COMPUTER NETWORKS LAB

Assignment - 2

SECTION S1

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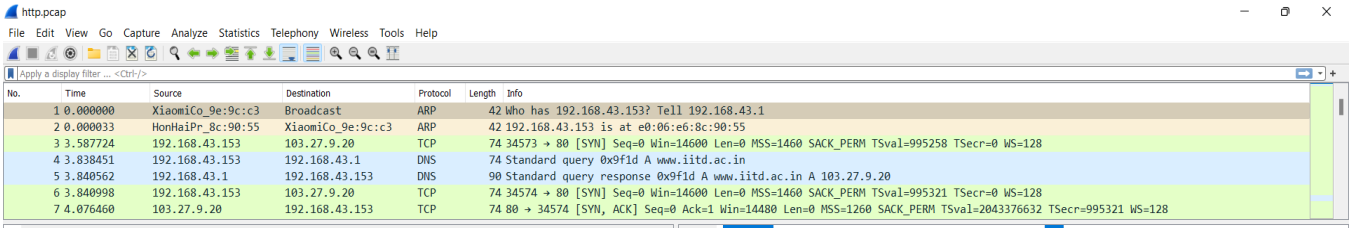
120CS0196

Q1: Answer the following questions for captured file http.pcap (HTTP Protocol)

1. List 3 different protocols that appear in the protocol column in the unfiltered packet-listing window in step 7 above.

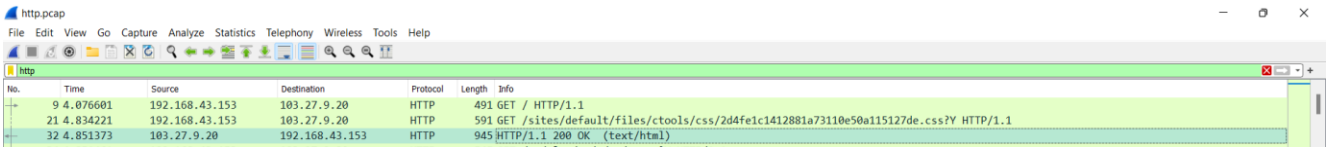
Sol: **ARP, TCP, DNS**



No.	Time	Source	Destination	Protocol	Length	Info
1	0.000000	XiaomiCo_9e:9c:c3	Broadcast	ARP	42	Who has 192.168.43.153? Tell 192.168.43.1
2	0.000033	HonHaiPr_8c:90:55	XiaomiCo_9e:9c:c3	ARP	42	192.168.43.153 is at e0:06:e6:8c:90:55
3	3.587724	192.168.43.153	103.27.9.20	TCP	74	34573 → 80 [SYN] Seq=0 Win=14600 Len=0 MSS=1460 SACK_PERM TSval=995258 TSecr=0 WS=128
4	3.838451	192.168.43.153	192.168.43.1	DNS	74	Standard query 0x9f1d A www.iitd.ac.in
5	3.840562	192.168.43.1	192.168.43.153	DNS	90	Standard query response 0x9f1d A www.iitd.ac.in A 103.27.9.20
6	3.840998	192.168.43.153	103.27.9.20	TCP	74	34574 → 80 [SYN] Seq=0 Win=14600 Len=0 MSS=1460 SACK_PERM TSval=995321 TSecr=0 WS=128
7	4.076460	103.27.9.20	192.168.43.153	TCP	74	80 → 34574 [SYN, ACK] Seq=0 Ack=1 Win=14480 Len=0 MSS=1260 SACK_PERM TSval=2043376632 TSecr=995321 WS=128

2. How long did it take from when the HTTP GET message was sent until the HTTP OK reply was received? (By default, the value of the Time column in the packet-listing window is the amount of time, in seconds, since Wireshark tracing began. To display the Time field in time-of-day format, select the Wireshark View pull down menu, then select Time DisplayFormat, then select Time-ofday.)

