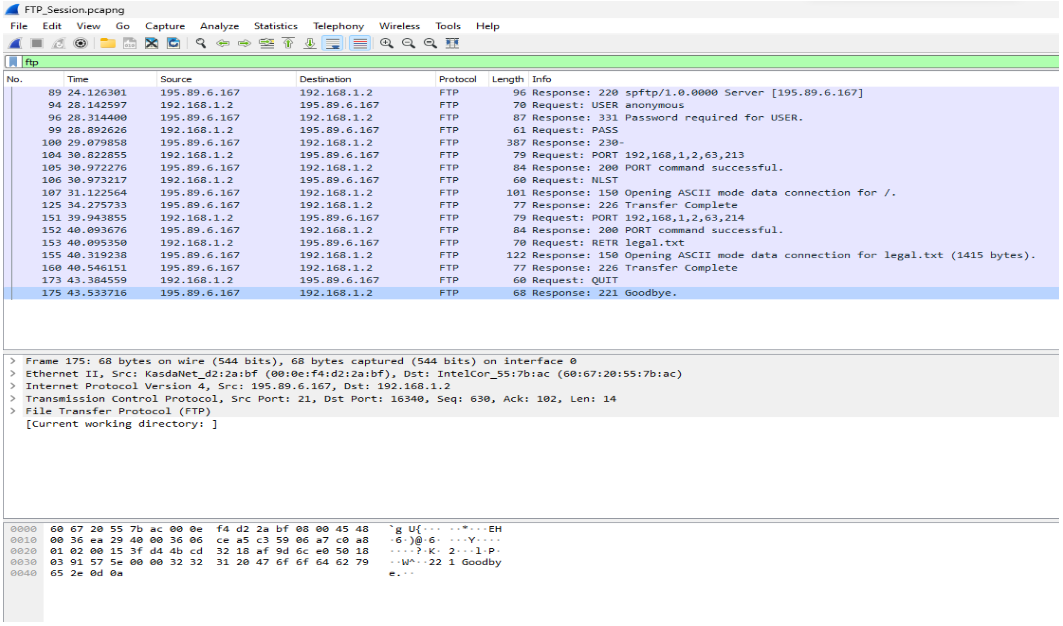
Naveed Ali 20L-1244 BDS7A

Computer Networks Lab

Question number 1:


