



**SCHOOL OF INFORMATION TECHNOLOGY AND  
ENGINEERING**

**DIGITAL ASSIGNMENT 2 - WINTER SEMESTER  
2023-24**

***Course: Information Security Management***

***Lab Course Code: BCSE354E***

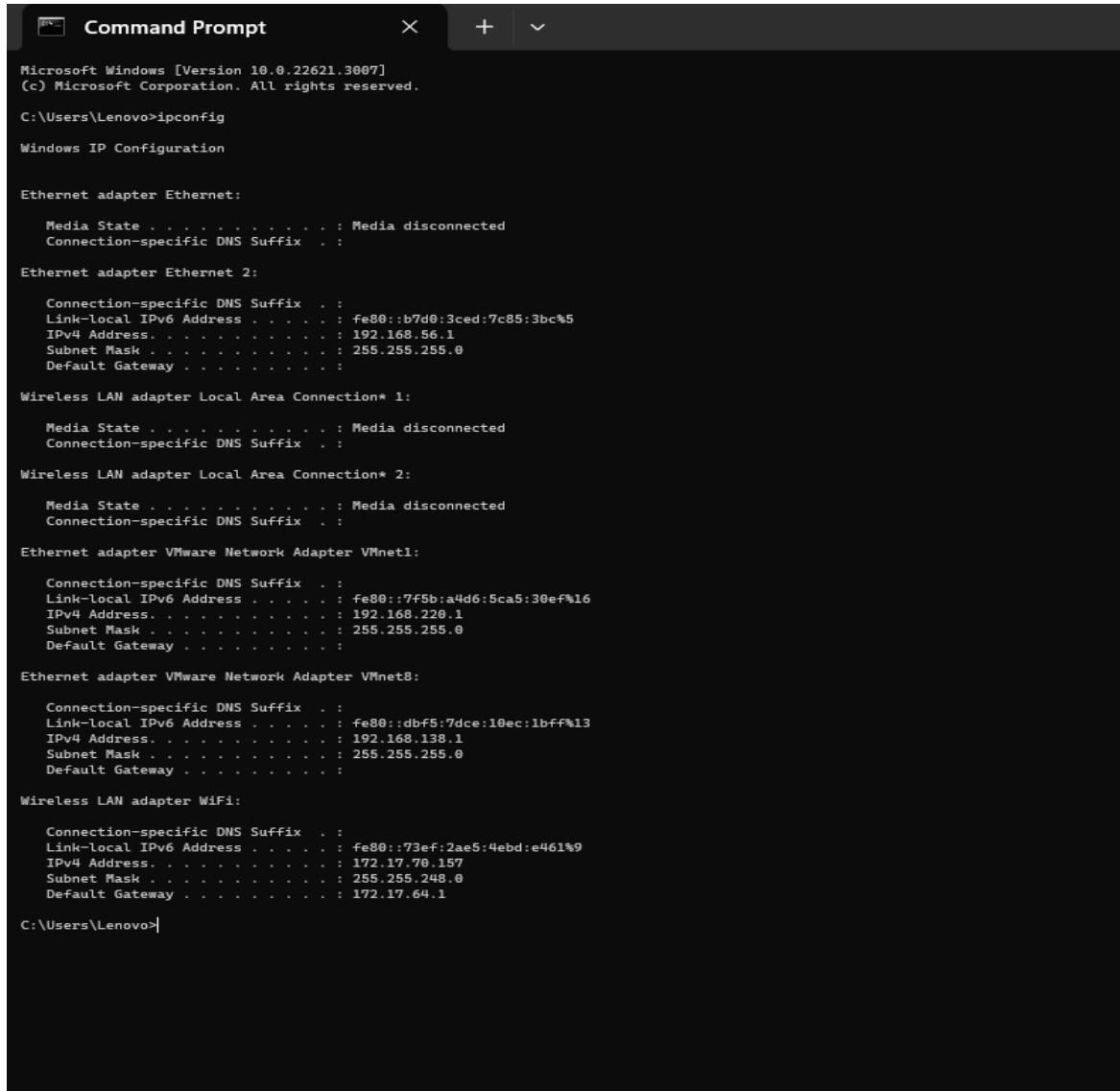
***Deadline: 31-Jan-2024***

***Name: Poli Vardhini Reddy***

***Register number: 21BIT0382***

## Give screenshot of System IP, Kali Linux IP and Metasploitable IP

### System IP



```
Microsoft Windows [Version 10.0.22621.3007]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Lenovo>ipconfig

Windows IP Configuration

Ethernet adapter Ethernet:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix . :

Ethernet adapter Ethernet 2:

    Connection-specific DNS Suffix . :
    Link-local IPv6 Address . . . . . : fe80::b7d0:3ced%3bc%5
    IPv4 Address. . . . . : 192.168.56.1
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . :

Wireless LAN adapter Local Area Connection* 1:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix . :

Wireless LAN adapter Local Area Connection* 2:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix . :

Ethernet adapter VMware Network Adapter VMnet1:

    Connection-specific DNS Suffix . :
    Link-local IPv6 Address . . . . . : fe80::7f5b:a4d6%5ca5:30ef%16
    IPv4 Address. . . . . : 192.168.220.1
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . :

Ethernet adapter VMware Network Adapter VMnet8:

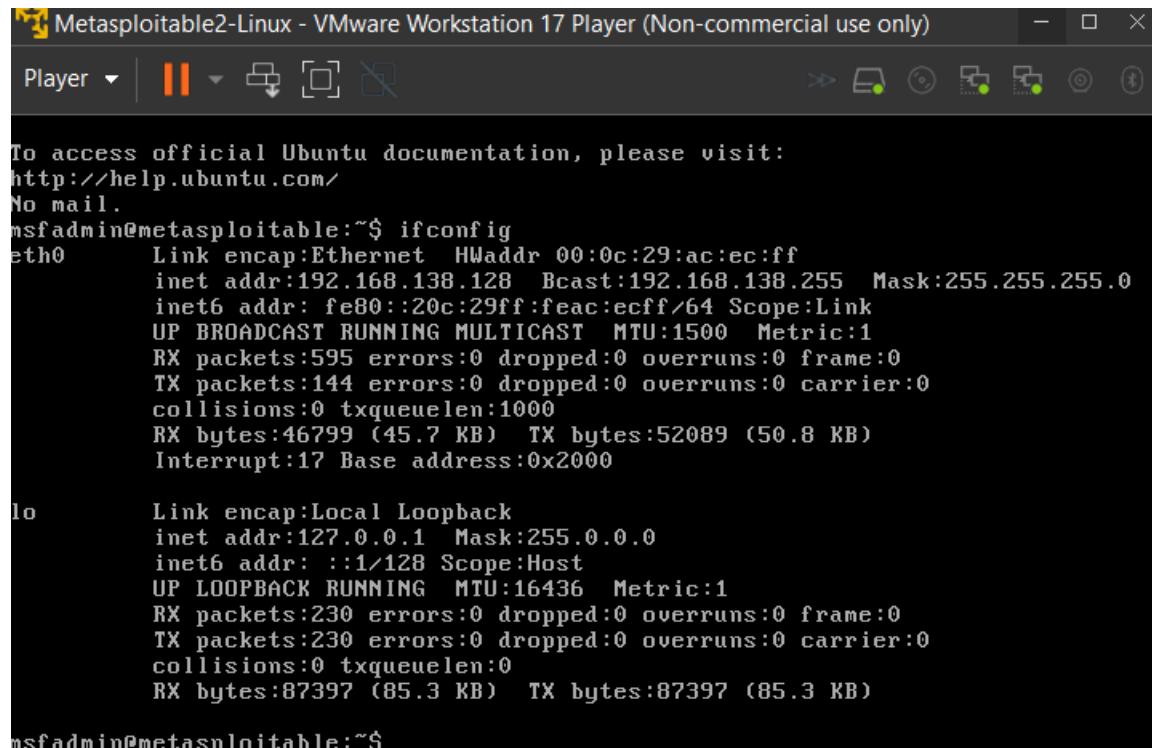
    Connection-specific DNS Suffix . :
    Link-local IPv6 Address . . . . . : fe80::dbf5:7dce%10ec:1bfff%13
    IPv4 Address. . . . . : 192.168.138.1