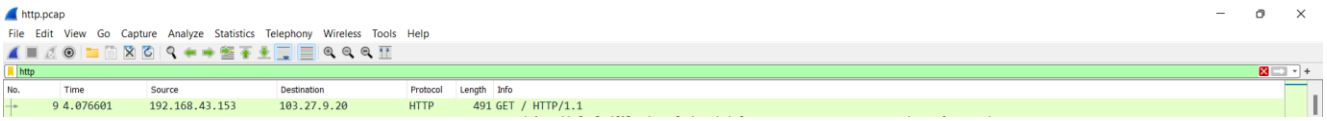
Sol: Time taken from when the HTTP GET message was sent until the HTTP OK reply was received is (HTTPS OK time- HTTPS GET time) **12:47:56.188990 - 12:47:55.414218 = .774772 sec**



No.	Time	Source	Destination	Protocol	Length	Info
9	4.076601	192.168.43.153	103.27.9.20	HTTP	491	GET / HTTP/1.1
21	4.834221	192.168.43.153	103.27.9.20	HTTP	591	GET /sites/default/files/ctools/css/2d4fe1c1412881a73110e50a115127de.css?Y HTTP/1.1
32	4.851373	103.27.9.20	192.168.43.153	HTTP	945	HTTP/1.1 200 OK (text/html)

3. What is the Internet address of iitd.ac.in? What is the Internet address of your computer?

Sol: **Internet address of the iitd.ac.in 103.27.9.20 Internet address of 192.168.43.153**



No.	Time	Source	Destination	Protocol	Length	Info
9	4.076601	192.168.43.153	103.27.9.20	HTTP	491	GET / HTTP/1.1

4. Print the two HTTP messages (GET and OK) referred to in question 2 above. To do so, select Printfrom the Wireshark Filecommand menu, and select the “SelectedPacketOnly” and “Printasdisplayed” radial buttons, and then click OK.

Sol: No. Time Source Destination Protocol Length Info 9 12:47:55.414218 192.168.43.153 103.27.9.20 HTTP 491 GET / HTTP/1.1 Frame 9: 491 bytes on wire (3928 bits), 491 bytes captured (3928 bits) Ethernet II, Src: HonHaiPr_8c:90:55 (e0:06:e6:8c:90:55), Dst: XiaomiCo_9e:9c:c3 (ac:c1:ee:9e: 9c:c3) Internet Protocol Version 4, Src: 192.168.43.153, Dst: 103.27.9.20 Transmission Control Protocol, Src Port: 34574, Dst Port: 80, Seq: 1, Ack: 1, Len: 425 Hypertext Transfer Protocol

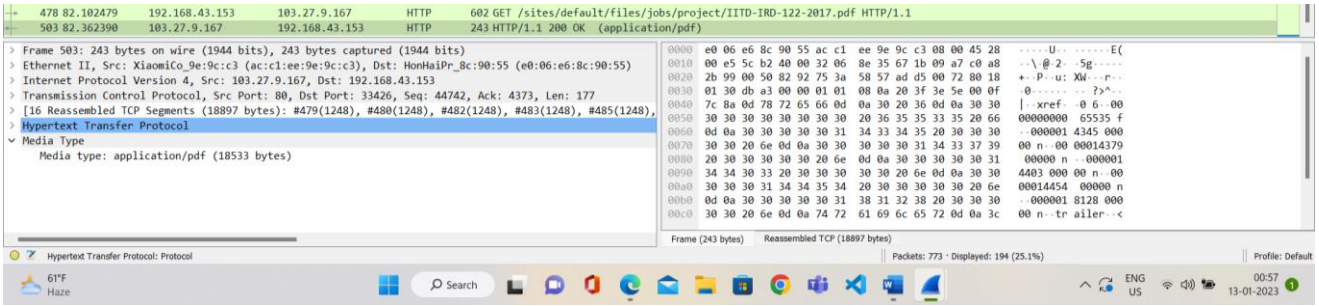
No. Time Source Destination Protocol Length Info 32 12:47:56.188990 103.27.9.20 192.168.43.153 HTTP 945 HTTP/1.1 200 OK (text/html)

Frame 32: 945 bytes on wire (7560 bits), 945 bytes captured (7560 bits) Ethernet II, Src: XiaomiCo_9e:9c:c3 (ac:c1:ee:9e:9c:c3), Dst: HonHaiPr_8c:90:55 (e0:06:e6:8c: 90:55) Internet Protocol Version 4, Src: 103.27.9.20, Dst: 192.168.43.153 Transmission Control Protocol, Src Port: 80, Dst Port: 34574, Seq: 8737, Ack: 426, Len: 879 [8 Reassembled TCP Segments (9615 bytes): #13(1248), #15(1248), #17(1248), #19(1248), #23(1248), #28(1248), #30(1248), #32(879)] Hypertext Transfer Protocol Line-based text data: text/html (709 lines)

5. Find the packet number that includes HTTP GET message for a file IITD-IRD-122-2017.pdf. Also find the length of the file in bytes and time when file is downloaded successfully.

