VISVESVARAYA NATIONAL INSTITUTE OF TECHNOLOGY

TREASURE HUNT

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Exiftool

Our first Question Starts with this Image and we have our first flag there,as well as hint shared with the challenge “Use Strings/ Exiftool”.Which clearly suggests us to use Exiftool to view the metadata of this Image nd proceed further.

SHELL{"Only if we understand, can we care. Only if we care, we will help. Only if we help, we shall be saved."}

checking the file type using the `file` command,it’s simple png file.

```
~/Downloads/Shell_Treasure_hunt                                    at 10:03:12 AM
ls
flag1.png

~/Downloads/Shell_Treasure_hunt                                    at 10:03:15 AM
file flag1.png
flag1.png: PNG image data, 1530 x 1080, 8-bit/color RGBA, non-interlaced
```

using `exiftool` command:

```
~/Downloads/Shell_Treasure_hunt
exiftool flag1.png
ExifTool Version Number         : 13.10
File Name                       : flag1.png
Directory                       : .
File Size                       : 2.7 MB
File Modification Date/Time     : 2025:04:19 10:02:35-04:00
File Access Date/Time           : 2025:04:19 10:03:23-04:00
File Inode Change Date/Time     : 2025:04:19 10:02:58-04:00
File Permissions                : -rw-rw-r--
File Type                       : PNG
File Type Extension             : png
MIME Type                       : image/png
Image Width                     : 1530
Image Height                    : 1080
Bit Depth                       : 8
Color Type                      : RGB with Alpha
Compression                     : Deflate/Inflate
Filter                          : Adaptive
Interlace                       : Noninterlaced
Significant Bits                : 8 8 8 8
Software                        : gnome-screenshot
Creation Time                   : Sun 16 Feb 2025 07:10:05 PM IST
Comment                         : YAY you are on your way! Take this and go on: https://shellpwn.super.site/birth
Warning                         : [minor] Trailer data after PNG IEND chunk
Image Size                      : 1530×1080
Megapixels                      : 1.7
```

we found url for our next flag- ‘https://shellpwn.super.site/birth’

On visiting the site we found our next Flag

SHELL/"A child is carefree until the world teaches them what to fear and what to desire."/

nd got link for next challenge

Good Job!

Proceed to the next level - https://hastebin.com/share/etivoguguc.sql

HASHCAT/CRACKSTATION

In this challenge we got a key in hash form and some base64 words, encrypted with XOR. So we need to crack the hash and find the key first.

