

## **Cybersecurity Internship Assignment – Krypton, Leviathan, NATAS**

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**Internship Program:** Digisuraksha Parhari Foundation

**Issued by:** Digisuraksha Parhari Foundation

**Powered by:** Infinisec Technologies Pvt. Ltd.

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### **Environment Details**

For completing this cybersecurity internship assignment, I have used **Kali Linux** operating system installed inside **VMware Workstation**. Kali Linux provided the necessary cybersecurity tools like SSH client, Linux commands, and other utilities required to solve CTF challenges effectively.

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#### **◆ Steps for Krypton Lab**

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##### **Level 0 → 1: Base64 Decoding**

###### **Objective:**

Decode a Base64 encoded password to access the next level.

###### **Steps Followed:**

1. Connected to the Krypton server and retrieved an encoded string.
2. Identified the encoding as Base64.
3. Used the following command to decode:

```
echo 'S1JZUFRPTkITR1JFQVQ=' | base64 -d
```

4. The password KRYPTONISGREAT was revealed.
5. Logged into **krypton1** using SSH:

```
ssh krypton1@krypton.labs.overthewire.org -p 2231
```

The screenshot shows a terminal window titled 'krypton1@bandit: ~'. The terminal displays the following text:

```
(kali㉿kali)-[~]
$ echo '$1JZUFRPTKLTR1JFQVQ=' | base64 -d
KRYPTONISGREAT

(kali㉿kali)-[~]
$ ssh krypton1@krypton.labs.overthewire.org -p 2231
[REDACTED]
This is an OverTheWire game server.
More information on http://www.overthewire.org/wargames
krypton1@krypton.labs.overthewire.org's password:
[REDACTED]
```

The terminal also shows a small ASCII art logo of a person sitting at a keyboard.

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## Level 1 → 2: ROT13 Cipher

### Objective:

Decrypt a message encrypted with ROT13 cipher.

### Steps Followed:

1. Navigated to the working directory:

```
cd /krypton/krypton1
```

2. Read the encrypted file:

```
cat krypton2
```

3. Decrypted the text using ROT13 cipher:

```
cat krypton2 | tr 'A-Za-z' 'N-ZA-Mn-za-m'
```

4. Retrieved the password ROTTEN and logged into **krypton2**.
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## Level 2 → 3: Caesar Cipher

### Objective:

Decrypt a file encrypted using the Caesar Cipher technique.

### Steps Followed:

1. Connected to **krypton2** with password ROTTEN.

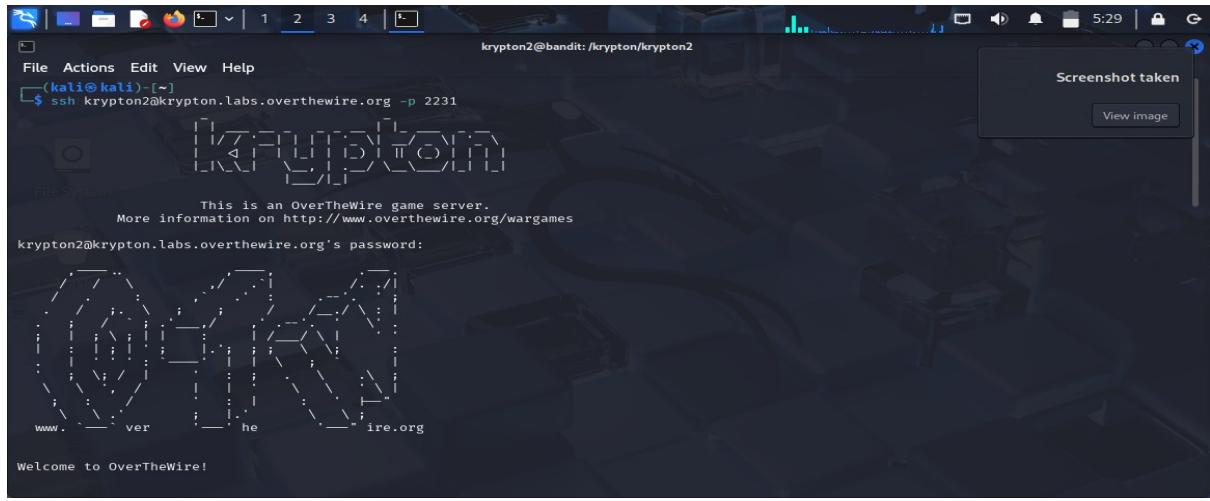
2. Navigated to the encrypted file and read it:

```
cat /krypton/krypton2/krypton3
```

3. Applied ROT13 transformation to decrypt:

```
cat krypton3 | tr 'A-Za-z' 'N-ZA-Mn-za-m'
```

4. Retrieved the password CAESARISEASY.



```
--[ More information ]--  
For more information regarding individual wargames, visit  
http://www.overthewire.org/wargames/  
For support, questions or comments, contact us on discord or IRC.  
Enjoy your stay!  
krypton2@bandit:~$ cd /krypton/krypton2  
krypton2@bandit:/krypton/krypton2$ cat krypton3 | tr 'A-Za-z' 'N-ZA-Mn-za-m'  
BZDRZQHRDZRX  
krypton2@bandit:/krypton/krypton2$
```

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## Level 3 → 4: Frequency Analysis

### Objective:

Use frequency analysis to decrypt a cipher text.

