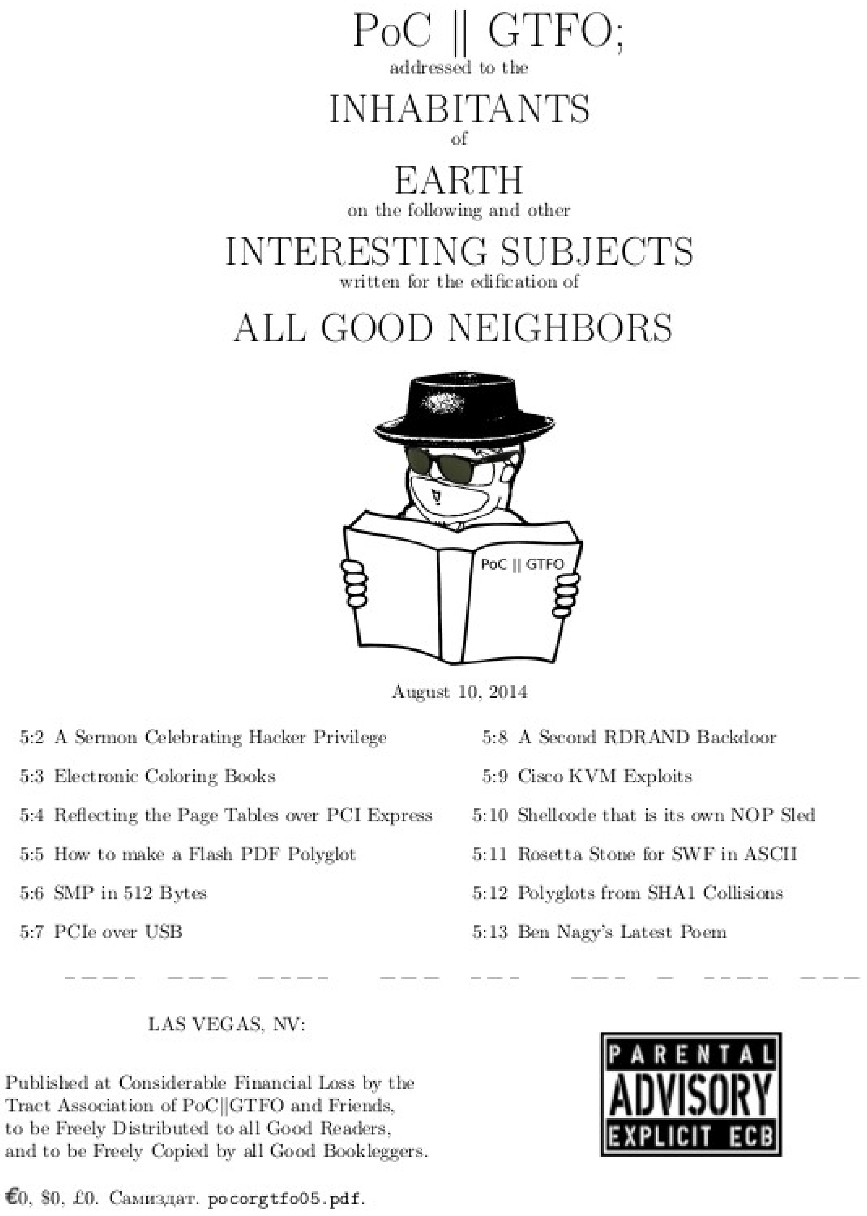
Electronic Coloring Book

Seen in

POC || GTFO 0x05



PoC || GTFO;
addressed to the
INHABITANTS
of
EARTH
on the following and other
INTERESTING SUBJECTS
written for the edification of
ALL GOOD NEIGHBORS

August 10, 2014

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PARENTAL
ADVISORY
EXPLICIT ECB

