

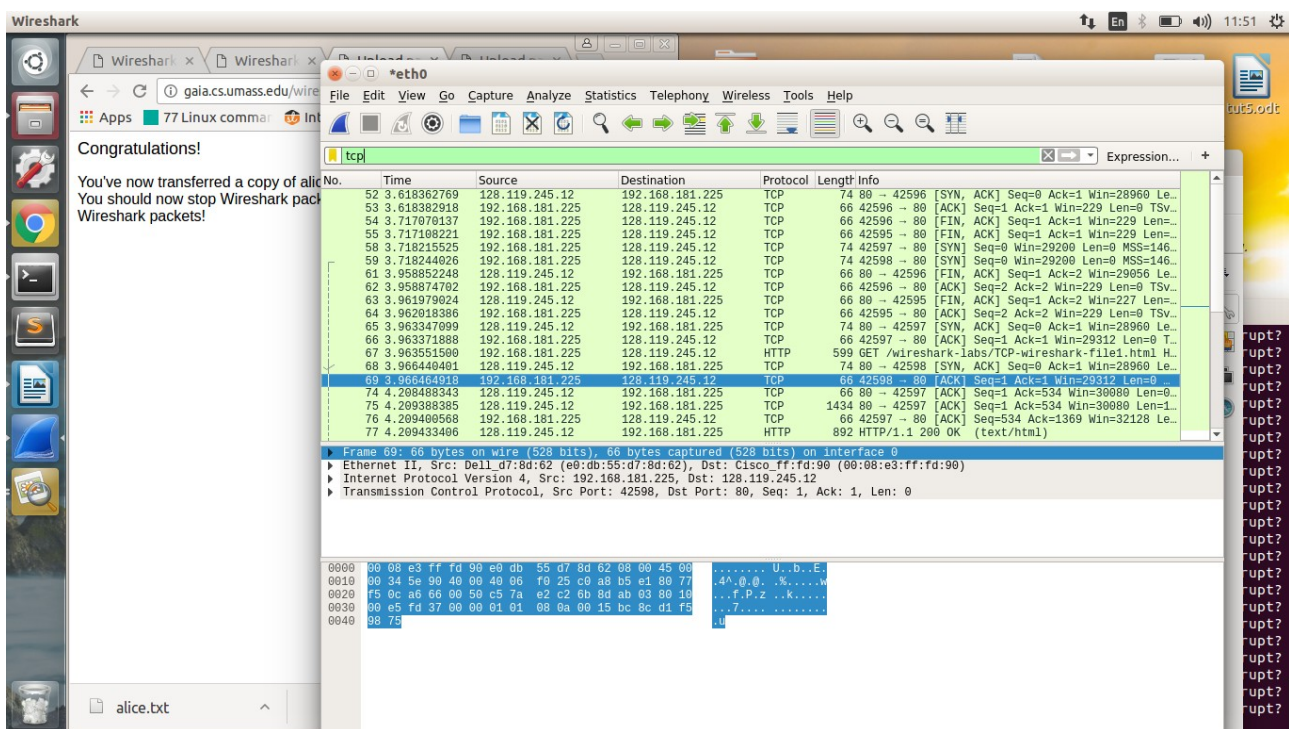
Name :- Harsh Kumar Bansal
Enrollment No. :- 15114033
Btech. CSE 3rd Year

Ans1.

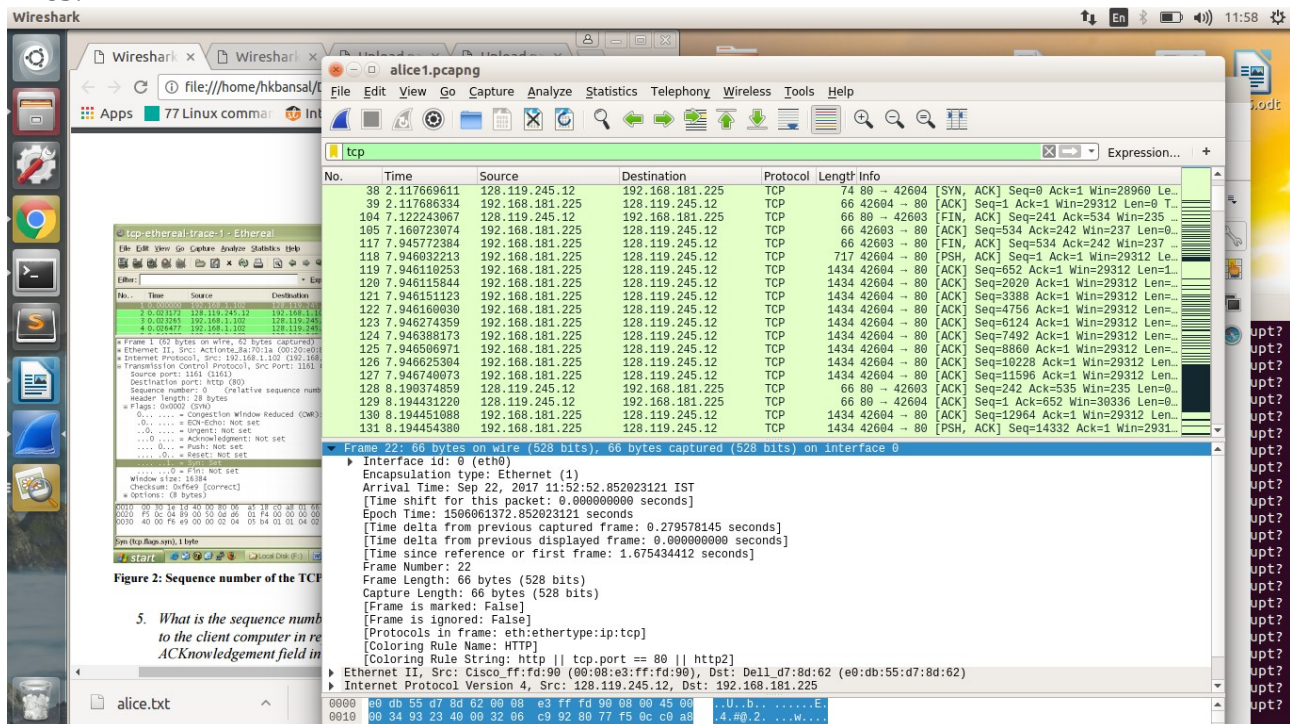
Source (Client)
IP Address 192.168.181.225
TCP Port 42596

Ans2.

