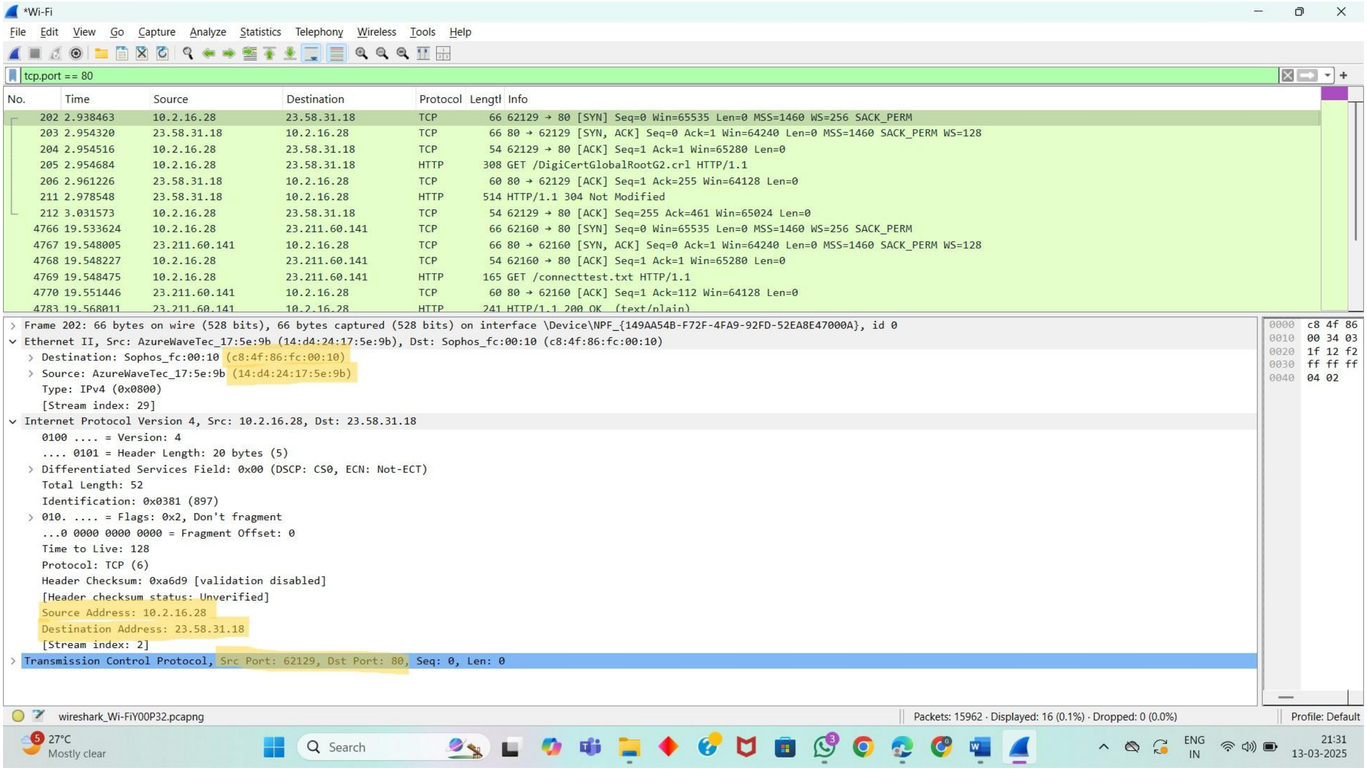
Register No:	**99220040570**
Name:	**K.Hanumaan**
Class/Section:	**8501 A/S06**
Ex.No:	**11**
Name of the Experiment	**Capture and Analyzing TCP 3 way handshake**
Google Drive link of the packet tracer file **(give view permission):**	https://drive.google.com/drive/folders/1bPielwY257DVwUtO2qz_DVoPJ4_fK_R_?usp=drive_link

1. Visit any one website by opening a browser fill your machine details.

Parameter	Value
Your Machine IP Address.	10.2.16.28
Your Machine MAC Address	14:d4:24:17:5e:9b
Default Gateway address	10.2.0.1
Website URL	www.amazon.in
Website IP Address	23.58.31.18

2. Fill the following details:

Field Name	Field Length (no of bits)	Field value
Destination MAC address	48 bits	c8:4f:86:fc:00:10
Source MAC address	48 bits	14:d4:24:17:5e:9b
Destination IP address	32 bits	23.58.31.18
Source IP Address	32 bits	10.2.16.28
Destination TCP port	16 bits	80
Source TCP port	16 bits	62129