Soon in

POC || GTFO 0x06

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- 79 -

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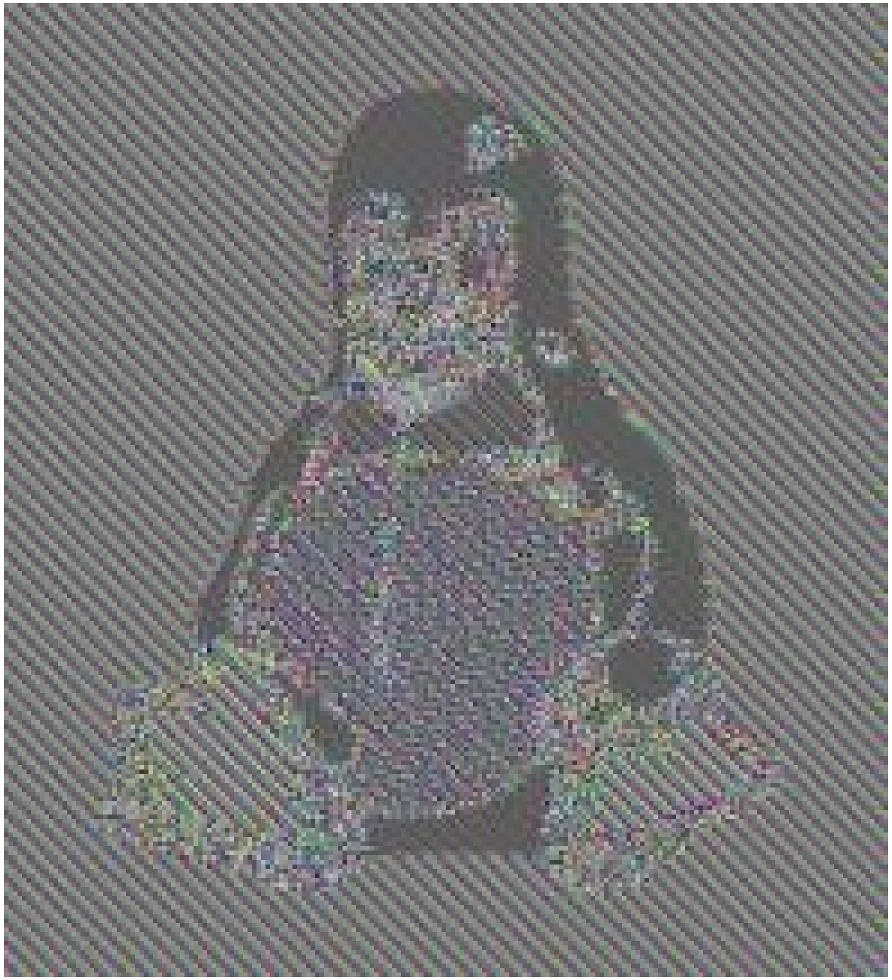
ECB mode is bad

Because you can see the penguin...



What can we do?

- **Stats on ECB blocks (16-byte for AES-ECB)**

```
c1b108f9b8cb7c020b992ea48d946a78      10018
2caef1297f191eeb7c086058de486e38      10001
5c0ce2b870019e78be581e7777988477       9906
f3f8e5ea5fbafe940ef5002f83ddd73e       9477
16eda065a407fab91b5e3ec58c390bbc       9296
3087b683a09e9663b5a5fb9b83904fcc       9224
9ce907fc9e9ae7a32064f5c49a8d3439       8238
7b1c0506a9c16aaa8176d949089c6056       8126
6a3d8e4660f8f0b7e11cce7c4f3f7fad       8081
...
********************************      24221
```

What can we do?

- **Paint top ECB blocks with uniform colors**
- **Paint remaining ECB blocks in black**

