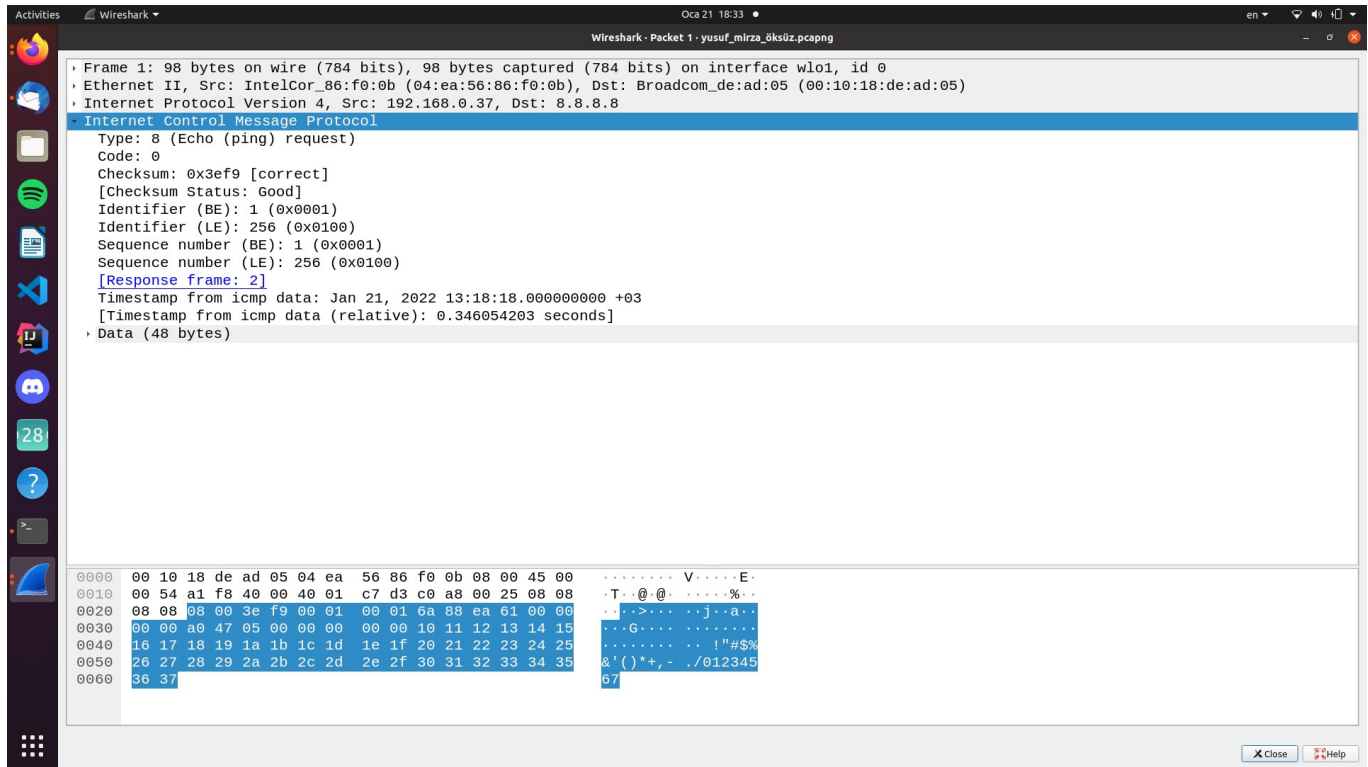
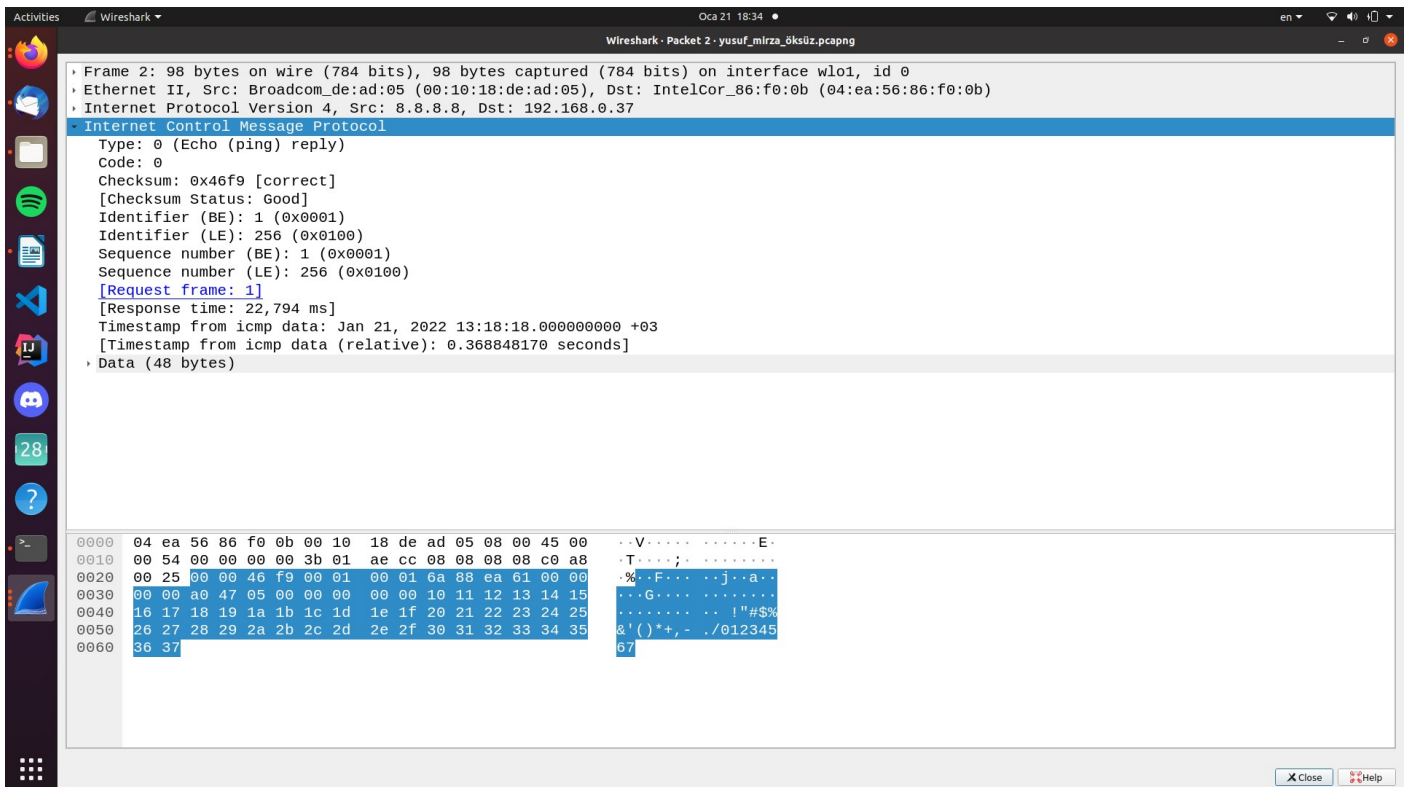