### Steps Followed:

1. Connected to **krypton3** with password CAESARISEA.

2. Navigated to the level directory:

```
cd /krypton/krypton3
```

3. Analyzed the content and frequency of letters.

4. Applied frequency analysis method manually.

5. Decrypted the password, found as BRUTE.

The screenshot shows a terminal window titled 'krypton3@bandit: /krypton/krypton3'. The user has run the command 'ssh krypton3@krypton.labs.overthewire.org -p 2231'. The terminal displays a welcome message from an OverTheWire game server, which includes a small ASCII-art logo of a shield with the word 'KRYPTON' and some text below it. It also provides links to the OverTheWire website and information about the wargames. The user then runs 'cat krypton4' and 'cat krypton5', both of which return the same string of characters: 'KSVWW BGSJD SVSIS VXBMN YQUUUK BNWCU ANMJS'. A tooltip 'Screenshot taken' is visible in the top right corner of the terminal window.

```
--[ More information ]--  
For more information regarding individual wargames, visit  
http://www.overthewire.org/wargames/  
For support, questions or comments, contact us on discord or IRC.  
Enjoy your stay!  
krypton3@bandit:~$ cd /krypton/krypton3  
krypton3@bandit:/krypton/krypton3$ cat krypton4  
KSVWW BGSJD SVSIS VXBMN YQUUUK BNWCU ANMJS krypton3@bandit:/krypton/krypton3$ ^C  
krypton3@bandit:/krypton/krypton3$ cat krypton4  
KSVWW BGSJD SVSIS VXBMN YQUUUK BNWCU ANMJS krypton3@bandit:/krypton/krypton3$
```

## Level 4 → 5: Vigenère Cipher

### Objective:

Decrypt text encrypted using Vigenère Cipher with a known key length.