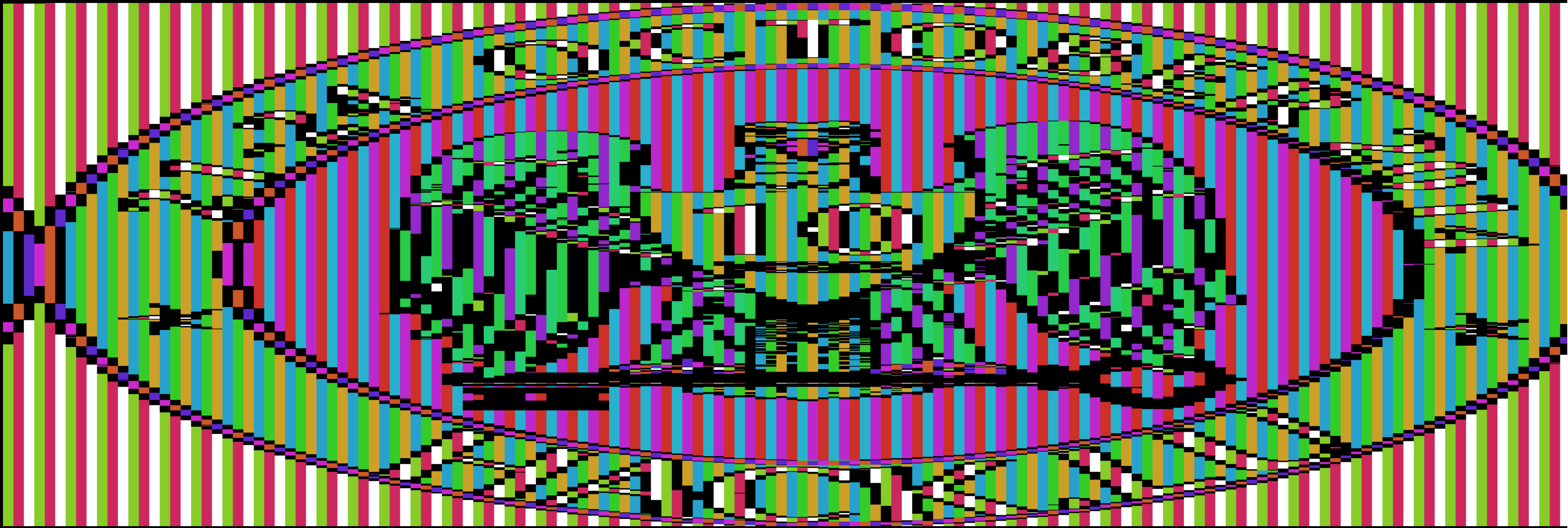
```
c1b108f9b8cb7c020b992ea48d946a78      10018 -> #FF #FF #FF
2caef1297f191eeb7c086058de486e38      10001 -> #28 #CC #8A
5c0ce2b870019e78be581e7777988477       9906 -> #28 #CC #63
f3f8e5ea5fbafe940ef5002f83ddd73e       9477 -> #28 #CC #50
16eda065a407fab91b5e3ec58c390bbc       9296 -> #CC #A8 #28
3087b683a09e9663b5a5fb9b83904fcc       9224 -> #CC #75 #28
9ce907fc9e9ae7a32064f5c49a8d3439       8238 -> #42 #28 #CC
7b1c0506a9c16aaa8176d949089c6056       8126 -> #28 #CC #3D
6a3d8e4660f8f0b7e11cce7c4f3f7fad       8081 -> #CC #28 #3C
...
********************************      24221 -> #00 #00 #00
```

What can we do?

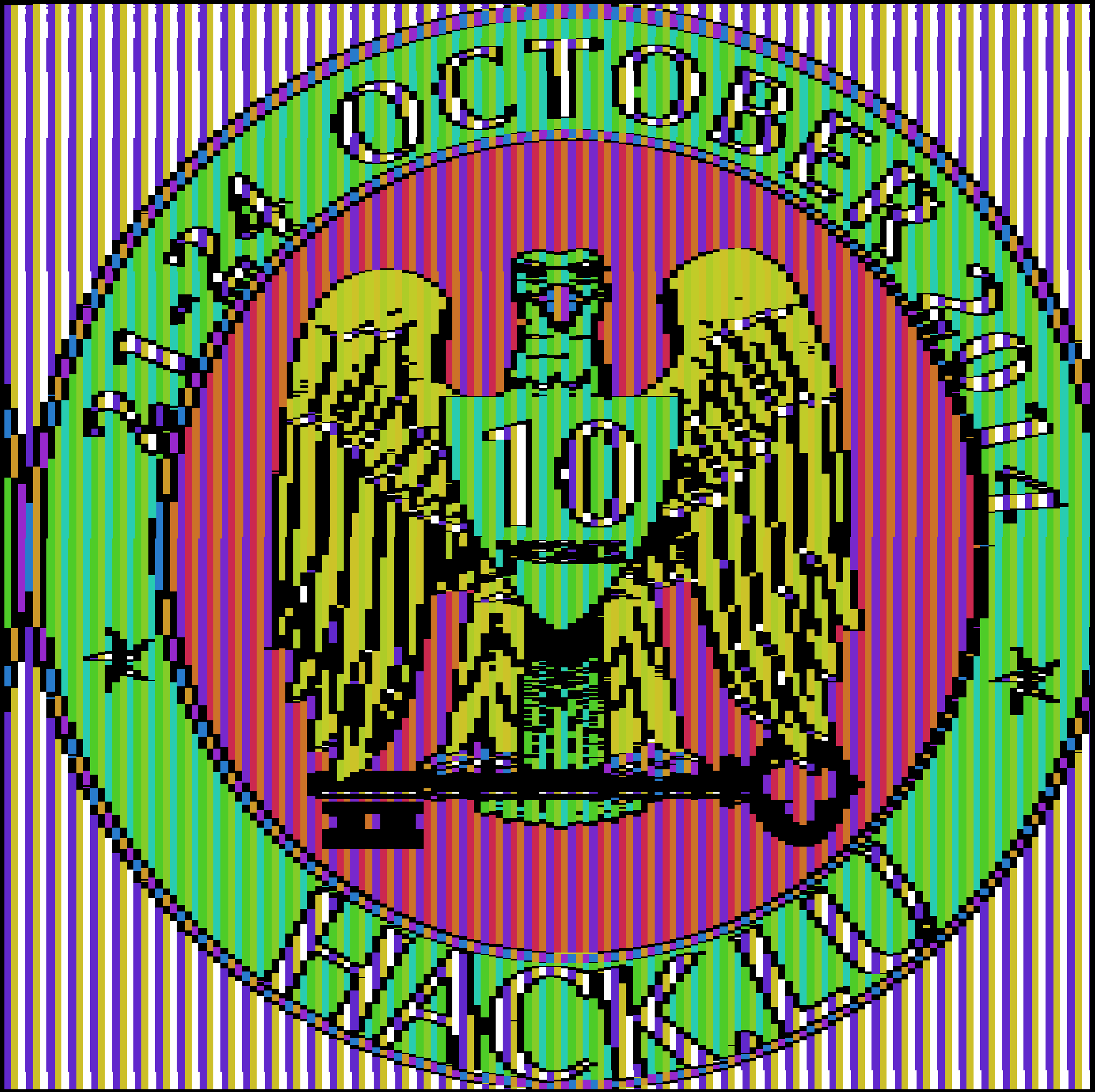
- **Guess automatically correct ratio by correlation between adjacent lines**