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . :

Wireless LAN adapter WiFi:

    Connection-specific DNS Suffix . :
    Link-local IPv6 Address . . . . . : fe80::73ef:2ae5%4ebd:e461%9
    IPv4 Address. . . . . : 172.17.70.157
    Subnet Mask . . . . . : 255.255.248.0
    Default Gateway . . . . . : 172.17.64.1

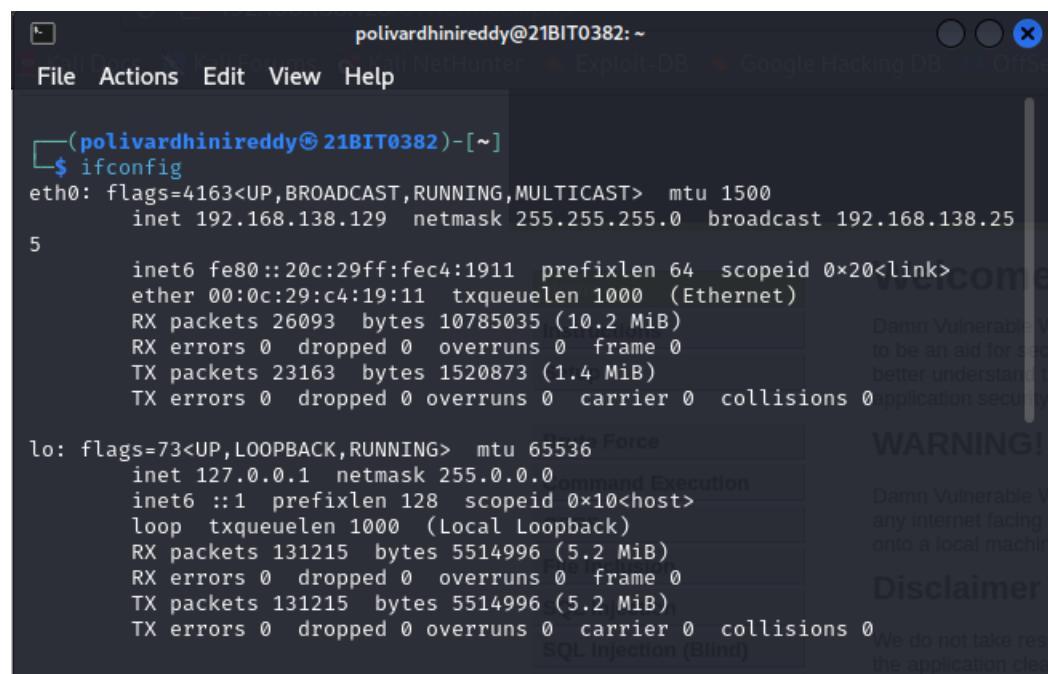
C:\Users\Lenovo>
```

## Metasploitable IP



```
To access official Ubuntu documentation, please visit:  
http://help.ubuntu.com/  
No mail.  
msfadmin@metasploitable:~$ ifconfig  
eth0      Link encap:Ethernet HWaddr 00:0c:29:ac:ec:ff  
          inet addr:192.168.138.128 Bcast:192.168.138.255 Mask:255.255.255.0  
          inet6 addr: fe80::20c:ecff%eth0 brd fe80.138.255.255 Scope:Link  
            UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1  
            RX packets:595 errors:0 dropped:0 overruns:0 frame:0  
            TX packets:144 errors:0 dropped:0 overruns:0 carrier:0  
            collisions:0 txqueuelen:1000  
            RX bytes:46799 (45.7 KB) TX bytes:52089 (50.8 KB)  
            Interrupt:17 Base address:0x2000  
  
lo        Link encap:Local Loopback  
          inet addr:127.0.0.1 Mask:255.0.0.0  
          inet6 addr: ::1/128 Scope:Host  
            UP LOOPBACK RUNNING MTU:16436 Metric:1  
            RX packets:230 errors:0 dropped:0 overruns:0 frame:0  
            TX packets:230 errors:0 dropped:0 overruns:0 carrier:0  
            collisions:0 txqueuelen:0  
            RX bytes:87397 (85.3 KB) TX bytes:87397 (85.3 KB)  
msfadmin@metasploitable:~$
```

