TENESYS

IAM9ROOT

AKINARI X ZHEEK

TEKNOKRAT AND SYSTEM SECURITY TENESYS 2019

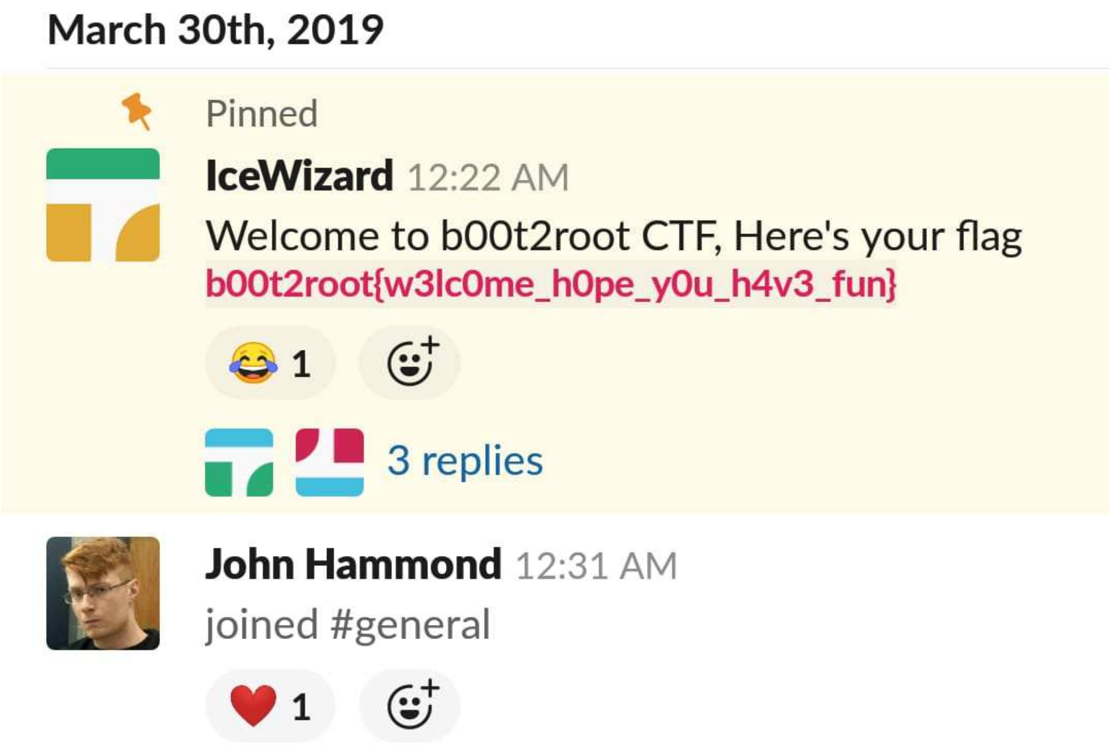
1. Welcome – 50 point – Misc –

Welcome to b00t2root CTF. Join the slack channel to get your flag.

slack

Author: NULLKrypt3rs :)