See https://github.com/doegox/ElectronicColoringBook

```
$ ElectronicColoringBook.py test.bin
```



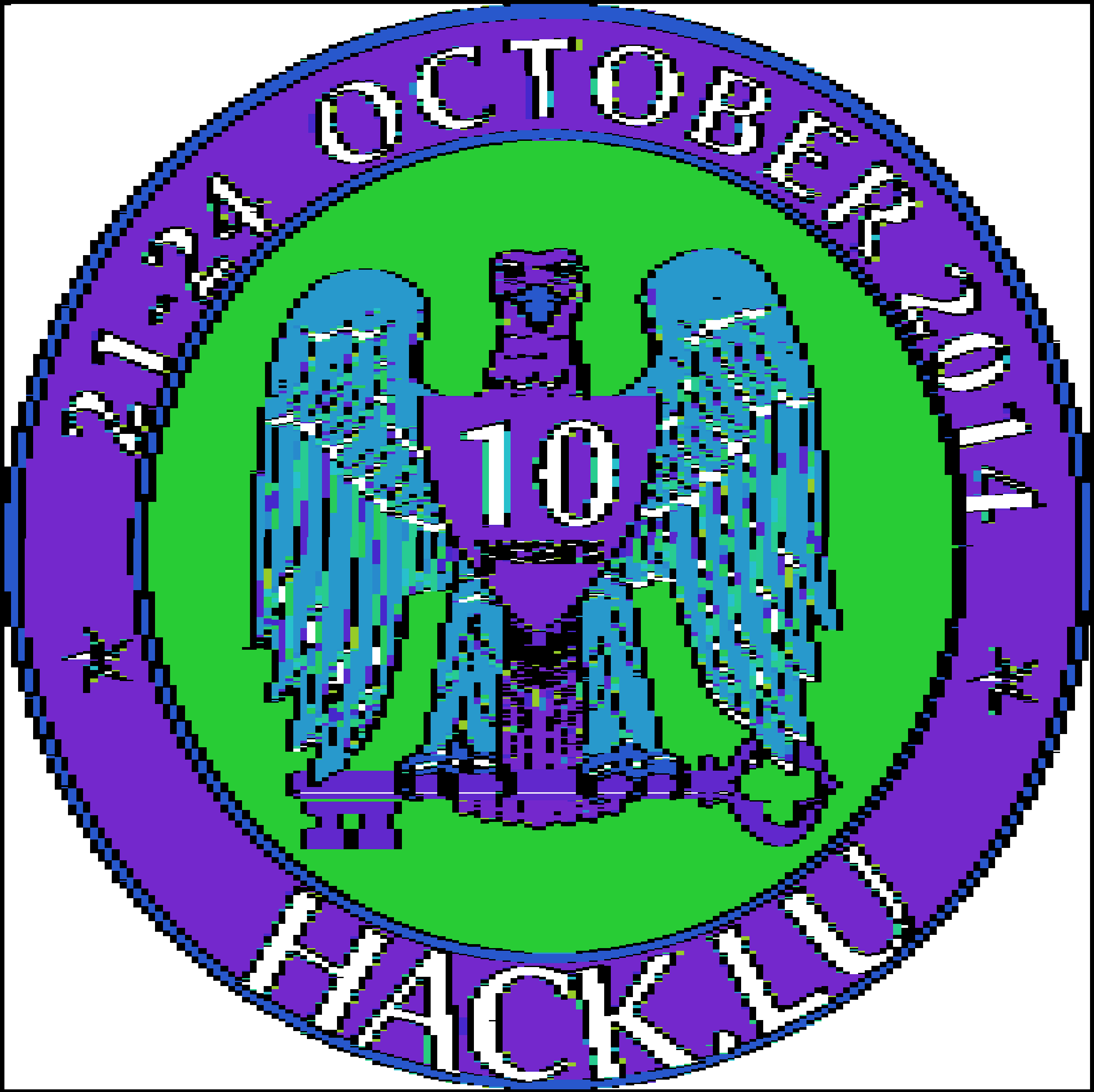
```
$ ElectronicColoringBook.py test.bin
   -p 3
```