## Kali Linux IP



```
(polivardhinireddy@21BIT0382)-[~]  
$ ifconfig  
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500  
      inet 192.168.138.129 netmask 255.255.255.0 broadcast 192.168.138.255  
      5  
      inet6 fe80::20c:29ff:fe4:1911 prefixlen 64 scopeid 0x20<link>  
        ether 00:0c:29:c4:19:11 txqueuelen 1000 (Ethernet)  
        RX packets 26093 bytes 10785035 (10.2 MiB)  
        RX errors 0 dropped 0 overruns 0 frame 0  
        TX packets 23163 bytes 1520873 (1.4 MiB)  
        TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0  
  
lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536 Force  
      inet 127.0.0.1 netmask 255.0.0.0  
      inet6 ::1 prefixlen 128 scopeid 0x10<host>  
        loop txqueuelen 1000 (Local Loopback)  
        RX packets 131215 bytes 5514996 (5.2 MiB)  
        RX errors 0 dropped 0 overruns 0 frame 0  
        TX packets 131215 bytes 5514996 (5.2 MiB)  
        TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

**Question 1 [5 Marks] Marks : 10**

**Perform the following scans and give the purpose of each of the commands listed below:  
Take screenshot of each scans. ( the ipaddr can be of your wireless gateway or your system  
ip address)**

### 1. nmap -sS ipaddr

```
[root@21BIT0382]# nmap -sS 172.17.70.157
Starting Nmap 7.94SVN ( https://nmap.org ) at 2024-01-31 20:20 IST
Nmap scan report for 172.17.70.157
Host is up (0.0016s latency).
Not shown: 994 filtered tcp ports (no-response)
PORT      STATE SERVICE
135/tcp   open  msrpc
139/tcp   open  netbios-ssn
445/tcp   open  microsoft-ds
902/tcp   open  iss-realsecure
1521/tcp  open  oracle
6881/tcp  open  bittorrent-tracker

Nmap done: 1 IP address (1 host up) scanned in 4.87 seconds
[root@21BIT0382]#
```

**Purpose:** It is used for TCP SYN port scan (Default)

### 2. nmap --script http-enum ipaddr

**Purpose:** The command nmap --script http-enum ipaddr scans the target IP address for HTTP service details using Nmap's http-enum script.

```
[root@21BIT0382]# nmap --script http-enum 172.17.70.157
Starting Nmap 7.94SVN ( https://nmap.org ) at 2024-01-31 20:22 IST
Nmap scan report for 172.17.70.157
Host is up (0.0034s latency).
Not shown: 993 filtered tcp ports (no-response)
PORT      STATE SERVICE
135/tcp   open  msrpc
139/tcp   open  netbios-ssn
445/tcp   open  microsoft-ds
902/tcp   open  iss-realsecure
912/tcp   open  apex-mesh
1521/tcp  open  oracle
6881/tcp  open  bittorrent-tracker

Nmap done: 1 IP address (1 host up) scanned in 9.90 seconds
[root@21BIT0382]#
```

### 3. nmap -p 80,443 ipaddr (which port is open and closed)

```
[root@21BIT0382] ~]
# nmap -p 80,443 172.17.70.157
Starting Nmap 7.94SVN ( https://nmap.org ) at 2024-01-31 20:24 IST
Nmap scan report for 172.17.70.157
Host is up (0.00087s latency).

PORT      STATE    SERVICE
80/tcp    filtered http
443/tcp   filtered https

Nmap done: 1 IP address (1 host up) scanned in 1.37 seconds
```

**Purpose:** The command nmap -p 80,443 ipaddr scans ports 80 and 443 on the specified IP address to identify open HTTP and HTTPS services.

Typically, open ports are displayed with the "open" status, and closed ports may be marked as "closed" or "filtered" depending on the response received during the scan.

Port 80/tcp – closed

Port 443/tcp - closed

#### 4. nmap -p T:8888,443 ipaddr ( what is the service name which is closed on 8888)

```
[root@21BIT0382] ~]
# nmap -p T:8888,443 172.17.70.157
Starting Nmap 7.94SVN ( https://nmap.org ) at 2024-01-31 20:26 IST
Nmap scan report for 172.17.70.157
Host is up (0.0012s latency).

PORT      STATE    SERVICE
443/tcp   filtered https
8888/tcp  filtered sun-answerbook

Nmap done: 1 IP address (1 host up) scanned in 1.35 seconds
```

The service name is sun-answerbook which is closed on 8888

**Purpose:** The command nmap -p T:8888,443 ipaddr scans for open ports 8888 and 443 on the specified IP address using TCP SYN scan to identify potential HTTP and HTTPS services.

#### 5. nmap Chennai.vit.ac.in ( determine the rdns record value and which are open and closed ports)

```
[root@21BIT0382] ~]
# nmap Chennai.vit.ac.in
Starting Nmap 7.94SVN ( https://nmap.org ) at 2024-01-31 20:28 IST
Nmap scan report for Chennai.vit.ac.in (122.187.117.186)
Host is up (0.0034s latency).
Other addresses for Chennai.vit.ac.in (not scanned): 115.240.194.16
rDNS record for 122.187.117.186: nsg-corporate-186.117.187.122.airtel.in
Not shown: 997 filtered tcp ports (no-response)
PORT      STATE    SERVICE
21/tcp    open     ftp
80/tcp    open     http
443/tcp   open     https

Nmap done: 1 IP address (1 host up) scanned in 4.95 seconds
```

**Purpose:** The command nmap Chennai.vit.ac.in is used to perform a network scan on the domain Chennai.vit.ac.in to identify open ports and services.

rDns record for 122.187.117.186: nsg-corporate-186.117.187.122.airtel.in

21/tcp – open

80/tcp – open

443/tcp – open

997 closed tcp ports

#### 6. nmap -p 1-65535 localhost (which are the open and known ports )

```
[root@218IT0382] ~
# nmap -p 1-65535 localhost
Starting Nmap 7.94SVN ( https://nmap.org ) at 2024-01-31 20:29 IST
Nmap scan report for localhost (127.0.0.1)
Host is up (0.0000020s latency).
Other addresses for localhost (not scanned): ::1
All 65535 scanned ports on localhost (127.0.0.1) are in ignored states.
Not shown: 65535 closed tcp ports (reset)

Nmap done: 1 IP address (1 host up) scanned in 0.56 seconds
```

65535 closed tcp ports

**purpose:** The command nmap -p 1-65535 localhost scans all TCP ports (1 through 65535) on the local machine to identify open ports and services.

#### 7. nmap -T4 -A cloudflare.com ( from the complete output, give only the trace route result)

**Purpose:** The command nmap -T4 -A cloudflare.com performs an aggressive scan with increased timing against the domain cloudflare.com to gather detailed information about the target's operating system, services, and versions.

