

Assignment 3

TCP

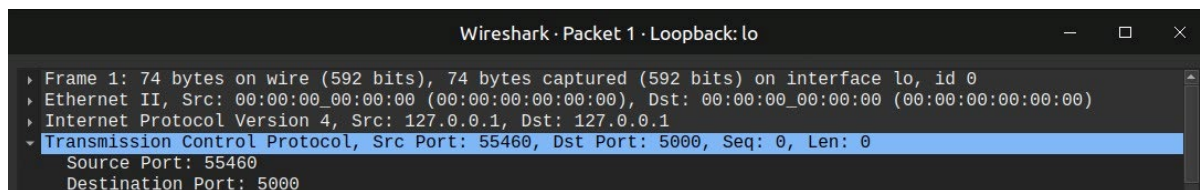
Shivam Choudhury

22CS10072

Ans 1)

Source – 127.0.0.1:55460

Destination – 127.0.0.1:5000



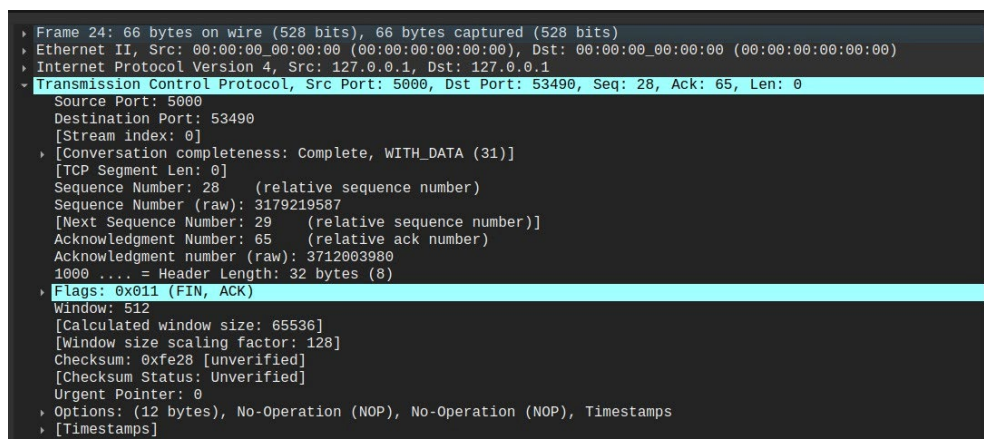
Ans 2)

1	0.000000000	127.0.0.1	127.0.0.1	TCP	74	55460 → 5000 [SYN] Seq=0 Win=65495 Len=0 MSS=65495 SACK_PERM ...
2	0.000010322	127.0.0.1	127.0.0.1	TCP	74	5000 → 55460 [SYN, ACK] Seq=0 Ack=1 Win=65483 Len=0 MSS=65495...
3	0.000020337	127.0.0.1	127.0.0.1	TCP	66	55460 → 5000 [ACK] Seq=1 Ack=1 Win=65536 Len=0 TSval=24424268...

The TCP Three-Way Handshake involves three packets: SYN, SYN-ACK, and ACK. Initially, the client sends a SYN packet to request a connection with the server. In response, the server replies with a SYN-ACK packet to acknowledge the request. Finally, the client sends an ACK packet to confirm receipt of the server's acknowledgment, completing the connection setup.

Ans 3) Last 4 packets are used in closing the connection

24	5.967310	127.0.0.1	127.0.0.1	TCP	66	5000 → 53490 [FIN, ACK] Seq=28 Ack=65 Win=65536 Len=0 TSval=2...
25	6.007652	127.0.0.1	127.0.0.1	TCP	66	53490 → 5000 [ACK] Seq=65 Ack=29 Win=65536 Len=0 TSval=244630...
26	7.242997	127.0.0.1	127.0.0.1	TCP	66	53490 → 5000 [FIN, ACK] Seq=65 Ack=29 Win=65536 Len=0 TSval=2...
27	7.243026	127.0.0.1	127.0.0.1	TCP	66	5000 → 53490 [ACK] Seq=29 Ack=66 Win=65536 Len=0 TSval=244630...