Destination (Server)
IP Address 128.119.245.12
TCP Port 80



Ans3.



Source (Client)

IP Address 192.168.181.225

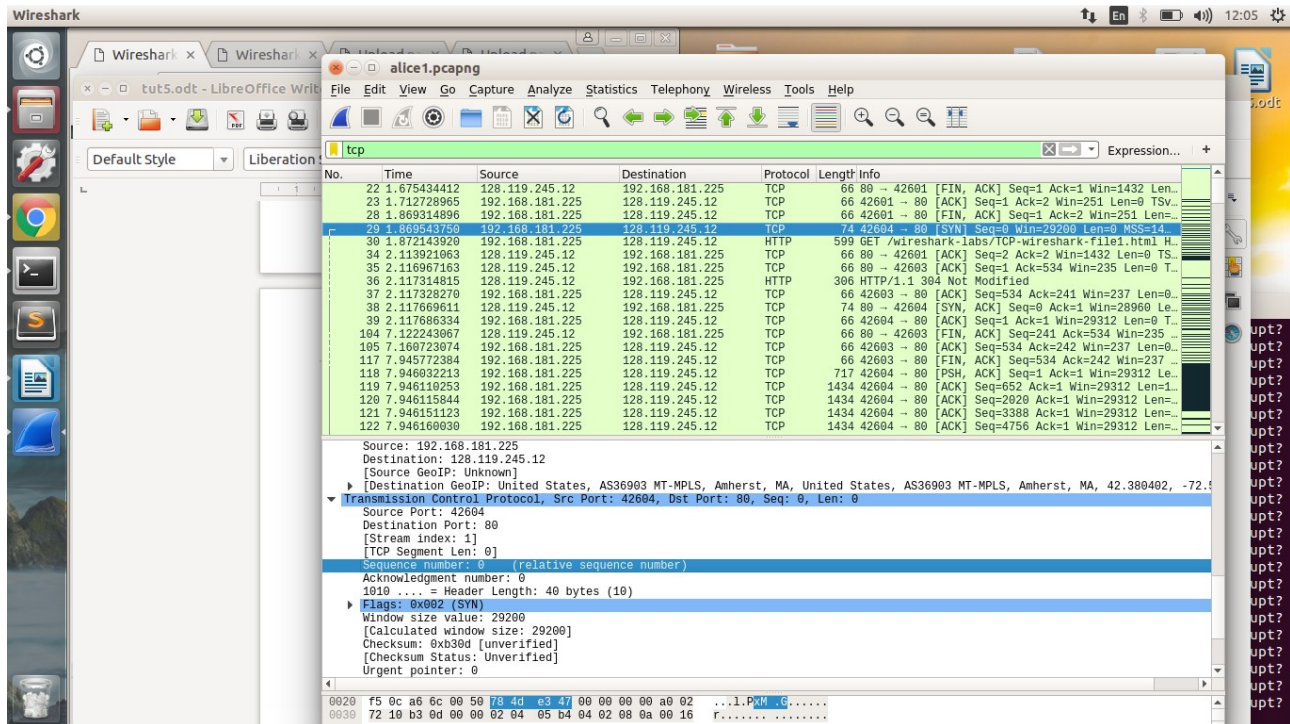
TCP Port 42604

Destination (Server)

IP Address 128.119.245.12

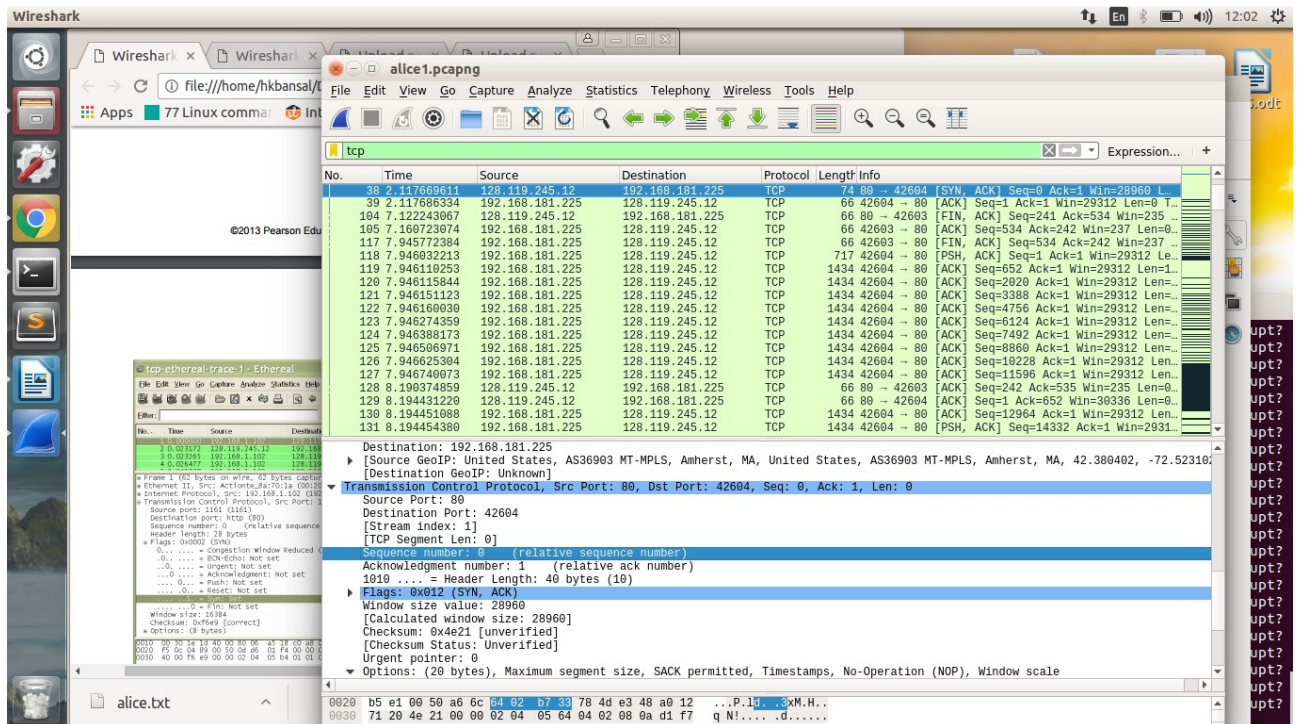
TCP Port 80

Ans4.