THE 4

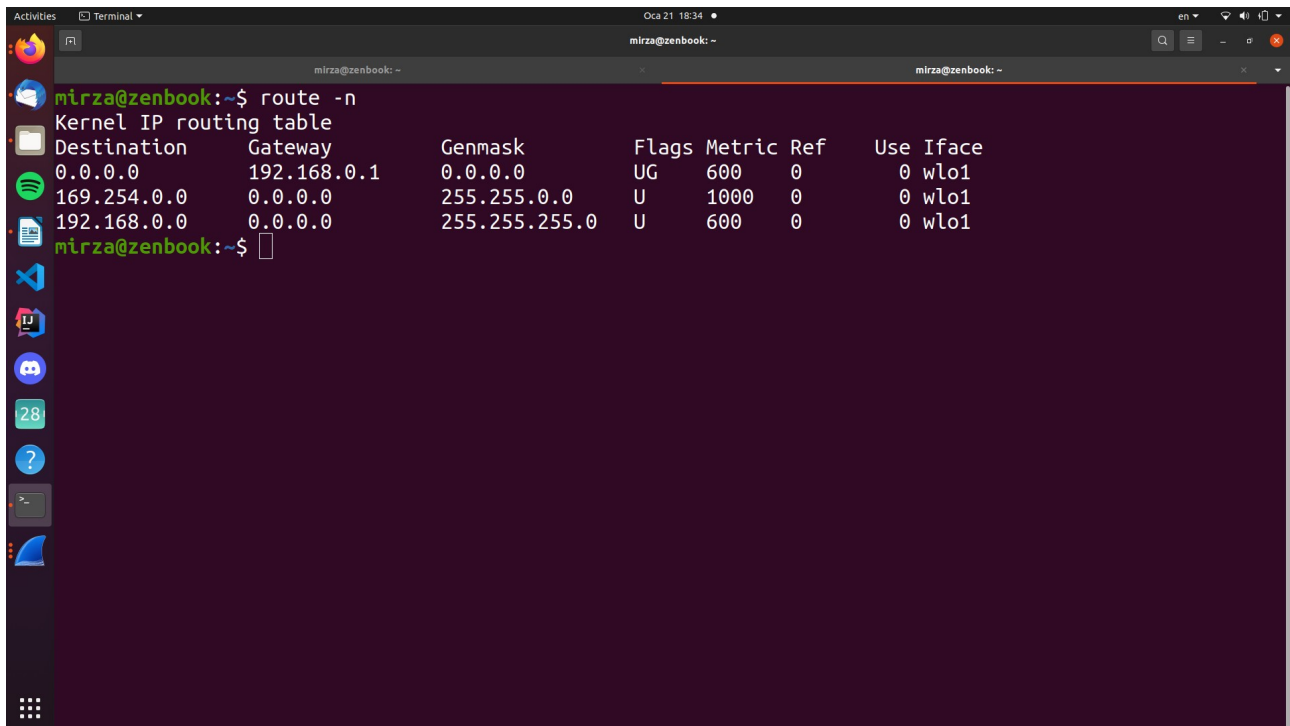
Request Screenshot :



Response Screenshot :



Routing Table Screenshot :