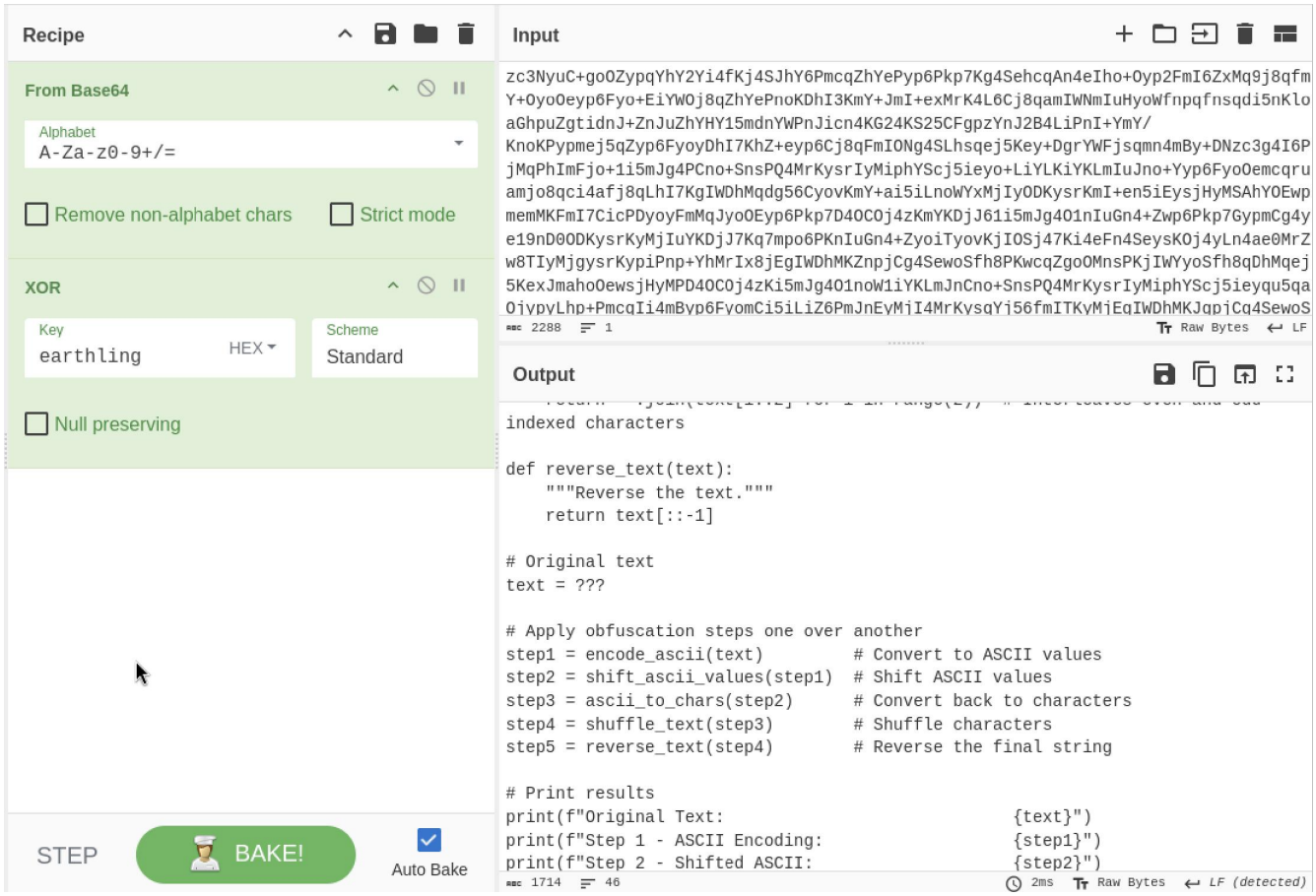
```
 _   _ _____ _     _     ___
| | | | ____| |   | |   / _ \
| |_| |  _| | |   | |  | | | |
|  _  | |___| |___| |__| |_| |
|_| |_|_____|_____|_____\___/
 ____  _____ _____ _  _______ ____
/ ___|| ____| ____| |/ / ____|  _ \
\___ \|  _| |  _| | ' /|  _| | |_) |
 ___) | |___| |___| . \| |___|  _ <
|____/|_____|_____|_|\_\_____|_| \_\


We see that you have come in quest of a flag.
But all we have are some random Base64 words. They were encrypted with XOR Cipher and a key.
You can have the key. The only problem is that it's hashed.
Find some way to crack the hash, get the key and unlock this random text.

🔑 b3380ac2ab5dbf1ed81e18163db6a9d8

📜 zc3NyuC+goOZypqYhY2Yi4fKj4SJhY6PmcqZhYePyp6Pkp7Kg4SehcqAn4eIho+Oyp2FmI6ZxMq9j8qfmY+OyoOeyp6Fyo+EiYW0j8qZhYePnoKDhI3KmY+JmI+exMrK4L6Cj8qamIWNmIuHyoWfnpqfnsqdi
HINT: https://gchq.github.io/CyberChef/
```

I'll be using Hashcat to crack the hash. first we will copy that hash in a file `hash.txt`

```
~/Downloads/Shell_Treasure_hunt
nano hash.txt
```

```
~/Downloads/Shell_Treasure_hunt
hashcat -m 0 hash.txt /usr/share/wordlists/rockyou.txt --show
b3380ac2ab5dbf1ed81e18163db6a9d8:earthling
```

as we can see our hash is successfully cracked using hashcat nd our key is:earthling
now we will use CyberChef to decrypt XOR nd base64.