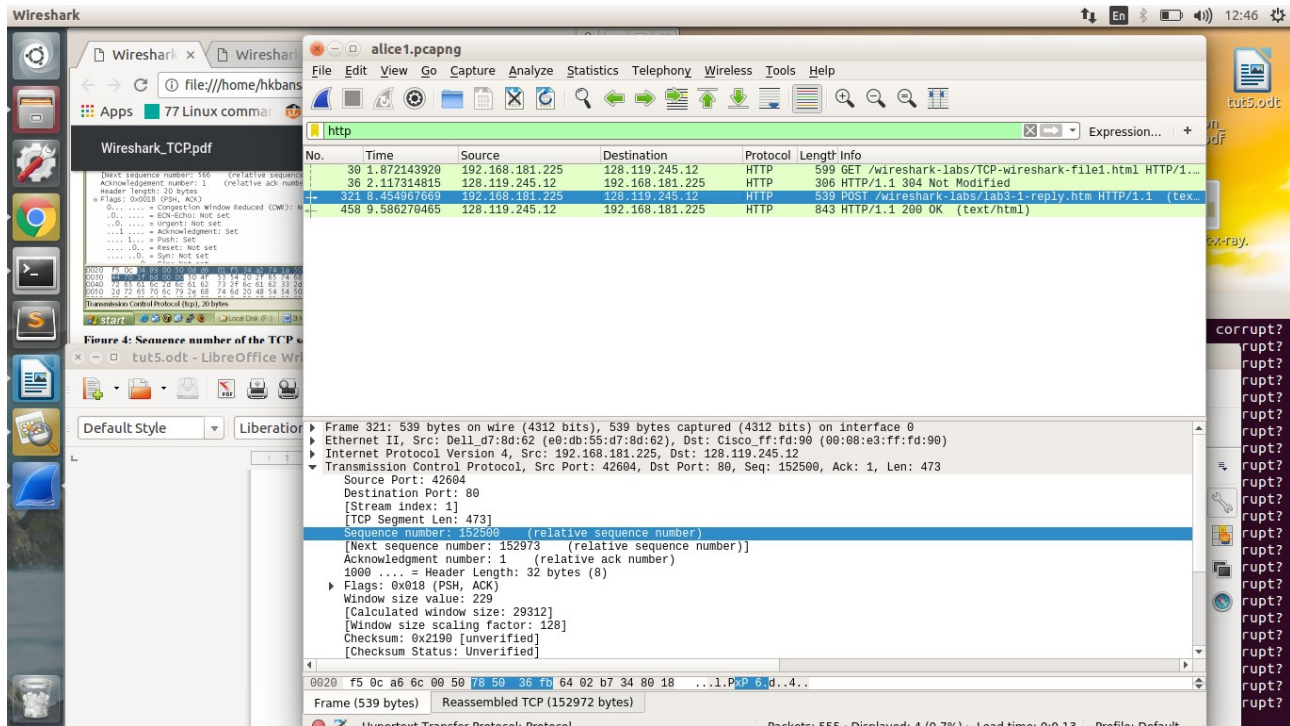
Sequence number of the TCP SYN segment is used to initiate the TCP connection between the client computer and gaia.cs.umass.edu.
The value of sequence No. is 0 in this case.

Ans5.



Sequence number of the SYNACK segment from gaia.cs.umass.edu to the client computer in reply to the SYN has the value of 0 in this trace. The value of the ACKnowledgement field in the SYNACK segment is 1. The value of the ACKnowledgement field in the SYNACK segment is determined by gaia.cs.umass.edu by adding 1 to the initial sequence number of SYN segment from the client computer (i.e. the sequence number of the SYN segment initiated by the client computer is 0.). The SYN flag and Acknowledgement flag in the segment are set to 1 and they indicate that this segment is a SYNACK segment.

Ans6.



No.321 segment is the TCP segment containing the HTTP GETcommand. The sequence number of this segment has the value of 151500 (relative number).

The screenshot shows a Wireshark capture of a TCP connection. The packet list on the left shows a SYN segment (Seq: 181.225) and an ACK segment (Seq: 181.225, Ack: 181.225). The packet details on the right show the ACK field is set to 534, which is 181.225 + 1. The packet bytes show the ACK field in hex and ASCII.