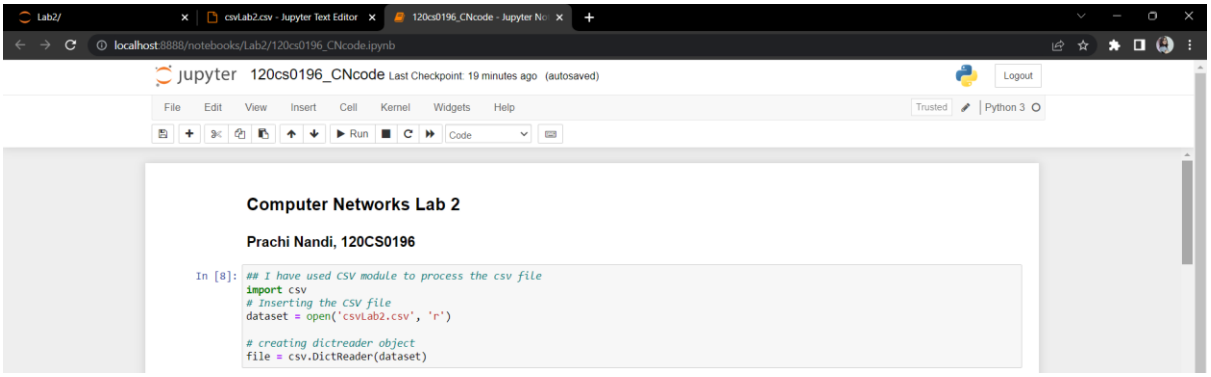
Sol: **478** is the packet number that includes HTTP GET message for a file IITD-IRD-122-2017.pdf.

Length of the file 18533 Bytes



Q2: Open the http.pcap file given in study material in Wireshark. Use File->Export Packet Dissections to save the data in csv file format. Write a C/C++/Java/Python code to read the data in csv file and print

Used Python:



Computer Networks Lab 2

Prachi Nandi, 120CS0196

```
In [8]: ## I have used CSV module to process the csv file
        import csv
        # Inserting the CSV file
        dataset = open('csvLab2.csv', 'r')

        # creating dictreader object
        file = csv.DictReader(dataset)
```

Python code to read data from the CSV file:

import csv

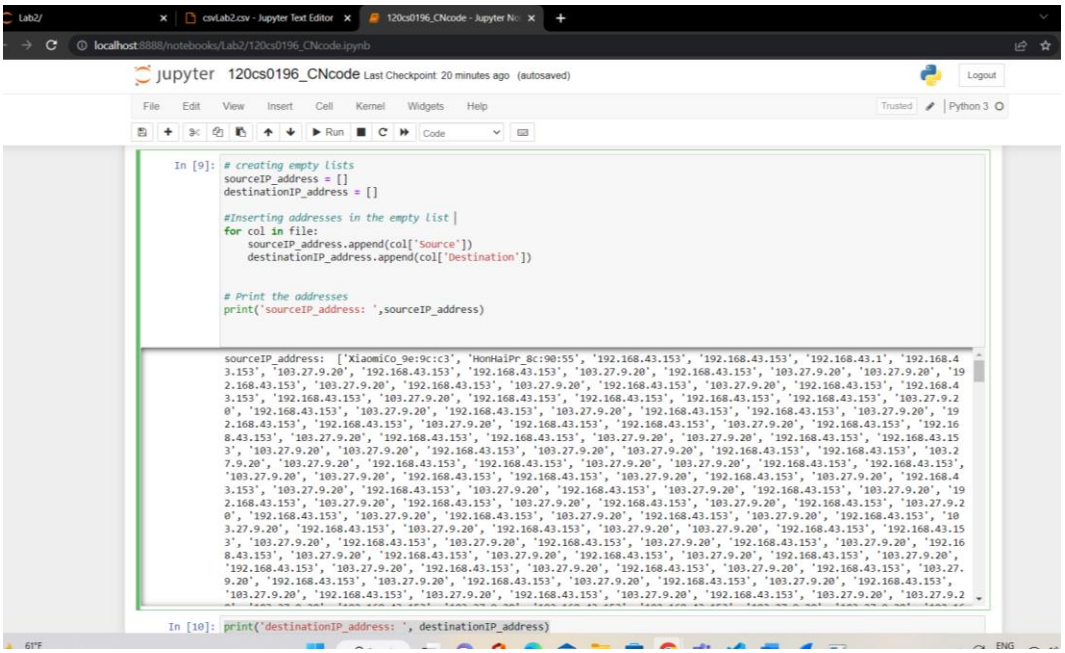
Inserting the CSV file

dataset = open('csvLab2.csv', 'r')