*Wi-Fi
File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

tcp.port == 80

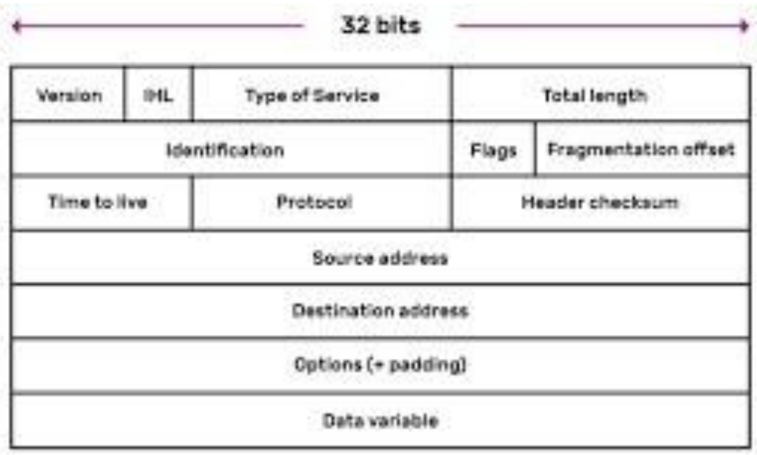
```
No.   Time        Source          Destination     Protocol Lengt Info
  202 2.938463    10.2.16.28      23.58.31.18     TCP       66 62129 → 80 [SYN] Seq=0 Win=65535 Len=0 MSS=1460 WS=256 SACK_PERM
  203 2.954320    23.58.31.18     10.2.16.28      TCP       66 80 → 62129 [SYN, ACK] Seq=0 Ack=1 Win=64240 Len=0 MSS=1460 SACK_PERM WS=128
  204 2.954516    10.2.16.28      23.58.31.18     TCP       54 62129 → 80 [ACK] Seq=1 Ack=1 Win=65280 Len=0
  205 2.954684    10.2.16.28      23.58.31.18     HTTP     308 GET /DigiCertGlobalRootG2.crl HTTP/1.1
  206 2.961226    23.58.31.18     10.2.16.28      TCP       60 80 → 62129 [ACK] Seq=1 Ack=255 Win=64128 Len=0
  211 2.978548    23.58.31.18     10.2.16.28      HTTP     514 HTTP/1.1 304 Not Modified
  212 3.031573    10.2.16.28      23.58.31.18     TCP       54 62129 → 80 [ACK] Seq=255 Ack=461 Win=65024 Len=0
 4766 19.533624   10.2.16.28      23.211.60.141   TCP       66 62160 → 80 [SYN] Seq=0 Win=65535 Len=0 MSS=1460 WS=256 SACK_PERM
 4767 19.548005   23.211.60.141   10.2.16.28      TCP       66 80 → 62160 [SYN, ACK] Seq=0 Ack=1 Win=64240 Len=0 MSS=1460 SACK_PERM WS=128
 4768 19.548227   10.2.16.28      23.211.60.141   TCP       54 62160 → 80 [ACK] Seq=1 Ack=1 Win=65280 Len=0
 4769 19.548475   10.2.16.28      23.211.60.141   HTTP     165 GET /connecttest.txt HTTP/1.1
 4770 19.551446   23.211.60.141   10.2.16.28      TCP       60 80 → 62160 [ACK] Seq=1 Ack=112 Win=64128 Len=0
 4783 19.568011   23.211.60.141   10.2.16.28      HTTP     241 HTTP/1.1 200 OK  (text/plain)
```

```
> Frame 202: 66 bytes on wire (528 bits), 66 bytes captured (528 bits) on interface \Device\NPF_{149AA54B-F72F-4FA9-92FD-52EA8E47000A}, id 0
v Ethernet II, Src: AzureWaveTec_17:5e:9b (14:d4:24:17:5e:9b), Dst: Sophos_fc:00:10 (c8:4f:86:fc:00:10)
  > Destination: Sophos_fc:00:10 (c8:4f:86:fc:00:10)
  > Source: AzureWaveTec_17:5e:9b (14:d4:24:17:5e:9b)
    Type: IPv4 (0x0800)
    [Stream index: 29]
v Internet Protocol Version 4, Src: 10.2.16.28, Dst: 23.58.31.18
    0100 .... = Version: 4
    .... 0101 = Header Length: 20 bytes (5)
  > Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT)
    Total Length: 52
    Identification: 0x0381 (897)
  > 010. .... = Flags: 0x2, Don't fragment
    ...0 0000 0000 0000 = Fragment Offset: 0
    Time to Live: 128
    Protocol: TCP (6)
    Header Checksum: 0xa6d9 [validation disabled]
    [Header checksum status: Unverified]
    Source Address: 10.2.16.28
    Destination Address: 23.58.31.18
    [Stream index: 2]
> Transmission Control Protocol, Src Port: 62129, Dst Port: 80, Seq: 0, Len: 0
```

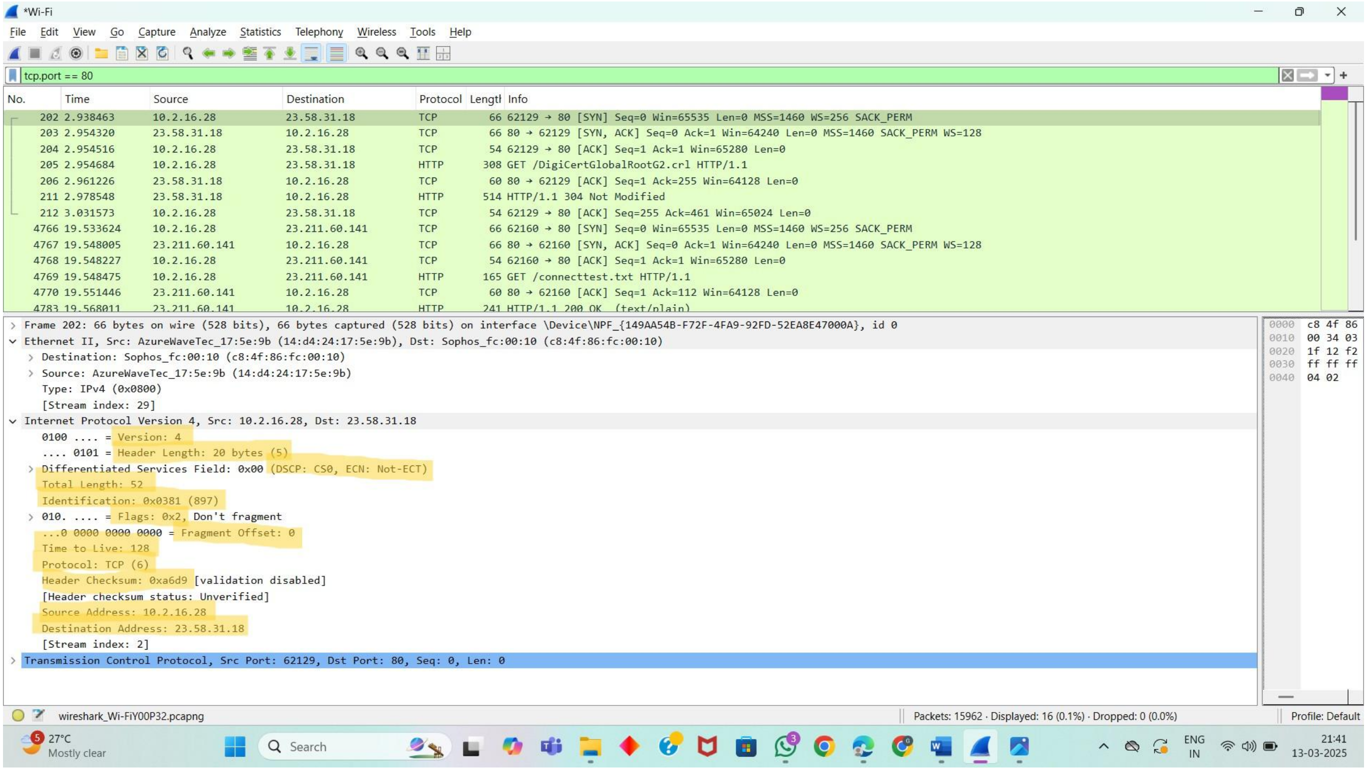
```
0000  c8 4f 86
0010  00 34 03
0020  1f 12 f2
0030  ff ff ff
0040  04 02
```

wireshark_Wi-FiY00P32.pcapng | Packets: 15962 · Displayed: 16 (0.1%) · Dropped: 0 (0.0%) | Profile: Default