### Steps Followed:

1. Connected to **krypton4** using password BRUTE.

2. Explored the files:

```
cd /krypton/krypton4
```

```
cat found1
```

```
cat found2
```

```
cat krypton5
```

3. Used an online tool ([dcode.fr Vigenère Cipher](https://dcode.fr/vigenere-cipher)) with key length set to 6.

4. Found the key FREKEY and decrypted the file, retrieving the password CLEARTEXT.

```
krypton4@bandit:~
```

```
[kali㉿kali] ~]$ ssh krypton4@krypton.labs.overthewire.org -p 2231
```

```
This is an OverTheWire game server.  
More information on http://www.overthewire.org/wargames
```

```
krypton4@krypton.labs.overthewire.org's password:
```

```
www. ver he ire.org
```

```
Welcome to OverTheWire!
```

```
krypton4@bandit:~$ cd /krypton/krypton4
```

```
krypton4@bandit:/krypton/krypton4$ cat found1
```

```
YYICS JIZIB RYIWW IIAFN JOOVB QVHDL CRKLK SSLYX RIQYI IOXQT WXRIC RVVKP BHZIK YLYZP DLCDI IKGFJ UXRI PTFQGL CWXWZ IEZRV NMYSF JDLCI RX  
OWJ NMINX FNJSP JGHVV ERJTT OOHMR VMBWN JTDXY TSYKL OQZFT OSRFN JKBIY YSSHE LIKLO RFJGS VMRJC CYTCS VHDLC LRXOJ MWFBY JPVNR NWUMZ GRVM  
F UPQEB XXSDL CBZGU IBZBZ MLMKK LOACK KECOC IUSBS RMPXR IPJZW XSPTR HKRBQ VVOHR MVKEE PIZEX SDYII QERJJ RYSLJ VZOYU NJLOW RTXSD LYYNE ILMBK  
LORYW VAOXM KZRNRA YGWVH DLCLZ VVFXF KASPJ GVIKW WWVTV MCIKL QQYSW SBAFJ EWRII SFACC MZRVO MLYYI MSSSK VISDY YIGML PZICW FJNMV PDNEH IS  
SFE HWEIJ PSEJJ QIVBW JFMIC TCWYE ZWLTK WMKBY IYCGY WVGBS UKFVG IKJRR DSBJJ VBSWM WWVYL MRXSW BNWJ VCSKW KBMYY IQYWW UMKRM KKLWV YVWWS SMSV  
L KWCAV WIQVQ ISIIIB MVVLE DTIC SGSRX EVYQQ CDMLZ XLDWJ JNSEP BRROJ WJFMI CSDDF YKWMQ VLKWM KKLOV CXKFE XRFBI MEPJW SBWFJ ZWGMZ PVHCR BKZIB  
GCFHE WEWSF CKPJTT NCYVR TUICX PTPLD VIJXT DSRM4 AOWRB YIBIR MWVER QKWKW RBDFY MELSF XPEQG KSPML IYIBX FJPXR ELPVH RMKFE HLEBj YMWMK TUFIJ YS  
UXE VLIJUX YAYWV XIUJ2 JXGEJ PZROS TJIJS IJYQ3 PMWKK KBEQX USDXC YIIRI YSXUR IPJNM DLBFZ WSIF EHLYR YVVMY NXUSB SRMPW DMJQN SBTRM VTBIR YPWS  
P IIIIC WQMVNL KHNZK SXMLY YIZEF FTILY RSFAF SFJWY EVNWZ WOWFJ WSERB NKAKW LTCSX KCWXX OILGL ZXPYJ NLSXC YYIBM ZGFRK VMZEH DSRTJ ROGIM RHPKW  
TCSCK GYKB ICSTS VSPEF HGEQF JARMR JRWN5 PTKLI WBWWW CXFJV QOVYQ UGSWX BRWCS MSCIP XDFIF OLGSU ECXFJ PENZY STINX FJXVY YLISI MEKJF SEKFJ IE  
XHF NCPSI PKFDL LCWA OVCSF JKVKX ESBLM ZJICM LYMC GMZEX BCMKK LOACK KEKHR MKVBS SSUAM WSKM VPCIZ RDLCF WXOVL TFRDL CXLRC LMSVL YXGSK LOMP  
K RGQWD TXIKR PJNIB ILTKY OIYQF SPJEW KLOQQ MRHOW MYYED FCKFV ORGLN XNSPTE KLIEL IKSDS YSXUR IJNFR GIPJK MBIBF EHVEW IFAXY NTEXR IEWRW CELIW  
IVPYX CIOTU NKLDR CBFNS QYSRR NXFFJ GKVCH ISGOC JGMKX UFGR krypton4@bandit:/krypton/krypton4$ cat found2
```

```
YYIIA CWVSL PGLVH DSAFD TYVRY LYXER BJIEV EPLVX BICNE XRIDT ITCDX TXIKR PJNIB ILTYS EWCXE IKVRM VXBIC RRHOE ETFHD LGHBG YZCWZ RQXNU IS  
DIA YKLQO DWFQD LCIVA KRBBY IDMLB FSNOY STLYT NJUEQ VCFKT SPCTW AYSBB ZXRLG XRB0E LIUB SRMPF EMJYR WZPCS UMNJG WVXRE RBRWV IBMV KRBRR HOLC  
W WIOPJ JJWVS LCCC LCFEH DSRTR XOXFJ CECEXM KLLOM PGIIK HYSUR YAQMV HSHTL KOXSU BYEDX FJPAY YJUJS PSPGI IKODF JXSJW TLASW FXRMM XFJCM YRGZB  
PVKMN EXYXF JWSBI QYRNN OGQCE NIWNC SBCMZ PSEGJ SISKW RNKFI XFJWM BIQNE GOCMZ IXKWR JJEBA QTGIM YJNRV DLYPY SETP7 WIBGN TBINJ MTUEX HRMRV IS  
SBZ PVLYW VEIFP DXSYH ZWUEV JYXKH YRUUC IKWCI FRDFC LXINX FJJKM AMTUQ KRGXY SEPBH VDEO SCCG1 ZSPCZ VIBFG SYVBJ VVKRB KYYIXG WORAC AMZC  
H BYQYR KKMMLG LDXLQD QZSXKA CSKEG ENWEX YXUVV SBIQY RRNJM ZEHRM QTNRN YNUUV KRBSF SXICA VVURC BLNMX GYNEC JMWYI NMBSK QRNN FRSKY SUXRI QHRVO  
GPTNJ YYLIR XBICK LPVSD SLXKE LIWMM PCIUS BSRMP WLEOP VXGMR MKLOQ OTKLK XQMV4 YYJIE SDFCM LROWV KFKVP MSX5S QCXYI DLMXZ LDXFN JAKWT JICUM LI  
RRN XFTLK RXDZC SPFXJ JGKVC HISGF SYJLO PYXJL OHFJR VDMJD RXDLC FNOGE PINEI MLLBM TYSPH IIKXS WVTSG IJUJY XFJEF DWFNJ TKHBj ULKRB XNIB  
I QTTPX QDQRK NFJZE YDWU IICQS RRPVX FFKLO HPTGT HYHQD SXCYX DEXCY XZYIY RNEXR IZJFO OXZZK XRIQH RVOGP TNHSI LTKQS RBMF4 VSL2 XDSPM YMWXM  
KZPVM FJSEC OCYWS BMRJE ELPCI YMWXH PVIZE UPFBJ SKYYI PMPJR WRIDJ RVOEP XVOHY XGEB0 KNXLD KCYZR DSFNP WDVBY RNRFS WLSQ SUJSR IIJGX KKMUTU HSWRF EG  
OEU FPJB5 KYYIP PYRVRK KRBT EPIGR VROEP YFGYZ CWUSB SRMPA SXFII CVIYA VWGLC SJLOP YDUSG RRTJP OINYD ICIIJ GXRIP AVVIW LZEX HUFIQ KRBXY ICPC  
U KYWYI ICCER RNQCY VLNEK GLCSZ XGEQI RCVME MXKXR1 ENIPL ERMVH RIPKR GOMLF CMDXJ JIMZT JNEKL VMTBE XHQTF RKJRJ IXRIW FCPCX YXWIN XMBRV NXFJY  
QOVYQ UGSWX YMMCA YXKSL IYSVZ ORRK1 PNEWK FVLC IYIEFJ JJWID LCDYE NLYWU PIFCJ EAKPI NEKRR FTLVG LCSKL OCQFN FOJMW VRXIK FXVOE RIZXM LMRMX MV  
MJX INXFJ ISKHY SUHSZ GIVHD LCKFV OWRFJ JKVVY KLOCA TLPNW CJFRO MRMV CMBZ JXEOF MIBCU NUINR RHEYX HUMVR DLDCT VOTRZ GYXF JVHQI YSUPY SJU
```

```
KMX AMTUQ KRYSU XRIJN FRLCM TBLSW QMRKQ CKFEI KRBQF SUIBY YSEKF YWYVF SYKLO WAFII MMVBJ ESHUJ TEKRM YWPIX FFKMC GCWK SRL3Z XRTPH View Image  
H MBEMX XMYYM CKPJR XNMRH YXRIP JWSBI GKNIM ELSFX TYKUF ZOVGY NIWYQ YJXYT UMVVO ACFFI SXFNE OSGMZ CHTYK UFZOV GYJES HRYNG YAWWW DEPOT FEFYX  
WDIKW SWZRQ FXJUM CXYST IMEPJ WYWPW NELSW KNEHD LCSNI KVCFK PBEME KEXWU JIINX FJJKK VCHIS GJMW P SEGS TEBWV ZJEEV MAVVY RWTLV LEAPF ROERF KM  
WIU JCPSP JYICS XOFZH DLCOZ SXAFT NMVPE TWMBW RNNMV PBJTP KVCIK LOWAF IIIMV BWSBM DFYP SSSUX RERDF YMSSQ URYXH ZDTYZ CWKLO KSQWH YMMY CGSS  
Q UFOOD QCINS PYIID MLBFS NOYSS ENPWI VRDBI TEXRI PTTOC FCQFA LYRNW MKQMS PSEVZ FTOSX UNCPX SRRRX DIPXF QEGFK FVDLC KRPVA MZCHX SRMLV DQCFK  
EVkrypton4@bandit:/krypton/krypton4$ cat krypton5  
HCIVK RJOKkrypton4@bandit:/krypton/krypton4$
```

## Level 5 → 6: Vigenère Cipher with Unknown Key Length

### Objective:

Decrypt a Vigenère Cipher without knowing the key length.

### Steps Followed:

1. Connected to **krypton5** using password **CLEARTEXT**.
2. Read multiple encrypted files:

```
cat found1
```

```
cat found2
```

```
cat found3
```

```
cat krypton6
```

3. Used the "Automatic Decryption" feature on [dcode.fr](http://dcode.fr).
4. Identified the key **KEYLENGTH** and decrypted the file to get password **RANDOM**.