Python Script

we have decrypted the text nd we can see it contain a python script which we simply need to reverse to get the output.

```python
def unshuffle(text):
    half = (len(text) + 1) // 2
    evens = text[:half]
    odds = text[half:]
    result = []
    for i in range(len(text)):
        if i % 2 == 0:
            result.append(evens[i // 2])
        else:
            result.append(odds[i // 2])
    return "".join(result)

def decode(encrypted):
    reversed_text = encrypted[::-1]
    unshuffled_text = unshuffle(reversed_text)
    ascii_encoded = "-".join(str(ord(c)) for c in
        unshuffled_text)
    shifted_back = "-".join(str(int(num) - 3) for num in
        ascii_encoded.split("-"))
    original_text = "".join(chr(int(num)) for num in
        shifted_back.split("-"))
    return original_text
encrypted = "|llqsh2wvusvqsok2=swwoevrvuhl1hx1zohv2vwk"
flag = decode(encrypted)
print("Decoded Text:", flag)
```

```
Decoded Text: https://shellpwn.super.site/responsibility

=== Code Execution Successful ===
```

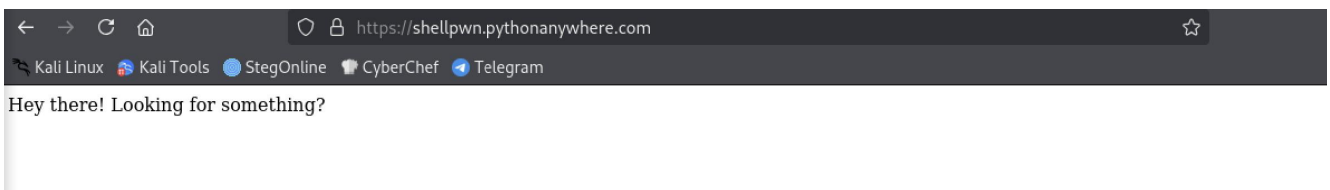
after reversing we get our flag and link for next challenge: https://shellpwn.super.site/responsibility

SHELL{"For most of history, man has had to fight nature to survive; in this century he is beginning to realize that, in order to survive, he must protect it."}

Directory Busting/Fuzzing

There we got our next challenge and hint that we need to fuzz the site url nd find the hidden pages. it can be done by dirbuster,gobuster,ffuf nd many other tools.we will be using ffuf in this chall. and we are also provided with wordlist which we can download and use.

we will try to visit the site first



nothing interesting, now we will proceed for dirbusting.

here instead of given wordlist we used pre-provided wordlist in Kali Linux.

```
~/Downloads/Shell_Treasure_hunt
ffuf -w /usr/share/wordlists/dirb/common.txt -u https://shellpwn.pythonanywhere.com/FUZZ

       /'___\  /'___\           /'___\
      /\ \__/ /\ \__/  __  __  /\ \__/
      \ \ ,__\\ \ ,__\/\ \/\ \ \ \ ,__\
       \ \ \_/ \ \ \_/\ \ \_\ \ \ \ \_/
        \ \_\   \ \_\  \ \____/  \ \_\
         \/_/    \/_/   \/___/    \/_/

      v2.1.0-dev
________________________________________________

 :: Method           : GET
 :: URL              : https://shellpwn.pythonanywhere.com/FUZZ
 :: Wordlist         : FUZZ: /usr/share/wordlists/dirb/common.txt
 :: Follow redirects : false
 :: Calibration      : false
 :: Timeout          : 10
 :: Threads          : 40
 :: Matcher          : Response status: 200-299,301,302,307,401,403,405,500
________________________________________________

                        [Status: 200, Size: 33, Words: 5, Lines: 1, Duration: 233ms]
secret                  [Status: 200, Size: 582, Words: 93, Lines: 17, Duration: 212ms]
:: Progress: [4614/4614] :: Job [1/1] :: 189 req/sec :: Duration: [0:00:26] :: Errors: 0 ::
```

after successful iterations we found hidden directory `/secret`.We will open the final link: https://shellpwn.pythonanywhere.com/secret and claim our flag.