3. Fill the details as per the IP frame format .(highlight the details for each of the output and paste screenshot)



4	20 bytes	DSCP:CS0	52	
0x0381 (897)			0x2	0
128		TCP (6)	0xa6d9	
10.2.16.28				
23.58.31.18				
None				
None				



*Wi-Fi
File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

```
tcp.port == 80
```

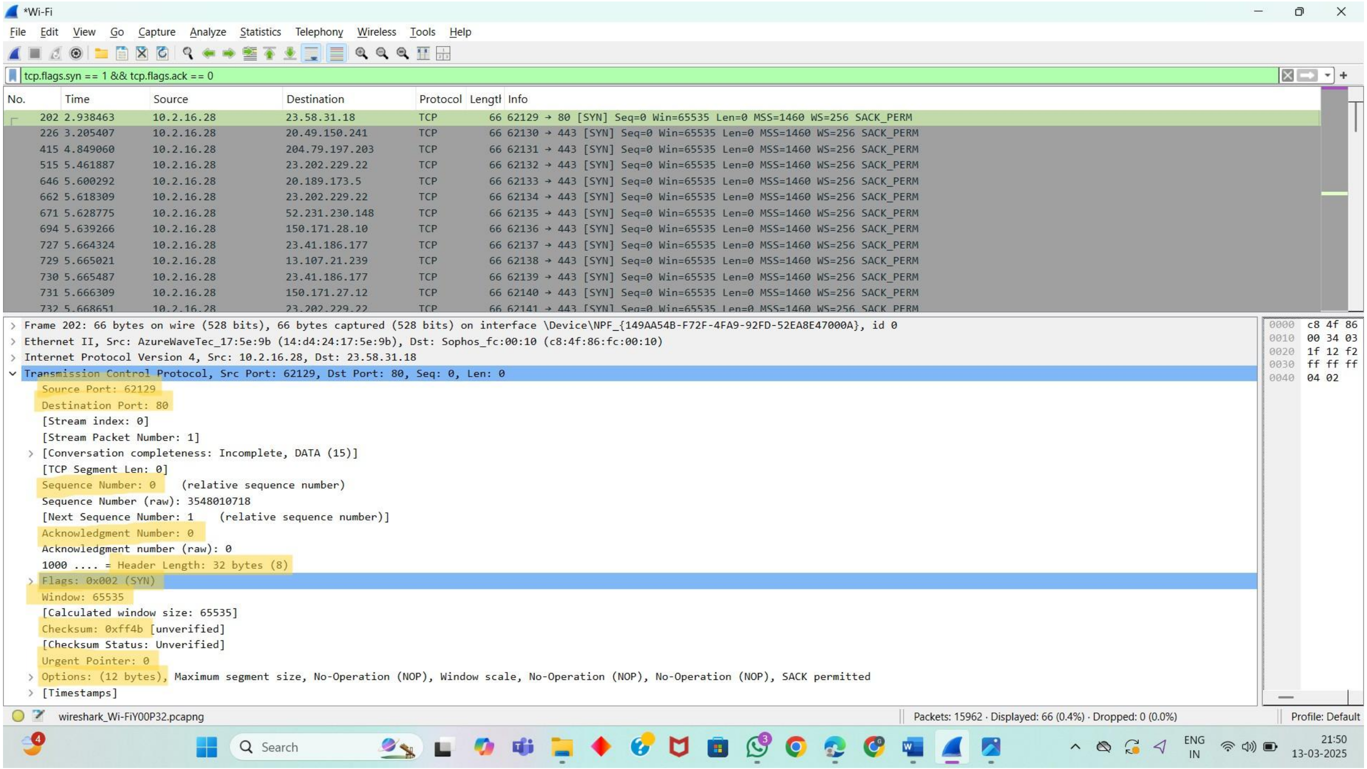
```
No.   Time        Source         Destination    Protocol Length Info
  202 2.938463    10.2.16.28     23.58.31.18    TCP       66 62129 → 80 [SYN] Seq=0 Win=65535 Len=0 MSS=1460 WS=256 SACK_PERM
  203 2.954320    23.58.31.18    10.2.16.28     TCP       66 80 → 62129 [SYN, ACK] Seq=0 Ack=1 Win=64240 Len=0 MSS=1460 SACK_PERM WS=128
  204 2.954516    10.2.16.28     23.58.31.18    TCP       54 62129 → 80 [ACK] Seq=1 Ack=1 Win=65280 Len=0
  205 2.954684    10.2.16.28     23.58.31.18    HTTP     308 GET /DigiCertGlobalRootG2.crl HTTP/1.1
  206 2.961226    23.58.31.18    10.2.16.28     TCP       60 80 → 62129 [ACK] Seq=1 Ack=255 Win=64128 Len=0
  211 2.978548    23.58.31.18    10.2.16.28     HTTP     514 HTTP/1.1 304 Not Modified
  212 3.031573    10.2.16.28     23.58.31.18    TCP       54 62129 → 80 [ACK] Seq=255 Ack=461 Win=65024 Len=0
 4766 19.533624   10.2.16.28     23.211.60.141  TCP       66 62160 → 80 [SYN] Seq=0 Win=65535 Len=0 MSS=1460 WS=256 SACK_PERM
 4767 19.548005   23.211.60.141  10.2.16.28     TCP       66 80 → 62160 [SYN, ACK] Seq=0 Ack=1 Win=64240 Len=0 MSS=1460 SACK_PERM WS=128
 4768 19.548227   10.2.16.28     23.211.60.141  TCP       54 62160 → 80 [ACK] Seq=1 Ack=1 Win=65280 Len=0
 4769 19.548475   10.2.16.28     23.211.60.141  HTTP     165 GET /connecttest.txt HTTP/1.1
 4770 19.551446   23.211.60.141  10.2.16.28     TCP       60 80 → 62160 [ACK] Seq=1 Ack=112 Win=64128 Len=0
 4783 19.568011   23.211.60.141  10.2.16.28     HTTP     241 HTTP/1.1 200 OK  (text/plain)
```

```
> Frame 202: 66 bytes on wire (528 bits), 66 bytes captured (528 bits) on interface \Device\NPF_{149AA54B-F72F-4FA9-92FD-52EA8E47000A}, id 0
v Ethernet II, Src: AzureWaveTec_17:5e:9b (14:d4:24:17:5e:9b), Dst: Sophos_fc:00:10 (c8:4f:86:fc:00:10)
  > Destination: Sophos_fc:00:10 (c8:4f:86:fc:00:10)
  > Source: AzureWaveTec_17:5e:9b (14:d4:24:17:5e:9b)
    Type: IPv4 (0x0800)
    [Stream index: 29]
v Internet Protocol Version 4, Src: 10.2.16.28, Dst: 23.58.31.18
    0100 .... = Version: 4
    .... 0101 = Header Length: 20 bytes (5)
  > Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT)
    Total Length: 52
    Identification: 0x0381 (897)
  > 010. .... = Flags: 0x2, Don't fragment
    ...0 0000 0000 0000 = Fragment Offset: 0
    Time to Live: 128
    Protocol: TCP (6)
    Header Checksum: 0xa6d9 [validation disabled]
    [Header checksum status: Unverified]
    Source Address: 10.2.16.28
    Destination Address: 23.58.31.18
    [Stream index: 2]
> Transmission Control Protocol, Src Port: 62129, Dst Port: 80, Seq: 0, Len: 0
```

```
0000  c8 4f 86
0010  00 34 03
0020  1f 12 f2
0030  ff ff ff
0040  04 02
```