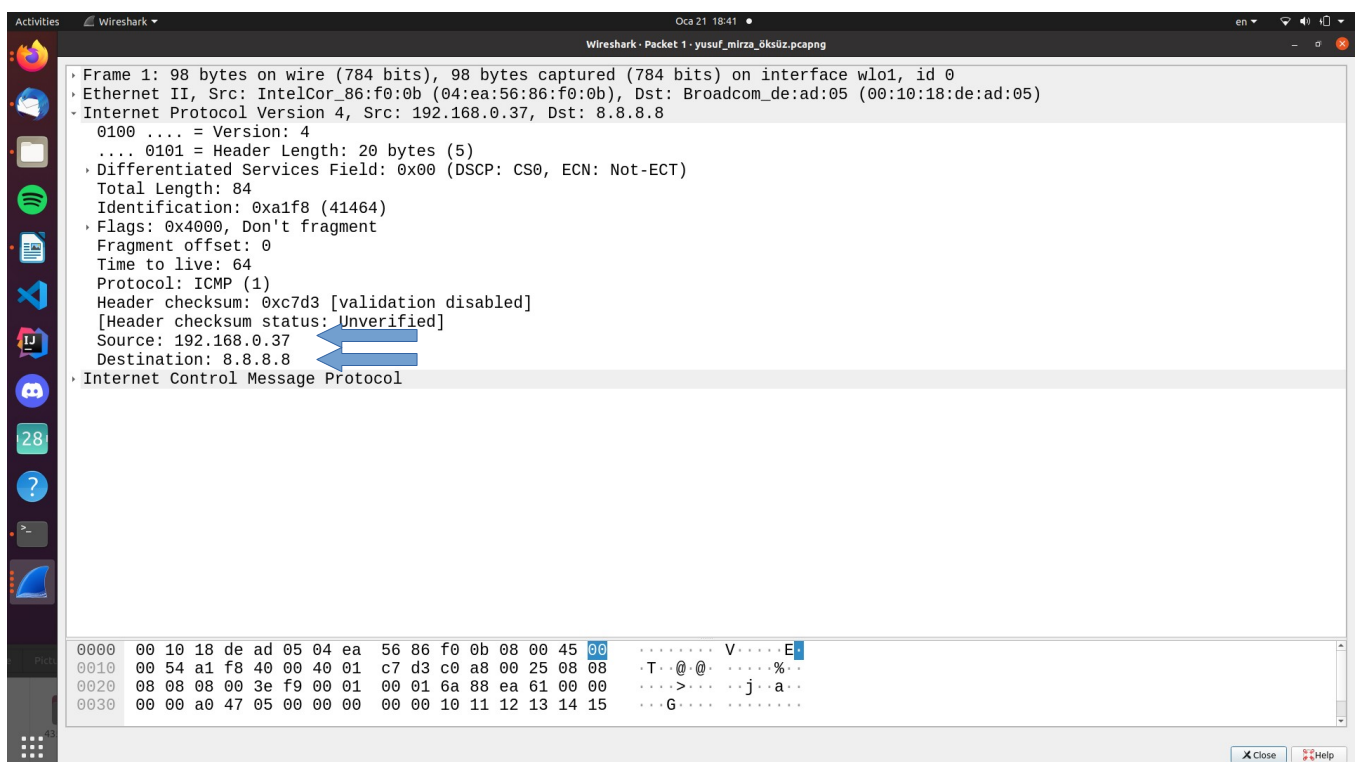


```
mirza@zenbook:~$ route -n
Kernel IP routing table
Destination Gateway Genmask Flags Metric Ref Use Iface
0.0.0.0 192.168.0.1 0.0.0.0 UG 600 0 0 wlo1
169.254.0.0 0.0.0.0 255.255.0.0 U 1000 0 0 wlo1
192.168.0.0 0.0.0.0 255.255.255.0 U 600 0 0 wlo1
mirza@zenbook:~$
```

3.1-)

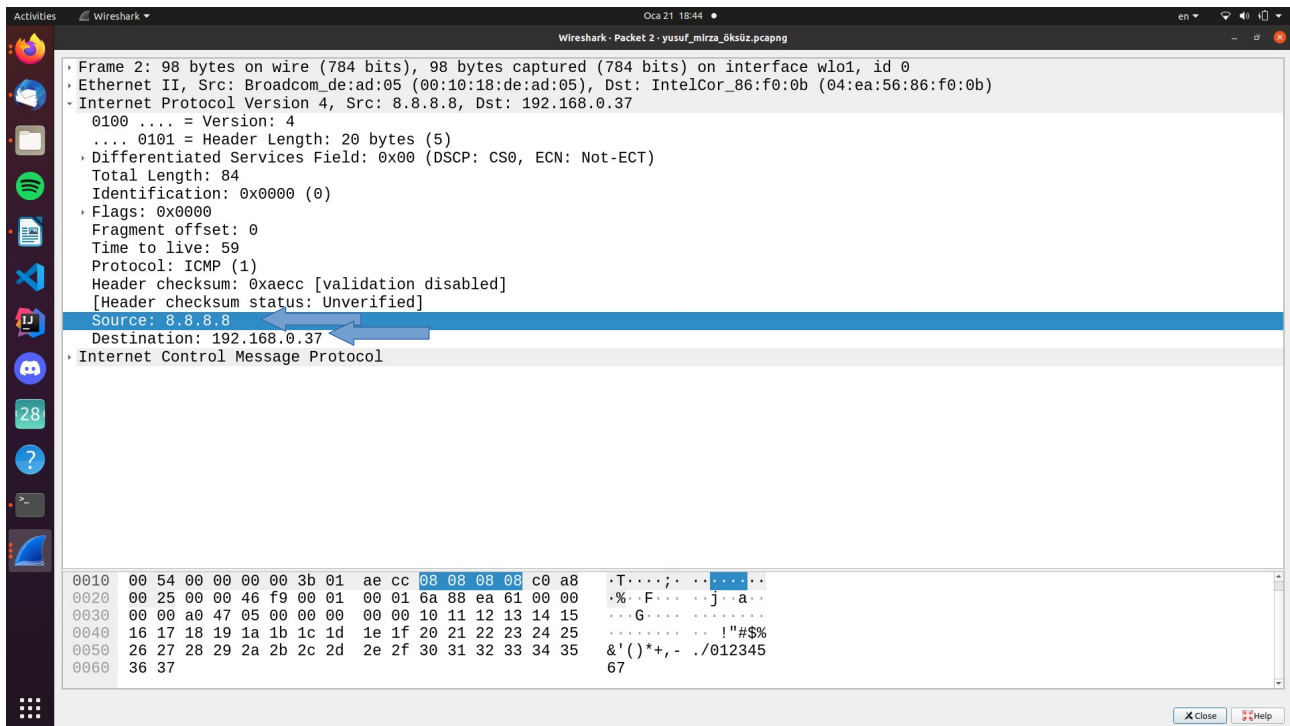
Request Message :

From screenshot we can see source ip address is 192.168.0.37 and destination ip address 8.8.8.8 .



Response Message :

Source ip address is 8.8.8.8 and destination ip address is 192.168.0.37 .



3.2-) From the first and second screenshots we can see there is no port number. This is due to ICMP works in the network layer. Port numbers are needed for TCP and UDP to reach their message to the correct place and they are working on the transport layer. Since we are not on the transport layer we do not need a port number.

3.3-) From the first and second screenshot we see request message's type number is 8 and code number is 0. Response message's type number is 0 and code number is 0.