creating dictreader object

file = csv.DictReader(dataset)

a. source IP addresses and destination IP addresses



```
In [9]: # creating empty lists
        sourceIP_address = []
        destinationIP_address = []

        #Inserting addresses in the empty list
        for col in file:
            sourceIP_address.append(col['Source'])
            destinationIP_address.append(col['Destination'])


        # Print the addresses
        print('sourceIP_address: ',sourceIP_address)
```

```
sourceIP_address:  ['XiaomiCo_9e:9c:c3', 'HonHaiPr_8c:90:55', '192.168.43.153', '192.168.43.153', '192.168.43.1', '192.168.4
3.153', '103.27.9.20', '192.168.43.153', '192.168.43.153', '103.27.9.20', '192.168.43.153', '103.27.9.20', '103.27.9.20', '19
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```

```
In [10]: print('destinationIP_address: ', destinationIP_address)
```

creating empty lists

sourceIP_address = []

destinationIP_address = []

#Inserting addresses in the empty list

for col in file:

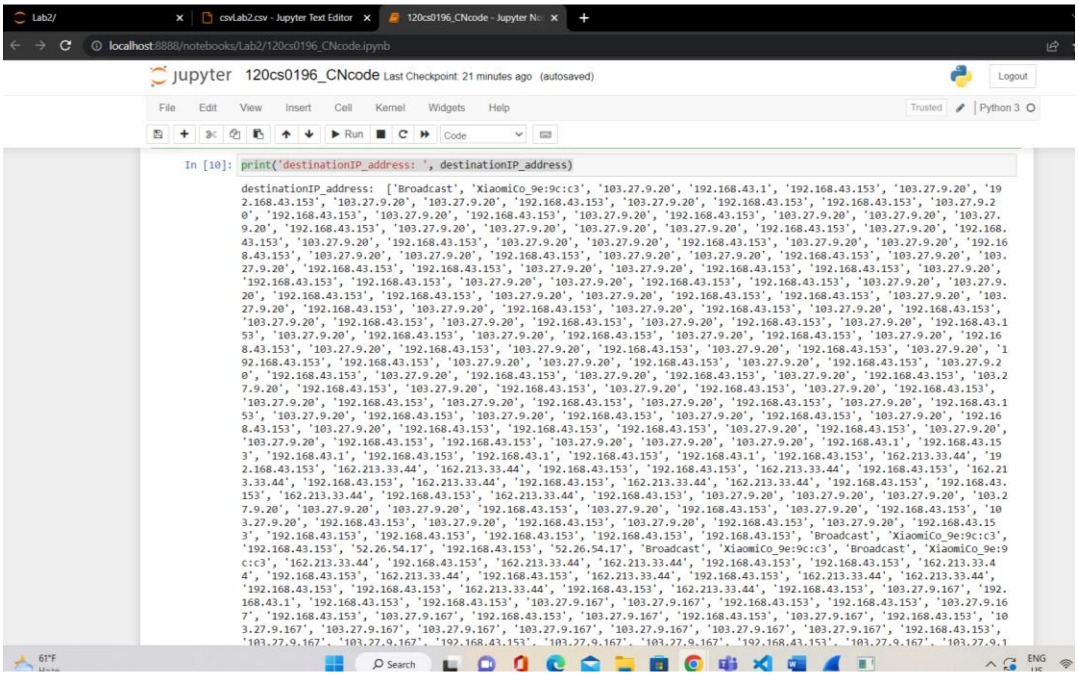
    sourceIP_address.append(col['Source'])

    destinationIP_address.append(col['Destination'])

Print the addresses

print('sourceIP_address: ',sourceIP_address)

print('destinationIP_address: ', destinationIP_address)