wireshark_Wi-FiY00P32.pcapng | Packets: 15962 · Displayed: 16 (0.1%) · Dropped: 0 (0.0%) | Profile: Default

4. Using the Wireshark capture of the first TCP session startup (SYN bit set to 1), fill in information about the TCP header. (paste screenshot for each of the output). Capture the packet and analyze it.


*Wi-Fi
File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help
Search
ENG
IN
21:50
13-03-2025

```
tcp.flags.syn == 1 && tcp.flags.ack == 0
```

```
No.   Time       Source        Destination       Protocol  Lengtl Info
  202 2.938463   10.2.16.28    23.58.31.18       TCP         66 62129 → 80 [SYN] Seq=0 Win=65535 Len=0 MSS=1460 WS=256 SACK_PERM
  226 3.205407   10.2.16.28    20.49.150.241     TCP         66 62130 → 443 [SYN] Seq=0 Win=65535 Len=0 MSS=1460 WS=256 SACK_PERM
  415 4.849060   10.2.16.28    204.79.197.203    TCP         66 62131 → 443 [SYN] Seq=0 Win=65535 Len=0 MSS=1460 WS=256 SACK_PERM
  515 5.461887   10.2.16.28    23.202.229.22     TCP         66 62132 → 443 [SYN] Seq=0 Win=65535 Len=0 MSS=1460 WS=256 SACK_PERM
  646 5.600292   10.2.16.28    20.189.173.5      TCP         66 62133 → 443 [SYN] Seq=0 Win=65535 Len=0 MSS=1460 WS=256 SACK_PERM
  662 5.618309   10.2.16.28    23.202.229.22     TCP         66 62134 → 443 [SYN] Seq=0 Win=65535 Len=0 MSS=1460 WS=256 SACK_PERM
  671 5.628775   10.2.16.28    52.231.230.148    TCP         66 62135 → 443 [SYN] Seq=0 Win=65535 Len=0 MSS=1460 WS=256 SACK_PERM
  694 5.639266   10.2.16.28    150.171.28.10     TCP         66 62136 → 443 [SYN] Seq=0 Win=65535 Len=0 MSS=1460 WS=256 SACK_PERM
  727 5.664324   10.2.16.28    23.41.186.177     TCP         66 62137 → 443 [SYN] Seq=0 Win=65535 Len=0 MSS=1460 WS=256 SACK_PERM
  729 5.665021   10.2.16.28    13.107.21.239     TCP         66 62138 → 443 [SYN] Seq=0 Win=65535 Len=0 MSS=1460 WS=256 SACK_PERM
  730 5.665487   10.2.16.28    23.41.186.177     TCP         66 62139 → 443 [SYN] Seq=0 Win=65535 Len=0 MSS=1460 WS=256 SACK_PERM
  731 5.666309   10.2.16.28    150.171.27.12     TCP         66 62140 → 443 [SYN] Seq=0 Win=65535 Len=0 MSS=1460 WS=256 SACK_PERM
  732 5.668651   10.2.16.28    23.202.229.22     TCP         66 62141 → 443 [SYN] Seq=0 Win=65535 Len=0 MSS=1460 WS=256 SACK_PERM
```