SHELL{"Many men go fishing all of their lives without knowing that it is not fish they are after."}

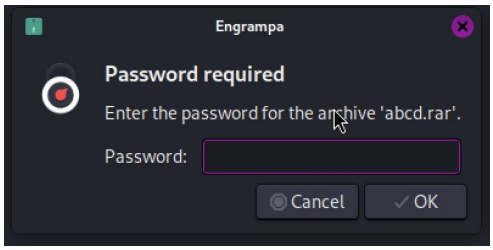
Hash crack(.rar)

and on the same page we got our next challenge with some hints

T Have some rest
Then go on to the next page https://shellpwn.pythonanywhere.com/???
But I forgot the last few characters :P
The last few characters were the process ID of the suspicious process that was running on this machine

Hint:

after downloading the .rar file when we go to extract the file it pops up with a password req field,means we need password to extract the file, but we don't have any passwords.



We will extract hash of this file nd crack that hash to obtain our password using either hashcat or john the ripper. as we have already covered hashcat this time we will go with John the Ripper.

```
~/Downloads/Shell_Treasure_hunt
rar2john abcd.rar > hash2.txt
```

```
~/Downloads/Shell_Treasure_hunt
cat hash2.txt
abcd.rar:$RAR3$*0*a8dc2fea1b70d3d0*f3f2cc585e03b173caa3a7b81850b161:0::::abcd.rar
```

cracking hash using `rockyou.txt` wordlist

```
~/Downloads/Shell_Treasure_hunt
john --wordlist=/usr/share/wordlists/rockyou.txt hash2.txt
Using default input encoding: UTF-8
Loaded 1 password hash (rar, RAR3 [SHA1 128/128 ASIMD 4x AES])
Will run 4 OpenMP threads
Press 'q' or Ctrl-C to abort, almost any other key for status
infected         (abcd.rar)
1g 0:00:01:12 DONE (2025-04-19 11:16) 0.01377g/s 343.7p/s 343.7c/s 343.7C/s apostol..24862486
Use the "--show" option to display all of the cracked passwords reliably
Session completed.
```

Found our password: `infected`

Volatility,pstree

now we will extract the file from abcd.rar
nd it is found to be: `0zapftis.vmem` which is a memory dump file
we need to find process id(PID) of sus process.

first we need to find what kind of os the memory belong to

```
~/Downloads/Shell_Treasure_hunt
python2 volatility/vol.py -f 0zapftis.vmem imageinfo
INFO    : volatility.debug    : Determining profile based on KDBG search...
          Suggested Profile(s) : WinXPSP2x86, WinXPSP3x86 (Instantiated with WinXPSP2x86)
                     AS Layer1 : IA32PagedMemoryPae (Kernel AS)
                     AS Layer2 : FileAddressSpace (/home/ironhawk717/Downloads/Shell_Treasure_hunt/0zapftis.vmem)
                      PAE type : PAE
                           DTB : 0x319000L
                          KDBG : 0x80544ce0L
          Number of Processors : 1
     Image Type (Service Pack) : 2
                KPCR for CPU 0 : 0xffdff000L
             KUSER_SHARED_DATA : 0xffdf0000L
           Image date and time : 2011-10-10 17:06:54 UTC+0000
     Image local date and time : 2011-10-10 13:06:54 -0400
```