FTP_Session.pcapng
File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help
ftp

```
No.  Time       Source         Destination    Protocol Length Info
  89 24.126301  195.89.6.167   192.168.1.2    FTP        96 Response: 220 spftp/1.0.0000 Server [195.89.6.167]
  94 28.142597  192.168.1.2    195.89.6.167   FTP        70 Request: USER anonymous
  96 28.314400  195.89.6.167   192.168.1.2    FTP        87 Response: 331 Password required for USER.
  99 28.892626  192.168.1.2    195.89.6.167   FTP        61 Request: PASS
 100 29.079858  195.89.6.167   192.168.1.2    FTP       387 Response: 230-
 104 30.822855  192.168.1.2    195.89.6.167   FTP        79 Request: PORT 192,168,1,2,63,213
 105 30.972276  195.89.6.167   192.168.1.2    FTP        84 Response: 200 PORT command successful.
 106 30.973217  192.168.1.2    195.89.6.167   FTP        60 Request: NLST
 107 31.122564  195.89.6.167   192.168.1.2    FTP       101 Response: 150 Opening ASCII mode data connection for /.
 125 34.275733  195.89.6.167   192.168.1.2    FTP        77 Response: 226 Transfer Complete
 151 39.943855  192.168.1.2    195.89.6.167   FTP        79 Request: PORT 192,168,1,2,63,214
 152 40.093676  195.89.6.167   192.168.1.2    FTP        84 Response: 200 PORT command successful.
 153 40.095350  192.168.1.2    195.89.6.167   FTP        70 Request: RETR legal.txt
 155 40.319238  195.89.6.167   192.168.1.2    FTP       122 Response: 150 Opening ASCII mode data connection for legal.txt (1415 bytes).
 160 40.546151  195.89.6.167   192.168.1.2    FTP        77 Response: 226 Transfer Complete
 173 43.384559  192.168.1.2    195.89.6.167   FTP        60 Request: QUIT
 175 43.533716  195.89.6.167   192.168.1.2    FTP        68 Response: 221 Goodbye.
```

```
> Frame 175: 68 bytes on wire (544 bits), 68 bytes captured (544 bits) on interface 0
> Ethernet II, Src: KasdaNet_d2:2a:bf (00:0e:f4:d2:2a:bf), Dst: IntelCor_55:7b:ac (60:67:20:55:7b:ac)
> Internet Protocol Version 4, Src: 195.89.6.167, Dst: 192.168.1.2
> Transmission Control Protocol, Src Port: 21, Dst Port: 16340, Seq: 630, Ack: 102, Len: 14
> File Transfer Protocol (FTP)
  [Current working directory: ]
```

```
0000  60 67 20 55 7b ac 00 0e  f4 d2 2a bf 08 00 45 48   `g U{···  ··*···EH
0010  00 36 ea 29 40 00 36 06  ce a5 c3 59 06 a7 c0 a8   ·6·)@·6·  ···Y····
0020  01 02 00 15 3f d4 4b cd  32 18 af 9d 6c e0 50 18   ····?·K·  2···l·P·
0030  03 91 57 5e 00 00 32 32  31 20 47 6f 6f 64 62 79   ··W^··22 1 Goodby
0040  65 2e 0d 0a                                        e.··
```

Port 20: It is the data port and is used for the transfer of files and data between FTP clients and servers

Port 21: It is the control port of FTP that is responsible for handling the control information of the FTP session.

Part 2

2:

Packet 89: FTP server responded 220 "service ready for user' on IP [195.89.6.167]

Packet 94 :Client asks server to send the data on IP:192.168.1.2 and Port:16341 and command is 'USER' which is used to specify username and Request Arg is anonymous

Packet 96: FTP server responded 331 "Password required for USER"

Packet 99 : Client asks server to send the data on IP:192.168.1.2 and Port :16341 and command is 'PASS' and without argument.

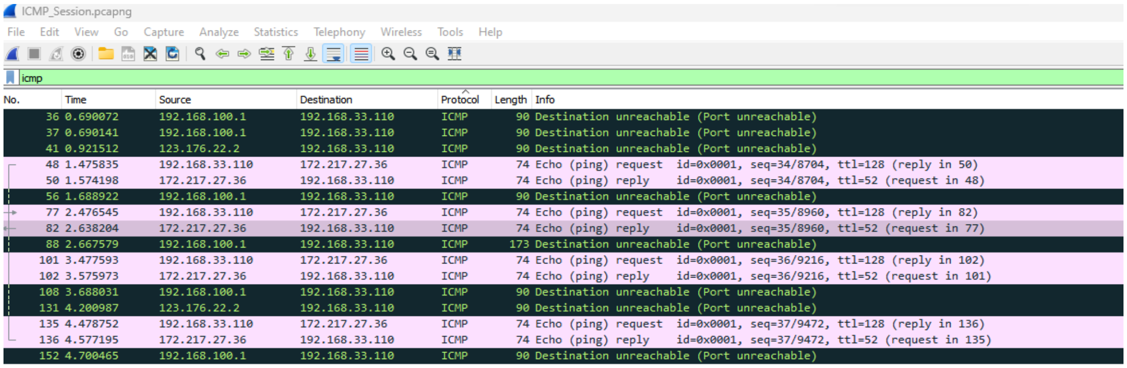
Packet 100: FTP server responded 230 "USer logged in" with empty arg

Packet 104 :Client instruct server to set up data connection using Request command: PORT Request arg: 192,168,1,2,63,213 Active IP address: 192.168.1.2 Active port: 16341