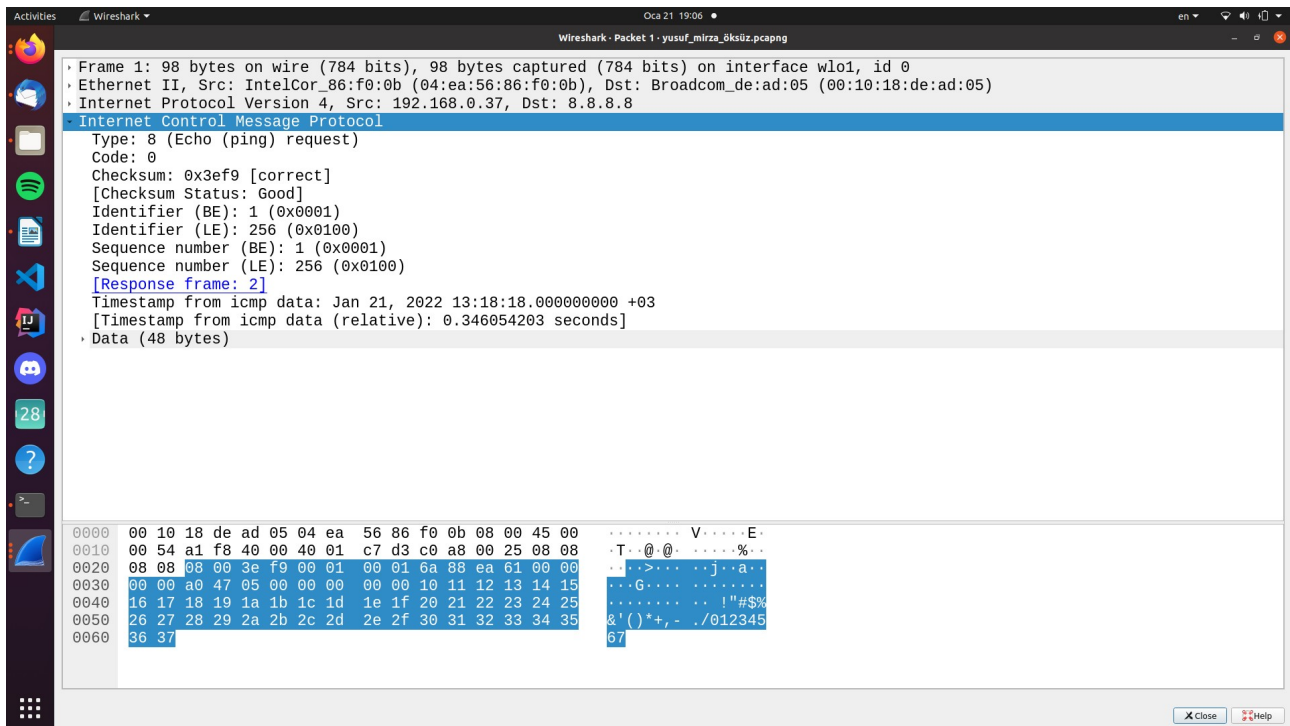
Type number 8 means it is just a standard action or approval for the sent message. Moreover, type 0 means the same thing but for response message. It basically means there was no problem when sending request and reply ICMP messages.

Code number is 0 for both request and reply. Both of them is just a subtype of the type number. For example if type number would be 3 it would mean destination is unreachable and code number would mean something like source route failed or destination port is unreachable. It is just a more detailed explanation for the type number.

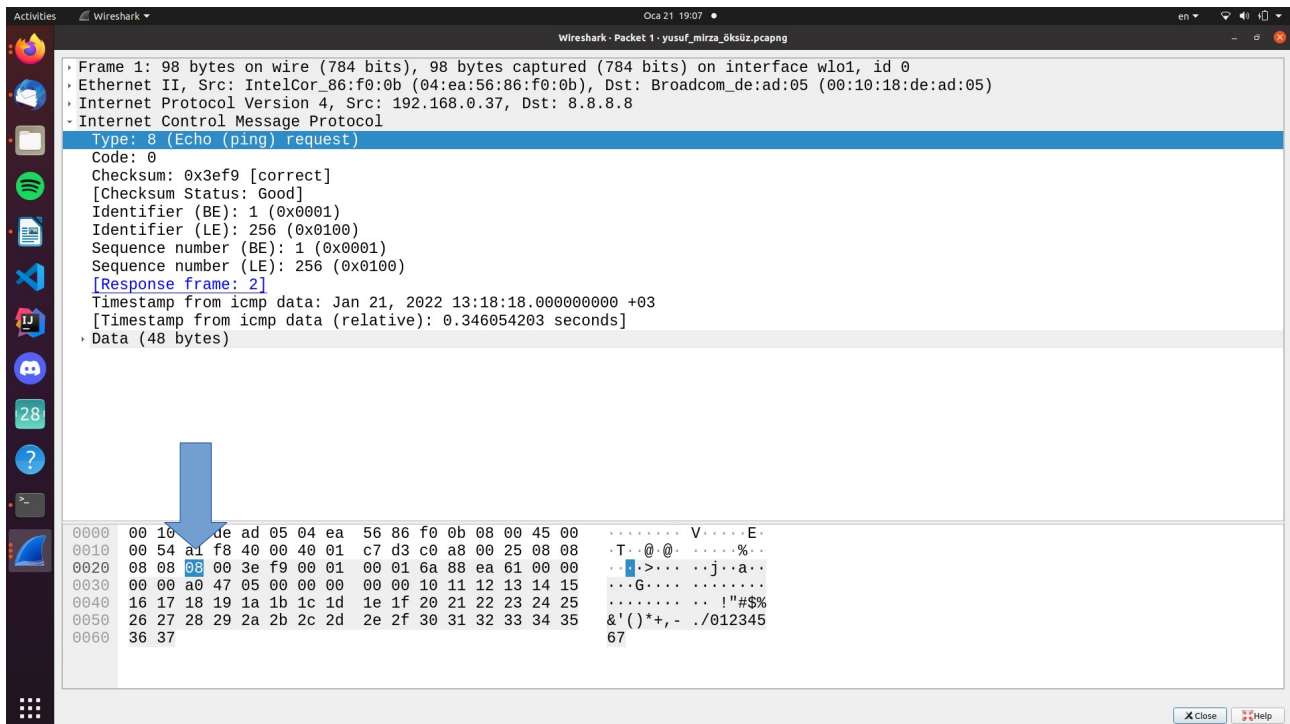
Both code and type number are gives information about the connection. If there is a mistake in the connection or not, and gives detailed reason for it.