```
root@21BIT0382:~  
File Actions Edit View Help  
Nmap done: 1 IP address (1 host up) scanned in 0.56 seconds  
└─(root@21BIT0382)-[~]  
# nmap -T4 -A cloudfare.com  
Starting Nmap 7.94SVN ( https://nmap.org ) at 2024-01-31 20:30 IST  
Nmap scan report for cloudfare.com (104.21.77.216)  
Host is up (0.021s latency).  
Other addresses for cloudfare.com (not scanned): 172.67.211.231 2606:4700:303  
4::ac43:d3e7 2606:4700:3031::6815:4dd8  
Not shown: 996 filtered tcp ports (no-response)  
PORT      STATE SERVICE VERSION  
80/tcp    open  http   Cloudflare http proxy  
|_http-server-header: cloudflare  
|_http-title: Did not follow redirect to https://www.cloudflare.com  
443/tcp   open  ssl/http Cloudflare http proxy  
|_http-server-header: cloudflare  
|_http-title: Did not follow redirect to https://www.cloudflare.com  
|_ssl-cert: Subject: commonName=cloudfare.com  
| Subject Alternative Name: DNS:cloudfare.com, DNS:*.cloudfare.com  
| Not valid before: 2024-01-29T00:34:13  
|_Not valid after: 2024-04-28T00:34:12  
8080/tcp  open  http   Cloudflare http proxy  
|_http-server-header: cloudflare  
|_http-title: Did not follow redirect to https://www.cloudflare.com  
8443/tcp  open  ssl/http Cloudflare http proxy  
|_ssl-cert: Subject: commonName=cloudfare.com  
| Subject Alternative Name: DNS:cloudfare.com, DNS:*.cloudfare.com  
| Not valid before: 2024-01-29T00:34:13  
|_Not valid after: 2024-04-28T00:34:12  
|_http-server-header: cloudflare  
|_http-title: Did not follow redirect to https://www.cloudflare.com  
Warning: OSScan results may be unreliable because we could not find at least  
1 open and 1 closed port  
Device type: WAP/general purpose  
Running: Actiontec embedded, Linux 2.4.X  
OS CPE: cpe:/h:actiontec:mi424wr-gen3i cpe:/o:linux:linux_kernel cpe:/o:linux  
:linux_kernel:2.4.37  
OS details: Actiontec MI424WR-GEN3I WAP, DD-WRT v24-sp2 (Linux 2.4.37)  
Network Distance: 2 hops  
  
TRACEROUTE (using port 80/tcp)  
HOP RTT      ADDRESS  
1  0.25 ms  192.168.138.2  
2  0.26 ms  104.21.77.216  
  
OS and Service detection performed. Please report any incorrect results at ht  
tps://nmap.org/submit/.  
Nmap done: 1 IP address (1 host up) scanned in 115.52 seconds  
└─(root@21BIT0382)-[~]  
#
```

#### Traceroute result:

```
TRACEROUTE (using port 80/tcp)  
HOP RTT      ADDRESS  
1  0.25 ms  192.168.138.2  
2  0.26 ms  104.21.77.216  
  
OS and Service detection performed. Please report any incorrect results at ht  
tps://nmap.org/submit/.  
Nmap done: 1 IP address (1 host up) scanned in 115.52 seconds
```

#### **8. nmap -Pn --script vuln ipaddr (how many ports are filtered)**





## Question 2 [2 Marks]

**Perform a Ping of Metaploitable IP on Kali Linux command and observe the packets in Wireshark. Give 2 screenshots one for pinging to metasploitable IP and another for wireshark capturing request and response packets to metasploitable IP.**

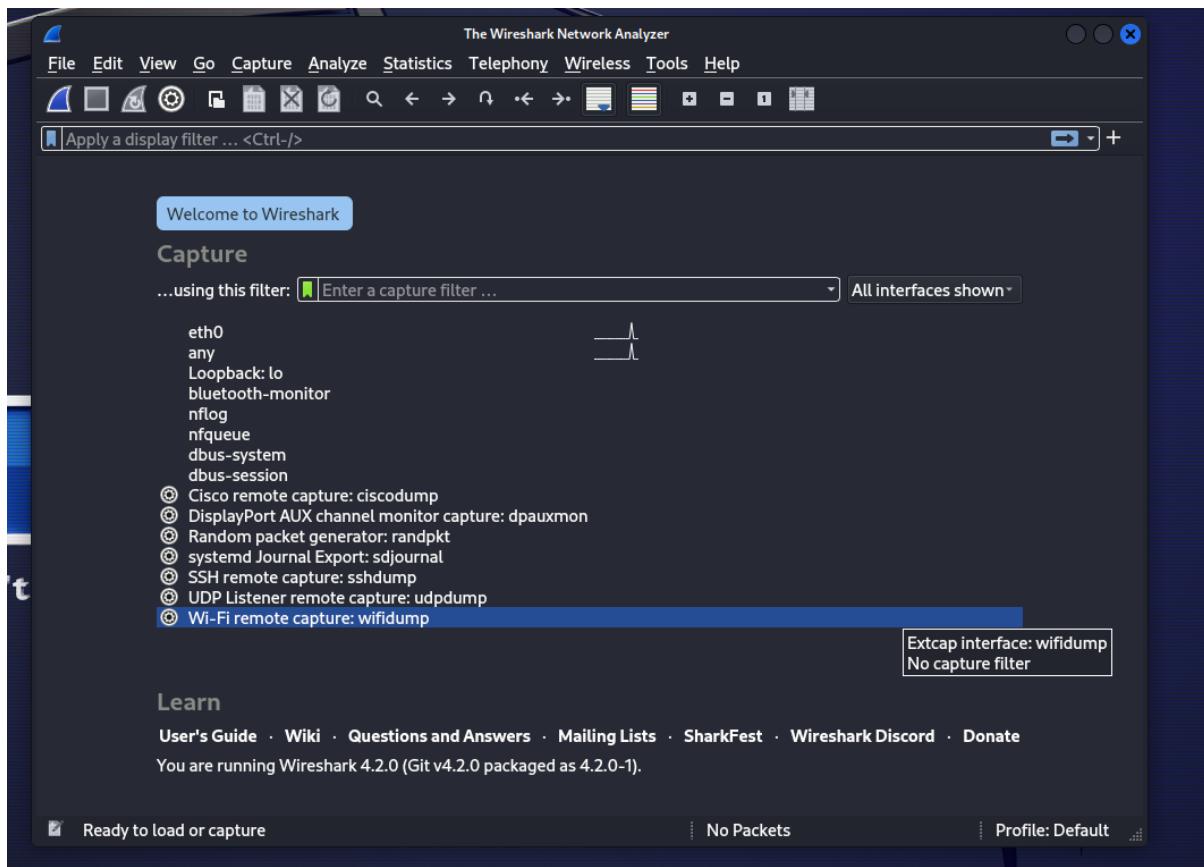
Performing ping of metasploitable ip on kali linux