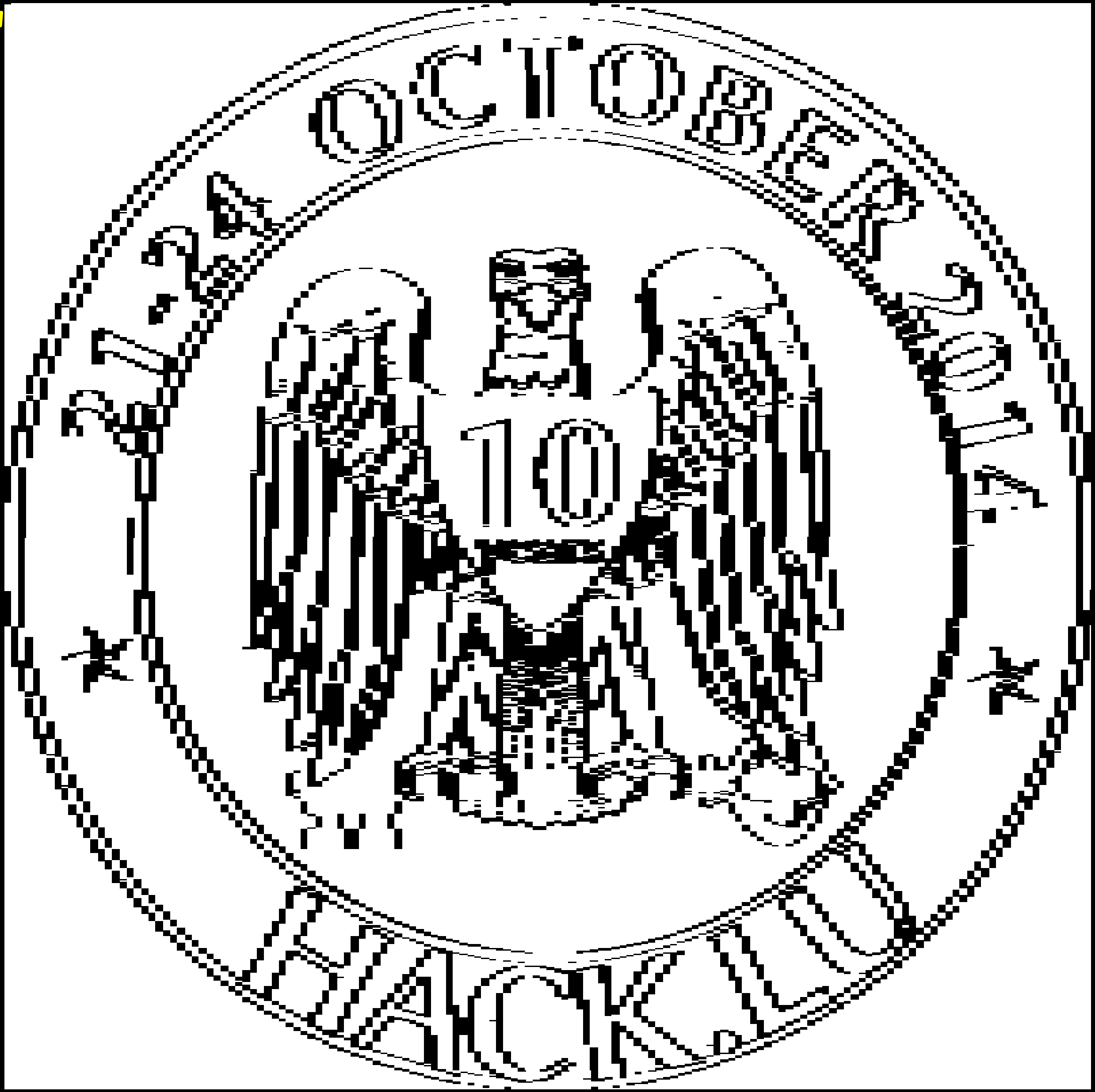
Stripes?

```
AABBCCAABBCCAABBCCAABBCCAABBCCAA  81E49040C91E64A8F2EB52EB313EADF4

BBCCAABBCCAABBCCAABBCCAABBCCAABB  769B3981E49040C9164A83B6CBFB12BF

CCAABBCCAABBCCAABBCCAABBCCAABBCC  12B4502017A19C0EB313EADF47638FB2

AABBCCAABBCCAABBCCAABBCCAABBCCAA  81E49040C91E64A8F2EB52EB313EADF4

BBCCAABBCCAABBCCAABBCCAABBCCAABB  769B3981E49040C9164A83B6CBFB12BF

etc.
```