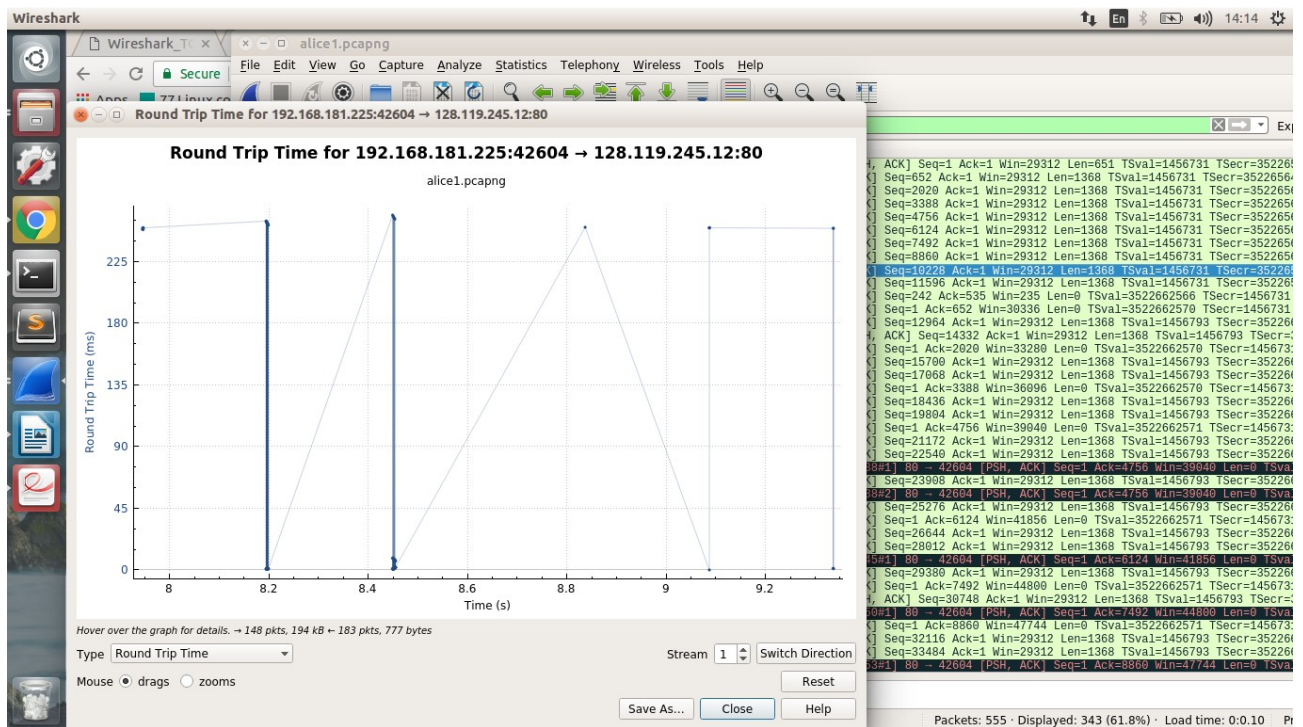
| No. | Time | Source | Destination | Protocol | Length | Info |
|-----|-------------|-----------------|-----------------|----------|--------|--|
| 213 | 8.449670926 | 128.119.245.12 | 192.168.181.225 | TCP | 66 | 80 → 42604 [ACK] Seq=1 Ack=15700 Win=61824 Len=0 |
| 214 | 8.449693435 | 192.168.181.225 | 128.119.245.12 | TCP | 1434 | 42604 → 80 [ACK] Seq=69052 Ack=1 Win=29312 Len=0 |
| 215 | 8.449696726 | 192.168.181.225 | 128.119.245.12 | TCP | 1434 | 42604 → 80 [ACK] Seq=70420 Ack=1 Win=29312 Len=0 |
| 216 | 8.449695560 | 128.119.245.12 | 192.168.181.225 | TCP | 66 | 80 → 42604 [ACK] Seq=1 Ack=18436 Win=67328 Len=0 |
| 217 | 8.449104056 | 128.119.245.12 | 192.168.181.225 | TCP | 66 | 80 → 42604 [ACK] Seq=1 Ack=22540 Win=75520 Len=0 |
| 218 | 8.449116893 | 192.168.181.225 | 128.119.245.12 | TCP | 1434 | 42604 → 80 [ACK] Seq=71788 Ack=1 Win=29312 Len=0 |
| 219 | 8.449139229 | 192.168.181.225 | 128.119.245.12 | TCP | 1434 | 42604 → 80 [ACK] Seq=73156 Ack=1 Win=29312 Len=0 |
| 220 | 8.449201679 | 128.119.245.12 | 192.168.181.225 | TCP | 66 | 80 → 42604 [ACK] Seq=1 Ack=23908 Win=78464 Len=0 |
| 221 | 8.449260821 | 128.119.245.12 | 192.168.181.225 | TCP | 66 | 80 → 42604 [ACK] Seq=1 Ack=25276 Win=81280 Len=0 |
| 222 | 8.449269942 | 128.119.245.12 | 192.168.181.225 | TCP | 66 | 80 → 42604 [ACK] Seq=1 Ack=29380 Win=89600 Len=0 |
| 223 | 8.449287215 | 192.168.181.225 | 128.119.245.12 | TCP | 1434 | 42604 → 80 [ACK] Seq=74524 Ack=1 Win=29312 Len=0 |
| 224 | 8.449347215 | 128.119.245.12 | 192.168.181.225 | TCP | 66 | 80 → 42604 [ACK] Seq=1 Ack=32116 Win=94976 Len=0 |
| 225 | 8.449353912 | 128.119.245.12 | 192.168.181.225 | TCP | 66 | 80 → 42604 [ACK] Seq=1 Ack=33484 Win=97920 Len=0 |
| 226 | 8.449377009 | 192.168.181.225 | 128.119.245.12 | TCP | 1434 | 42604 → 80 [ACK] Seq=75892 Ack=1 Win=29312 Len=0 |
| 227 | 8.449387548 | 128.119.245.12 | 192.168.181.225 | TCP | 66 | 80 → 42604 [ACK] Seq=1 Ack=37588 Win=106112 Len=0 |
| 228 | 8.449487332 | 192.168.181.225 | 128.119.245.12 | TCP | 1434 | 42604 → 80 [PSH, ACK] Seq=77260 Ack=1 Win=29312 Len=0 |
| 229 | 8.449629419 | 192.168.181.225 | 128.119.245.12 | TCP | 1434 | 42604 → 80 [ACK] Seq=78628 Ack=1 Win=29312 Len=0 |
| 230 | 8.449738247 | 128.119.245.12 | 192.168.181.225 | TCP | 66 | 80 → 42604 [ACK] Seq=1 Ack=41692 Win=114304 Len=0 |
| 231 | 8.449752078 | 128.119.245.12 | 192.168.181.225 | TCP | 78 | [TCP Dup ACK 230] 80 → 42604 [PSH, ACK] Seq=1 Ack=41692 Win=114304 Len=0 |

Frame 35: 386 bytes on wire (2448 bits), 386 bytes captured (2448 bits) on interface 0
 Ethernet II, Src: Cisco_ff:fd:90 (00:08:03:ff:fd:90), Dst: Dell_d7:8d:62 (e0:db:55:d7:8d:62)
 Internet Protocol Version 4, Src: 128.119.245.12, Dst: 192.168.181.225
 Transmission Control Protocol, Src Port: 80, Dst Port: 42603, Seq: 1, Ack: 534, Len: 240
 Source Port: 80
 Destination Port: 42603
 [Stream index: 2]
 [TCP Segment Len: 240]
 Sequence number: 1 (relative sequence number)
 [Next sequence number: 241 (relative sequence number)]
 Acknowledgment number: 534 (relative ack number)
 1000 = Header Length: 32 bytes (8)
 [Flags: 0x018 (PSH, ACK)]
 Window size value: 235
 [Calculated window size: 235]
 [Window size scaling factor: -1 (unknown)]
 Checksum: 0x4d3c [unverified]
 [Checksum Status: Unverified]
 Urgent pointer: 0