```
[root@21BIT0382] ~
# ping 172.17.70.157
PING 172.17.70.157 (172.17.70.157) 56(84) bytes of data.
64 bytes from 172.17.70.157: icmp_seq=1 ttl=128 time=1.82 ms
64 bytes from 172.17.70.157: icmp_seq=2 ttl=128 time=1.88 ms
64 bytes from 172.17.70.157: icmp_seq=3 ttl=128 time=1.94 ms
64 bytes from 172.17.70.157: icmp_seq=4 ttl=128 time=2.00 ms
64 bytes from 172.17.70.157: icmp_seq=5 ttl=128 time=0.975 ms
64 bytes from 172.17.70.157: icmp_seq=6 ttl=128 time=0.802 ms
64 bytes from 172.17.70.157: icmp_seq=7 ttl=128 time=1.99 ms
64 bytes from 172.17.70.157: icmp_seq=8 ttl=128 time=1.83 ms
64 bytes from 172.17.70.157: icmp_seq=9 ttl=128 time=0.882 ms
64 bytes from 172.17.70.157: icmp_seq=10 ttl=128 time=0.987 ms
64 bytes from 172.17.70.157: icmp_seq=11 ttl=128 time=0.982 ms
64 bytes from 172.17.70.157: icmp_seq=12 ttl=128 time=0.831 ms
64 bytes from 172.17.70.157: icmp_seq=13 ttl=128 time=1.90 ms
64 bytes from 172.17.70.157: icmp_seq=14 ttl=128 time=2.02 ms
64 bytes from 172.17.70.157: icmp_seq=15 ttl=128 time=1.11 ms
64 bytes from 172.17.70.157: icmp_seq=16 ttl=128 time=0.994 ms
64 bytes from 172.17.70.157: icmp_seq=17 ttl=128 time=0.958 ms
64 bytes from 172.17.70.157: icmp_seq=18 ttl=128 time=1.67 ms
64 bytes from 172.17.70.157: icmp_seq=19 ttl=128 time=0.962 ms
64 bytes from 172.17.70.157: icmp_seq=20 ttl=128 time=1.97 ms
64 bytes from 172.17.70.157: icmp_seq=21 ttl=128 time=1.85 ms
64 bytes from 172.17.70.157: icmp_seq=22 ttl=128 time=1.93 ms
64 bytes from 172.17.70.157: icmp_seq=23 ttl=128 time=1.91 ms
64 bytes from 172.17.70.157: icmp_seq=24 ttl=128 time=2.13 ms
64 bytes from 172.17.70.157: icmp_seq=25 ttl=128 time=1.76 ms
64 bytes from 172.17.70.157: icmp_seq=26 ttl=128 time=1.98 ms
64 bytes from 172.17.70.157: icmp_seq=27 ttl=128 time=1.88 ms
64 bytes from 172.17.70.157: icmp_seq=28 ttl=128 time=1.93 ms
64 bytes from 172.17.70.157: icmp_seq=29 ttl=128 time=1.25 ms
64 bytes from 172.17.70.157: icmp_seq=30 ttl=128 time=0.758 ms
64 bytes from 172.17.70.157: icmp_seq=31 ttl=128 time=0.861 ms
64 bytes from 172.17.70.157: icmp_seq=32 ttl=128 time=0.926 ms
^C
--- 172.17.70.157 ping statistics ---
32 packets transmitted, 32 received, 0% packet loss, time 31104ms
rtt min/avg/max/mdev = 0.758/1.489/2.130/0.489 ms
[root@21BIT0382] ~
#
```