The screenshot shows a terminal window on a Kali Linux desktop environment. The terminal title is 'krypton5@bandit: ~'. The user has run the command `ssh krypton5@krypton.labs.overthewire.org -p 2231`. The server response is displayed in a decorative font:

```
This is an OverTheWire game server.  
More information on http://www.overthewire.org/wargames
```

The user is prompted for the password:

```
krypton5@krypton.labs.overthewire.org's password:
```

The password is partially visible in the same decorative font:

```
www. ver he ire.org
```

At the bottom of the terminal, the message 'Welcome to OverTheWire!' is visible.

```
krypton5@bandit:~$ cd /krypton/krypton5
krypton5@bandit:/krypton/krypton5$ cat found1
SXULW GNXIO WRZIG OFLCM RHEFZ ALGSP DXBLM PWIQT XJGLA RIVRI BLPPC HMXMG CTZDL CLKRU YMWJS TWUTX ZCMRH EFZAL OTMNL BLULV MCQMG CTZDL CPTBT AV
PML NVRJN SSXWT XJGLA RIQPE FUGVP PGRLG OMDKR RSIFK TZYRM QHNXD UOWQT XJGLA RIQAV VTZVP LMAIV ZPHCX FPAVT MBLSD OIFVT PBACS EQKOL BCRSM AMUL
P SPPYF CXOKH LZXUO GNLDN ZVRAL DOAAC INREN YMLRH VXXJD XMSIN BXUGI UPVRG ESQSG YKQZK LMRSX IBZAL BAYJM AYAVB XRSIC KPKYH ULWFU YHBPQ VIGNX
WBHQF RGVXY SSBEL NZLVM IMQMG YGVFS GPWKG NARSP TXVXL PXWGD XJRHU SXQMI VTZVY GCTZR JYVBK MZHBB YVBT ITPTV OWSWA IERTA SZCOI TXXLY JAZQC GK
PCS LZRYE MOOVC HIEKT RSREH MGNTS KVEPN NCTUM EOFIR TPPDL YAPNO GMKGC ZRGNX ARVMY IBLXU QPYHH GNXYO ACCIN OBUQA GELNR TYQIH LANTU HAYCP RJOM
O JKYT VSGLY RSSIG NKVXI MOJEG GJOML MSGNV VERRC MRYBA GEQNP RGKLB FFLXP RZLVEK ZDEA JYPCPL CDXUG
MARMIL RWVTZ LXIPL PJKLN CIREP RJYVB IPTPV ZPHCX FPCRG KVPSX CPBXW VXRIS SHYTH NWCGI ANNUN VCOEA JLLFI LECSD OLCTG CMGAT SBITP PNZBVW XWUPV RI
HUM IBPHG UXUQP YYHNZ MOKXD LZBAK LNTCC MBJZT KXRSM FSZKC SSELN UMARE BCIPK GAVCY EXNOG LNLCC JVBXH XHRHI AZBLL LWZIF YXKLM PELOQ RVPAF ZQNV
K ZVLCZ MPVFC FERPM ALMDP HKKRCM SSBEL NZLVM IMQMG YGVFS GPWKG NARSP TXVXL PXWGD XJRHU SXQMI VTZVY GCTZR JYVBK MZHBB YVBT ITPTV OWSWA IERTA SZCOI TXXLY JAZQC GK
LEVXH MYEAJ PLCKX TRFXZ YOCZY XUKVW MOJLR RMAVU XFLH0 KXUEV GOSAR RHBSX YHQUS LSXDJ INXLH PXCCV NVPX KMFXV ZLTOW QLKRV TZDLC DTVXH ACSDE LV
YOL BCWPE ERTZO TYDXFV AILBR YEVEG SSIHC QMPOX UDMLZ VVMBU KPGECE EGIWC HMFVG NXPBW KVPRS XZCEE PWVTM OOICYK XURRV BHCCS SKOLX XQSEQ RTAOB WNSZ
K MVDLC PRTRB ZRGZB AAGGK ZMAPR RLKWV EAZRT XXXZCS DMVZS MNRIM ZSRYX IEOVH GLGNL FZKHZ KCESE KEHDH FLZRV KVFIB XSEKB TZSPE EAZMV DLCSY
ZGGYK GCELN TLTUIG MXQHT BJKXG ZRFEX ABIAP MIKWA RVMFK UGGFY JRSIP NJBUJ LDSSZ ALMSA VPNTX IBSMO krypton5@bandit:/krypton/krypton5$ cat found2
krypton5@bandit:/krypton/krypton5$ cat found2
GLCYX UKFHS PEZFV AVJOW QQYR RAYHM GIEOG ARIAZ YEYXV PXPFP BXXUY SLELR NXHNH PLARX TADLC CSLGE NOSPR IUUML VSNPR RJMOO GMLGU JHVQE QSMFI NZ
DSK HEFNX KSHGE AVZAZ YQCOP BAKPC LMQGR XXTYR WOSEG FHSPH ZYETX FPVMS PBTWV XMLHM AZXYG EQLRN IAPOZ CXIAZ MMVSL RVNZN SKXCL RNJOL XXSCS HYM
K ZCWPX XNWYR ZXJUG MASQC ELRXX DKWMY PLUGL KHTPR GAKVE WRCIE KESOV JPJGH XJYRE CEGAE HDIBQ SEZAL DAMZX UKKRZ EBMIR TLLDH MHRNZ MOOMP CIFVX
JDMPY VBGWZ SHCOI FZBUK XGZRF ZALWM JOIJE BUCMB PSSZA LMSYN LJOMO SXQOE ZVTUN HGCLX YMYKA GEWQQ LHQCIC LYFKL TOPJL RQOMZ YFQNQ EOMFG EQCEG NX
YVM APIEG KNOVB ZKXXG UOPKX PBXKF DLCAE FYXUQ IPDLN QBULQ GWXR VYEXM QMGOG JREGY WBLLA BEULX NTZSO SDDLN MFZFGV YATRX YSKTN TRNT AKRBY YQR
S OKQHE FXTAR IPWMX KTSKV EPVPU KAYJB ZKGNX YOAGW POKTW KGIPX GUVHY EGDXB SHYBS UOVNC XYIIQ DMEOY ARIUP EGNYX RJSJOW NTWAR IUTRO YXACX MWIEG
USOJY TVGNX ASHCH MYRLL BZCAV RZMFX MAPPL GMHLS SEXJU BUDLC LJGKK UYSLD MEHXX CMPTW UGESX SRSSG UJULN GPWAO ZDFDS EMJGG AKFCO VBUFH XHME EH