0000 00 0b 55 d7 8d 62 00 00 e3 ff fd 90 08 00 45 90 .U..b.....E.
 0010 01 24 e8 ac 40 90 32 06 73 19 80 7f 15 9c 0c a8 ..0.2.s....

| segment | sequence No. | Sent Time | Received Time | RTT |
|---------|--------------|-------------|---------------|-------------|
| 118 | 1 | 7.946032213 | 8.190126423 | 0.24409421 |
| 119 | 652 | 7.946110253 | 8.194431220 | 0.248320967 |
| 120 | 2020 | 7.946115844 | 8.194677389 | 0.248561545 |
| 121 | 3388 | 7.946151123 | 8.197694046 | 0.251542923 |
| 122 | 4756 | 7.946160030 | 8.195043270 | 0.24888324 |
| 123 | 6124 | 7.946274359 | 8.195336255 | 0.249061896 |

RTT for segment 118 = 0.24409421
 RTT for segment 119 = 0.244622554
 RTT for segment 120 = 0.245114927
 RTT for segment 121 = 0.245918426
 RTT for segment 122 = 0.246289028
 RTT for segment 123 = 0.246635636



Ans8.

The image shows a Wireshark packet capture of a TCP connection. The packet list on the left shows a sequence of packets. The packet details pane for packet 119 shows a TCP segment with a length of 651 bytes. The packet bytes pane shows the raw data of the segment.

| No. | Time | Source | Destination | Protocol | Length | Info |
|-----|-------------|-----------------|-----------------|----------|--------|--|
| 35 | 2.116967163 | 128.119.245.12 | 192.168.181.225 | TCP | 66 | 80 → 42603 [ACK] Seq=1 Ack=534 Win=235 Len=0 TSval=3522656493 TSecr=1455212 |
| 36 | 2.117314815 | 128.119.245.12 | 192.168.181.225 | HTTP | 308 | HTTP/1.1 304 Not Modified |
| 37 | 2.117328279 | 192.168.181.225 | 128.119.245.12 | TCP | 66 | 42603 → 80 [ACK] Seq=534 Ack=241 Win=237 Len=0 TSval=1455274 TSecr=3522656493 |
| 38 | 2.117669611 | 128.119.245.12 | 192.168.181.225 | TCP | 74 | 80 → 42604 [SYN, ACK] Seq=0 Ack=1 Win=28968 Len=0 MSS=1380 SACK_PERM=1 TSval= |
| 39 | 2.117686334 | 192.168.181.225 | 128.119.245.12 | TCP | 66 | 42604 → 80 [ACK] Seq=1 Ack=1 Win=29312 Len=0 TSval=1455274 TSecr=3522656493 |
| 104 | 7.122243967 | 128.119.245.12 | 192.168.181.225 | TCP | 66 | 80 → 42603 [FIN, ACK] Seq=241 Ack=534 Win=235 Len=0 TSval=3522661498 TSecr=14 |
| 105 | 7.169723974 | 192.168.181.225 | 128.119.245.12 | TCP | 66 | 42603 → 80 [ACK] Seq=534 Ack=242 Win=237 Len=0 TSval=1456535 TSecr=3522661498 |
| 117 | 7.945772384 | 192.168.181.225 | 128.119.245.12 | TCP | 66 | 42603 → 80 [FIN, ACK] Seq=534 Ack=242 Win=237 Len=0 TSval=1456731 TSecr=35226 |
| 119 | 7.946110253 | 192.168.181.225 | 128.119.245.12 | TCP | 1434 | 42604 → 80 [ACK] Seq=652 Ack=1 Win=29312 Len=1368 TSval=1456731 TSecr=3522656 |
| 120 | 7.946115844 | 192.168.181.225 | 128.119.245.12 | TCP | 1434 | 42604 → 80 [ACK] Seq=2020 Ack=1 Win=29312 Len=1368 TSval=1456731 TSecr=3522656 |
| 121 | 7.946151123 | 192.168.181.225 | 128.119.245.12 | TCP | 1434 | 42604 → 80 [ACK] Seq=3388 Ack=1 Win=29312 Len=1368 TSval=1456731 TSecr=3522656 |
| 122 | 7.946160930 | 192.168.181.225 | 128.119.245.12 | TCP | 1434 | 42604 → 80 [ACK] Seq=4756 Ack=1 Win=29312 Len=1368 TSval=1456731 TSecr=3522656 |
| 123 | 7.946274359 | 192.168.181.225 | 128.119.245.12 | TCP | 1434 | 42604 → 80 [ACK] Seq=6124 Ack=1 Win=29312 Len=1368 TSval=1456731 TSecr=3522656 |
| 124 | 7.946388173 | 192.168.181.225 | 128.119.245.12 | TCP | 1434 | 42604 → 80 [ACK] Seq=7492 Ack=1 Win=29312 Len=1368 TSval=1456731 TSecr=3522656 |
| 125 | 7.946506971 | 192.168.181.225 | 128.119.245.12 | TCP | 1434 | 42604 → 80 [ACK] Seq=8860 Ack=1 Win=29312 Len=1368 TSval=1456731 TSecr=3522656 |
| 126 | 7.946625394 | 192.168.181.225 | 128.119.245.12 | TCP | 1434 | 42604 → 80 [ACK] Seq=10228 Ack=1 Win=29312 Len=1368 TSval=1456731 TSecr=35226 |
| 127 | 7.946740073 | 192.168.181.225 | 128.119.245.12 | TCP | 1434 | 42604 → 80 [ACK] Seq=11596 Ack=1 Win=29312 Len=1368 TSval=1456731 TSecr=35226 |
| 128 | 8.190374859 | 128.119.245.12 | 192.168.181.225 | TCP | 66 | 80 → 42603 [ACK] Seq=242 Ack=535 Win=235 Len=0 TSval=3522662566 TSecr=1456731 |

Packet 119 details:

