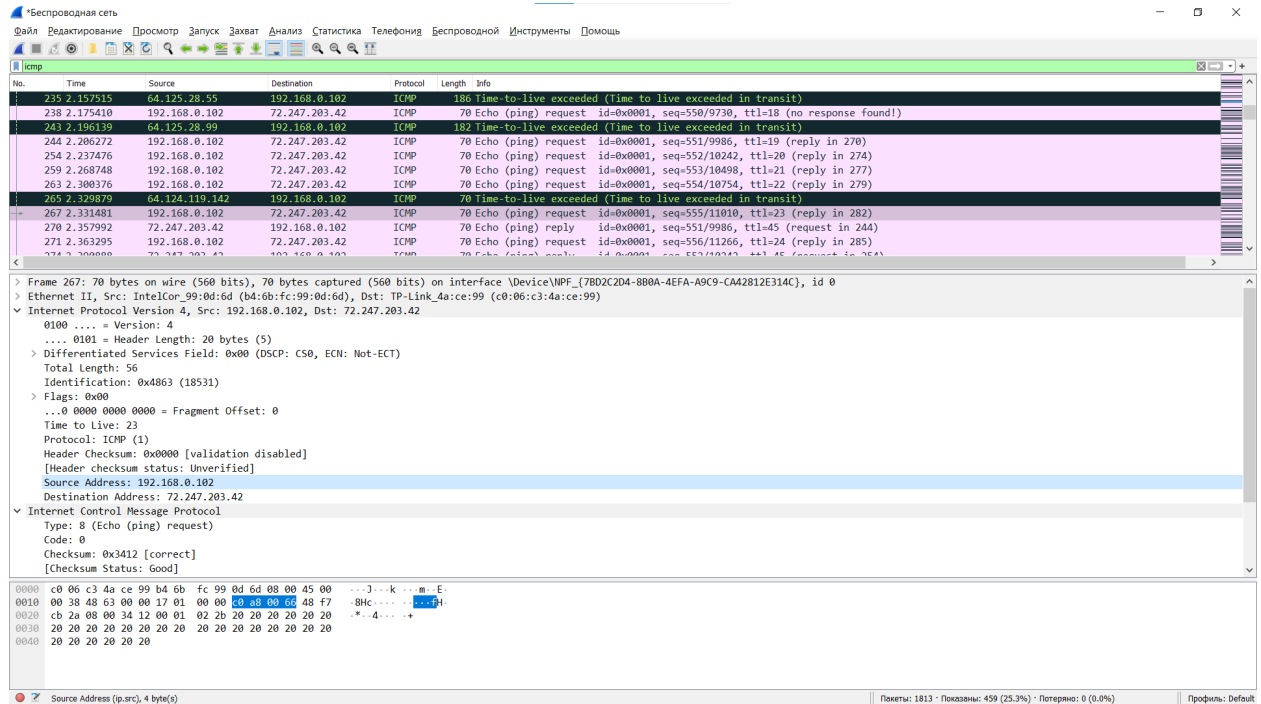


Wireshark

1. Ip-address: 192.168.0.102



2. Protocol: ICMP (1)

3. 20 байт в IP-заголовке, размер дейтаграммы 56 - 20 = 36 байт

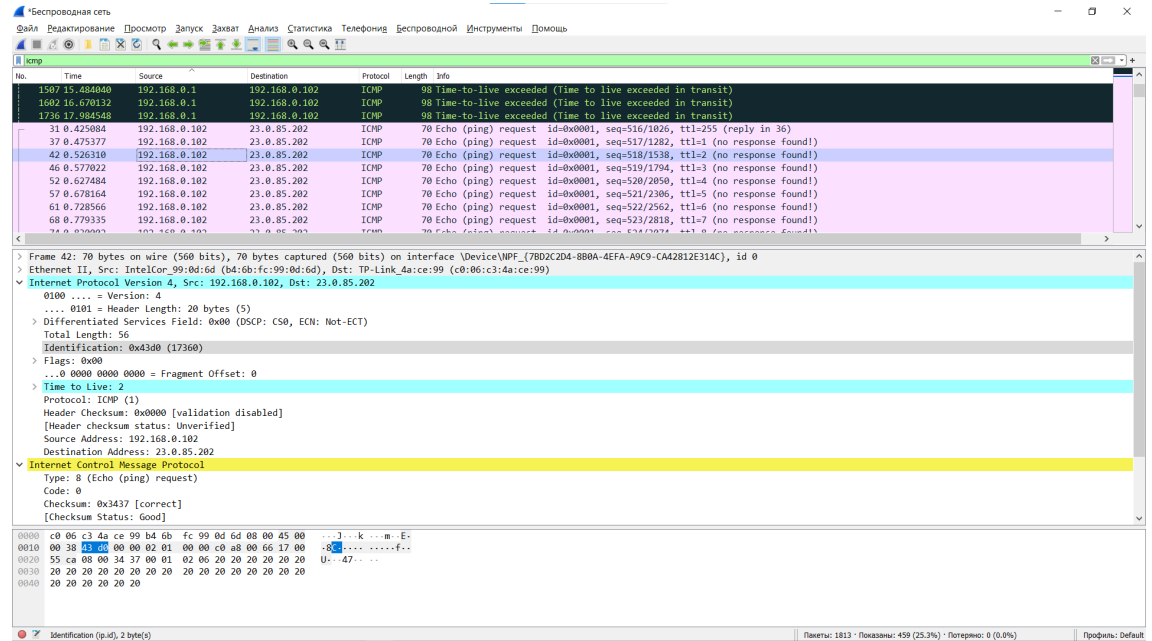
4.