XYK RBEKL TUVOE IQUEFZ LPBCX DWVXM OKXUL CFOKP PCMFY KYTZO WFZAP UGJVY BRIAZ ELWEL DZNRB ZOELD BZRPB DIPES PUGYJ VBAYY RHMPK CYXYK FHXWZ ZSGY
B UMSLN SEJRV EAGWP SOGKX JGYFV KTJYE JQMEK LPBJC EGUHT YLIPE SPUGJ YVBDX VXTIY YRELX XXUYA DZPVU GJYVB ELRIH UMSPO FRJVO KQZPV OKBQF EJHEL
YTZCM EYIQZ HHZEQ DIAMX YLCRS IZGBS KRBAE FYXUQ IPDPL ZALWE GWFRW GNPKU LCFNX HMFMJ AEGIW OHSAJ EUFOO EBESS UHADL CCSBZ AHNFX PSQJB UDIPP WG
LHY DLCPW GGGS WFXIA ZHMDL CSCLG ENOSP RIGNT AKPRS SHMAI EXWYI XOGKY JKLRL GLZOI LESTU BUDSG EYRD PXLHQ RQBTY SIRTU FUYTO RALQF UNAYJ GEGB
T LLACY XYXET UXFP VQXTD OVYHH GHCHY VRPFV GGKCI TPVNR FHSHQ LRQZA LVELO PNJRD YRHPD IPTRT HRHMG GOTAZ TAEP EYRD PXLHQ RQBTY SIRTU FUYTO RALQF UNAYJ GEGB
RZPLO RRSIP UGJVY BLRQZ MDSQD QIRXH VWAFP RNMUX DPCXE AUYZS BRJZB XFHPW WOVRV LLNML LFEUP CGSVE SSIIE DYLCDT EKMAI ACYRJUWYU
GCB ARPYC KRYJB KVCNY SLLHX HJLVT KYSKT QSEGN XYWYI PXPFT CZIBL PBTZV XLDA NemVR MQMVR GDMKW rkryston5@bandit:/krypton/krypton5$ cat found3
FIPJS EJXVV CYHYZ KMOYH GNEYN XSYSF PHJOM OKLYY BTXHK MLVYI RGKKM PMFHJ GMJRK GNOVT ZHCL ZBAL ZOVKZ RHTWL BLGJD YCZLW HULMF ZVWY View image
RMP AMGZK KSQXN VNBBK IELOB BTZLJ MRJET GBUCX RSIXK OPDCY HRYBT UOWAP RPKHM DLCMV VYDMS VCSIU GHQHS MOPRM TUNAY DEYI AYVIL MAUJP D'JMCY VVYU
Y ALDXB IDPXX QMQZG XKCPC PONTW JVSPQ EAJPL BIMOE SOGLD IVEYE KACPW FZIFG GKLYA VPRYM VYXFZ YTNIY KMLHI EKMYS QFPAB XXHXS BOPVZ MSOWJ PIXIK
PCTDW EKKGD SKQXG GOGNF IPJGY ULLDS FTWIK TKGLG NLJQZ PDME SOKIY OWXSI QCTZW EBPPS NTPBF SEAUO VOVSM VQLT YWSPP EFTAN ERFTY KKLZC TSYJL UP
MSP YXIAZ LVPWG WOBXZ SKWQS MFRBU ORRSS HMAUY XMQES OGLXI QDMAG VJYVB LRPKP PDLFT WFZHQJ UMLRW JGLHC AFTXR GLARI RZTF View image
W YRRSI AKBNRN FMFVV TZIOE ASSEZ ALCTC NOFUY ZKJME SRRPH VTMOD WSPV MAAPE PLXFK THPEA PLNHB AEEJW CFAIN BIQDI View image
BNRXC OYCAT KOVRS IDATP XXUTK OETWJ MPZJZ UBZDF PTKUZ XFOWR SEGOM TEWKV EKIVK CXRSI VXHDX IPTRL KTYCK MYIOE LWIN LM View image
XKK RBCFIC KKCOH CITEK LZSSL ZGKE SCSDL FNTDO OLYOE UKTSD LWNSY UNYSR FTWPN XLWUW YHULQ MKGCE LBAZO VMLPH OUKLP IUEV View image
T WCXFP GBTYP NILEM NRNUH LCWSE IELBO QTRKG ESCSL DFNTD DOVCA VVTVP ZEJWC BIVBZ MCOAV ZAARI ALVRY HMYXF PVKHF WIYVY View image
XXZVM IPWRI HUNLY YHPRH ARION SZKXH CMJJS SLTUN SLNSZ VELDM LRLVY KLCTK MPNTV LDSYX EACAV GEQDM GZBQJ JMCLV YVFBX PLMGS KSYVP JHEUI WOHMQ JG
ULS OINEL RGKYS ZYWSS NBZLV CLOSS LABSS DIONB TKRBS IFGBK DSRSTI QXTDO VYDLR SHCOH FTWPN TPBXM TXVBC ZREAN SZSHK KGZ View image
J RDRSK LCPUF LIQPF EGGEF DMKPx BJTFC LCXEL GLRPS PXWGX KCSWZ ZVEEH YCLCX ELUGS IEQVJ BXTNO RRWIZ GGMBS KEIYR LVXWZ View image
LKLZS VRPPY YHUCF YYOVT EXVHM YWVXH LCCCD WXPL RETPS SZXUD MKPGW NXOYR MFVGU XUDIP EEVTR VEVEP RGRXT ORGYX UKBDY View image
BXP HHBQW IGCBE DPWYH BTTUN TYCMF YBQKX YDQXK TSY2R CEIKE SSRED MOEGA OPJDS AGGKM SKEA ELOYY QPCR PLKVC BYVZK HPVC View image
T RBZRS LPCRy LPBRM EQHIA PXXFP LNHA YQJQF UZKHF IJWMA MRREV QPPSO MOSRI DMETH AJYJL XREXH BWGEM FLBMD ICYCR GKZCM View image
VBSYY KRAP krypton5@bandit:/krypton/krypton5$ cat krypt0n6
BELOS krypton5@bandit:/krypton/krypton5$
```

```
krypton5@bandit:/krypton/krypton5$ cat found3
GLCYX UKFHS PEZFV AVJOW QQYR RAYHM GIEOG ARIAZ YEYXV PXPFP BXXUY SLELR NXHNH PLARX TADLC CSLGE NOSPR IUUML VSNPR RJMOO GMLGU JHVQE QSMFI NZ
DSK HEFNX KSHGE AVZAZ YQCOP BAKPC LMQGR XXTYR WOSEG FHSPH ZYETX FPVMS PBTWV XMLHM AZXYG EQLRN IAPOZ CXIAZ MMVSL RVNZN SKXCL RNJOL XXSCS HYM
K ZCWPX XNWYR ZXJUG MASQC ELRXX DKWMY PLUGL KHTPR GAKVE WRCIE KESOV JPJGH XJYRE CEGAE HDIBQ SEZAL DAMZX UKKRZ EBMIR TLLDH MHRNZ MOOMP CIFVX