```
In [10]: print('destinationIP_address: ', destinationIP_address)

destinationIP_address:  ['Broadcast', 'XiaomiCo_9e:9c:c3', '103.27.9.20', '192.168.43.1', '192.168.43.153', '103.27.9.20', '19
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c:c3', '162.213.33.44', '192.168.43.153', '162.213.33.44', '162.213.33.44', '192.168.43.153', '192.168.43.153', '162.213.33.4
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```
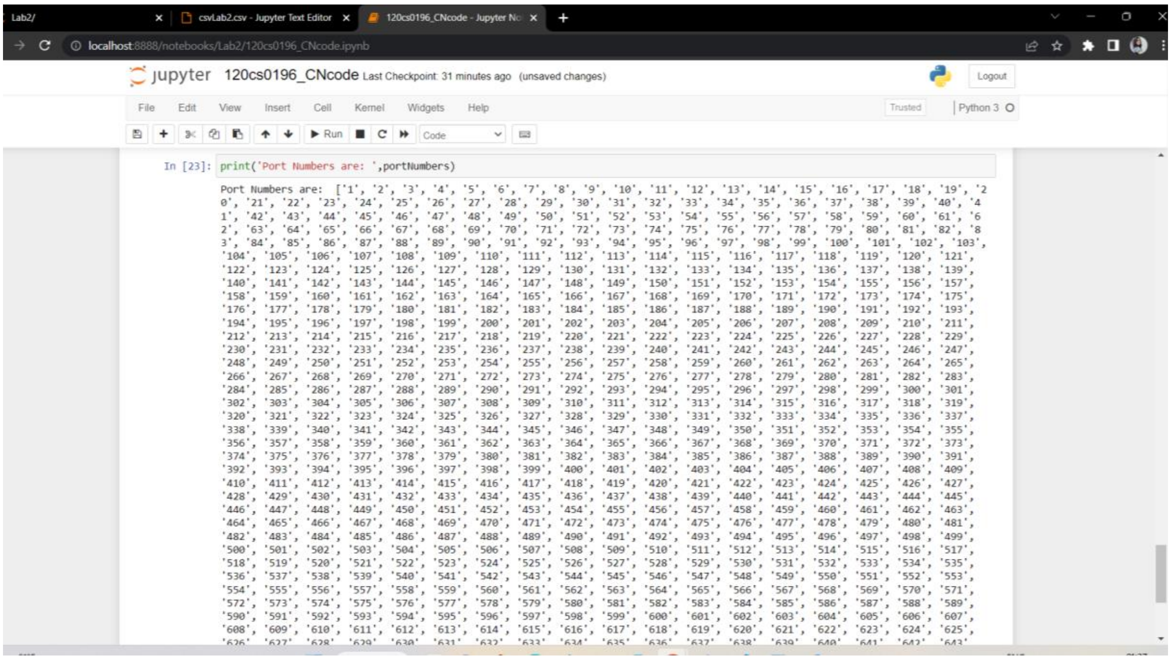

b. source port numbers and destination port numbers

print('Port Numbers are: ',portNumbers)



```
In [23]: print('Port Numbers are: ',portNumbers)

Port Numbers are:  ['1', '2', '3', '4', '5', '6', '7', '8', '9', '10', '11', '12', '13', '14', '15', '16', '17', '18', '19', '2
0', '21', '22', '23', '24', '25', '26', '27', '28', '29', '30', '31', '32', '33', '34', '35', '36', '37', '38', '39', '40', '4
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```

c. http request and response messages

import pandas as pd

df = pd.read_csv("http.csv", usecols = ['Source','Destination','Info'])

print(df)

```
nit@nit-OptiPlex-5000:~/Desktop$ python3 lab.py
                 Source        Destination                                                Info
0    XiaomiCo_9e:9c:c3          Broadcast          Who has 192.168.43.153? Tell 192.168.43.1
1    HonHaiPr_8c:90:55  XiaomiCo_9e:9c:c3             192.168.43.153 is at e0:06:e6:8c:90:55
2       192.168.43.153        103.27.9.20  34573  >  80 [SYN] Seq=0 Win=14600 Len=0 MSS=1...
3       192.168.43.153       192.168.43.1             Standard query 0x9f1d A www.iitd.ac.in
4         192.168.43.1     192.168.43.153  Standard query response 0x9f1d A www.iitd.ac.i...
..                 ...                ...                                                  ...
768      54.149.16.101     192.168.43.153  443  >  45136 [ACK] Seq=154 Ack=321 Win=28160 ...
769      54.149.16.101     192.168.43.153                                   Encrypted Alert
770     192.168.43.153      54.149.16.101            45136  >  443 [RST] Seq=321 Win=0 Len=0
771      54.149.16.101     192.168.43.153  443  >  45136 [FIN, ACK] Seq=191 Ack=321 Win=2...
772     192.168.43.153      54.149.16.101            45136  >  443 [RST] Seq=321 Win=0 Len=0

[773 rows x 3 columns]
nit@nit-OptiPlex-5000:~/Desktop$
```

THANK YOU

Prachi Nandi, 120CS0196