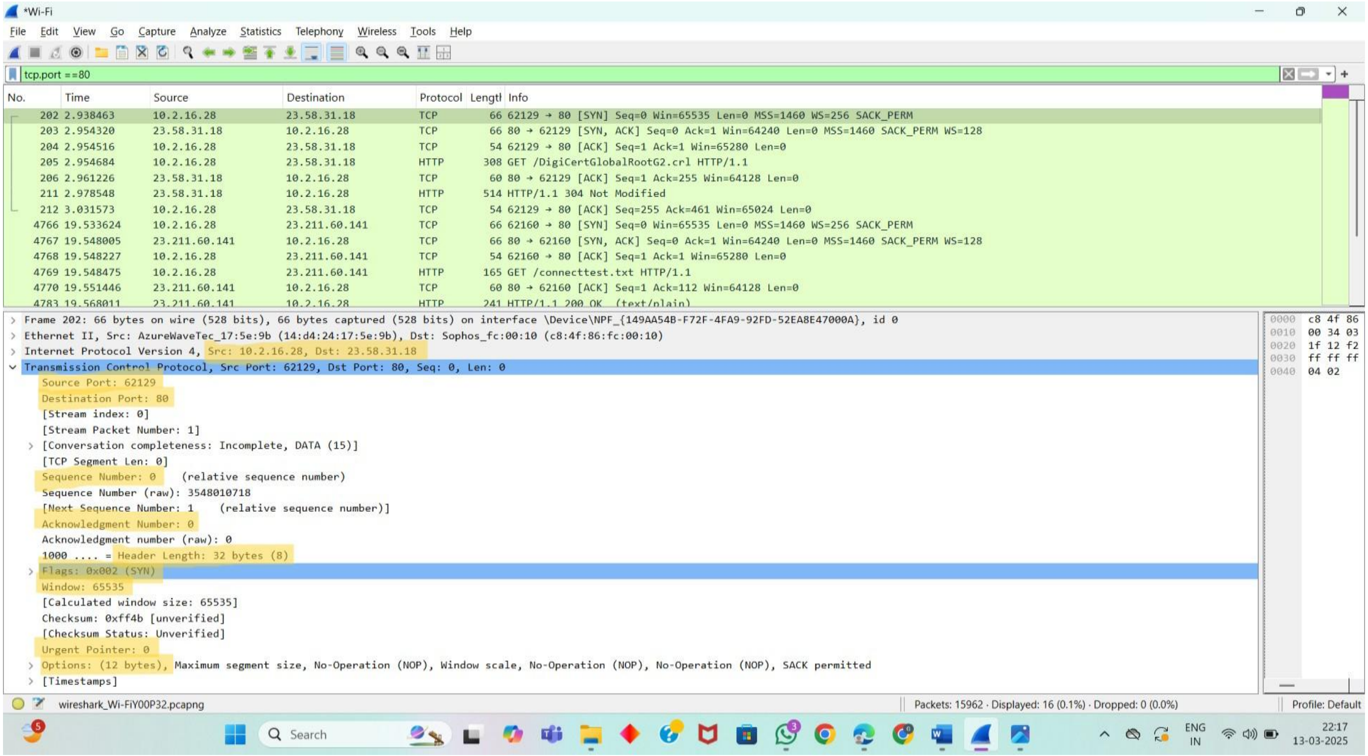
```
> Frame 202: 66 bytes on wire (528 bits), 66 bytes captured (528 bits) on interface \Device\NPF_{149AA54B-F72F-4FA9-92FD-52EA8E47000A}, id 0
> Ethernet II, Src: AzureWaveTec_17:5e:9b (14:d4:24:17:5e:9b), Dst: Sophos_fc:00:10 (c8:4f:86:fc:00:10)
> Internet Protocol Version 4, Src: 10.2.16.28, Dst: 23.58.31.18
v Transmission Control Protocol, Src Port: 62129, Dst Port: 80, Seq: 0, Len: 0
    Source Port: 62129
    Destination Port: 80
    [Stream index: 0]
    [Stream Packet Number: 1]
  > [Conversation completeness: Incomplete, DATA (15)]
    [TCP Segment Len: 0]
    Sequence Number: 0    (relative sequence number)
    Sequence Number (raw): 3548010718
    [Next Sequence Number: 1    (relative sequence number)]
    Acknowledgment Number: 0
    Acknowledgment number (raw): 0
    1000 .... = Header Length: 32 bytes (8)
  > Flags: 0x002 (SYN)
    Window: 65535
    [Calculated window size: 65535]
    Checksum: 0xff4b [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]
```

```
0000  c8 4f 86
0010  00 34 03
0020  1f 12 f2
0030  ff ff ff
0040  04 02
```

```
wireshark_Wi-FiY00P32.pcapng    Packets: 15962 · Displayed: 66 (0.4%) · Dropped: 0 (0.0%)    Profile: Default
```

5. Fill in the following information regarding the SYN message.(highlight the details for each of the output and paste screenshot)

Source IP address	10.2.16.28
Destination IP address	23.58.31.18
Source port number	62129
Destination port number	80
Sequence number	0
Acknowledgement number	0
Flags	0x002 (SYN)
Header length	32 bytes (8)
Window size	65535
Checksum	0xff4b



*Wi-Fi
File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

tcp.port ==80

```
No.   Time        Source          Destination     Protocol Lengtl Info
  202 2.938463    10.2.16.28      23.58.31.18     TCP       66 62129 → 80 [SYN] Seq=0 Win=65535 Len=0 MSS=1460 WS=256 SACK_PERM
  203 2.954320    23.58.31.18     10.2.16.28      TCP       66 80 → 62129 [SYN, ACK] Seq=0 Ack=1 Win=64240 Len=0 MSS=1460 SACK_PERM WS=128
  204 2.954516    10.2.16.28      23.58.31.18     TCP       54 62129 → 80 [ACK] Seq=1 Ack=1 Win=65280 Len=0
  205 2.954684    10.2.16.28      23.58.31.18     HTTP     308 GET /DigiCertGlobalRootG2.crl HTTP/1.1
  206 2.961226    23.58.31.18     10.2.16.28      TCP       60 80 → 62129 [ACK] Seq=1 Ack=255 Win=64128 Len=0
  211 2.978548    23.58.31.18     10.2.16.28      HTTP     514 HTTP/1.1 304 Not Modified
  212 3.031573    10.2.16.28      23.58.31.18     TCP       54 62129 → 80 [ACK] Seq=255 Ack=461 Win=65024 Len=0
 4766 19.533624   10.2.16.28      23.211.60.141   TCP       66 62160 → 80 [SYN] Seq=0 Win=65535 Len=0 MSS=1460 WS=256 SACK_PERM
 4767 19.548005   23.211.60.141   10.2.16.28      TCP       66 80 → 62160 [SYN, ACK] Seq=0 Ack=1 Win=64240 Len=0 MSS=1460 SACK_PERM WS=128
 4768 19.548227   10.2.16.28      23.211.60.141   TCP       54 62160 → 80 [ACK] Seq=1 Ack=1 Win=65280 Len=0
 4769 19.548475   10.2.16.28      23.211.60.141   HTTP     165 GET /connecttest.txt HTTP/1.1
 4770 19.551446   23.211.60.141   10.2.16.28      TCP       60 80 → 62160 [ACK] Seq=1 Ack=112 Win=64128 Len=0
 4783 19.568011   23.211.60.141   10.2.16.28      HTTP     241 HTTP/1.1 200 OK  (text/plain)
```