JDMPY VBGWZ SHCOI FZBUK XGZRF ZALWM JOIJE BUCMB PSSZA LMSYN LJOMO SXQOE ZVTUN HGCLX YMYKA GEWQQ LHQCIC LYFKL TOPJL RQOMZ YFQNQ EOMFG EQCEG NX
YVM APIEG KNOVB ZKXXG UOPKX PBXKF DLCAE FYXUQ IPDLN QBULQ GWXR VYEXM QMGOG JREGY WBLLA BEULX NTZSO SDDLN MFZFGV YATRX YSKTN TRNT AKRBY YQR
S OKQHE FXTAR IPWMX KTSKV EPVPU KAYJB ZKGNX YOAGW POKTW KGIPX GUVHY EGDXB SHYBS UOVNC XYIIQ DMEOY ARIUP EGNYX RJSJOW NTWAR IUTRO YXACX MWIEG
USOJY TVGNX ASHCH MYRLL BZCAV RZMFX MAPPL GMHLS SEXJU BUDLC LJGKK UYSLD MEHXX CMPTW UGESX SRSSG UJULN GPWAO ZDFDS EMJGG AKFCO VBUFH XHME EH
XYK RBEKL TUVOE IQUEFZ LPBCX DWVXM OKXUL CFOKP PCMFY KYTZO WFZAP UGJVY BRIAZ ELWEL DZNRB ZOELD BZRPB DIPES PUGYJ VBAYY RHMPK CYXYK FHXWZ ZSGY
B UMSLN SEJRV EAGWP SOGKX JGYFV KTJYE JQMEK LPBJC EGUHT YLIPE SPUGJ YVBDX VXTIY YRELX XXUYA DZPVU GJYVB ELRIH UMSPO FRJVO KQZPV OKBQF EJHEL
YTZCM EYIQZ HHZEQ DIAMX YLCRS IZGBS KRBAE FYXUQ IPDPL ZALWE GWFRW GNPKU LCFNX HMFMJ AEGIW OHSAJ EUFOO EBESS UHADL CCSBZ AHNFX PSQJB UDIPP WG
LHY DLCPW GGGS WFXIA ZHMDL CSCLG ENOSP RIGNT AKPRS SHMAI EXWYI XOGKY JKLRL GLZOI LESTU BUDSG EYRD PXLHQ RQBTY SIRTU FUYTO RALQF UNAYJ GEGB
T LLACY XYXET UXFP VQXTD OVYHH GHCHY VRPFV GGKCI TPVNR FHSHQ LRQZA LVELO PNJRD YRHPD IPTRT HRHMG GOTAZ TAEP EYRD PXLHQ RQBTY SIRTU FUYTO RALQF UNAYJ GEGB
RZPLO RRSIP UGJVY BLRQZ MDSQD QIRXH VWAFP RNMUX DPCXE AUYZS BRJZB XFHPW WOVRV LLNML LFEUP CGSVE SSIIE DYLCDT EKMAI ACYRJUWYU
GCB ARPYC KRYJB KVCNY SLLHX HJLVT KYSKT QSEGN XYWYI PXPFT CZIBL PBTZV XLDA NemVR MQMVR GDMKW rkryston5@bandit:/krypton/krypton5$ cat found4
FIPJS EJXVV CYHYZ KMOYH GNEYN XSYSF PHJOM OKLYY BTXHK MLVYI RGKKM PMFHJ GMJRK GNOVT ZHCL ZBAL ZOVKZ RHTWL BLGJD YCZLW HULMF ZVWY View image
RMP AMGZK KSQXN VNBBK IELOB BTZLJ MRJET GBUCX RSIXK OPDCY HRYBT UOWAP RPKHM DLCMV VYDMS VCSIU GHQHS MOPRM TUNAY DEYI AYVIL MAUJP D'JMCY VVYU
Y ALDXB IDPXX QMQZG XKCPC PONTW JVSPQ EAJPL BIMOE SOGLD IVEYE KACPW FZIFG GKLYA VPRYM VYXFZ YTNIY KMLHI EKMYS QFPAB XXHXS BOPVZ MSOWJ PIXIK
PCTDW EKKGD SKQXG GOGNF IPJGY ULLDS FTWIK TKGLG NLJQZ PDME SOKIY OWXSI QCTZW EBPPS NTPBF SEAUO VOVSM VQLT YWSPP EFTAN ERFTY KKLZC TSYJL UP
MSP YXIAZ LVPWG WOBXZ SKWQS MFRBU ORRSS HMAUY XMQES OGLXI QDMAG VJYVB LRPKP PDLFT WFZHQJ UMLRW JGLHC AFTXR GLARI RZTF View image
W YRRSI AKBNRN FMFVV TZIOE ASSEZ ALCTC NOFUY ZKJME SRRPH VTMOD WSPV MAAPE PLXFK THPEA PLNHB AEEJW CFAIN BIQDI View image
BNRXC OYCAT KOVRS IDATP XXUTK OETWJ MPZJZ UBZDF PTKUZ XFOWR SEGOM TEWKV EKIVK CXRSI VXHDX IPTRL KTYCK MYIOE LWIN LM View image
XKK RBCFIC KKCOH CITEK LZSSL ZGKE SCSDL FNTDO OLYOE UKTSD LWNSY UNYSR FTWPN XLWUW YHULQ MKGCE LBAZO VMLPH OUKLP IUEV View image
T WCXFP GBTYP NILEM NRNUH LCWSE IELBO QTRKG ESCSL DFNTD DOVCA VVTVP ZEJWC BIVBZ MCOAV ZAARI ALVRY HMYXF PVKHF WIYVY View image
XXZVM IPWRI HUNLY YHPRH ARION SZKXH CMJJS SLTUN SLNSZ VELDM LRLVY KLCTK MPNTV LDSYX EACAV GEQDM GZBQJ JMCLV YVFBX PLMGS KSYVP JHEUI WOHMQ JG
ULS OINEL RGKYS ZYWSS NBZLV CLOSS LABSS DIONB TKRBS IFGBK DSRSTI QXTDO VYDLR SHCOH FTWPN TPBXM TXVBC ZREAN SZSHK KGZ View image
J RDRSK LCPUF LIQPF EGGEF DMKPx BJTFC LCXEL GLRPS PXWGX KCSWZ ZVEEH YCLCX ELUGS IEQVJ BXTNO RRWIZ GGMBS KEIYR LVXWZ View image
LKLZS VRPPY YHUCF YYOVT EXVHM YWVXH LCCCD WXPL RETPS SZXUD MKPGW NXOYR MFVGU XUDIP EEVTR VEVEP RGRXT ORGYX UKBDY View image
BXP HHBQW IGCBE DPWYH BTTUN TYCMF YBQKX YDQXK TSY2R CEIKE SSRED MOEGA OPJDS AGGKM SKEA ELOYY QPCR PLKVC BYVZK HPVC View image
T RBZRS LPCRy LPBRM EQHIA PXXFP LNHA YQJQF UZKHF IJWMA MRREV QPPSO MOSRI DMETH AJYJL XREXH BWGEM FLBMD ICYCR GKZCM View image
VBSYY KRAP krypton5@bandit:/krypton/krypton5$ cat krypt0n6
BELOS krypton5@bandit:/krypton/krypton5$
```

