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COURSE: COMPUTER NETWORK

Q1 Suppose a packet has a total length of 500 bytes, including the IP header and a payload length of 450 bytes. The version of IP address protocol is IPv4, & the header length is 20 bytes. Calculate the value of the following fields in the IP header:

a) Total length

→ The total length is 500 bytes, so we need to convert this to hexadecimal notation & fill the Total Length field, which is a 16 bit field located at offset 2 in the IP header.

Total length = 0x01F4 (500 in decimal)

b) Identification

→ It is a 16 bit field used to identify different IP datagrams that belong to the same packet. In this case we can choose any value of 1234 in decimal & convert it to hexadecimal notation to fill in the field.

Identification = 0x04D2 (1234 in decimal)

c) TTL

→ It specifies the maximum no. of hops that a packet can take before it is discarded.

Let's choose a value of 64

TTL = 64 (decimal) = 0x40 (hexadecimal)

Q2 Suppose a TCP packet has a source port no. of 5500 and a destination port no. of 80. The sequence no. is 1000, & the acknowledgement no. is 2000. The window size is 1000 bytes & the TCP header length is 24 bytes. Calculate the value of the following fields in the TCP header:

a) checksum

→ Source port: 5500

Destination port: 80

Sequence no.: 1000

Ack no.: 2000

Data offset: 24

Reserve: 0

Flags: 000000

size of window size: 1000

$$\begin{aligned} & 5500 + 0050 + 03E8 + 0700 + 0600 + 0000 + \\ & 0000 + 0000 + 5002 + 03EB + 0000 + \\ & 0000 = 1D8E \end{aligned}$$

we need to take ones complement of this sum,

$$FFF - 1D8E = E271$$

\therefore Checksum will be E271

Q3

→

① IP add of domain
192.0.2.1

② TTL value is
TTL is 300 sec.

③ Primary DNS is
ns1.example.com