- Didapatkan sebuah web slack
- Lalu gabung dengan slack tersebut



March 30th, 2019

Pinned

IceWizard 12:22 AM

Welcome to b00t2root CTF, Here's your flag b00t2root{w3lc0me_h0pe_y0u_h4v3_fun}

😂 1

3 replies

John Hammond 12:31 AM

joined #general

❤️ 1

- Dan didapatkan flag : **b00t2root{w3lc0me_h0pe_y0u_h4v3_fun}**

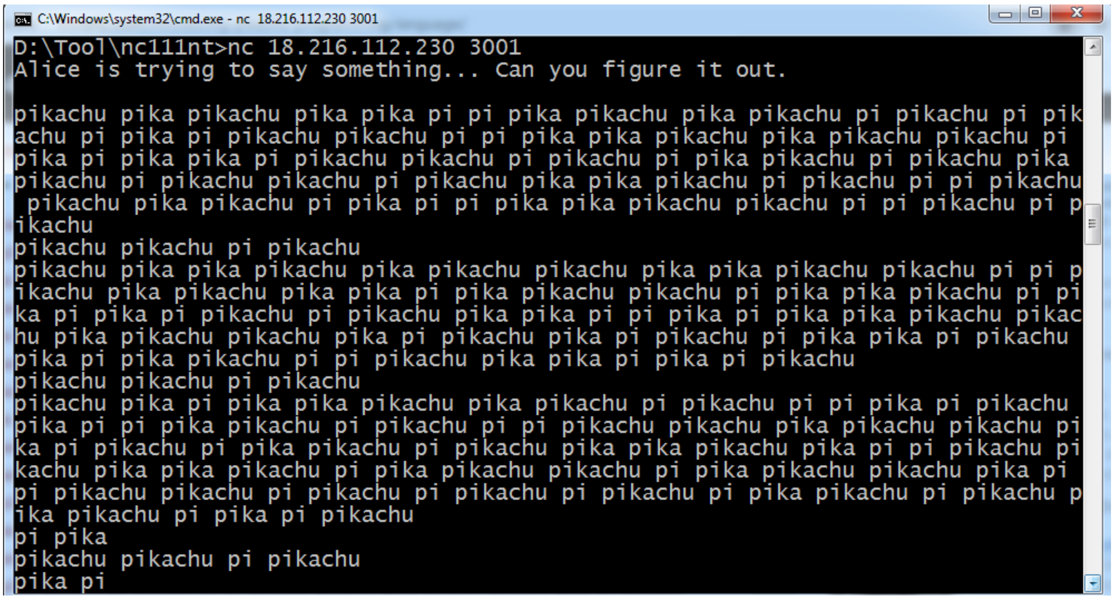
2. Can You Read Me – 233 point – Misc –

Find What I'm trying to say.

nc 18.216.112.230 3001

Author: GYeyosi

- Jalankan nc 18.216.112.230 3001
- Lalu di dapatkan sebuah pikalang https://esolangs.org/wiki/pikalang



```
D:\Tool\nc111nt>nc 18.216.112.230 3001
Alice is trying to say something... Can you figure it out.

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```
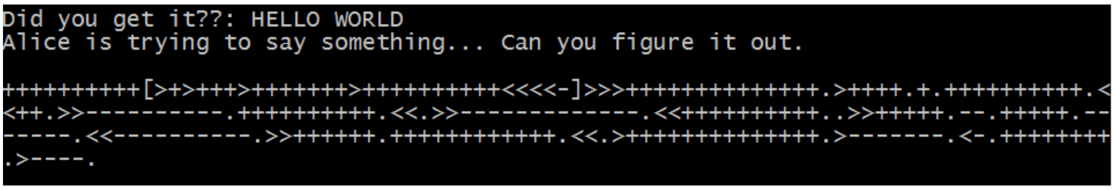
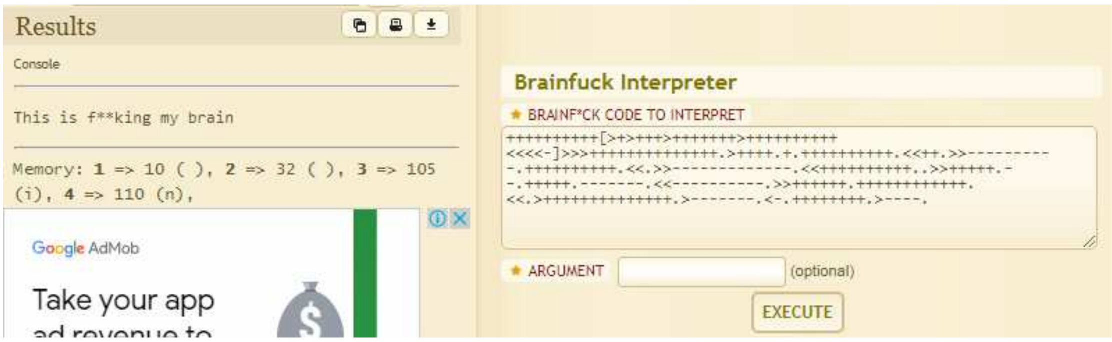

- Lalu decode dengan Pikachu-interpreter https://github.com/joelsmithjohnson/pikachu-interpreter
- Dan didapatkan HELLO WORLD
- Lalu masukkan HELLO WORLD



```
Did you get it??: HELLO WORLD
Alice is trying to say something... Can you figure it out.