Packet 105 :FTP server responded 200 with arg PORT command successful

Packet 106: client uses command 'NLST' to list file names
Packet 107: FTP server respond 150 "File status okay,opening data connection" with response arg "Opening ASCII mode data connection"
Packet 125: FTP server responded 226 "Closing data connection" with arg "Transfer Complete"
Packet 151: PORT 192,168,1,2,63,214 Request command: PORT Request arg: 192,168,1,2,63,214 Active IP address: 192.168.1.2 Active port: 16342
Packet 152: FTP responded 200 "Command Successful" with arg "PORT successful"
Packet 153: Clients uses RETR command to retrieve files with Request arg 'legal.txt'
Packet 155: FTP response 150 "OPENING ASCII mode data connection"
Packet 160: FTP response 226 "Closing data connection" with arg Transfer Complete
Packet 173: Client uses QUIT command to terminate the session
Packet 175: FTP respond 221 with code "Service Closing" with arg "Good Bye"

Question no 2:


ICMP_Session.pcapng
File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

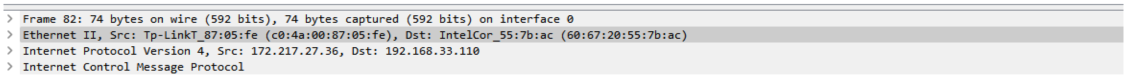
icmp

No.	Time	Source	Destination	Protocol	Length	Info
36	0.690072	192.168.100.1	192.168.33.110	ICMP	90	Destination unreachable (Port unreachable)
37	0.690141	192.168.100.1	192.168.33.110	ICMP	90	Destination unreachable (Port unreachable)
41	0.921512	123.176.22.2	192.168.33.110	ICMP	90	Destination unreachable (Port unreachable)
48	1.475835	192.168.33.110	172.217.27.36	ICMP	74	Echo (ping) request id=0x0001, seq=34/8704, ttl=128 (reply in 50)
50	1.574198	172.217.27.36	192.168.33.110	ICMP	74	Echo (ping) reply id=0x0001, seq=34/8704, ttl=52 (request in 48)
56	1.688922	192.168.100.1	192.168.33.110	ICMP	90	Destination unreachable (Port unreachable)
77	2.476545	192.168.33.110	172.217.27.36	ICMP	74	Echo (ping) request id=0x0001, seq=35/8960, ttl=128 (reply in 82)
82	2.638204	172.217.27.36	192.168.33.110	ICMP	74	Echo (ping) reply id=0x0001, seq=35/8960, ttl=52 (request in 77)
88	2.667579	192.168.100.1	192.168.33.110	ICMP	173	Destination unreachable (Port unreachable)
101	3.477593	192.168.33.110	172.217.27.36	ICMP	74	Echo (ping) request id=0x0001, seq=36/9216, ttl=128 (reply in 102)
102	3.575973	172.217.27.36	192.168.33.110	ICMP	74	Echo (ping) reply id=0x0001, seq=36/9216, ttl=52 (request in 101)
108	3.688031	192.168.100.1	192.168.33.110	ICMP	90	Destination unreachable (Port unreachable)
131	4.200987	123.176.22.2	192.168.33.110	ICMP	90	Destination unreachable (Port unreachable)
135	4.478752	192.168.33.110	172.217.27.36	ICMP	74	Echo (ping) request id=0x0001, seq=37/9472, ttl=128 (reply in 136)
136	4.577195	172.217.27.36	192.168.33.110	ICMP	74	Echo (ping) reply id=0x0001, seq=37/9472, ttl=52 (request in 135)
152	4.700465	192.168.100.1	192.168.33.110	ICMP	90	Destination unreachable (Port unreachable)

1-

Are ICMP messages sent over UDP or TCP?

