APRIL 24, 2024

CS-971 COMPUTER NETWORKING-II
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ASSIGNMENT 1

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Cybersecurity

1. Within the IP packet header, what is the value in the upper layer protocol field?
Within the IP packet header, the value in the upper layer protocol field is ICMP (0x01).
2. How many bytes are in the IP header? How many bytes are in the payload of the IP datagram? Explain how you determined the number of payload bytes.
As we are sending a packet of length 56 bytes and which 20 bytes in the IP header so left-over bytes 36 is for the payload of the IP datagram. In short, IP header=20 bytes Total packet length=56 bytes Payload= (Total packet length – IP Header) (56 – 20) = 36 bytes
3. Has this IP datagram been fragmented? Explain how you determined whether or not the datagram has been fragmented.
Since the fragment offset is set to 0, it indicates that the packet has not undergone fragmentation.
4. What is the value in the Identification field and the TTL field?
The value in the identification field is: 0x80b2 (32946). The value in the TTL field is: 1.
5. Can you say whether the message corresponding to the above packet has been fragmented?
The set Flags bit for more fragments indicates that the datagram has indeed been fragmented.
6. What information in the IP header indicates that the datagram been fragmented?
Given that the Fragment offset is 0, it suggests that this is the initial fragment.
7. What information in the IP header indicates whether this is the first fragment versus a latter fragment?
A fragmentation offset value of 0 in the IP header signifies that the fragment is the first one.
8. What information in the IP header indicates that this is not the first datagram fragment?
The fragmentation offset value is not 0, it indicates that this is not the first datagram in the IP header.
9. Are the more fragments? How can you tell?
No more fragments are present as the value of the 'more fragments' flag is now set to 0.
10. If Fig. 2 and Fig. 3 are the 1st and 2nd fragments of a message, then what fields change in the IP header between the first and second fragment?

The IP header fields that have undergone changes between the fragments include

- **Total length**
- **Flags**
- **Fragment offset**
- **More fragments**
- **Header checksum**.