- a. Identification, TTL
- b. Не меняются: Version, Header Length, Differentiated Services Field, Total Length, Flags, Protocol, Header Checksum, Source Address, Destination Address.

Должны оставаться неизменными: (Version, Header Length), Total Length, Protocol, Source Address, Destination Address.

Должны изменяться: Identification, Checksum

- c. Identification меняется прибавлением на 1.



5. Identification: 17359. TTL: 1

- Internet Protocol Version 4, Src: 192.168.0.102, Dst: 23.0.85.202
 - 0100 = Version: 4
 - 0101 = Header Length: 20 bytes (5)
 - > Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT)
 - Total Length: 56
 - Identification: 0x43cf (17359)
 - > Flags: 0x00
 - ...0 0000 0000 0000 = Fragment Offset: 0
 - > Time to Live: 1
 - Protocol: ICMP (1)
 - Header Checksum: 0x0000 [validation disabled]
 - [Header checksum status: Unverified]
 - Source Address: 192.168.0.102
 - Destination Address: 23.0.85.202

6. Header

- ▼ Internet Protocol Version 4, Src: 192.168.0.1, Dst: 192.168.0.102
 - 0100 = Version: 4
 - 0101 = Header Length: 20 bytes (5)
 - > Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT)
 - Total Length: 84
 - Identification: 0x44b5 (17589)
 - > Flags: 0x00
 - ...0 0000 0000 0000 = Fragment Offset: 0
 - Time to Live: 64
 - Protocol: ICMP (1)
 - Header Checksum: 0xb43c [validation disabled]
[Header checksum status: Unverified]
 - Source Address: 192.168.0.1
 - Destination Address: 192.168.0.102

7. Identification: 17589. TTL: 64

8.

- a. Да, 3 фрагмента
- b. (Fragment Offset, Flags), Total Length

The image shows a Wireshark packet capture of an ICMP Echo request and its fragments. The top packet list shows a standard query response (No. 485) and a fragmented IP protocol (No. 486). The packet details pane shows the header of the fragmented IP protocol (No. 486) with a total length of 540 bytes. The packet bytes pane shows the raw data of the fragmented IP protocol, including the header and the fragments.

Packet List:

No.	Time	Source	Destination	Protocol	Length	Info
485	6.742700	192.168.0.1	192.168.0.102	DNS	546	Standard query response 0xb4c A akamai.com A 104.69.208.81 NS f.gtld-servers.net NS i.gtld-servers.net NS ...
486	6.754777	31.204.156.201	192.168.0.102	UDP	208	50002 → 60200 Len=164
487	6.759106	192.168.0.102	104.69.208.81	IPv4	1514	Fragmented IP protocol (proto=ICMP 1, off=0, ID=e888) [Reassembled in #489]
488	6.759106	192.168.0.102	104.69.208.81	IPv4	1514	Fragmented IP protocol (proto=ICMP 1, off=1480, ID=e888) [Reassembled in #489]
489	6.759106	192.168.0.102	104.69.208.81	ICMP	554	Echo (ping) request id=0x0001, seq=16257/33087, ttl=255 (reply in 499)
490	6.775938	31.204.156.201	192.168.0.102	UDP	208	50002 → 60200 Len=166
491	6.796420	31.204.156.201	192.168.0.102	UDP	211	50002 → 60200 Len=169
492	6.797700	192.168.0.102	104.69.208.81	IPv4	1514	Fragmented IP protocol (proto=ICMP 1, off=0, ID=e889) [Reassembled in #494]
493	6.797700	192.168.0.102	104.69.208.81	IPv4	1514	Fragmented IP protocol (proto=ICMP 1, off=1480, ID=e889) [Reassembled in #494]
494	6.797700	192.168.0.102	104.69.208.81	ICMP	554	Echo (ping) request id=0x0001, seq=16258/33343, ttl=1 (no response found)
495	6.799188	192.168.0.1	192.168.0.102	ICMP	126	Time-to-live exceeded (Time to live exceeded in transit)
496	6.822421	31.204.156.201	192.168.0.102	UDP	204	50002 → 60200 Len=162
497	6.836872	104.69.208.81	192.168.0.102	IPv4	1514	Fragmented IP protocol (proto=ICMP 1, off=0, ID=0d56) [Reassembled in #499]
498	6.836970	104.69.208.81	192.168.0.102	IPv4	1514	Fragmented IP protocol (proto=ICMP 1, off=1480, ID=0d56) [Reassembled in #499]
499	6.836970	104.69.208.81	192.168.0.102	ICMP	554	Echo (ping) reply id=0x0001, seq=16257/33087, ttl=54 (request in 489)
500	6.837200	192.168.0.102	104.69.208.81	IPv4	1514	Fragmented IP protocol (proto=ICMP 1, off=0, ID=e88a) [Reassembled in #502]
501	6.837200	192.168.0.102	104.69.208.81	IPv4	1514	Fragmented IP protocol (proto=ICMP 1, off=1480, ID=e88a) [Reassembled in #502]