3.4-)

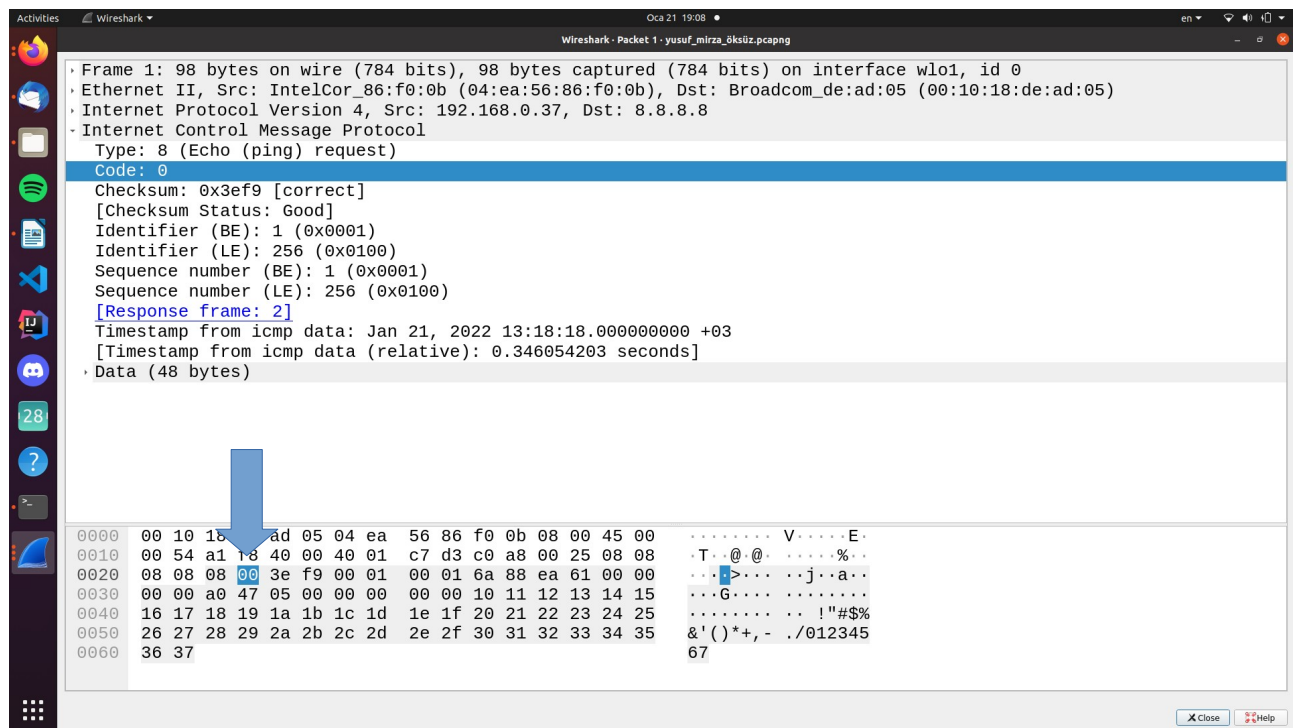
There is 34 bytes before the ICMP message context.



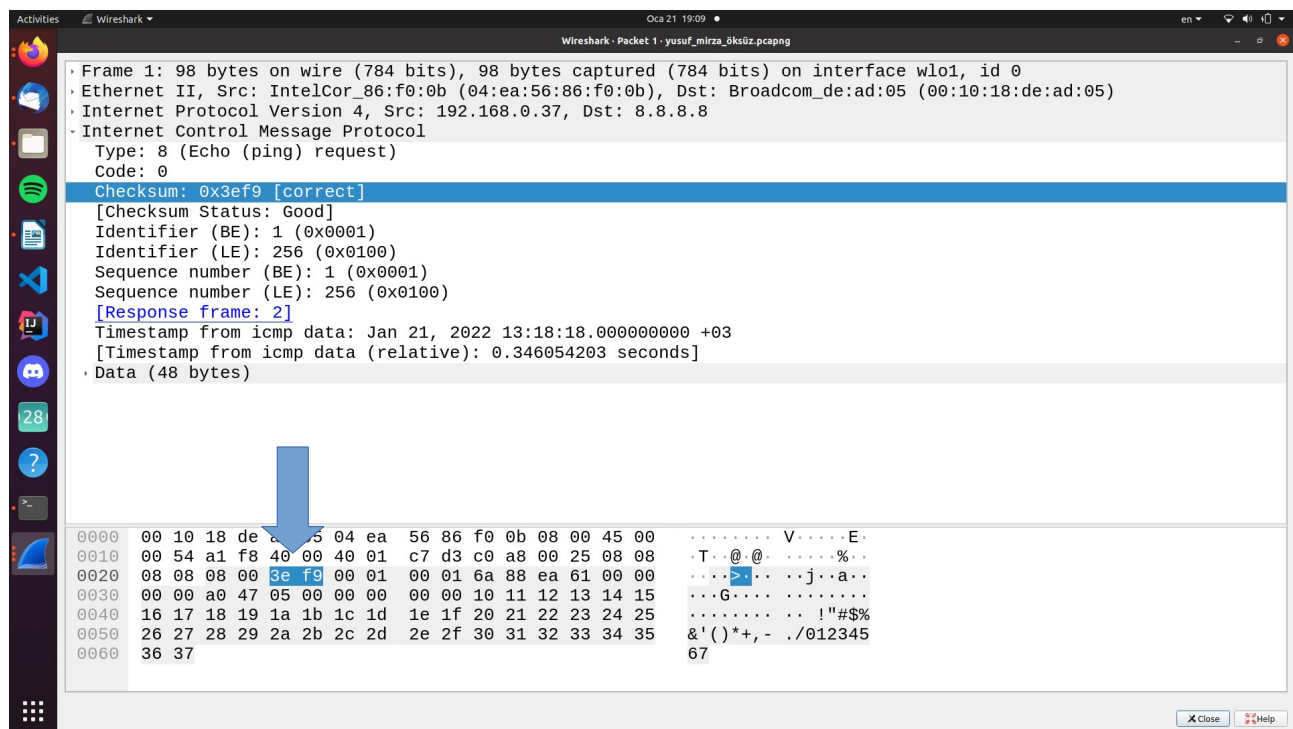
There is 1 byte for Type value.