None of TCP or UDP, as ICMP is a distinct protocol.



```
> Frame 82: 74 bytes on wire (592 bits), 74 bytes captured (592 bits) on interface 0
> Ethernet II, Src: Tp-LinkT_87:05:fe (c0:4a:00:87:05:fe), Dst: IntelCor_55:7b:ac (60:67:20:55:7b:ac)
> Internet Protocol Version 4, Src: 172.217.27.36, Dst: 192.168.33.110
> Internet Control Message Protocol
```

2-Link-layer:

C0:4a:00:87:05:fe

3- ICMP Packets for Communication:

This method involves the transmission of ICMP packets, commonly referred to as echo request messages. The objective is to gauge the time taken for these messages to travel to their destination and return as echo reply messages.

4- Host-Based Requests:

When initiating a ping operation, four packets are dispatched as requests, and the host receiving these requests responds with an equal number of packets.

5- Host IP Addresses:

The source host's IP address is 172.217.27.36, while the destination host's IP address is 192.168.33.110.

6- Purpose of ICMP Packets:

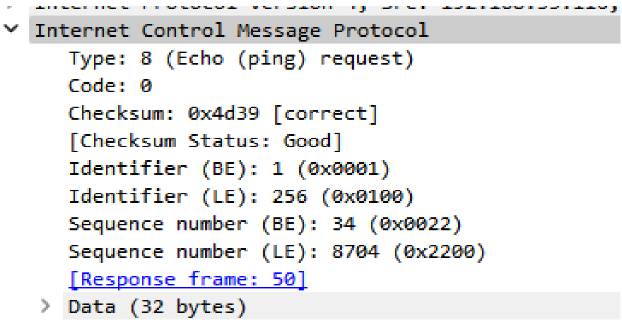
ICMP packets were designed for conveying network-layer data between hosts and routers. They do not include source and destination port numbers, as their primary function is not to facilitate communication between application layer processes. Each ICMP packet contains a "Type" and a "Code."

7- ICMP Message Types:

The ICMP message type is indicated in the initial byte of the packet. Specifically, an ICMP request is denoted by type 8, whereas an ICMP reply corresponds to type 0. Type 3 is utilized for messages indicating an inaccessible destination.

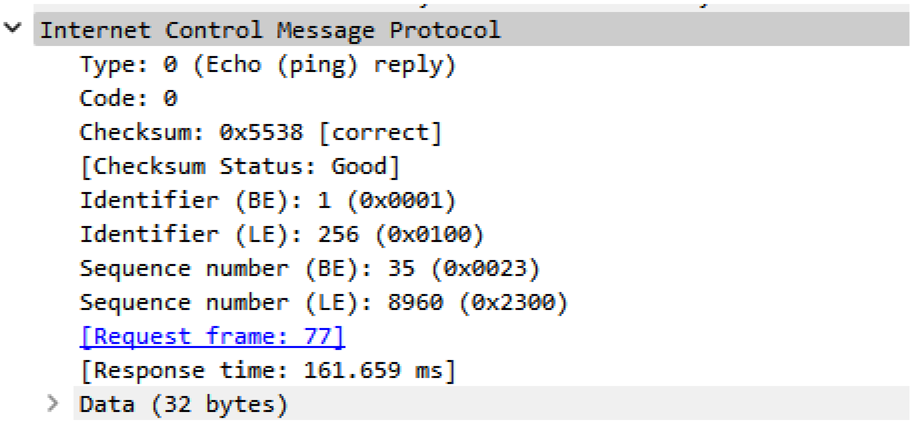
e 8, while an ICMP reply is of type 0. For messages with an inaccessible destination, we utilize type 3.