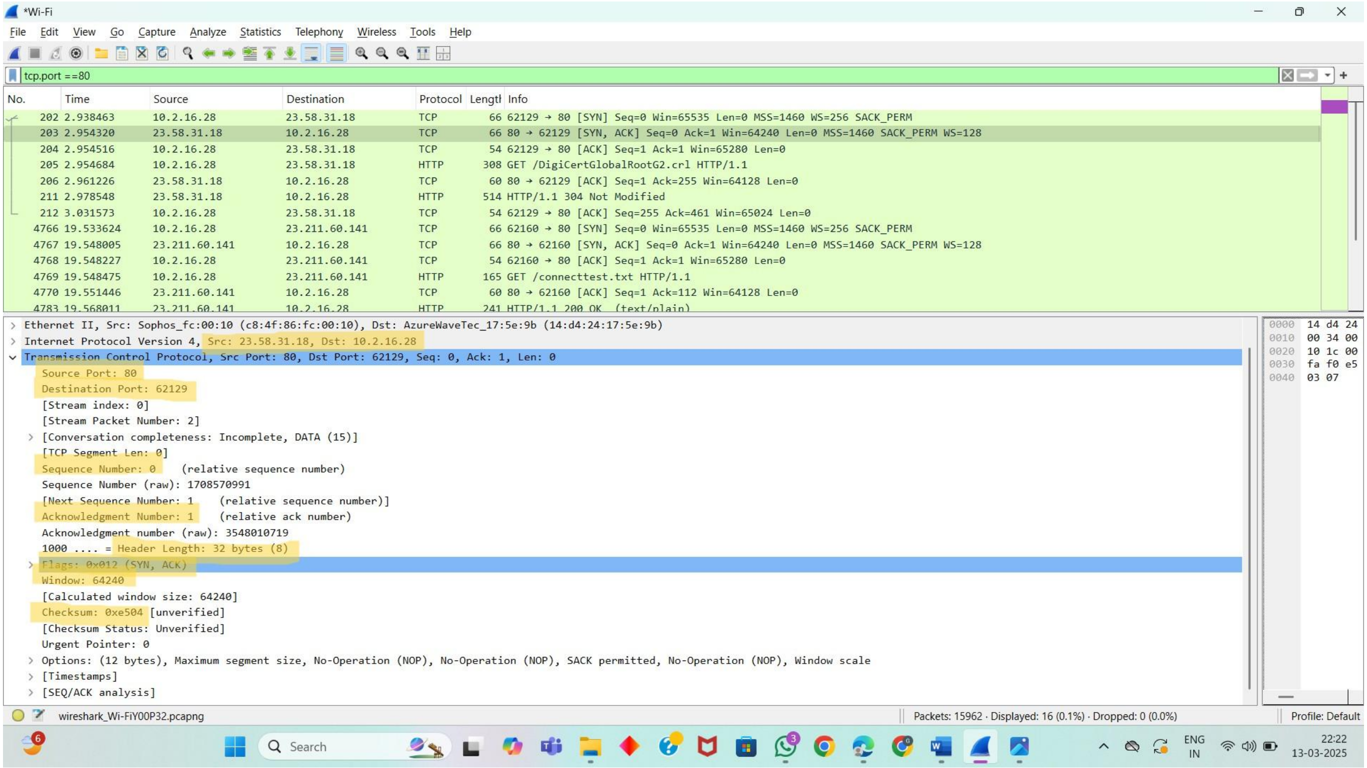
```
> Frame 202: 66 bytes on wire (528 bits), 66 bytes captured (528 bits) on interface \Device\NPF_{149AA54B-F72F-4FA9-92FD-52EA8E47000A}, id 0
> Ethernet II, Src: AzureWaveTec_17:5e:9b (14:d4:24:17:5e:9b), Dst: Sophos_fc:00:10 (c8:4f:86:fc:00:10)
> Internet Protocol Version 4, Src: 10.2.16.28, Dst: 23.58.31.18
v Transmission Control Protocol, Src Port: 62129, Dst Port: 80, Seq: 0, Len: 0
    Source Port: 62129
    Destination Port: 80
    [Stream index: 0]
    [Stream Packet Number: 1]
  > [Conversation completeness: Incomplete, DATA (15)]
    [TCP Segment Len: 0]
    Sequence Number: 0    (relative sequence number)
    Sequence Number (raw): 3548010718
    [Next Sequence Number: 1    (relative sequence number)]
    Acknowledgment Number: 0
    Acknowledgment number (raw): 0
    1000 .... = Header Length: 32 bytes (8)
  > Flags: 0x002 (SYN)
    Window: 65535
    [Calculated window size: 65535]
    Checksum: 0xff4b [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]
```

```
0000  c8 4f 86
0010  00 34 03
0020  1f 12 f2
0030  ff ff ff
0040  04 02
```

wireshark_Wi-FiY00P32.pcapng | Packets: 15962 · Displayed: 16 (0.1%) · Dropped: 0 (0.0%) | Profile: Default

6. Fill in the following information regarding the SYN-ACK message .(highlight the details for each of the output and paste screenshot)

Source IP address	23.58.31.18
Destination IP address	10.2.16.28
Source port number	80
Destination port number	62129
Sequence number	0
Acknowledgement number	1
Header length	32 bytes (8)
Window size	64240
Flags	0x012 (SYN, ACK)
Checksum	0xe504



