Assignment3

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Problem 1

Within the IP packet header, what is the value in the upper layer protocol field?

ICMP(0x01)

Problem 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.

There are 20 bytes in the IP header.
Payload of the IP datagram is equal to (total length - length of IP header) i.e. 56-20, which is 36 bytes.

Problem 3

Has this IP datagram been fragmented? Explain how you determined whether or not the datagram has been fragmented.

As the more fragments field is **not set**, it means that it doesn't have more fragments and also the fragment offset is 0 which means that it is the first fragment.
So, it is the first fragment without any further more fragments. So, the message is not fragmented.

Problem 4

What is the value in the Identification field and the TTL field?

Value in the identification field is 0x80b2 i.e. 32946.
Value of TTL field is 1.

Problem 5

Can you say whether the message corresponding to the above packet has been fragmented?

Yes, the message has been fragmented.

Problem 6

What information in the IP header indicates that the datagram been fragmented?

Since, the more fragments field in the datagram is set, we can say that the datagram has been fragmented.

Problem 7

What information in the IP header indicates whether this is the first fragment versus a latter fragment?

The fragment offset fields tell about it. As the fragment offset here is 0, this is the first fragment.

Problem 8

What information in the IP header indicates that this is not the first datagram fragment?

The fragment offset fields tell about whether it is the first fragment or not. As the fragment offset here is 1480, this is **not** the first fragment.

Problem 9

Are the more fragments? How can you tell?

As the more fragment field is **not set**, there are no more fragments.

Problem 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?

There are following fields which are changed

1. The fragment offset in the first is 0 as it is the first fragment, while in the second it is non-zero(1480).
2. Total length has been changed in both the fragments due to the difference between the size of the messages.
3. More fragments field in first is **set**, while in second, it is **not set**.
4. Also, the header checksum field is different in both.