```

poli@poli-Vostro-3558:~$ ping 172.17.70.157
PING 172.17.70.157 (172.17.70.157) 56(84) bytes of data.
64 bytes from 172.17.70.157: icmp_seq=1 ttl=128 time=2.03 ms
64 bytes from 172.17.70.157: icmp_seq=2 ttl=128 time=1.48 ms
64 bytes from 172.17.70.157: icmp_seq=3 ttl=128 time=2.13 ms
64 bytes from 172.17.70.157: icmp_seq=4 ttl=128 time=1.75 ms
64 bytes from 172.17.70.157: icmp_seq=5 ttl=128 time=1.08 ms
64 bytes from 172.17.70.157: icmp_seq=6 ttl=128 time=1.73 ms
64 bytes from 172.17.70.157: icmp_seq=7 ttl=128 time=1.88 ms
64 bytes from 172.17.70.157: icmp_seq=8 ttl=128 time=1.38 ms
64 bytes from 172.17.70.157: icmp_seq=9 ttl=128 time=0.749 ms
64 bytes from 172.17.70.157: icmp_seq=10 ttl=128 time=1.18 ms
64 bytes from 172.17.70.157: icmp_seq=11 ttl=128 time=3.21 ms
64 bytes from 172.17.70.157: icmp_seq=12 ttl=128 time=1.08 ms
64 bytes from 172.17.70.157: icmp_seq=13 ttl=128 time=1.22 ms
64 bytes from 172.17.70.157: icmp_seq=14 ttl=128 time=1.54 ms
64 bytes from 172.17.70.157: icmp_seq=15 ttl=128 time=2.00 ms
64 bytes from 172.17.70.157: icmp_seq=16 ttl=128 time=1.74 ms
64 bytes from 172.17.70.157: icmp_seq=17 ttl=128 time=1.40 ms
64 bytes from 172.17.70.157: icmp_seq=18 ttl=128 time=0.726 ms
64 bytes from 172.17.70.157: icmp_seq=19 ttl=128 time=0.977 ms
64 bytes from 172.17.70.157: icmp_seq=20 ttl=128 time=1.20 ms
64 bytes from 172.17.70.157: icmp_seq=21 ttl=128 time=0.762 ms
64 bytes from 172.17.70.157: icmp_seq=22 ttl=128 time=0.805 ms

```



## Observing packets in Wireshark

Frame 1: 217 bytes on wire (1736 bits), 217 bytes captured (1736 bits) on interface eth0, id 0  
 Ethernet II, Src: VMware\_08:00:08 (08:00:56:c8:00:08), Dst: IPv4mcast\_7f:ff:fa (01:00:5e:7f:ff:fa)  
 Internet Protocol Version 4, Src: 192.168.138.1, Dst: 239.255.255.250  
 User Datagram Protocol, Src Port: 58265, Dst Port: 1900  
 Simple Service Discovery Protocol