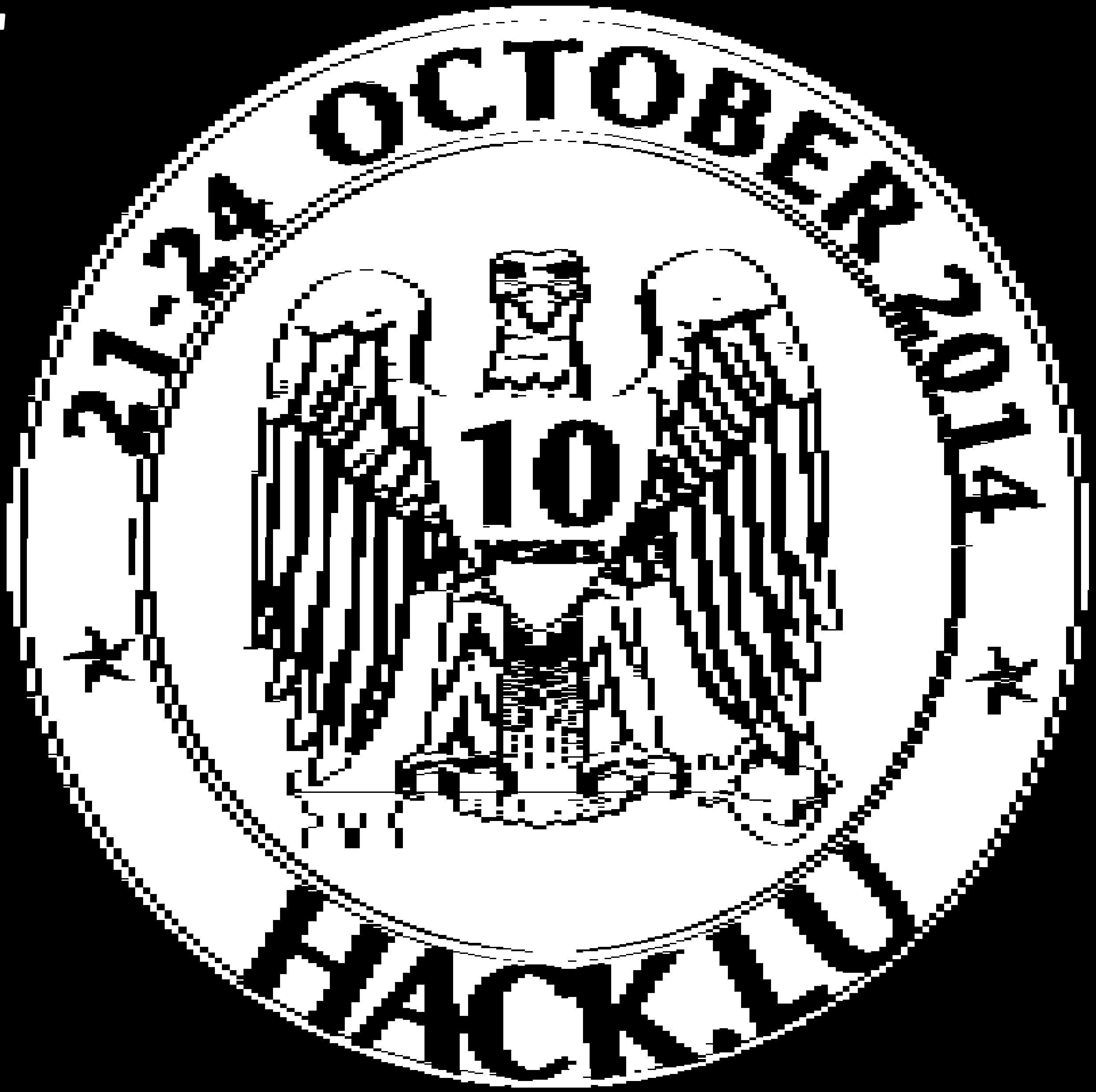
```
$ ElectronicColoringBook.py test.bin
  -p 3 -g 3 -o 3
```