we found the profile WinXPSP2x86 , we need this because volatility need correct profile to parse memory structure correctly.

```
~/Downloads/Shell_Treasure_hunt
python2 volatility/vol.py -f 0zapftis.vmem --profile=WinXPSP2x86 pstree
Name                                                  Pid   PPid   Thds   Hnds Time
-------------------------------------------------- ------ ------ ------ ------ ----
 0x819cc830:System                                      4      0     55    162 1970-01-01 00:00:00 UTC+0000
. 0x81945020:smss.exe                                 536      4      3     21 2011-10-10 17:03:56 UTC+0000
.. 0x816c6020:csrss.exe                               608    536     11    355 2011-10-10 17:03:58 UTC+0000
.. 0x813a9020:winlogon.exe                            632    536     24    533 2011-10-10 17:03:58 UTC+0000
... 0x816da020:services.exe                           676    632     16    261 2011-10-10 17:03:58 UTC+0000
.... 0x817757f0:svchost.exe                           916    676      9    217 2011-10-10 17:03:59 UTC+0000
.... 0x81772ca8:vmacthlp.exe                          832    676      1     24 2011-10-10 17:03:59 UTC+0000
.... 0x816c6da0:svchost.exe                           964    676     63   1058 2011-10-10 17:03:59 UTC+0000
..... 0x815c4da0:wscntfy.exe                         1920    964      1     27 2011-10-10 17:04:39 UTC+0000
..... 0x815e7be0:wuauclt.exe                          400    964      8    173 2011-10-10 17:04:46 UTC+0000
.... 0x8167e9d0:svchost.exe                           848    676     20    194 2011-10-10 17:03:59 UTC+0000
.... 0x81754990:VMwareService.e                      1444    676      3    145 2011-10-10 17:04:00 UTC+0000
.... 0x8136c5a0:alg.exe                              1616    676      7     99 2011-10-10 17:04:01 UTC+0000
.... 0x813aeda0:svchost.exe                          1148    676     12    187 2011-10-10 17:04:00 UTC+0000
.... 0x817937e0:spoolsv.exe                          1260    676     13    140 2011-10-10 17:04:00 UTC+0000
.... 0x815daca8:svchost.exe                          1020    676      5     58 2011-10-10 17:03:59 UTC+0000
... 0x813c4020:lsass.exe                              688    632     23    336 2011-10-10 17:03:58 UTC+0000
 0x813bcda0:explorer.exe                             1956   1884     18    322 2011-10-10 17:04:39 UTC+0000
. 0x8180b478:VMwareUser.exe                           192   1956      6     83 2011-10-10 17:04:41 UTC+0000
. 0x817a34b0:cmd.exe                                  544   1956      1     30 2011-10-10 17:06:42 UTC+0000
. 0x816d63d0:VMwareTray.exe                           184   1956      1     28 2011-10-10 17:04:41 UTC+0000
. 0x818233c8:reader_sl.exe                            228   1956      2     26 2011-10-10 17:04:41 UTC+0000
```

finally viewing parent-child relation of processes using pstree.
we found: `0x813bcda0:explorer.exe` as suspecious process(According to me it is sus because it dosn't have any parent,nd its subprocess is cmd.exe directly, feels like a malware)

finally completing our link: `https://shellpwn.pythonanywhere.com/1956`

SHELL["Beliefs are dangerous. Beliefs allow the mind to stop functioning. A non-functioning mind is clinically dead."]

we got our flag and next chall as well.

WIRESHARK

I guess we are coming to an end now. Just one last stretch . . .
There are things hidden in this traffic.
Find them and move ahead

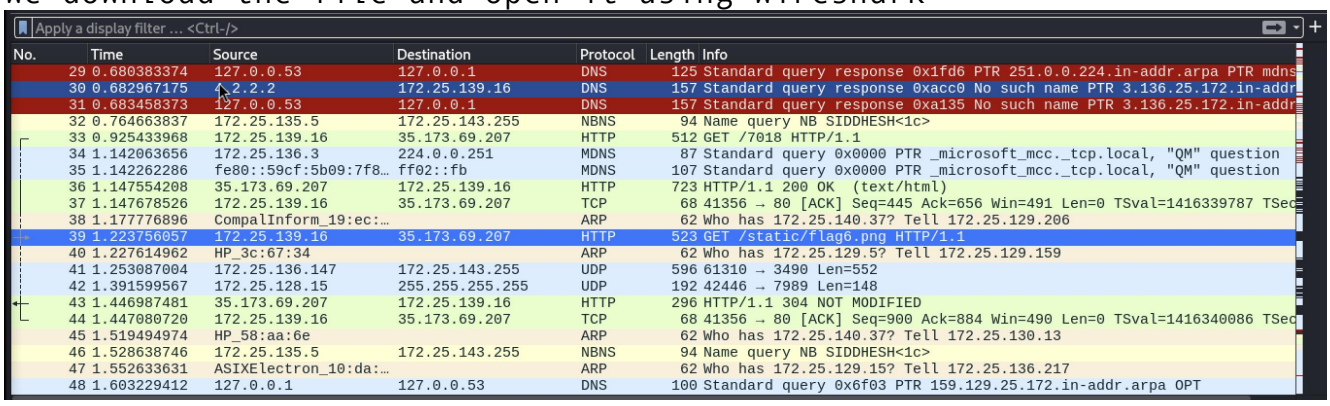
Hint1:

Use Wireshark

Hint2:

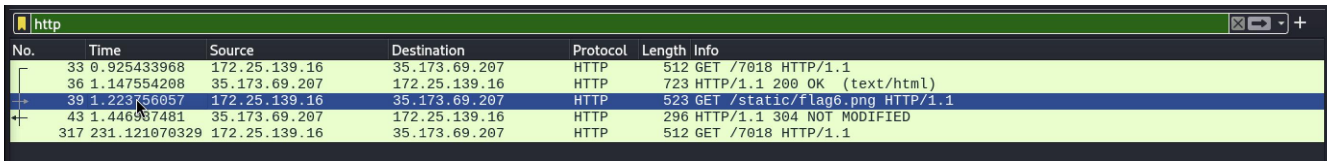
Use It's an HTTP GET Request (look for a url)

we download the file and open it using wireshark



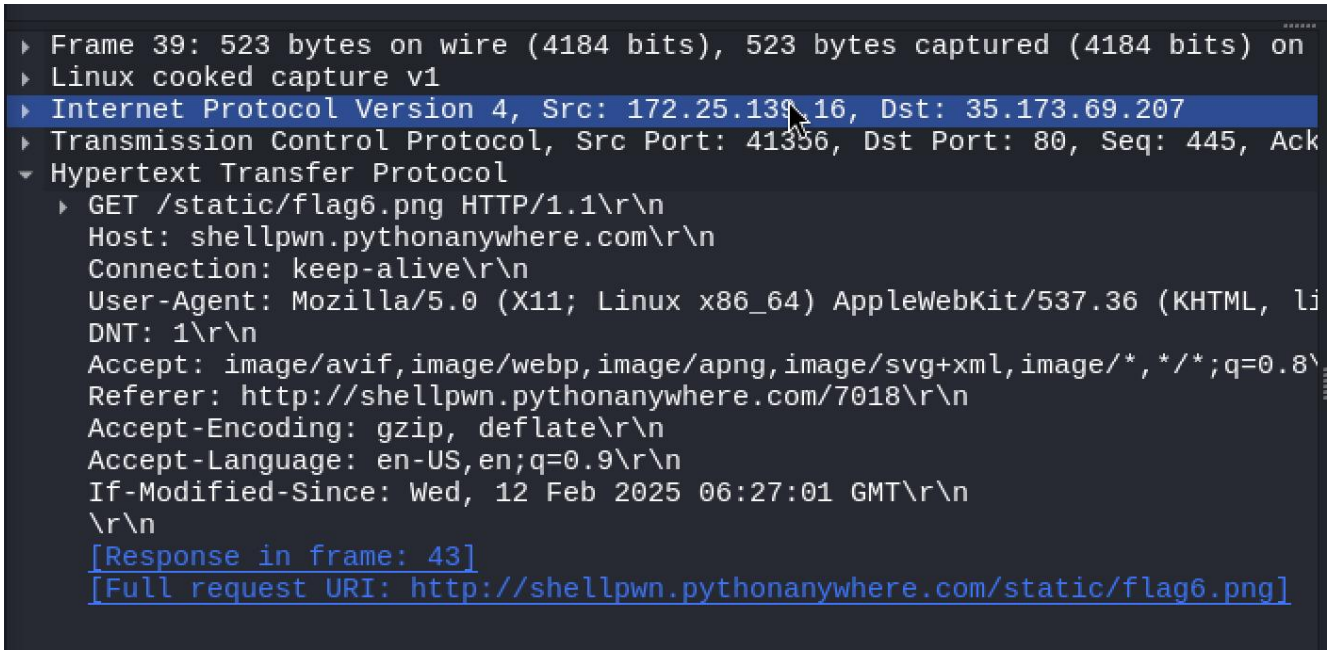
we have network traffic, displaying packets with protocol,lengths etc.

according to hint we will filter out http requests



we can clearly see request 39. is GET request with /static/flag6.png

we will open this and analyze properly



very easily we found the full request URI nd visiting this will give us our FINAL flag.

SHELL/"The question is not, Can they reason? nor, Can they talk? but, Can they suffer?"/

..THANKYOU..