++++++++++[>+>+++>+++++++>++++++++++<<<<-]>>>++++++++++++++.>++++.+.++++++++++.<
<++.>>----------.++++++++++.<<.>>-------------.<<++++++++++..>>+++++.--.+++++.--
-----.<<----------.>>++++++.++++++++++++.<<.>++++++++++++++.>-------.<-.++++++++
.>----.
```

- Didapatkan sebuah Brainfuck https://esolangs.org/wiki/brainfuck
- Lalu decode brainfuck https://www.dcode.fr/brainfuck-language

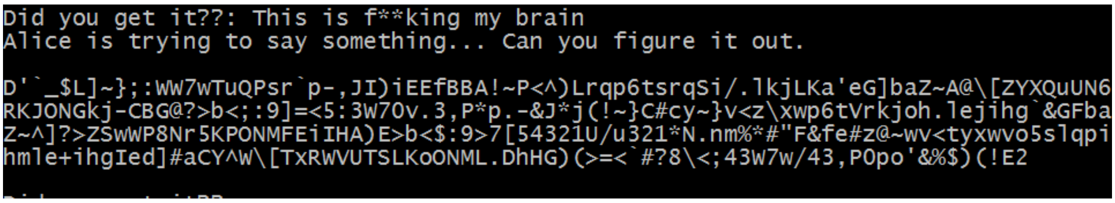


```
This is f**king my brain
```

```
Memory: 1 => 10 ( ), 2 => 32 ( ), 3 => 105
(i), 4 => 110 (n),
```

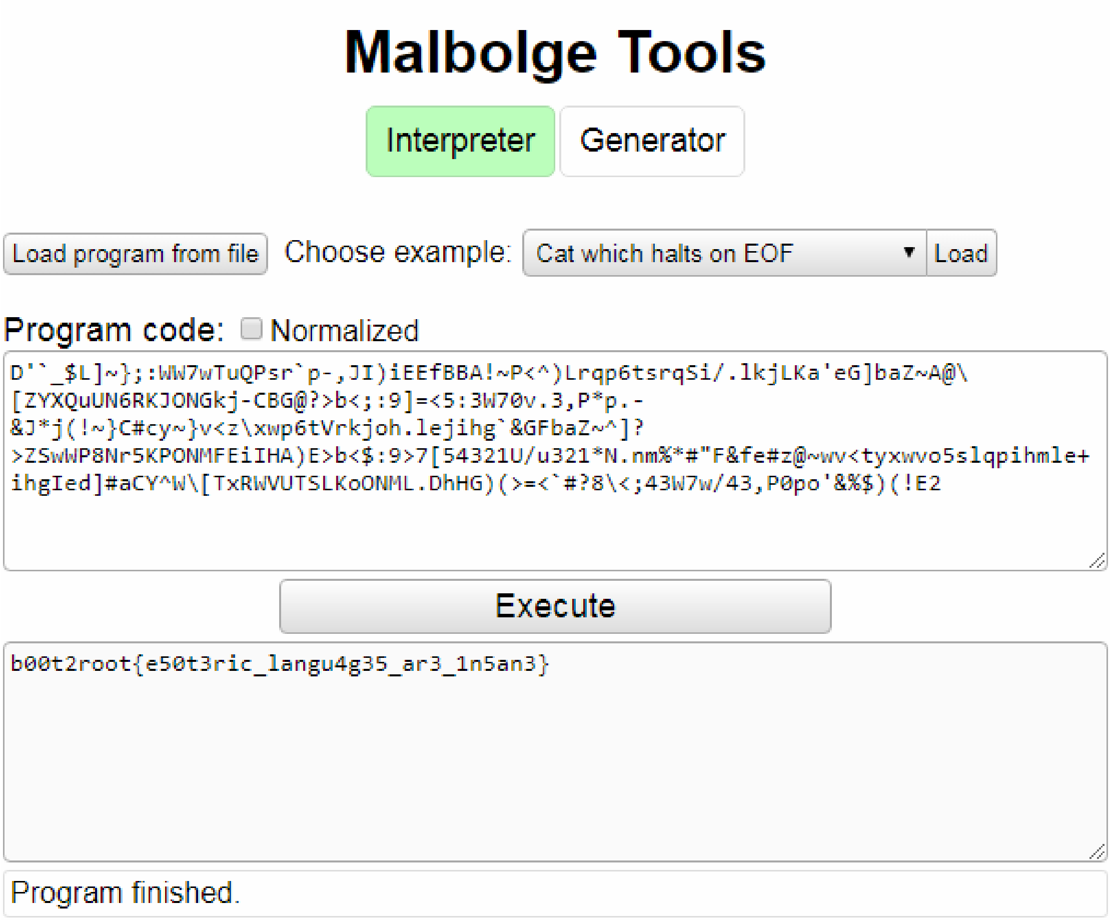
```
++++++++++[>+>+++>+++++++>++++++++++
<<<<-]>>>++++++++++++++.>++++.+.++++++++++.<<++.>>---------
-.++++++++++.<<.>>-------------.<<++++++++++..>>+++++.-
-.+++++.-------.<<----------.>>++++++.++++++++++++.
<<.>++++++++++++++.>-------.<-.++++++++.>----.
```

- Didapatkan This is f**king my brain dan lalu dimasukkan
- Didapatkan sebuah Malbolge https://esolangs.org/wiki/malbolge