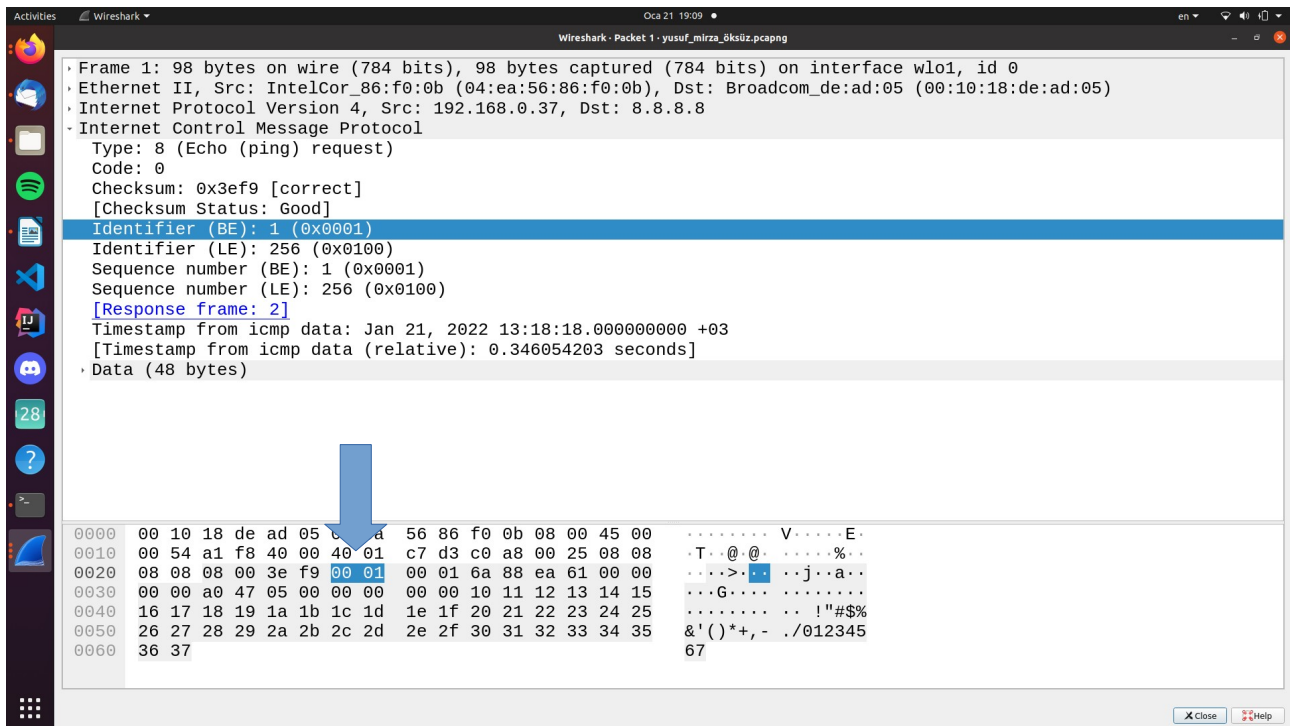
There is 1 byte for Code value .



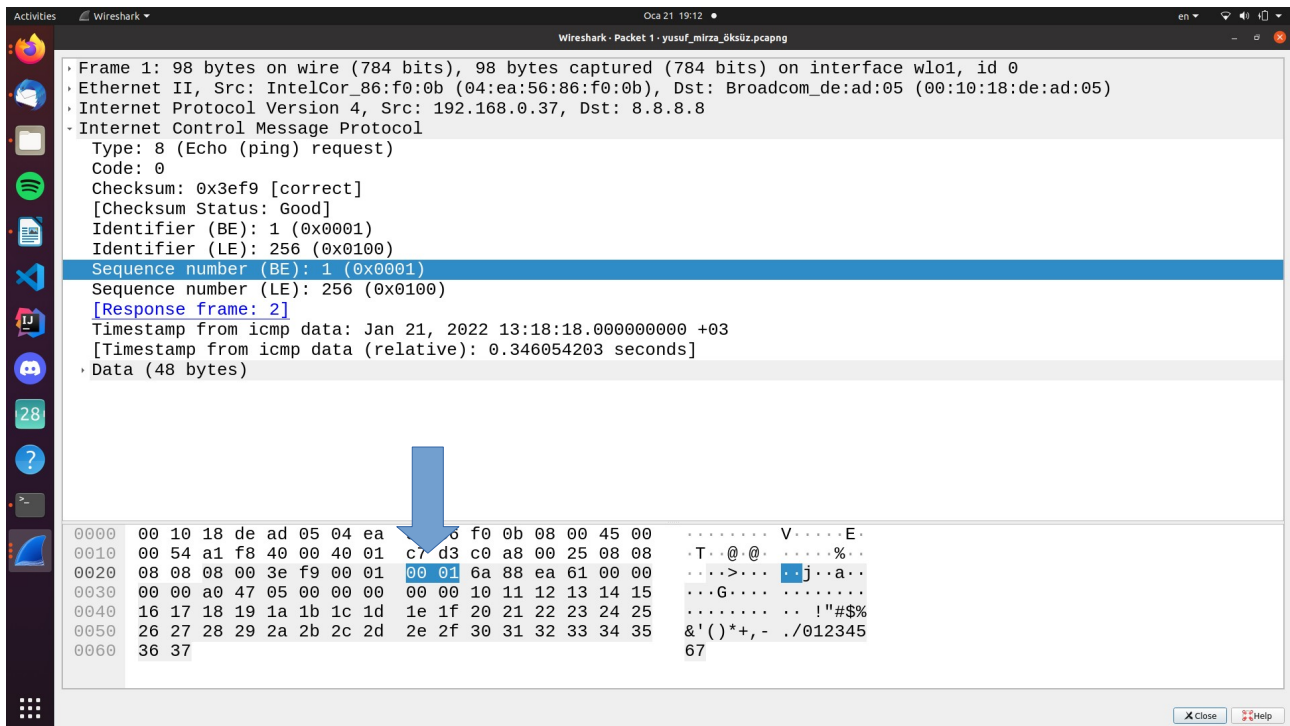
There are 2 bytes for checksum.