*Wi-Fi
File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

```
tcp.port ==80
```

```
No.   Time         Source          Destination     Protocol Length Info
  202 2.938463     10.2.16.28      23.58.31.18     TCP       66 62129 → 80 [SYN] Seq=0 Win=65535 Len=0 MSS=1460 WS=256 SACK_PERM
  203 2.954320     23.58.31.18     10.2.16.28      TCP       66 80 → 62129 [SYN, ACK] Seq=0 Ack=1 Win=64240 Len=0 MSS=1460 SACK_PERM WS=128
  204 2.954516     10.2.16.28      23.58.31.18     TCP       54 62129 → 80 [ACK] Seq=1 Ack=1 Win=65280 Len=0
  205 2.954684     10.2.16.28      23.58.31.18     HTTP     308 GET /DigiCertGlobalRootG2.crl HTTP/1.1
  206 2.961226     23.58.31.18     10.2.16.28      TCP       60 80 → 62129 [ACK] Seq=1 Ack=255 Win=64128 Len=0
  211 2.978548     23.58.31.18     10.2.16.28      HTTP     514 HTTP/1.1 304 Not Modified
  212 3.031573     10.2.16.28      23.58.31.18     TCP       54 62129 → 80 [ACK] Seq=255 Ack=461 Win=65024 Len=0
 4766 19.533624    10.2.16.28      23.211.60.141   TCP       66 62160 → 80 [SYN] Seq=0 Win=65535 Len=0 MSS=1460 WS=256 SACK_PERM
 4767 19.548005    23.211.60.141   10.2.16.28      TCP       66 80 → 62160 [SYN, ACK] Seq=0 Ack=1 Win=64240 Len=0 MSS=1460 SACK_PERM WS=128
 4768 19.548227    10.2.16.28      23.211.60.141   TCP       54 62160 → 80 [ACK] Seq=1 Ack=1 Win=65280 Len=0
 4769 19.548475    10.2.16.28      23.211.60.141   HTTP     165 GET /connecttest.txt HTTP/1.1
 4770 19.551446    23.211.60.141   10.2.16.28      TCP       60 80 → 62160 [ACK] Seq=1 Ack=112 Win=64128 Len=0
 4783 19.568011    23.211.60.141   10.2.16.28      HTTP     241 HTTP/1.1 200 OK  (text/plain)
```

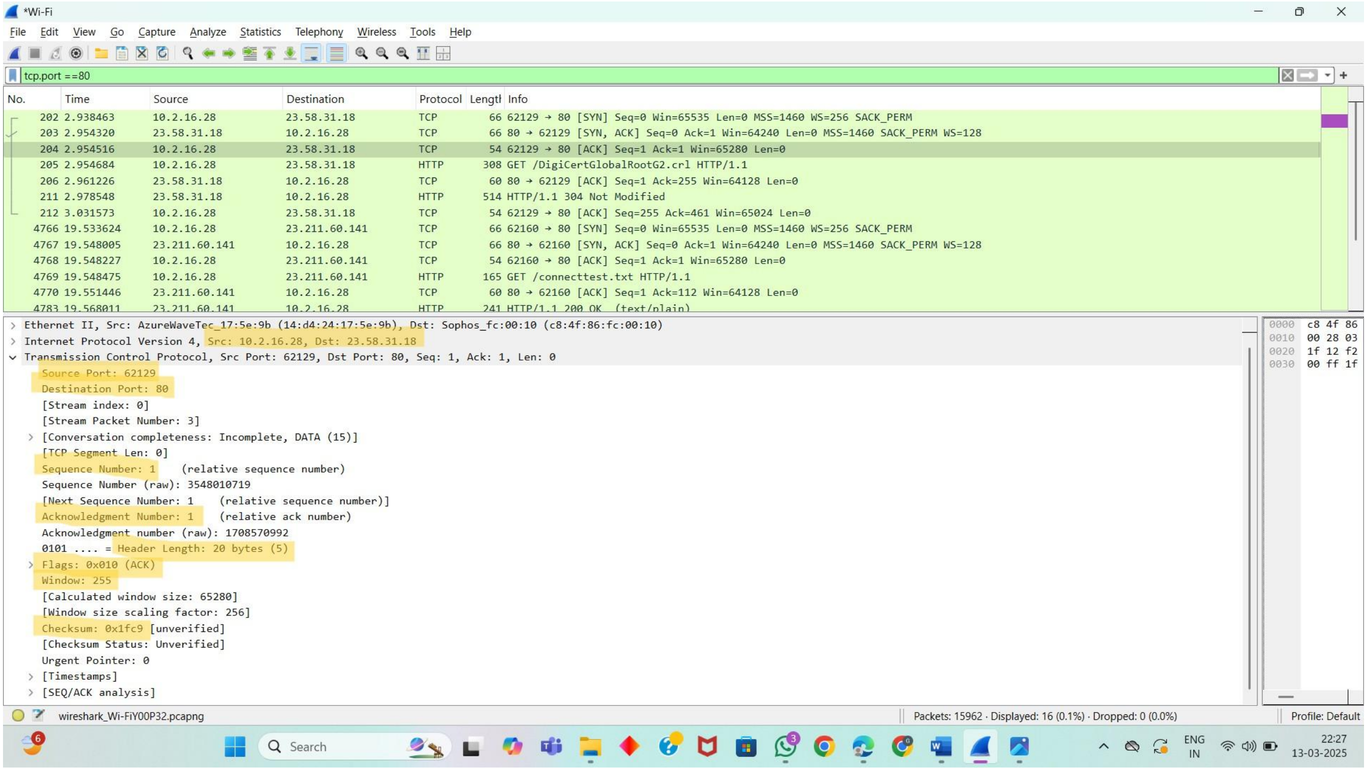
```
> Ethernet II, Src: Sophos_fc:00:10 (c8:4f:86:fc:00:10), Dst: AzureWaveTec_17:5e:9b (14:d4:24:17:5e:9b)
> Internet Protocol Version 4, Src: 23.58.31.18, Dst: 10.2.16.28
v Transmission Control Protocol, Src Port: 80, Dst Port: 62129, Seq: 0, Ack: 1, Len: 0
    Source Port: 80
    Destination Port: 62129
    [Stream index: 0]
    [Stream Packet Number: 2]
  > [Conversation completeness: Incomplete, DATA (15)]
    [TCP Segment Len: 0]
    Sequence Number: 0    (relative sequence number)
    Sequence Number (raw): 1708570991
    [Next Sequence Number: 1    (relative sequence number)]
    Acknowledgment Number: 1    (relative ack number)
    Acknowledgment number (raw): 3548010719
    1000 .... = Header Length: 32 bytes (8)
  > Flags: 0x012 (SYN, ACK)
    Window: 64240
    [Calculated window size: 64240]
    Checksum: 0xe504 [unverified]
    [Checksum Status: Unverified]
    Urgent Pointer: 0
  > Options: (12 bytes), Maximum segment size, No-Operation (NOP), No-Operation (NOP), SACK permitted, No-Operation (NOP), Window scale
  > [Timestamps]
  > [SEQ/ACK analysis]
```

```
0000  14 d4 24
0010  00 34 00
0020  10 1c 00
0030  fa f0 e5
0040  03 07
```

```
wireshark_Wi-FiY00P32.pcapng    Packets: 15962 · Displayed: 16 (0.1%) · Dropped: 0 (0.0%)    Profile: Default
```