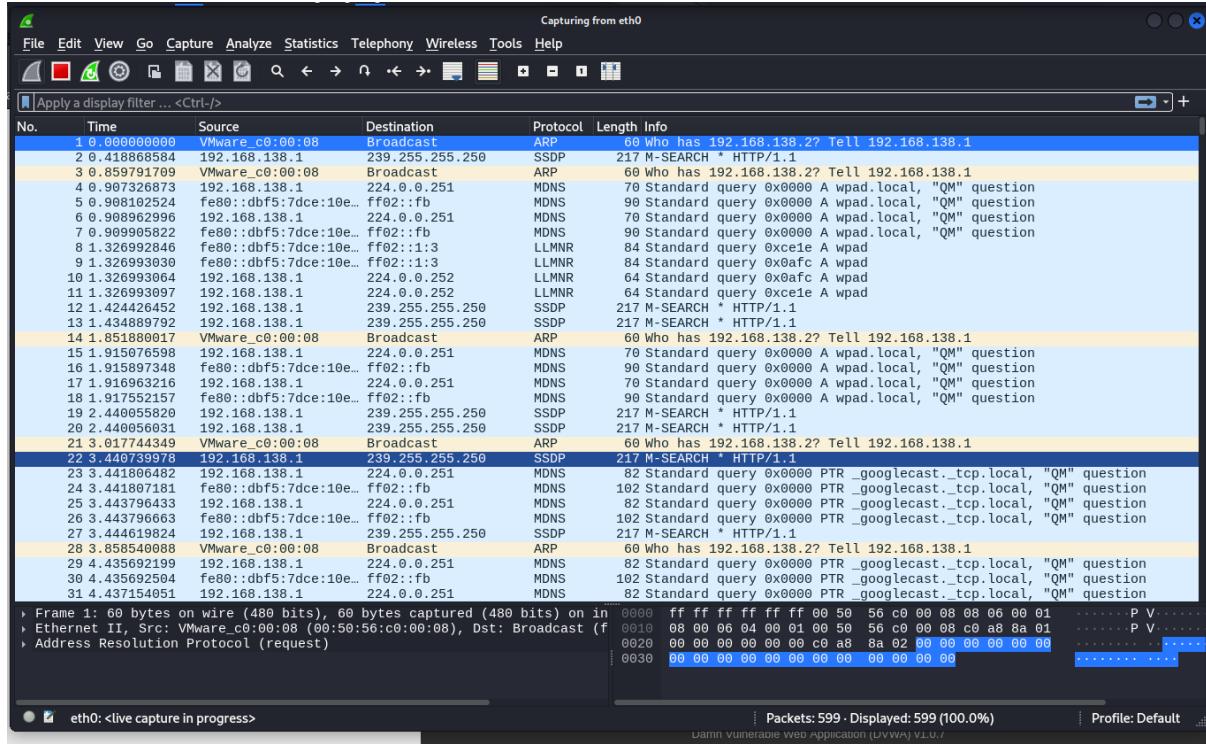
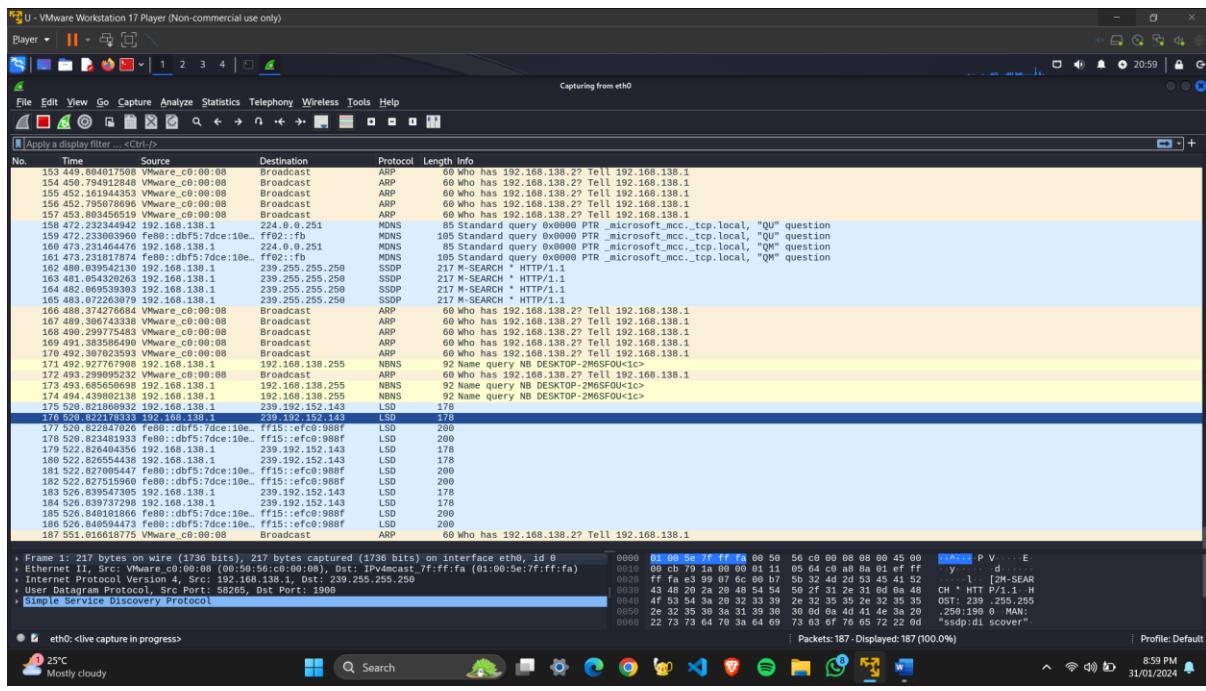
Packets: 40 - Displayed: 40 (100.0%) | Profile: Default

25°C Mostly cloudy 8:53 PM 31/01/2024

Frame 1: 217 bytes on wire (1736 bits), 217 bytes captured (1736 bits) on interface eth0, id 0  
 Ethernet II, Src: VMware\_08:00:08 (08:00:56:c8:00:08), Dst: IPv4mcast\_7f:ff:fa (01:00:5e:7f:ff:fa)  
 Internet Protocol Version 4, Src: 192.168.138.1, Dst: 239.255.255.250  
 User Datagram Protocol, Src Port: 58265, Dst Port: 1900  
 Simple Service Discovery Protocol

Packets: 163 - Displayed: 163 (100.0%) | Profile: Default

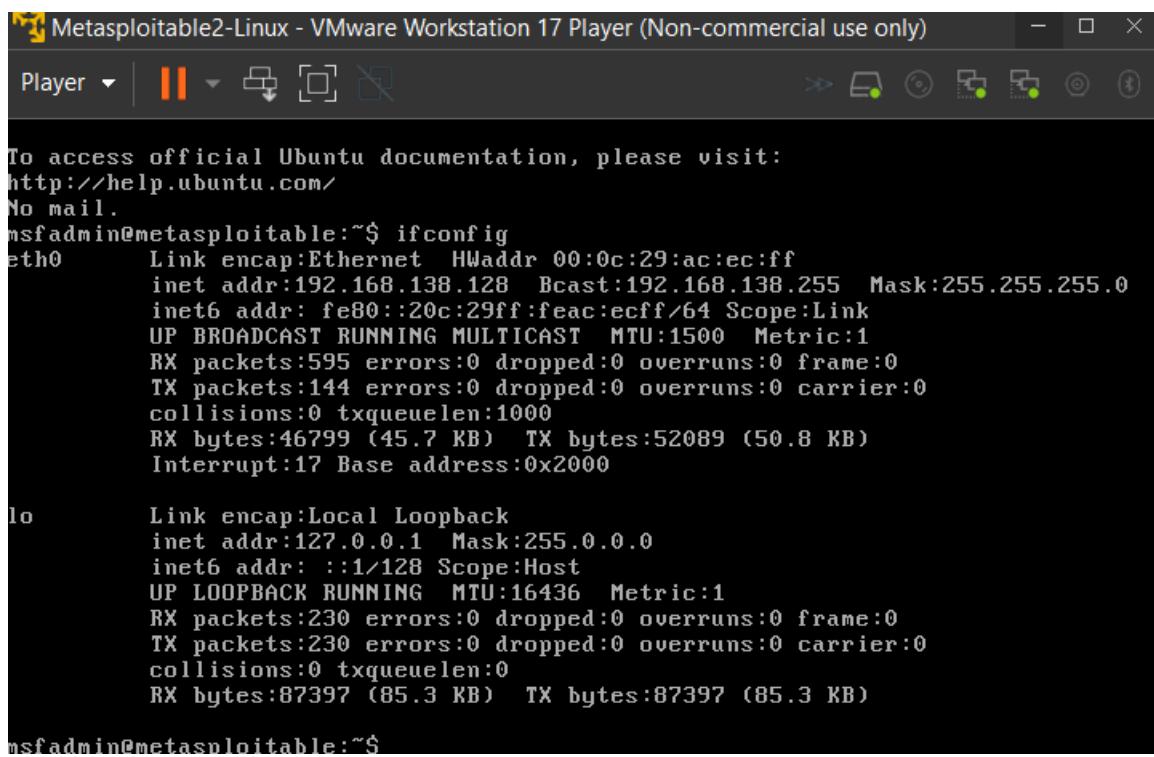
25°C Mostly cloudy 8:58 PM 31/01/2024



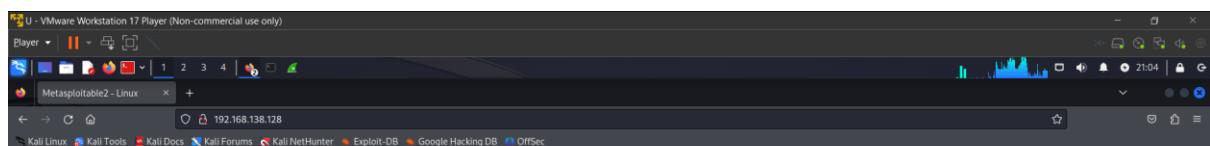
### Question 3 [3 Marks]

**Open Wireshark and start capturing packets. Open Metasploitable IP from Kali Linux browser and visit DVWA website. Go to login page and login with the given credentials in the website. Perform a password sniffing on Wireshark after login. Also give the screenshot of flow graph and perform an HTTP analysis.**

## Opening Metasploitable IP from Kali Linux browser and visiting DVWA website



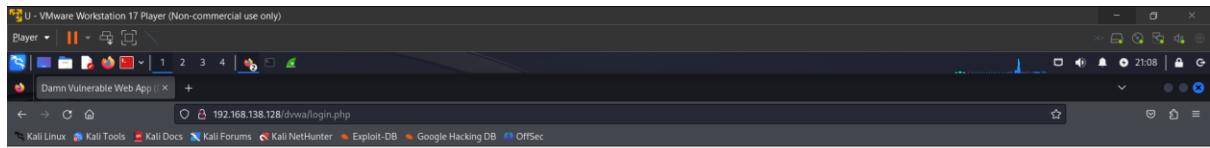
```
To access official Ubuntu documentation, please visit:  
http://help.ubuntu.com/  
No mail.  
msfadmin@metasploitable:~$ ifconfig  
eth0      Link encap:Ethernet HWaddr 00:0c:29:ac:ec:ff  
          inet addr:192.168.138.128 Bcast:192.168.138.255 Mask:255.255.255.0  
          inet6 addr: fe80::20c:29ff:feac:ecff/64 Scope:Link  
             UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1  
             RX packets:595 errors:0 dropped:0 overruns:0 frame:0  
             TX packets:144 errors:0 dropped:0 overruns:0 carrier:0  
             collisions:0 txqueuelen:1000  
             RX bytes:46799 (45.7 KB) TX bytes:52089 (50.8 KB)  
             Interrupt:17 Base address:0x2000  
  