```
Did you get it??: This is f**king my brain
Alice is trying to say something... Can you figure it out.

D'`_$L]~};:WW7wTuQPsr`p-,JI)iEEfBBA!~P<^)Lrqp6tsrqSi/.lkjLKa'eG]baZ~A@\[ZYXQuUN6
RKJONGkj-CBG@?>b<;:9]=<5:3W70v.3,P*p.-&J*j(!~}C#cy~}v<z\xwp6tVrkjoh.lejihg`&GFba
Z~^]?>ZSwWP8Nr5KPONMFEiIHA)E>b<$:9>7[54321U/u321*N.nm%*#"F&fe#z@~wv<tyxwvo5slqpi
hmle+ihgIed]#aCY^W\[TxRWVUTSLKoONML.DhHG)(>=<`#?8\<;43W7w/43,P0po'&%$)(!E2
```

- Lalu decode dengan https://zb3.me/malbolge-tools/



Choose example: Cat which halts on EOF

```
D'`_$L]~};:WW7wTuQPsr`p-,JI)iEEfBBA!~P<^)Lrqp6tsrqSi/.lkjLKa'eG]baZ~A@\
[ZYXQuUN6RKJONGkj-CBG@?>b<;:9]=<5:3W70v.3,P*p.-
&J*j(!~}C#cy~}v<z\xwp6tVrkjoh.lejihg`&GFbaZ~^]?
>ZSwWP8Nr5KPONMFEiIHA)E>b<$:9>7[54321U/u321*N.nm%*#"F&fe#z@~wv<tyxwvo5slqpihmle+
ihgIed]#aCY^W\[TxRWVUTSLKoONML.DhHG)(>=<`#?8\<;43W7w/43,P0po'&%$)(!E2
```

```
b00t2root{e50t3ric_langu4g35_ar3_1n5an3}
```

Program finished.

- Dan didapatkan flag : **b00t2root{e50t3ric_langu4g35_ar3_1n5an3}**

3. Cuz_rsa_is_lub – 50 point – Crypto –

```
n=
716418315469267193033696452965285464800834259054582
474052790611962144245581006789479962711796597615217
752909737905975336836680811733149403920982567214884
68660504161994357

e = 65537

c =
631270798325004123629501002425497381763181700723314
917508027161386213229745299949144078464489544876850
683315640089368085394205622516614357908554221304435
84773306161128156
```

- Didapatkan n, e dan c
- Lalu running script berikut :