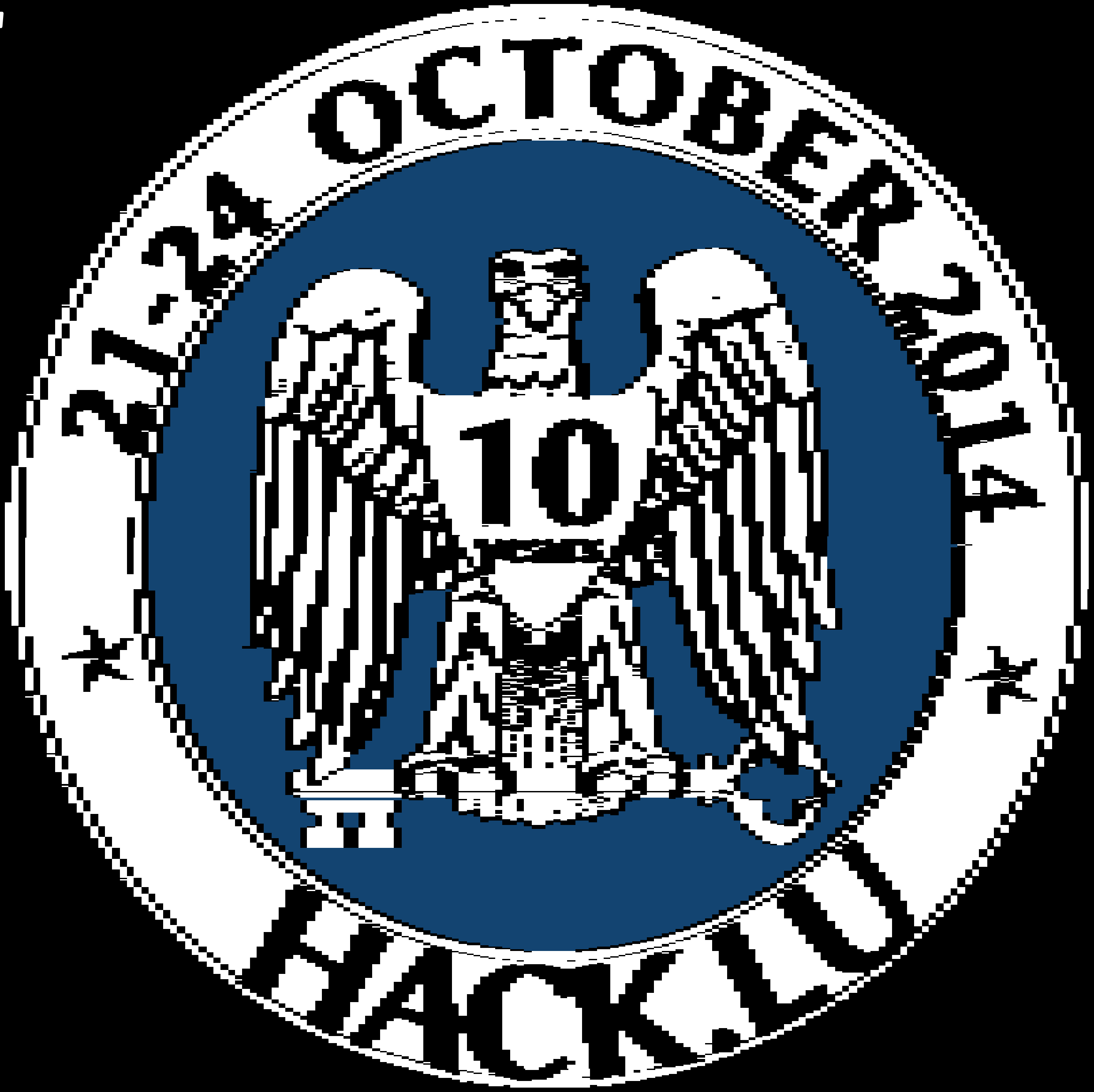
```
$ ElectronicColoringBook.py test.bin
  -p 3 -g 3 -o 3 -P
'#ffffff#ffffff#ffffff#ffffff#ffffff#ffffff
 #000000'
```



