Destination: 40.114.79.69
ransmission Control Protocol, Src Port: 58109, Dst Port: 443, Seq: θ, Len: θ
   Source Port: 58109
    Destination Port: 443
    [Stream index: 3]
    [TCP Segment Len: 0]
    [Next sequence number: 0 (relative sequence number)
[Next sequence number: 0 (relative sequence number)]
    Acknowledgment number: 0
   1000 .... = Header Length: 32 bytes (8)
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
        Window size value: 65535
    [Calculated window size: 65535]
    Checksum: 0x9dcd [unverified]
[Checksum Status: Unverified]
    Urgent pointer: 0
    Options: (12 bytes), Maximum segment size, No-Operation (NOP), Window scale, No-Operation (NOP), No-Operation (NOP), SACK permitted
    [Timestamps]
```

```
No.
        Time
                                           Source
                                                                    Destination
                                                                                             Protocol Length Info
     18 2019-02-24 21:59:26.354972
                                                                                                              58108 → 80 [PSH, ACK] Seq=1 Ack=1
                                          172.20.10.2
                                                                    128.119.245.12
                                                                                                       596
Win=262144 Len=542 [TCP segment of a reassembled PDU]
Frame 18: 596 bytes on wire (4768 bits), 596 bytes captured (4768 bits) on interface 0
Ethernet II, Src: IntelCor_10:10:99 (14:ab:c5:10:10:99), Dst: a2:56:f3:b9:0d:64 (a2:56:f3:b9:0d:64)
Internet Protocol Version 4, Src: 172.20.10.2, Dst: 128.119.245.12
    0100 .... = Version: 4
.... 0101 = Header Length: 20 bytes (5)
    Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT)
     Total Length: 582
     Identification: 0x3fad (16301)
     Flags: 0x4000, Don't fragment
     Time to live: 128
    Protocol: TCP (6)
    Header checksum: 0x8d6a [validation disabled]
     [Header checksum status: Unverified]
     Source: 172.20.10.2
    Destination: 128.119.245.12
Transmission Control Protocol, Src Port: 58108, Dst Port: 80, Seq: 1, Ack: 1, Len: 542
    Source Port: 58108
     Destination Port: 80
     [Stream index: 2]
     [TCP Segment Len: 542]
    Sequence number: 1 (relative sequence number)
[Next sequence number: 543 (relative sequence number)]
Acknowledgment number: 1 (relative ack number)
     0101 .... = Header Length: 20 bytes (5)
    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
         .... = Acknowledgment: Set
         .... = Push: Set
         .... .... .0.. = Reset: Not set
         .... .... ..0. = Syn: Not set
         .... .... 0 = Fin: Not set

[TCP Flags: ......AP...]
     Window size value: 1024
     [Calculated window size: 262144]
     [Window size scaling factor: 256]
     Checksum: 0x2e6f [unverified]
     [Checksum Status: Unverified]
    Urgent pointer: 0
     [SEQ/ACK analysis]
         [iRTT: 0.055917000 seconds]
         [Bytes in flight: 542]
[Bytes sent since last PSH flag: 542]
     [Timestamps]
     TCP payload (542 bytes)
    [Reassembled PDU in frame: 182]
TCP segment data (542 bytes)
```