## Level 6 → 7: Custom Stream Cipher Analysis

### Objective:

Analyze a custom stream cipher using known plaintext attack.

### Steps Followed:

1. Connected to **krypton6** using password RANDOM.
2. Read and understood the encryption program.
3. Created a plaintext file with repeating characters:

```
python3 -c 'print("A" * 50)' > /tmp/plain  
./encrypt6 /tmp/plain /tmp/cipher  
cat /tmp/cipher
```

4. Analyzed the encrypted output to deduce the encryption key pattern.
5. Decrypted the final file **krypton7** manually.

```
(kali㉿kali)-[~]  
$ ssh krypton6@krypton.labs.overthewire.org -p 2231  
  
This is an OverTheWire game server.  
More information on http://www.overthewire.org/wargames  
krypton6@krypton.labs.overthewire.org's password:
```

```
krypton6@bandit:~  
File Actions Edit View Help  
Enjoy your stay!  
krypton6@bandit:~$ cd /krypton/krypton6  
krypton6@bandit:/krypton/krypton6$ cat README  
Hopefully by now its obvious that encryption using repeating keys  
is a bad idea. Frequency analysis can destroy repeating/fixed key  
substitution crypto.  
  
A feature of good crypto is random ciphertext. A good cipher must  
not reveal any clues about the plaintext. Since natural language  
plaintext (in this case, English) contains patterns, it is left up  
to the encryption key or the encryption algorithm to add the  
'randomness'.  
  
Modern ciphers are similar to older plain substitution  
ciphers, but improve the 'random' nature of the key.  
  
An example of an older cipher using a complex, random, large key  
is a vigenere using a key of the same size of the plaintext. For  
example, imagine you and your confidant have agreed on a key using  
the book 'A Tale of Two Cities' as your key, in 256 byte blocks.  
  
The cipher works as such:  
  
Each plaintext message is broken into 256 byte blocks. For each  
block of plaintext, a corresponding 256 byte block from the book  
is used as the key, starting from the first chapter, and progressing.  
No part of the book is ever re-used as key. The use of a key of the  
same length as the plaintext, and only using it once is called a "One Time Pad".  
  
Look in the krypton6/onetim... directory. You will find a file called 'plain1', a 256
```

```

krypton6@bandit:/tmp/lev7$ cat krypton6
python -c 'print("A" * 50)' > /tmp/plain
./encrypt6 /tmp/plain /tmp/cipher
cat /tmp/cipher
cat: krypton6: No such file or directory
Command 'python' not found, did you mean:
  command 'python3' from deb python3
  command 'python' from deb python-is-python3
krypton6@bandit:/tmp/lev7$ cat krypton6
cat: krypton6: No such file or directory
krypton6@bandit:/tmp/lev7$ cat HINT2
8 bit LFSR
krypton6@bandit:/tmp/lev7$ mkdir /tmp/lev7
mkdir: cannot create directory '/tmp/lev7': File exists
krypton6@bandit:/tmp/lev7$ cd /tmp/lev7
krypton6@bandit:/tmp/lev7$ ls
a.txt cipher.txt k keyfile.dat krypton7 m main.py s
krypton6@bandit:/tmp/lev7$ ln -s /krypton/krypton6/
krypton6@bandit:/tmp/lev7$ ln -s /krypton/krypton6/k
ln: failed to create symbolic link './k': File exists
krypton6@bandit:/tmp/lev7$ ln -s /krypton/krypton6/keyf
ile.dat
ln: failed to create symbolic link './keyfile.dat': File exists
krypton6@bandit:/tmp/lev7$ ln -s /krypton/krypton6/kryp
ton7
ln: failed to create symbolic link './krypton7': File exists
krypton6@bandit:/tmp/lev7$ ls
a.txt k krypton6 m s

