1)How long is an ipv6 header?

The length of fixed ipv6 header is 40 byte.

2)What are the different fields of ipv6 header?

Ans) Different fields of ipv6 header are described below:

versions(8bits): Indicates the IP version, which is always 6 for IPv6.

Traffic Class (8 bits): Replaces the Type of Service field in IPv4 and is used for quality of service differentiation.

Flow Label (20 bits): Used to identify packets belonging to the same flow for quality of service or other purposes.

Payload Length (16 bits): Specifies the length of the data following the header.

Next Header (8 bits): Indicates the type of the next header, which can be either another header or the data itself.

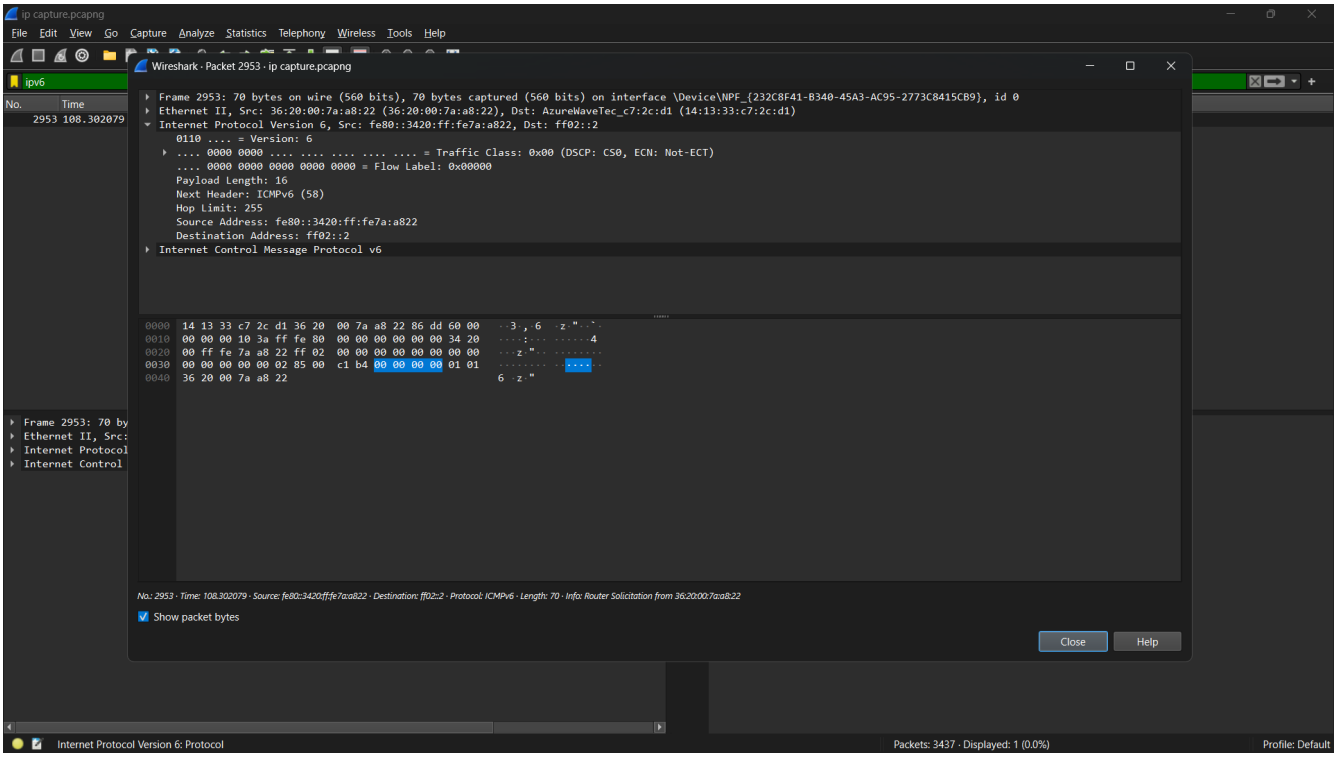
Hop Limit (8 bits): Similar to the Time-to-Live field in IPv4, it specifies the maximum number of hops a packet can traverse.

Source Address (128 bits): The IP address of the sending host.

Destination Address (128 bits): The IP address of the receiving host

3)In wireshark locate an ipv6 header and discuss the header present?

The captured packet is shown in the figure below:



Traffic Class: 0x00 (DSCP: CS0, ECN: Not-ECT)(value 0 in hexadecimal indicating default traffic value)

Flow Label: 0x00000(When the Flow Label field is set to 0x0000, it typically indicates (**No Flow Identification)** the sending host has not assigned any specific flow identifier to the packet.

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Payload Length: 16 bytes(A payload length of 16 in an IPv6 header means that the data following the header is 16 bytes long.)

Next Header: ICMPv6 (58)(type of data following the header)

Hop Limit: 255(A value of 255 indicates the maximum possible hop limit, allowing a packet to travel as far as possible within the network before being dropped.)

Source Address: fe80::3420:ff:fe7a:a822(is the IP address of the system sending the packet.)

Destination Address: ff02::2(ip address of receiver of packet)