- Flags: 0x02 (Don't Fragment)
- Fragment offset: 0
- Time to live: 64
- Protocol: TCP (6)
- Header checksum: 0x74fd [validation disabled]
- [Header checksum status: Unverified]
- Source: 192.168.181.225
- Destination: 128.119.245.12
- [Source GeoIP: Unknown]
- [Destination GeoIP: United States, AS36903 MT-MPLS, Amherst, MA, United States, AS36903 MT-MPLS, Amherst, MA, 42.380402, -72.523102]
- Transmission Control Protocol, Src Port: 42604, Dst Port: 80, Seq: 1, Ack: 1, Len: 651
- Source Port: 42604
- Destination Port: 80
- [Stream index: 1]
- [TCP Segment Len: 651]
- Sequence number: 1 (relative sequence number)
- [Next sequence number: 652 (relative sequence number)]
- Acknowledgment number: 1 (relative ack number)
- 1000 = Header Length: 32 bytes (8)

Packet bytes:

```
0020 f5 0c a6 6c 00 50 78 4d e3 48 64 02 b7 34 80 18 ...I.PxM .Hd..4..
0030 00 e5 4b 03 00 00 01 01 08 0a 00 16 3a 5b d1 f7 ...K.....[:...
```

First one is of 651 bytes
And all other fives are of 1368 bytes.

Ans9.

Wireshark

alice1.pcapng

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tcp

| No. | Time | Source | Destination | Protocol | Length | Info |
|-----|-------------|-----------------|-----------------|----------|--------|---|
| 38 | 2.117669611 | 128.119.245.12 | 192.168.181.225 | TCP | 74 | 80 → 42604 [SYN, ACK] Seq=0 Ack=1 Win=28960 Len=0 MSS=1380 SACK_PERM=1 TSval= |
| 39 | 2.117686334 | 192.168.181.225 | 128.119.245.12 | TCP | 66 | 42604 → 80 [ACK] Seq=1 Ack=1 Win=29312 Len=0 TSval=1455274 TSecr=3522656493 |
| 104 | 7.122243967 | 128.119.245.12 | 192.168.181.225 | TCP | 66 | 80 → 42603 [FIN, ACK] Seq=241 Ack=534 Win=235 Len=0 TSval=3522661498 TSecr=14 |
| 105 | 7.169723974 | 192.168.181.225 | 128.119.245.12 | TCP | 66 | 42603 → 80 [ACK] Seq=534 Ack=242 Win=237 Len=0 TSval=1456535 TSecr=3522661498 |
| 117 | 7.945772384 | 192.168.181.225 | 128.119.245.12 | TCP | 66 | 42603 → 80 [FIN, ACK] Seq=534 Ack=242 Win=237 Len=0 TSval=1456731 TSecr=35226 |
| 118 | 7.946032245 | 192.168.181.225 | 128.119.245.12 | TCP | 74 | 80 → 42604 [PSH, ACK] Seq=1 Ack=1 Win=29312 Len=0 MSS=1380 SACK_PERM=1 TSval= |
| 119 | 7.946119253 | 192.168.181.225 | 128.119.245.12 | TCP | 1434 | 42604 → 80 [ACK] Seq=652 Ack=1 Win=29312 Len=1368 TSval=1456731 TSecr=3522656 |
| 120 | 7.946115844 | 192.168.181.225 | 128.119.245.12 | TCP | 1434 | 42604 → 80 [ACK] Seq=2020 Ack=1 Win=29312 Len=1368 TSval=1456731 TSecr=3522656 |
| 121 | 7.946151123 | 192.168.181.225 | 128.119.245.12 | TCP | 1434 | 42604 → 80 [ACK] Seq=3388 Ack=1 Win=29312 Len=1368 TSval=1456731 TSecr=3522656 |
| 122 | 7.946160930 | 192.168.181.225 | 128.119.245.12 | TCP | 1434 | 42604 → 80 [ACK] Seq=4756 Ack=1 Win=29312 Len=1368 TSval=1456731 TSecr=3522656 |
| 123 | 7.946274359 | 192.168.181.225 | 128.119.245.12 | TCP | 1434 | 42604 → 80 [ACK] Seq=6124 Ack=1 Win=29312 Len=1368 TSval=1456731 TSecr=3522656 |
| 124 | 7.946388173 | 192.168.181.225 | 128.119.245.12 | TCP | 1434 | 42604 → 80 [ACK] Seq=7492 Ack=1 Win=29312 Len=1368 TSval=1456731 TSecr=3522656 |
| 125 | 7.946596971 | 192.168.181.225 | 128.119.245.12 | TCP | 1434 | 42604 → 80 [ACK] Seq=8860 Ack=1 Win=29312 Len=1368 TSval=1456731 TSecr=3522656 |
| 126 | 7.946625394 | 192.168.181.225 | 128.119.245.12 | TCP | 1434 | 42604 → 80 [ACK] Seq=10228 Ack=1 Win=29312 Len=1368 TSval=1456731 TSecr=3522656 |
| 127 | 7.946749673 | 192.168.181.225 | 128.119.245.12 | TCP | 1434 | 42604 → 80 [ACK] Seq=11596 Ack=1 Win=29312 Len=1368 TSval=1456731 TSecr=3522656 |
| 128 | 8.199374859 | 128.119.245.12 | 192.168.181.225 | TCP | 66 | 80 → 42603 [ACK] Seq=242 Ack=535 Win=235 Len=0 TSval=3522662566 TSecr=1456731 |
| 129 | 8.194431220 | 128.119.245.12 | 192.168.181.225 | TCP | 66 | 80 → 42604 [ACK] Seq=1 Ack=652 Win=38336 Len=0 TSval=3522662570 TSecr=1456731 |
| 130 | 8.194451088 | 192.168.181.225 | 128.119.245.12 | TCP | 1434 | 42604 → 80 [ACK] Seq=12964 Ack=1 Win=29312 Len=1368 TSval=1456731 TSecr=3522656 |
| 131 | 8.194454380 | 192.168.181.225 | 128.119.245.12 | TCP | 1434 | 42604 → 80 [PSH, ACK] Seq=14332 Ack=1 Win=29312 Len=1368 TSval=1456731 TSecr= |
| 132 | 8.194677389 | 128.119.245.12 | 192.168.181.225 | TCP | 66 | 80 → 42604 [ACK] Seq=1 Ack=2020 Win=33280 Len=0 TSval=3522662570 TSecr=1456731 |
| 133 | 8.194688648 | 192.168.181.225 | 128.119.245.12 | TCP | 1434 | 42604 → 80 [ACK] Seq=15700 Ack=1 Win=29312 Len=1368 TSval=1456731 TSecr=3522656 |
| 134 | 8.194691959 | 192.168.181.225 | 128.119.245.12 | TCP | 1434 | 42604 → 80 [ACK] Seq=17068 Ack=1 Win=29312 Len=1368 TSval=1456731 TSecr=3522656 |
| 135 | 8.194694046 | 128.119.245.12 | 192.168.181.225 | TCP | 66 | 80 → 42604 [ACK] Seq=1 Ack=3388 Win=36096 Len=0 TSval=3522662570 TSecr=1456731 |
| 136 | 8.194742215 | 192.168.181.225 | 128.119.245.12 | TCP | 1434 | 42604 → 80 [ACK] Seq=18436 Ack=1 Win=29312 Len=1368 TSval=1456731 TSecr=3522656 |