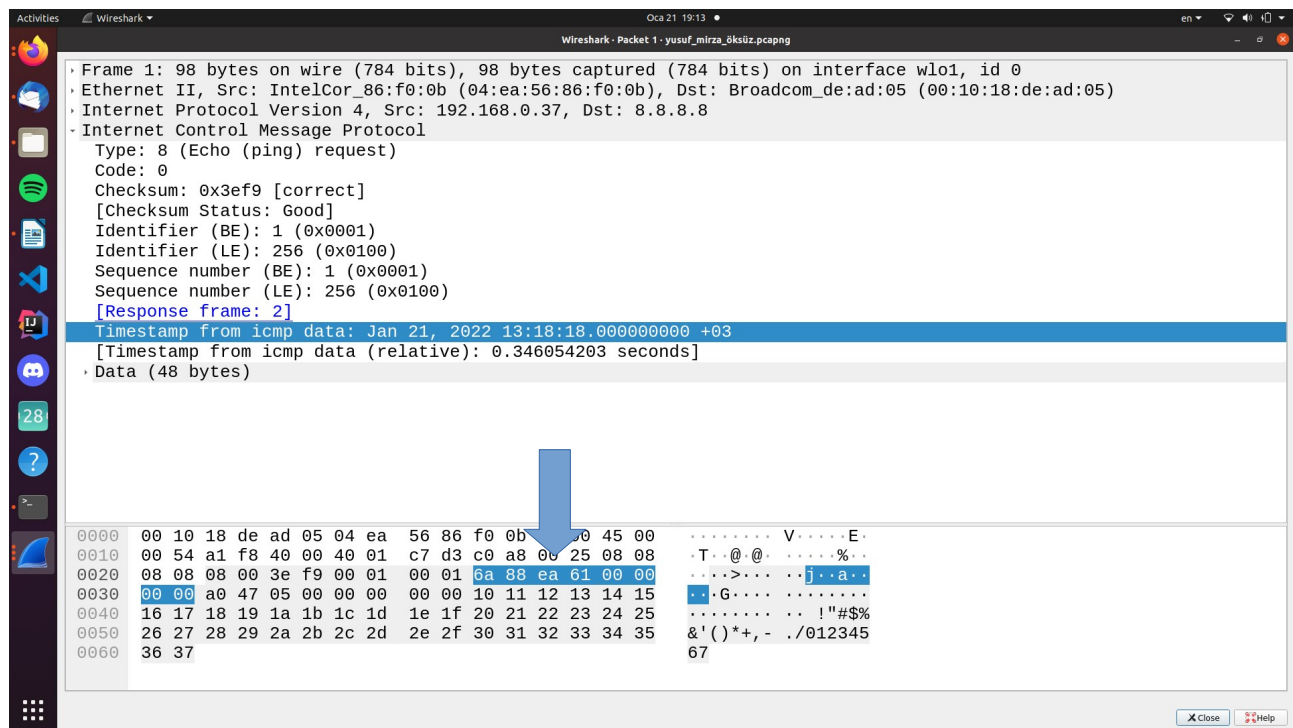
There are 2 bytes for identifier.



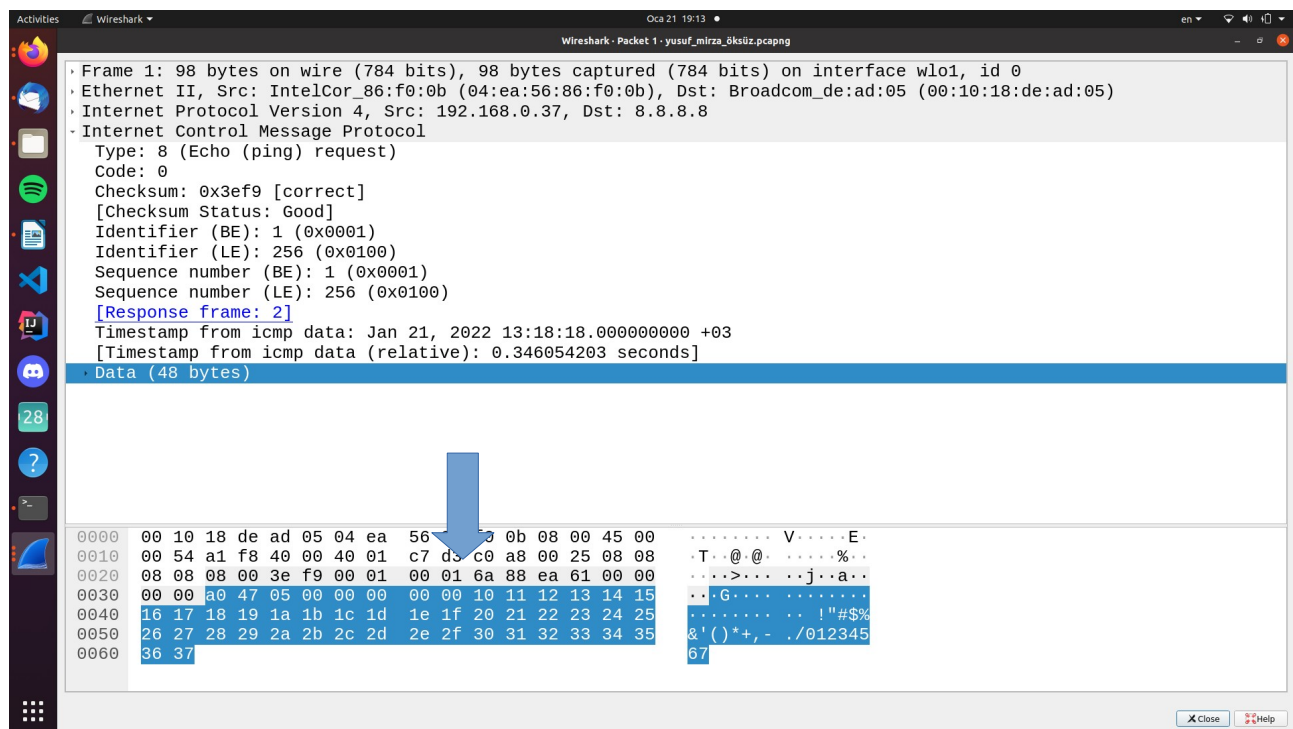
There are 2 bytes for sequence number.