lo        Link encap:Local Loopback  
          inet addr:127.0.0.1 Mask:255.0.0.0  
          inet6 addr: ::1/128 Scope:Host  
             UP LOOPBACK RUNNING MTU:16436 Metric:1  
             RX packets:230 errors:0 dropped:0 overruns:0 frame:0  
             TX packets:230 errors:0 dropped:0 overruns:0 carrier:0  
             collisions:0 txqueuelen:0  
             RX bytes:87397 (85.3 KB) TX bytes:87397 (85.3 KB)  
  
msfadmin@metasploitable:~$
```



Warning: Never expose this VM to an untrusted network!  
Contact: msfdev@metasploit.com  
Login with msfadmin/msfadmin to get started

- TWiki
- phMyAdmin
- Muttillidae
- DVWA
- WebDAV

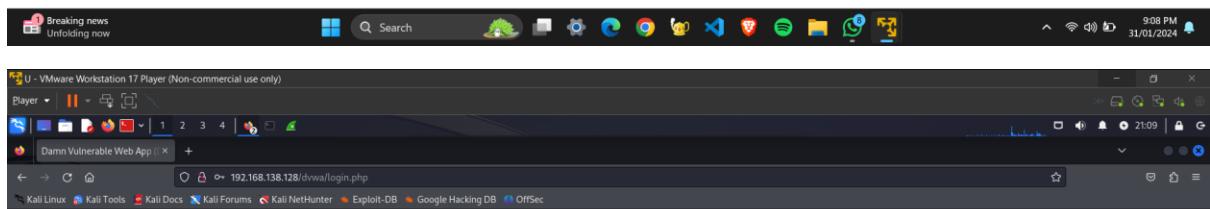




Username

Password

Damn Vulnerable Web Application (DVWA) is a RandomStorm OpenSource project  
Hint: default username is 'admin' with password 'password'

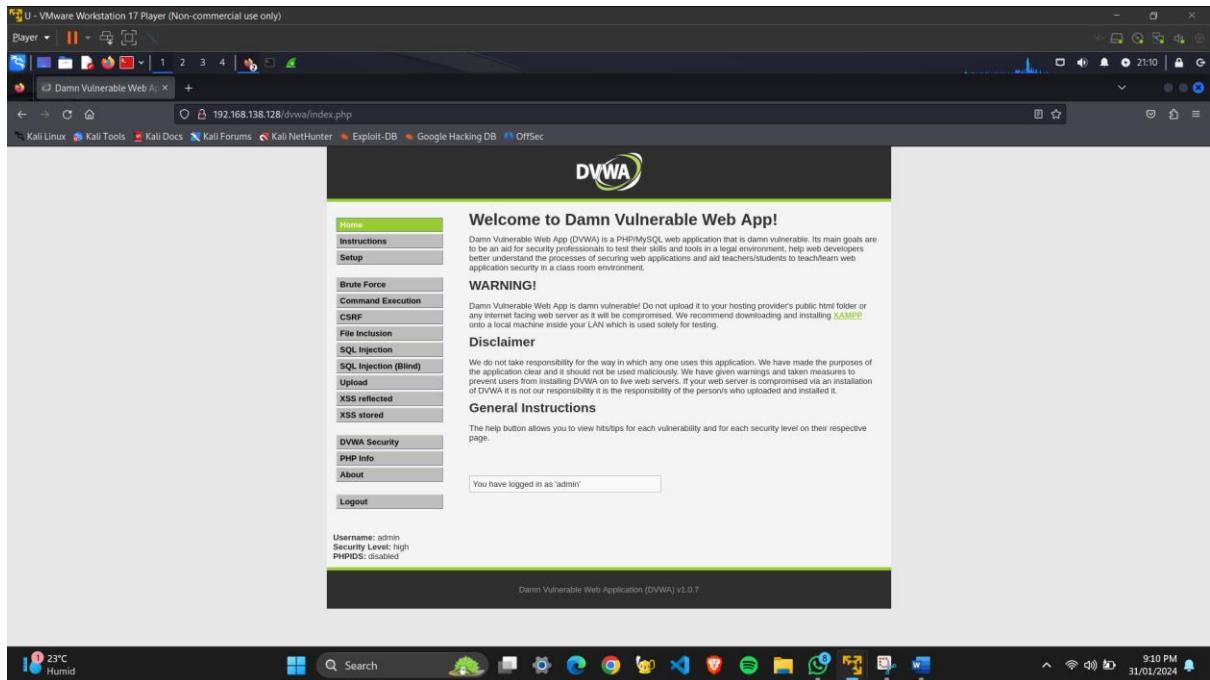


Username

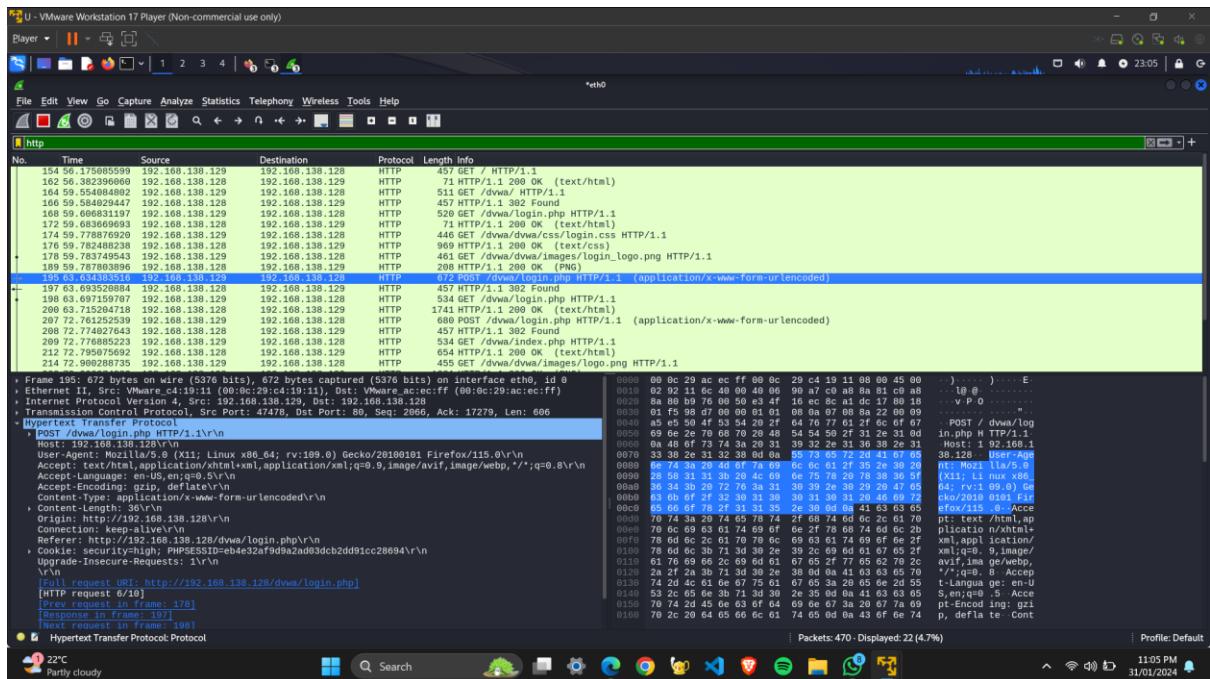
Password

Damn Vulnerable Web Application (DVWA) is a RandomStorm OpenSource project  
Hint: default username is 'admin' with password 'password'





Screenshot of packets captured in Wireshark.



Password Sniffing



## Flow Graph