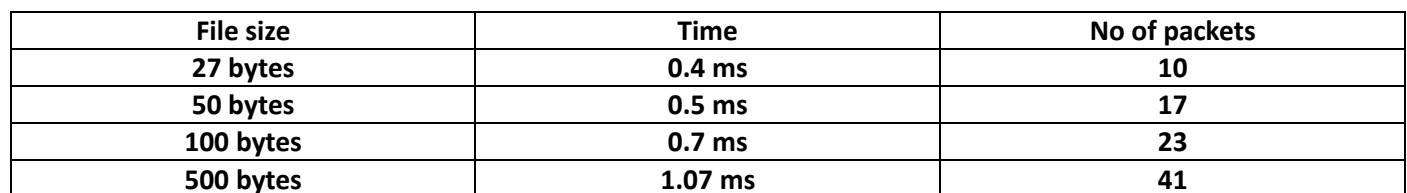


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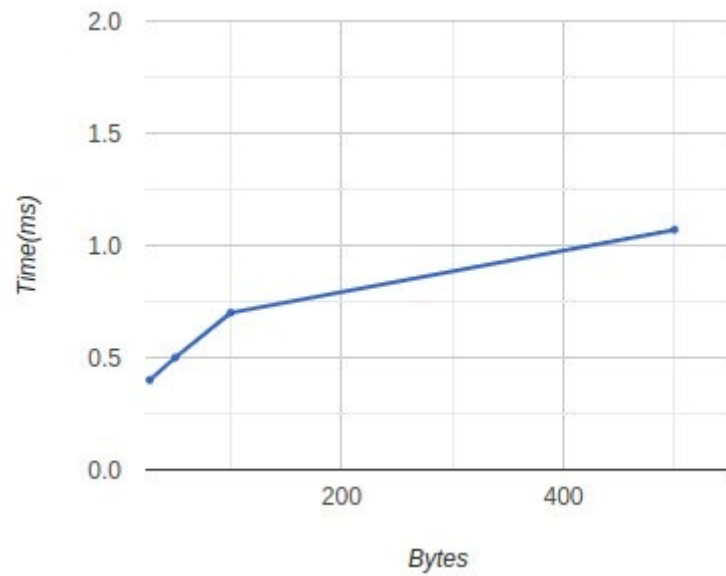
• Frame 27: 66 bytes on wire (528 bits), 66 bytes captured (528 bits)
• Ethernet II, Src: 08:00:00:00:00:00 (08:00:00:00:00:00), Dst: 00:00:00:00:00:00 (00:00:00:00:00:00)
• Internet Protocol Version 4, Src: 127.0.0.1, Dst: 127.0.0.1
• Transmission Control Protocol, Src Port: 5000, Dst Port: 53490, Seq: 29, Ack: 66, Len: 0
  Source Port: 5000
  Destination Port: 53490
  [Stream index: 0]
  • [Conversation completeness: Complete, WITH_DATA (31)]
  • [TCP Segment Len: 0]
    Sequence Number: 29 (relative sequence number)
    Sequence Number (raw): 3179219588
    [Next Sequence Number: 29 (relative sequence number)]
    Acknowledgment Number: 66 (relative ack number)
    Acknowledgment number (raw): 3712083981
    1000 .... = Header Length: 32 bytes (8)
  • Flags: 0x010 (ACK)
    Window: 512
    [Calculated window size: 65536]
    [Window size scaling factor: 128]
    Checksum: 0xbdb1 [unverified]
    [Checksum Status: Unverified]
    Urgent Pointer: 0
  • Options: (2 bytes), No-Operation (NOP), No-Operation (NOP), Timestamps
  • [Timestamps]
    • [TSW/TSV sequence]

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Ans 4)



Ans 5)



Ans 6)

Total file size = $27 + 50 + 100 + 500 = 677$ bytes

Total packets = $10 + 17 + 23 + 41 = 91$

Average packet size = $677/91 = 7.439$ bytes