```
import math
import gmpy2


def num_to_str(num):
    res = ""
    while num > 0:
        res = chr(num % 256) + res
        num = num / 256
    return res
```

```
n =
7164183154692671930336964529652854648008342590545
8247405279061196214424558100678947996271179659761
5217752909737905975336836680811733149403920982567
21488468660504161994357

N = gmpy2.mpz(n)

gmpy2.get_context().precision = 2048

a = int(gmpy2.sqrt(N))

a2 = a*a

b2 = gmpy2.sub(a2,N)

while not(gmpy2.is_square(b2)):

    a = a+1

    b2 = a*a-N

b2 = gmpy2.mpz(b2)

gmpy2.get_context().precision = 2048

b = int(gmpy2.sqrt(b2))

p = a+b

q = a-b

print "p: ", p

print "q: ", q



c =
6312707983250041236295010024254973817631817007233
1491750802716138621322974529994914407846448954487
6850683315640089368085394205622516614357908554221
30443584773306161128156
```

```
e = 65537

t = (p-1)*(q-1)

d = gmpy2.invert(e,t)

m = pow(c,d,n)


print "Flag: ", num_to_str(m)
```

- Dan didapatkan flag :
  b00t2root{RSA_c4n_b3_vuln3r4bl3}

4. Genetics – 235 point – Crypto –

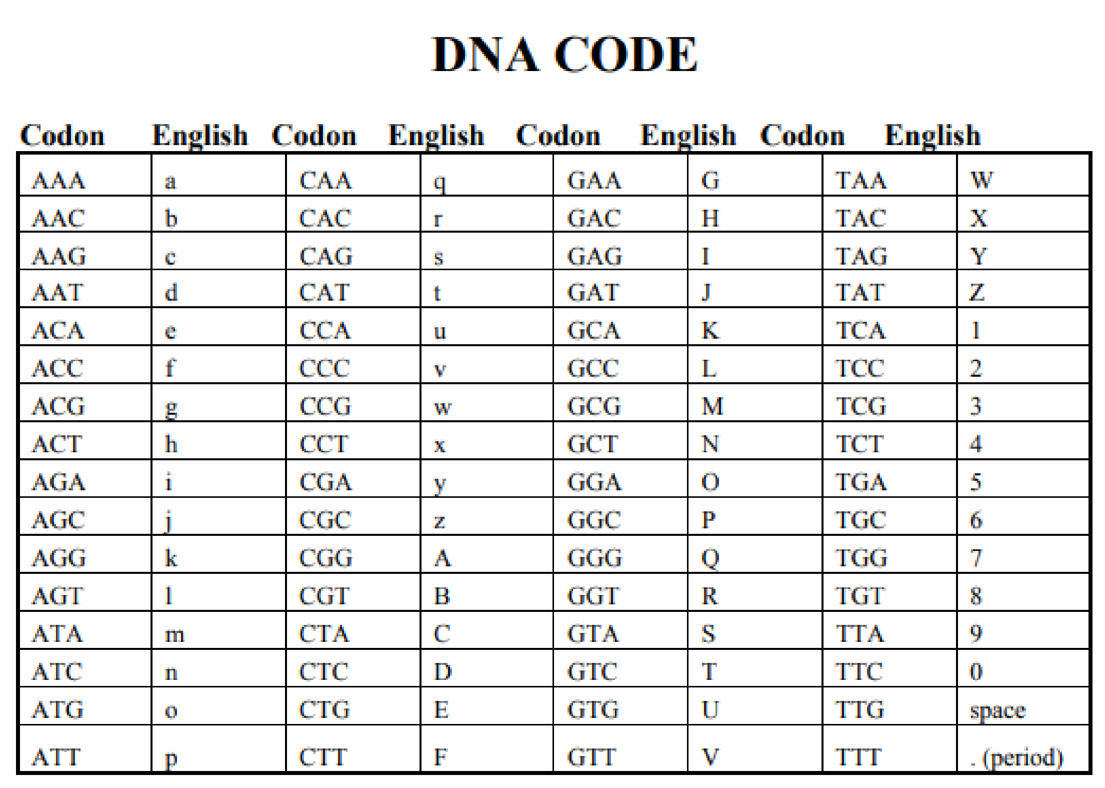
Cipher in my blood. Flag is not in actual format. Wrap it in b00t2root{flag} before you submit.

Author : blackpearl

- Didapatkan sebuah file yang berisikan DNA Code