Frame 118: 717 bytes on wire (5736 bits), 717 bytes captured (5736 bits) on interface 0

Ethernet II, Src: Dell_d7:8d:62 (e0:db:55:d7:8d:62), Dst: Cisco_ff:fd:90 (00:08:e3:ff:fd:90)

Internet Protocol Version 4, Src: 192.168.181.225, 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: 703

Identification: 0xd72d (55085)

Flags: 0x02 (Don't Fragment)

Fragment offset: 0

Time to live: 64

Protocol: TCP (6)

Header checksum: 0x74fd [validation disabled]

[Header checksum status: Unverified]

Source: 192.168.181.225

0010 02 bf d7 2d 40 00 40 06 74 fd c0 a8 b5 e1 80 77 ...-0.0. t.....W

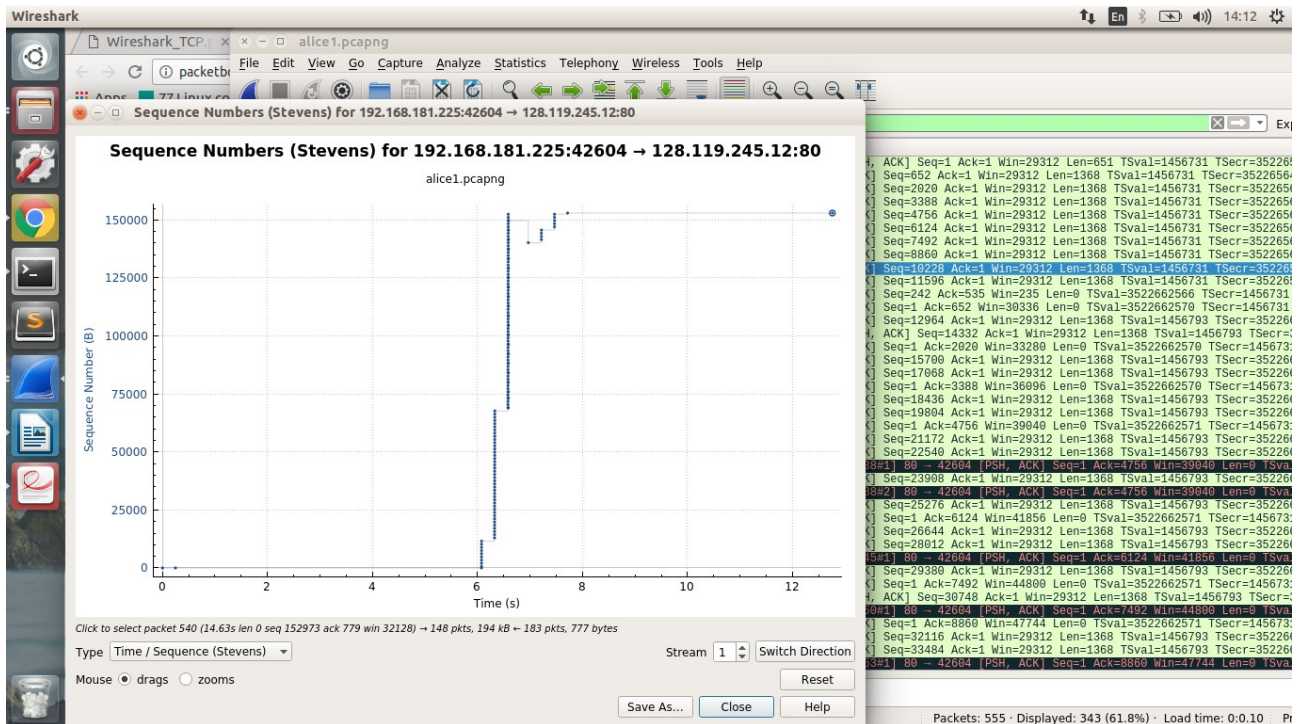
0020 f5 0c a6 6c 00 50 78 4d e3 48 64 02 b7 34 80 18 ...1.PxM .Hd..4..

Header checksum status (ip.checksum.status)

Packets: 555 · Displayed: 343 (61.8%) · Load time: 0:0.10 · Pk

The minimum amount of buffer space (receiver window) advertised at gaia.cs.umass.edu for the entire trace is 29312 bytes, which shows in the first acknowledgement from the server. This receiver window grows steadily until a maximum receiver buffer size of 204032 bytes. The sender is never throttled due to lacking of receiver buffer space by inspecting this trace.

Ans10. There are no retransmitted segments in the trace file. We can verify this by checking the sequence numbers of the TCP segments in the trace file.



Ans 11.