Packet Details (No. 486):

- ... 0101 = Header Length: 20 bytes (5)
- > Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT)
- Total Length: 540
- Identification: 0xe889 (59529)
- > Flags: 0x01
 - ...0 1011 1001 0000 = Fragment Offset: 2960
- > Time to Live: 1
- Protocol: ICMP (1)
- Header Checksum: 0x0000 [validation disabled]
[Header checksum status: Unverified]
- Source Address: 192.168.0.102
- Destination Address: 104.69.208.81
- ▼ [3 IPv4 Fragments (3480 bytes): #492(1480), #493(1480), #494(520)]
 - [Frame: 492, payload: 0-1479 (1480 bytes)]
 - [Frame: 493, payload: 1480-2959 (1480 bytes)]
 - [Frame: 494, payload: 2960-3479 (520 bytes)]
- [Fragment count: 3]

Packet Bytes (No. 486):

0000 00 00 de a2 00 01 3f 82 20 20 20 20 20 20 20 20?
0010 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
0020 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
0030 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
0040 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
0050 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
0060 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20

Frame (554 bytes) Reassembled IPv4 (3480 bytes)
IPv4 Fragment (p.fragment), 1480 byte(s)

Пакеты: 62276 - Показаны: 62276 (100.0%)
Профиль: Default

Программирование

Задание 1.

<https://github.com/SBOne-Kenobi/RestService/blob/master/src/main/kotlin/ping.py>

```
D:\anaconda3\python.exe D:/Programms/RestService/ping.py -n 10 -w 1000 linkedin.com
rtt: 28ms, sent: 16b
rtt: 27ms, sent: 16b
rtt: 28ms, sent: 16b
rtt: 28ms, sent: 16b
rtt: 28ms, sent: 16b
rtt: 29ms, sent: 16b
rtt: 27ms, sent: 16b
rtt: 28ms, sent: 16b
rtt: 28ms, sent: 16b
rtt: 28ms, sent: 16b
Packages sent: 10, Packages received: 10 (0.0% loss)
Min rtt: 27, Max rtt: 29, Avg rtt: 27.9

Process finished with exit code 0
```

```
D:\anaconda3\python.exe D:/Programms/RestService/ping.py -n 10 -w 1000 huawei.com
rtt: 250ms, sent: 16b
rtt: 250ms, sent: 16b
rtt: 250ms, sent: 16b
rtt: 255ms, sent: 16b
rtt: 252ms, sent: 16b
rtt: 250ms, sent: 16b
rtt: 257ms, sent: 16b
rtt: 258ms, sent: 16b
rtt: 255ms, sent: 16b
rtt: 251ms, sent: 16b
Packages sent: 10, Packages received: 10 (0.0% loss)
Min rtt: 250, Max rtt: 258, Avg rtt: 252.8

Process finished with exit code 0
```

Задание 2.

<https://github.com/SBOne-Kenobi/RestService/blob/master/src/main/kotlin/gbnMain.kt>

Логи: <https://github.com/SBOne-Kenobi/RestService/blob/master/src/main/kotlin/log.log>

```
Sender: frame 0 sent
Sender: [ 0| 1 2 3 ] 4 5 6
Receiver: | 0 1 2 3 4 5 6
-----
Receiver: received 0
Send ack 0
Sender: [ 0| 1 2 3 ] 4 5 6
Receiver: 0| 1 2 3 4 5 6
-----
Sender: frame 1 sent
Sender: [ 0 1| 2 3 ] 4 5 6
Receiver: 0| 1 2 3 4 5 6
-----
Receiver: received 1
Send ack 1
Sender: [ 0 1| 2 3 ] 4 5 6
Receiver: 0 1| 2 3 4 5 6
-----
```