8-ping request: type: 8 code number: 0



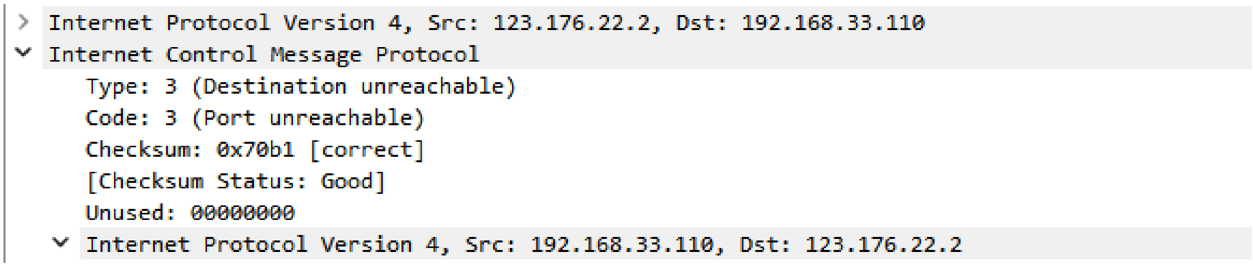
```
  Internet Protocol Version 4, Src: 192.168.33.110,
v Internet Control Message Protocol
     Type: 8 (Echo (ping) request)
     Code: 0
     Checksum: 0x4d39 [correct]
     [Checksum Status: Good]
     Identifier (BE): 1 (0x0001)
     Identifier (LE): 256 (0x0100)
     Sequence number (BE): 34 (0x0022)
     Sequence number (LE): 8704 (0x2200)
     [Response frame: 50]
   > Data (32 bytes)
```

ping reply: type: 0 code number: 0



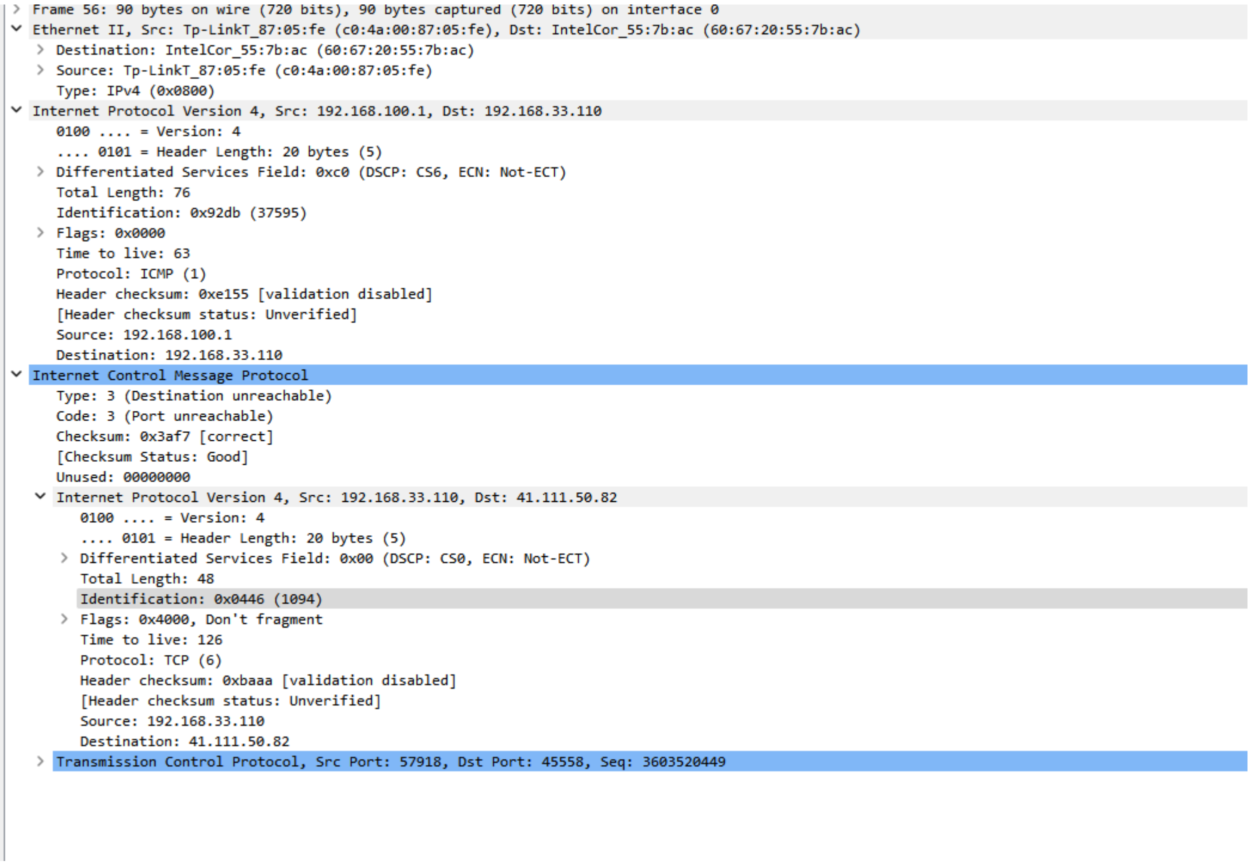
```
v Internet Control Message Protocol
      Type: 0 (Echo (ping) reply)
      Code: 0
      Checksum: 0x5538 [correct]
      [Checksum Status: Good]
      Identifier (BE): 1 (0x0001)
      Identifier (LE): 256 (0x0100)
      Sequence number (BE): 35 (0x0023)
      Sequence number (LE): 8960 (0x2300)
      [Request frame: 77]
      [Response time: 161.659 ms]
    > Data (32 bytes)
```