Ack1 651 and all other rest five are of 1368 bytes

Ans12.

| No. | Time | Source | Destination | Protocol | Length | Info |
|-----|--------------|-----------------|-----------------|----------|--------|--|
| 433 | 9.086836689 | 128.119.245.12 | 192.168.181.225 | TCP | 66 | 80 → 42604 [ACK] Seq=1 Ack=142924 Win=182528 Len=0 TSval=3522663462 TSecr=1451 |
| 434 | 9.086834958 | 192.168.181.225 | 128.119.245.12 | TCP | 1434 | [TCP Retransmission] 42604 → 80 [ACK] Seq=144292 Ack=1 Win=29312 Len=1368 TSV |
| 435 | 9.086835876 | 192.168.181.225 | 128.119.245.12 | TCP | 1434 | [TCP Retransmission] 42604 → 80 [ACK] Seq=145660 Ack=1 Win=29312 Len=1368 TSV |
| 439 | 9.336461048 | 128.119.245.12 | 192.168.181.225 | TCP | 78 | [TCP Window Update] 80 → 42604 [ACK] Seq=1 Ack=142924 Win=183296 Len=0 TSval= |
| 440 | 9.336475267 | 128.119.245.12 | 192.168.181.225 | TCP | 66 | 80 → 42604 [ACK] Seq=1 Ack=144292 Win=186112 Len=0 TSval=3522663711 TSecr=145 |
| 441 | 9.336487436 | 192.168.181.225 | 128.119.245.12 | TCP | 1434 | [TCP Retransmission] 42604 → 80 [ACK] Seq=147028 Ack=1 Win=29312 Len=1368 TSV |
| 442 | 9.336491591 | 192.168.181.225 | 128.119.245.12 | TCP | 1434 | [TCP Retransmission] 42604 → 80 [ACK] Seq=148396 Ack=1 Win=29312 Len=1368 TSV |
| 443 | 9.336494155 | 128.119.245.12 | 192.168.181.225 | TCP | 66 | 80 → 42604 [ACK] Seq=1 Ack=145660 Win=189056 Len=0 TSval=3522663712 TSecr=145 |
| 444 | 9.336497479 | 192.168.181.225 | 128.119.245.12 | TCP | 1434 | [TCP Retransmission] 42604 → 80 [ACK] Seq=149764 Ack=1 Win=29312 Len=1368 TSV |
| 445 | 9.336499202 | 192.168.181.225 | 128.119.245.12 | TCP | 1434 | [TCP Retransmission] 42604 → 80 [ACK] Seq=151132 Ack=1 Win=29312 Len=1368 TSV |
| 446 | 9.336501613 | 128.119.245.12 | 192.168.181.225 | TCP | 66 | 80 → 42604 [ACK] Seq=1 Ack=147028 Win=191872 Len=0 TSval=3522663712 TSecr=145 |
| 447 | 9.336503418 | 192.168.181.225 | 128.119.245.12 | TCP | 539 | [TCP Retransmission] 42604 → 80 [PSH, ACK] Seq=152508 Ack=1 Win=29312 Len=473 |
| 448 | 9.336505290 | 128.119.245.12 | 192.168.181.225 | TCP | 78 | [TCP Dup ACK 446#1] 80 → 42604 [ACK] Seq=1 Ack=147028 Win=191872 Len=0 TSval= |
| 449 | 9.337540657 | 128.119.245.12 | 192.168.181.225 | TCP | 78 | [TCP Dup ACK 446#2] 80 → 42604 [PSH, ACK] Seq=1 Ack=147028 Win=191872 Len=0 T |
| 450 | 9.337548197 | 128.119.245.12 | 192.168.181.225 | TCP | 66 | [TCP Dup ACK 446#3] 80 → 42604 [PSH, ACK] Seq=1 Ack=147028 Win=191872 Len=0 T |
| 451 | 9.337549810 | 128.119.245.12 | 192.168.181.225 | TCP | 90 | [TCP Dup ACK 446#4] 80 → 42604 [PSH, ACK] Seq=1 Ack=147028 Win=191872 Len=0 T |
| 455 | 9.585799377 | 128.119.245.12 | 192.168.181.225 | TCP | 66 | 80 → 42604 [ACK] Seq=1 Ack=149764 Win=197376 Len=0 TSval=3522663961 TSecr=145 |
| 456 | 9.585815923 | 128.119.245.12 | 192.168.181.225 | TCP | 66 | 80 → 42604 [ACK] Seq=1 Ack=151132 Win=200320 Len=0 TSval=3522663961 TSecr=145 |
| 457 | 9.585818891 | 128.119.245.12 | 192.168.181.225 | TCP | 66 | 80 → 42604 [ACK] Seq=1 Ack=152973 Win=204932 Len=0 TSval=3522663961 TSecr=145 |
| 458 | 9.586270465 | 128.119.245.12 | 192.168.181.225 | HTTP | 843 | HTTP/1.1 200 OK (text/html) |
| 459 | 9.586282768 | 192.168.181.225 | 128.119.245.12 | TCP | 66 | 42604 → 80 [ACK] Seq=152973 Ack=778 Win=32128 Len=0 TSval=1457141 TSecr=35226 |
| 539 | 14.591954470 | 128.119.245.12 | 192.168.181.225 | TCP | 66 | 80 → 42604 [FIN, ACK] Seq=778 Ack=152973 Win=204932 Len=0 TSval=3522668967 TSV |
| 540 | 14.628727593 | 192.168.181.225 | 128.119.245.12 | TCP | 66 | 42604 → 80 [ACK] Seq=152973 Ack=779 Win=32128 Len=0 TSval=1458402 TSecr=35226 |

Flags: 0x02 (Don't Fragment)
Fragment offset: 0
Time to live: 49
Protocol: TCP (6)
Header checksum: 0x0223 [validation disabled]
[Header checksum status: Unverified]
Source: 128.119.245.12
Destination: 192.168.181.225
[Source GeoIP: United States, AS36903 MT-MPLS, Amherst, MA, United States, AS36903 MT-MPLS, Amherst, MA, 42.380402, -72.523102]
[Destination GeoIP: Unknown]
Transmission Control Protocol, Src Port: 80, Dst Port: 42604, Seq: 1, Ack: 152973, Len: 0
Source Port: 80
Destination Port: 42604
[Stream index: 1]
[TCP Segment Len: 0]

0000 e0 db 55 d7 8d 62 00 08 e3 ff fd 90 08 00 45 00 ..U..b... ..E.
0010 00 34 db 92 40 00 31 06 82 23 80 77 f5 0c c0 a8 .4..@.1. .#.w....

Transmission Control Protocol: Protocol

Packets: 555 · Displayed: 343 (61.8%) · Load time: 0:0.10

the sequence number of the first TCP segment (i.e. 1 byte for No. 118 segment)
the acknowledged sequence number of the last ACK (152973 bytes for No. 457 segment)
Total Bytes of data = 152973-1=152972 bytes.
Total time taken =9.585818891-7.946032213=1.639786678
Throughput = 93.2877441KBytes/second.