```
ACCAGTAAAACGTTGAGACAGTTGAATATCAAACTACACCGAATTC
ATATGTCACAGCGGCCGACACAGATGATAACA
```

- Lalu decode dengan table DNA Code dari https://github.com/JohnHammond/ctf-katana



DNA CODE

Codon	English	Codon	English	Codon	English	Codon	English
AAA	a	CAA	q	GAA	G	TAA	W
AAC	b	CAC	r	GAC	H	TAC	X
AAG	c	CAG	s	GAG	I	TAG	Y
AAT	d	CAT	t	GAT	J	TAT	Z
ACA	e	CCA	u	GCA	K	TCA	1
ACC	f	CCC	v	GCC	L	TCC	2
ACG	g	CCG	w	GCG	M	TCG	3
ACT	h	CCT	x	GCT	N	TCT	4
AGA	i	CGA	y	GGA	O	TGA	5
AGC	j	CGC	z	GGC	P	TGC	6
AGG	k	CGG	A	GGG	Q	TGG	7
AGT	l	CGT	B	GGT	R	TGT	8
ATA	m	CTA	C	GTA	S	TTA	9
ATC	n	CTC	D	GTC	T	TTC	0
ATG	o	CTG	E	GTG	U	TTG	space
ATT	p	CTT	F	GTT	V	TTT	. (period)

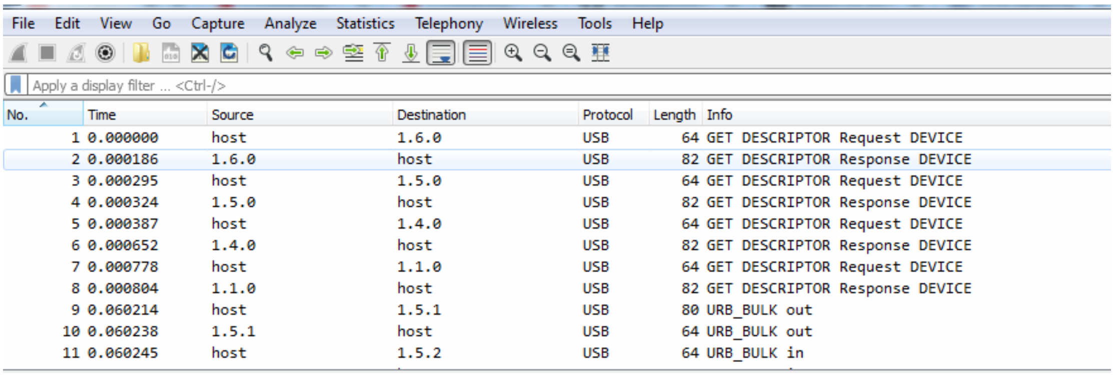
- Dan didapatkan flag : **b00t2root{dnaCrypto1sAwesome}**

5. Key_me_baby – 159 point – Forensic –

https://drive.google.com/file/d/1yO4j-7CEr2lvl3n7kkqGLSBNqsZlhmL_/view

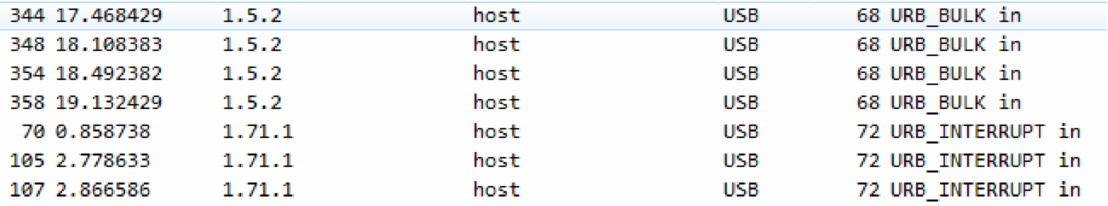
Author : Akir4

- Didapatkan sebuah file pcap dan dijalakan
- Ini merupakan sebuah traffic USB



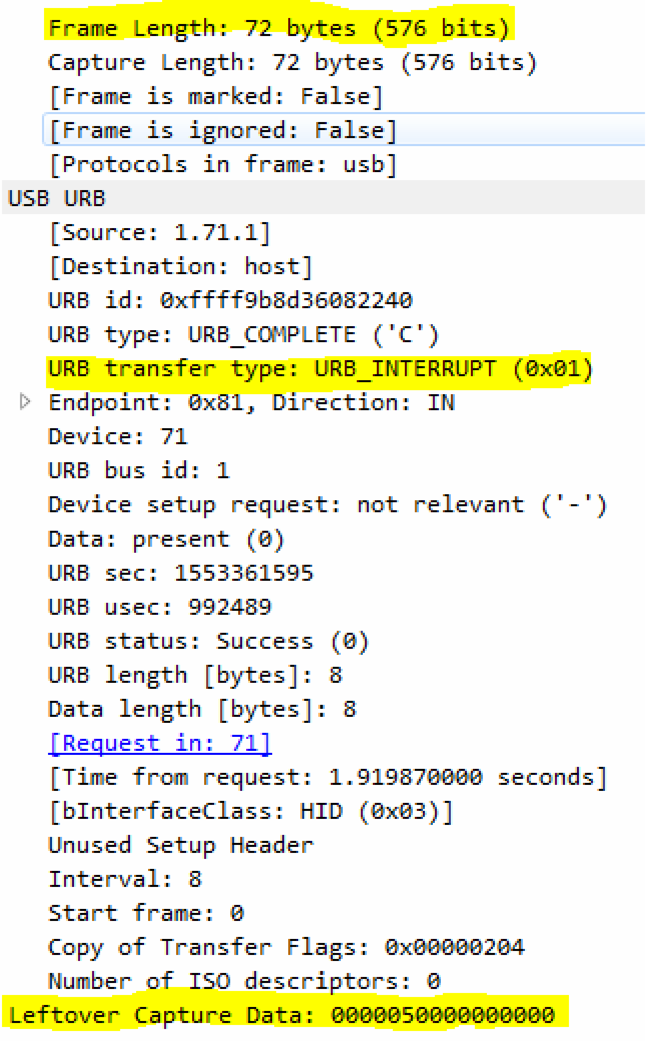
```
No.   Time       Source   Destination   Protocol   Length  Info
    1 0.000000   host     1.6.0         USB        64 GET DESCRIPTOR Request DEVICE
    2 0.000186   1.6.0    host          USB        82 GET DESCRIPTOR Response DEVICE
    3 0.000295   host     1.5.0         USB        64 GET DESCRIPTOR Request DEVICE
    4 0.000324   1.5.0    host          USB        82 GET DESCRIPTOR Response DEVICE
    5 0.000387   host     1.4.0         USB        64 GET DESCRIPTOR Request DEVICE
    6 0.000652   1.4.0    host          USB        82 GET DESCRIPTOR Response DEVICE
    7 0.000778   host     1.1.0         USB        64 GET DESCRIPTOR Request DEVICE
    8 0.000804   1.1.0    host          USB        82 GET DESCRIPTOR Response DEVICE
    9 0.060214   host     1.5.1         USB        80 URB_BULK out
   10 0.060238   1.5.1    host          USB        64 URB_BULK out
   11 0.060245   host     1.5.2         USB        64 URB_BULK in
```

- Ada empat mode dasar transfer untuk USB yaitu isochronous (0), interrupt (1), control (2) atau bulk
- Lalu kita lihat berdasarkan Length disini kita lihat terdapat Interrupt dan bulk