There are 8 bytes for timestamp.



Finally 48 for bytes for data.



Totally we have $1 + 1 + 2 + 2 + 2 + 8 + 48 = 64$ bytes of data in ICMP message.

Both code and type number are gives information about the connection. If there is a mistake in the connection or not, and gives detailed reason for it.

Checksum is responsible for the data integrity. It holds a number receiver compares the number with the package context and decide whether there is an error in the message.

Identifier is the unique connection number, it holds a unique number for every connection so if there are more than 1 connection machine knows which connection to send the message.

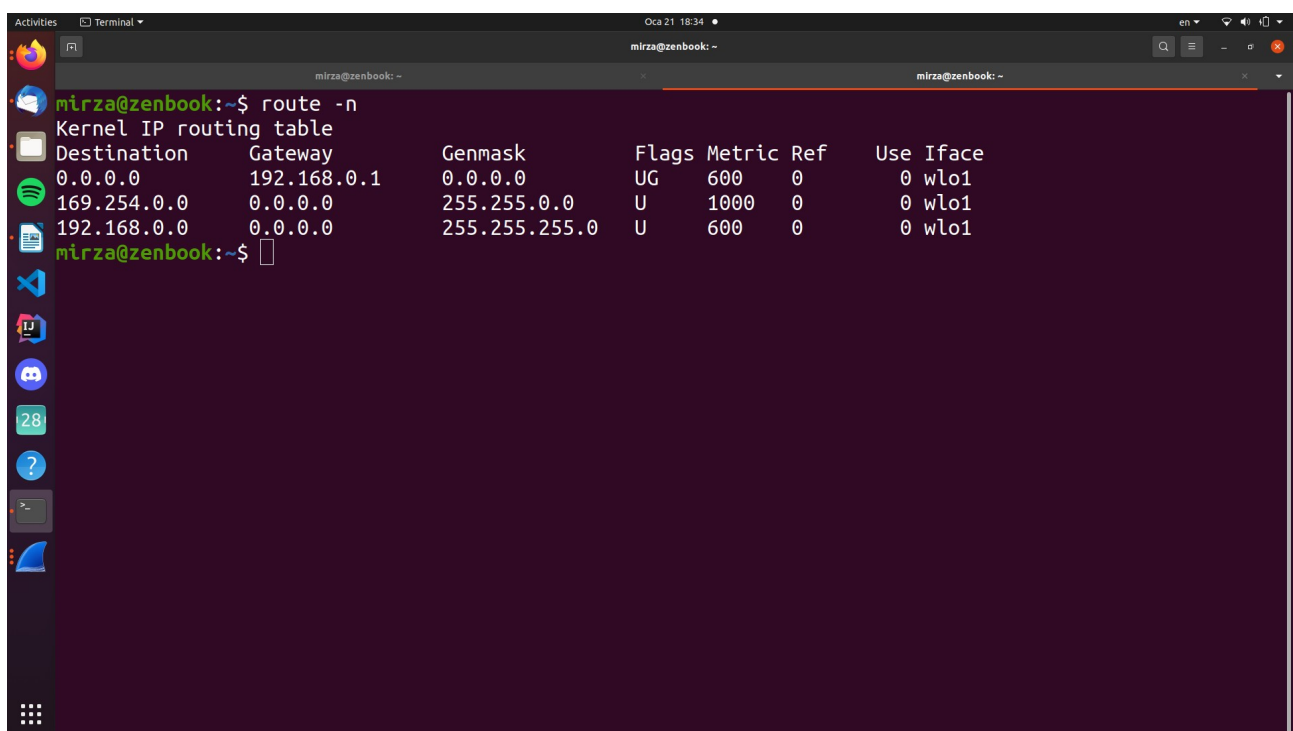
Sequence number is the unique message number in order to not to confuse message order or just messages.

Timestamp needed in order to observe the message time that passes from the network.

Data is an optional payload data part. We can put something we want to put.

3.5-)

Default gateway is the one that mask is all zeros. Because since mask is all zeros it does not check any bites and sends the packages directly to the written gateway. In my computer it is the first line.



```
mirza@zenbook:~$ route -n
Kernel IP routing table
Destination    Gateway         Genmask         Flags Metric Ref    Use Iface
0.0.0.0        192.168.0.1    0.0.0.0         UG    600    0      0 wlo1
169.254.0.0    0.0.0.0        255.255.0.0     U     1000   0      0 wlo1
192.168.0.0    0.0.0.0        255.255.255.0   U     600    0      0 wlo1
```

Default gateways job is to connect the host to a remote network. Thus, we use it to connect to the internet. In other words, it is an exit point for the packages that we send. If we remove that rule basically we can not send any ping requests because there wont be any exit point for our packages since the connection wont be established.