7. Fill in the following information regarding the ACK message. .(highlight the details for each of the output and paste screenshot)

Source IP address	10.20.16.28
Destination IP address	23.58.31.18
Source port number	62129
Destination port number	80
Sequence number	1
Acknowledgement number	1
Header length	20 bytes (5)
Window size	255
Flags	0x010 (ACK)
Checksum	0x1fc9



*Wi-Fi
File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

tcp.port ==80

```
No.   Time        Source         Destination    Protocol Lengtl Info
  202 2.938463    10.2.16.28     23.58.31.18    TCP       66 62129 → 80 [SYN] Seq=0 Win=65535 Len=0 MSS=1460 WS=256 SACK_PERM
  203 2.954320    23.58.31.18    10.2.16.28     TCP       66 80 → 62129 [SYN, ACK] Seq=0 Ack=1 Win=64240 Len=0 MSS=1460 SACK_PERM WS=128
  204 2.954516    10.2.16.28     23.58.31.18    TCP       54 62129 → 80 [ACK] Seq=1 Ack=1 Win=65280 Len=0
  205 2.954684    10.2.16.28     23.58.31.18    HTTP     308 GET /DigiCertGlobalRootG2.crl HTTP/1.1
  206 2.961226    23.58.31.18    10.2.16.28     TCP       60 80 → 62129 [ACK] Seq=1 Ack=255 Win=64128 Len=0
  211 2.978548    23.58.31.18    10.2.16.28     HTTP     514 HTTP/1.1 304 Not Modified
  212 3.031573    10.2.16.28     23.58.31.18    TCP       54 62129 → 80 [ACK] Seq=255 Ack=461 Win=65024 Len=0
 4766 19.533624   10.2.16.28     23.211.60.141  TCP       66 62160 → 80 [SYN] Seq=0 Win=65535 Len=0 MSS=1460 WS=256 SACK_PERM
 4767 19.548005   23.211.60.141  10.2.16.28     TCP       66 80 → 62160 [SYN, ACK] Seq=0 Ack=1 Win=64240 Len=0 MSS=1460 SACK_PERM WS=128
 4768 19.548227   10.2.16.28     23.211.60.141  TCP       54 62160 → 80 [ACK] Seq=1 Ack=1 Win=65280 Len=0
 4769 19.548475   10.2.16.28     23.211.60.141  HTTP     165 GET /connecttest.txt HTTP/1.1
 4770 19.551446   23.211.60.141  10.2.16.28     TCP       60 80 → 62160 [ACK] Seq=1 Ack=112 Win=64128 Len=0
 4783 19.568011   23.211.60.141  10.2.16.28     HTTP     241 HTTP/1.1 200 OK  (text/plain)
```

```
> Ethernet II, Src: AzureWaveTec_17:5e:9b (14:d4:24:17:5e:9b), Dst: Sophos_fc:00:10 (c8:4f:86:fc:00:10)
> Internet Protocol Version 4, Src: 10.2.16.28, Dst: 23.58.31.18
v Transmission Control Protocol, Src Port: 62129, Dst Port: 80, Seq: 1, Ack: 1, Len: 0
    Source Port: 62129
    Destination Port: 80
    [Stream index: 0]
    [Stream Packet Number: 3]
  > [Conversation completeness: Incomplete, DATA (15)]
    [TCP Segment Len: 0]
    Sequence Number: 1    (relative sequence number)
    Sequence Number (raw): 3548010719
    [Next Sequence Number: 1    (relative sequence number)]
    Acknowledgment Number: 1    (relative ack number)
    Acknowledgment number (raw): 1708570992
    0101 .... = Header Length: 20 bytes (5)
  > Flags: 0x010 (ACK)
    Window: 255
    [Calculated window size: 65280]
    [Window size scaling factor: 256]
    Checksum: 0x1fc9 [unverified]
    [Checksum Status: Unverified]
    Urgent Pointer: 0
  > [Timestamps]
  > [SEQ/ACK analysis]
```

```
0000  c8 4f 86
0010  00 28 03
0020  1f 12 f2
0030  00 ff 1f
```

wireshark_Wi-FiY00P32.pcapng   Packets: 15962 · Displayed: 16 (0.1%) · Dropped: 0 (0.0%)   Profile: Default

Rubrics for Wireshark labs: (To be Filled by the Class Teacher)

Rubrics	Excellent	Fair	Poor	Marks
Understanding (2)	Understand the Concept very well. (2)	Understand the Concept (1)	Poor Understand the Concept (0)	
Usage of filters (3)	Identified and applied the filter correctly (3)	Identified the filter, but not applied correctly (2-1)	Couldn't identify and apply the filter. Just captured the packets (1)	
Attach relevant Screenshots (3)	clearly Highlighted the answers and attached the screenshots (3)	attached the screenshots, but not highlighted. (2-1)	Did not attach the screenshots (0)	
On time Submission (2)	Early or on time submission (2)	Submitted after deadline (1)	Did not Submit (0)	
			Total	

Result:Thus the Capture and Analyzing TCP 3 way handshake has been implemented and successfully verified.