9-



```
> Internet Protocol Version 4, Src: 123.176.22.2, Dst: 192.168.33.110
v Internet Control Message Protocol
      Type: 3 (Destination unreachable)
      Code: 3 (Port unreachable)
      Checksum: 0x70b1 [correct]
      [Checksum Status: Good]
      Unused: 00000000
    v Internet Protocol Version 4, Src: 192.168.33.110, Dst: 123.176.22.2
```

10-



```
> Frame 56: 90 bytes on wire (720 bits), 90 bytes captured (720 bits) on interface 0
v Ethernet II, Src: Tp-LinkT_87:05:fe (c0:4a:00:87:05:fe), Dst: IntelCor_55:7b:ac (60:67:20:55:7b:ac)
  > Destination: IntelCor_55:7b:ac (60:67:20:55:7b:ac)
  > Source: Tp-LinkT_87:05:fe (c0:4a:00:87:05:fe)
    Type: IPv4 (0x0800)
v Internet Protocol Version 4, Src: 192.168.100.1, Dst: 192.168.33.110
    0100 .... = Version: 4
    .... 0101 = Header Length: 20 bytes (5)
  > Differentiated Services Field: 0xc0 (DSCP: CS6, ECN: Not-ECT)
    Total Length: 76
    Identification: 0x92db (37595)
  > Flags: 0x0000
    Time to live: 63
    Protocol: ICMP (1)
    Header checksum: 0xe155 [validation disabled]
    [Header checksum status: Unverified]
    Source: 192.168.100.1
    Destination: 192.168.33.110
v Internet Control Message Protocol
    Type: 3 (Destination unreachable)
    Code: 3 (Port unreachable)
    Checksum: 0x3af7 [correct]
    [Checksum Status: Good]
    Unused: 00000000
  v Internet Protocol Version 4, Src: 192.168.33.110, Dst: 41.111.50.82
      0100 .... = Version: 4
      .... 0101 = Header Length: 20 bytes (5)
    > Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT)
      Total Length: 48
      Identification: 0x0446 (1094)
    > Flags: 0x4000, Don't fragment
      Time to live: 126
      Protocol: TCP (6)
      Header checksum: 0xbaaa [validation disabled]
      [Header checksum status: Unverified]
      Source: 192.168.33.110
      Destination: 41.111.50.82
  > Transmission Control Protocol, Src Port: 57918, Dst Port: 45558, Seq: 3603520449
```