```
344 17.468429    1.5.2         host        USB       68 URB_BULK in
348 18.108383    1.5.2         host        USB       68 URB_BULK in
354 18.492382    1.5.2         host        USB       68 URB_BULK in
358 19.132429    1.5.2         host        USB       68 URB_BULK in
 70 0.858738     1.71.1        host        USB       72 URB_INTERRUPT in
105 2.778633     1.71.1        host        USB       72 URB_INTERRUPT in
107 2.866586     1.71.1        host        USB       72 URB_INTERRUPT in
```

- Lalu kita perhatikan tipe interruptnya , panjang frame dan data yang ditangkap



```
   Frame Length: 72 bytes (576 bits)
   Capture Length: 72 bytes (576 bits)
   [Frame is marked: False]
   [Frame is ignored: False]
   [Protocols in frame: usb]
USB URB
   [Source: 1.71.1]
   [Destination: host]
   URB id: 0xffff9b8d36082240
   URB type: URB_COMPLETE ('C')
   URB transfer type: URB_INTERRUPT (0x01)
 ▷ Endpoint: 0x81, Direction: IN
   Device: 71
   URB bus id: 1
   Device setup request: not relevant ('-')
   Data: present (0)
   URB sec: 1553361595
   URB usec: 992489
   URB status: Success (0)
   URB length [bytes]: 8
   Data length [bytes]: 8
   [Request in: 71]
   [Time from request: 1.919870000 seconds]
   [bInterfaceClass: HID (0x03)]
   Unused Setup Header
   Interval: 8
   Start frame: 0
   Copy of Transfer Flags: 0x00000204
   Number of ISO descriptors: 0
Leftover Capture Data: 0000050000000000
```

- Lalu kita membuat filter dengan usb.transfer_type == 0x01

- Lalu kita filter kembali dengan ((usb.transfer_type == 0x01) && (frame.len == 72)) && !(usb.capdata == 00:00:00:00:00:00:00:00)
- Lalu add the capture ke column dan export data ke CSV untuk mendapatkan column
- Lalu filter untuk panggil Leftover Capture Data aja bisa dengan cat file | cut -d “,” -f 7 | cut -d “\”” -f 2 | grep -vE “Leftover Capture Data” > hexoutput.txt atau filter dengan manual monggo.
- Lalu didapatkan Leftover Capture Data

```
0000050000000000
0000270000000000
0000270000000000
0000170000000000
00001f0000000000
0000150000000000
0000120000000000
0000120000000000
0000170000000000
00002f0000000000
0000060000000000
0000040000000000
0000130000000000
0000170000000000
0000180000000000
0000150000000000
0000080000000000
0000170000000000
00000b0000000000
0000080000000000
00000e0000000000
0000080000000000
00001c0000000000
0000300000000000
```

- Lalu running script berikut

```
newmap = {
 2: "PostFail",
 4: "a",
 5: "b",
 6: "c",
 7: "d",
 8: "e",
 9: "f",
 10: "g",
 11: "h",
 12: "i",
 13: "j",
 14: "k",
 15: "l",
 16: "m",
 17: "n",
 18: "o",
 19: "p",
 20: "q",
 21: "r",
 22: "s",
 23: "t",
 24: "u",
 25: "v",
 26: "w",
 27: "x",
 28: "y",
 29: "z",
 30: "1",
 31: "2",
 32: "3",
 33: "4",
 34: "5",
 35: "6",
 36: "7",
 37: "8",
 38: "9",
 39: "0",
 40: "Enter",
 41: "esc",
 42: "del",
 43: "tab",
 44: "space",
 45: "-",
 47: "{",
 48: "}",
 56: "/",
 57: "CapsLock",
 79: "RightArrow",
 80: "LetfArrow"
 }

myKeys = open('hexoutput.txt')
i = 1
aw = ""
for line in myKeys:
     bytesArray = bytearray.fromhex(line.strip())
     #print "Line Number: " + str(i)
     for byte in bytesArray:
          if byte != 0:
               keyVal = int(byte)

     if keyVal in newmap:
          aw+=newmap[keyVal]
     else:
          print "No map found for this value: " +
str(keyVal)
     i+=1
print aw
```

- Dan didapatkan flag : **b00t2root{capturethekey}**