```

```

krypton6@bandit:/tmp/lev7$ ls
a.txt k krypton6 m s
cipher.txt keyfile.dat krypton7 main.py
krypton6@bandit:/tmp/lev7$ chmod 777
chmod: missing operand after '777'
Try 'chmod --help' for more information.
krypton6@bandit:/tmp/lev7$ chmod 777 .
krypton6@bandit:/tmp/lev7$ touch a.txt
krypton6@bandit:/tmp/lev7$ nano a.txt
Unable to create directory /home/krypton6/.local/share/
nano/: No such file or directory
It is required for saving/loading search history or cursor positions.

krypton6@bandit:/tmp/lev7$ krypton/krypton6/encrypt6 a.
txt cipher.txt
-bash: krypton/krypton6/encrypt6: No such file or directory
krypton6@bandit:/tmp/lev7$ ls
a.txt k krypton6 m s
cipher.txt keyfile.dat krypton7 main.py
krypton6@bandit:/tmp/lev7$ cat cipher.txt
EICTDGYIYZKTHNSIRFXCPFUEOCKRNEICTDGYIYZKTHNSIRFXCPFUE
OCKRNEICTDGYIYZKTHNSIRFXCPFUEOCKRNEICT[krypton6@bandit:
/tmp/lev7$ nano krypton6
Unable to create directory /home/krypton6/.local/share/
nano/: No such file or directory
It is required for saving/loading search history or cursor positions.

krypton6@bandit:/tmp/lev7$ man

```

**HISTORY**

1990, 1991 – Originally written by John W. Eaton ([jwe@che.utexas.edu](mailto:jwe@che.utexas.edu)).

Dec 23 1992: Rik Faith ([faith@cs.unc.edu](mailto:faith@cs.unc.edu)) applied bug fixes supplied by Willem Kasdorp ([wkasdorp@nikhefk.nikef.nl](mailto:wkasdorp@nikhefk.nikef.nl)).

30th April 1994 – 23rd February 2000: Wilf. ([G.Wilford@ee.surrey.ac.uk](mailto:(G.Wilford@ee.surrey.ac.uk)) has been developing and maintaining this package with the help of a few dedicated people.

30th October 1996 – 30th March 2001: Fabrizio Polacco <[fpolacco@debian.org](mailto:fpolacco@debian.org)> maintained and enhanced this package for the Debian project, with the help of all the community.

31st March 2001 – present day: Colin Watson <[cjwatson@debian.org](mailto:cjwatson@debian.org)> is now developing and maintaining man-db.

**BUGS**

<https://gitlab.com/man-db/man-db/-/issues>  
<https://savannah.nongnu.org/bugs/?group=man-db>

2.12.0 2023-09-23 MAN(1)  
Manual page man(1) line 958/987 (END) (press h for help or q to quit)

```
krypton6@bandit: /tmp/lev7$ ls
a.txt      k      krypton6  m      s
cipher.txt  keyfile.dat  krypton7  main.py
krypton6@bandit:/tmp/lev7$ cat cipher.txt
EICTDGYIYZKTHNSIRFXCPCFUEOCKRNIECTDGYIYZKTHNSIRFXCPCFUE
OCKRNEICTDGYIYZKTHNSIRFXCPCFUEOCKRNIECTDGYIYZKTHNSIRFXCPCFUE
krypton6@bandit:/tmp/lev7$ nano krypton6
Unable to create directory /home/krypton6/.local/share/
nano/: No such file or directory
It is required for saving/loading search history or cur-
sor positions.
krypton6@bandit:/tmp/lev7$ man
What manual page do you want?
For example, try 'man man'.
krypton6@bandit:/tmp/lev7$ man man
man: can't resolve man7/groff_man.7

krypton6@bandit:/tmp/lev7$
```

Screenshot taken  
View image

## Level 7

### Objective:

Complete the final Krypton level.

### Steps Followed:

1. Connected to **krypton7** using password LFSRISNOTRANDOM.
2. After login, received the congratulatory message for completing the Krypton lab.

```
krypton7@bandit: ~
File Actions Edit View Help
(kali㉿kali)-[~]
└─$ ssh krypton7@krypton.labs.overthewire.org -p 2231

This is an OverTheWire game server.
More information on http://www.overthewire.org/wargames

krypton7@krypton.labs.overthewire.org's password:

www. ver he . ire.org

Welcome to OverTheWire!
```

```
krypton7@bandit: /krypton/krypton7
File Actions Edit View Help
In addition, the execstack tool can be used to flag the stack as
executable on ELF binaries.

Finally, network-access is limited for most levels by a local
firewall.

--[ Tools ]--

For your convenience we have installed a few useful tools which you can find
in the following locations:

* gef (https://github.com/hugsy/gef) in /opt/gef/
* pwndbg (https://github.com/pwndbg/pwndbg) in /opt/pwndbg/
* gdbinit (https://github.com/gdbinit/gdbinit) in /opt/gdbinit/
* pwntools (https://github.com/Gallopsled/pwntools)
* radare2 (http://www.radare.org/)

--[ More information ]--

For more information regarding individual wargames, visit
http://www.overthewire.org/wargames/

For support, questions or comments, contact us on discord or IRC.

Enjoy your stay!

krypton7@bandit:~$ ls
krypton7@bandit:~$ cd /krypton/krypton7
krypton7@bandit:/krypton/krypton7$ cat README
Congratulations on beating Krypton!
krypton7@bandit:/krypton/krypton7$
```

---

## Conclusion

Through solving Krypton and Leviathan labs, I strengthened my skills in Linux commands, cipher decoding, binary analysis, and basic exploit techniques. This hands-on experience provided real-world exposure to cybersecurity fundamentals, critical thinking, and team collaboration.