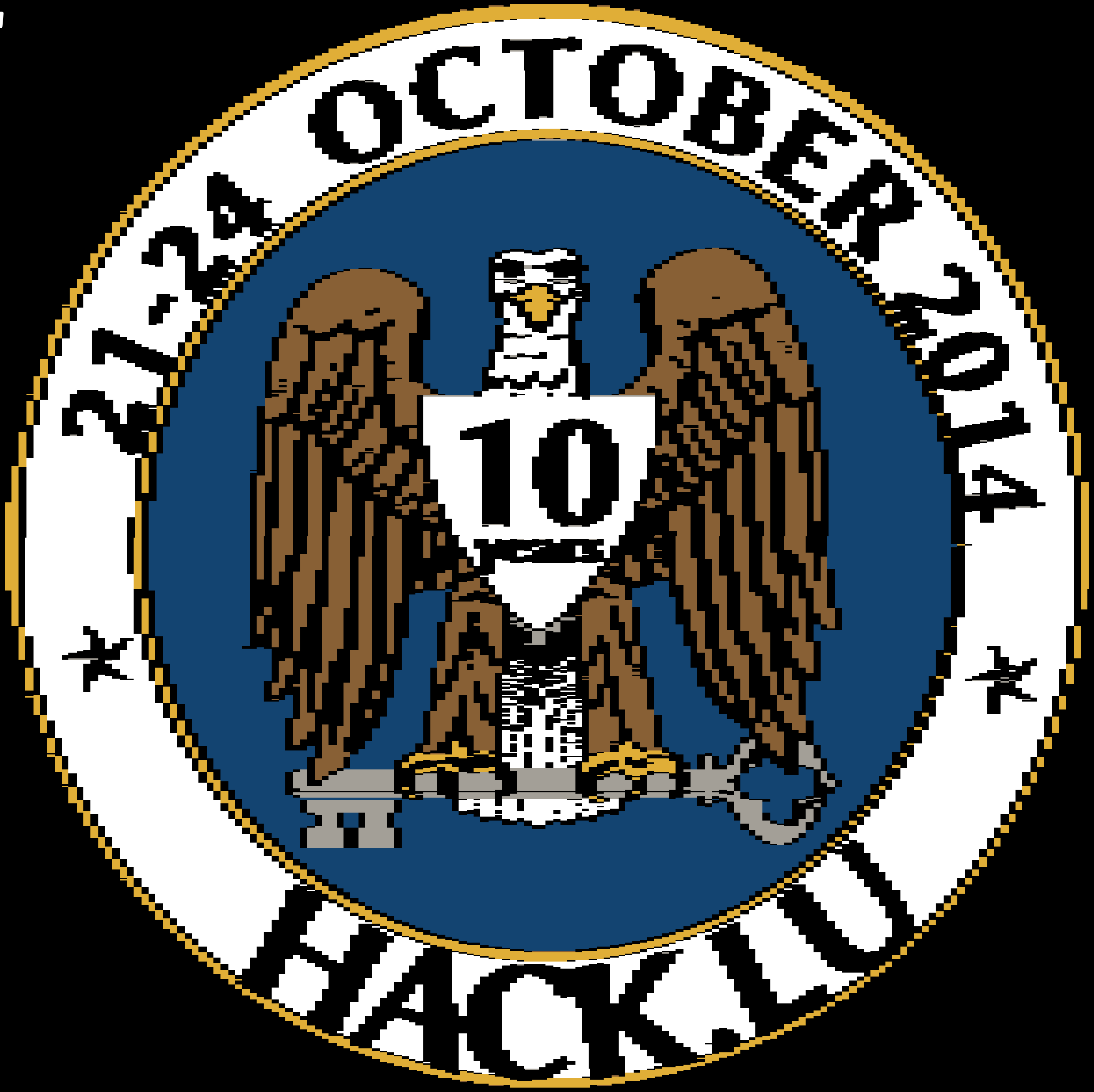
```
$ ElectronicColoringBook.py test.bin
  -p 3 -g 3 -o 3 -P
'#000000#ffffff#ffffff#ffffff#ffffff#ffffff
 #000000'
```



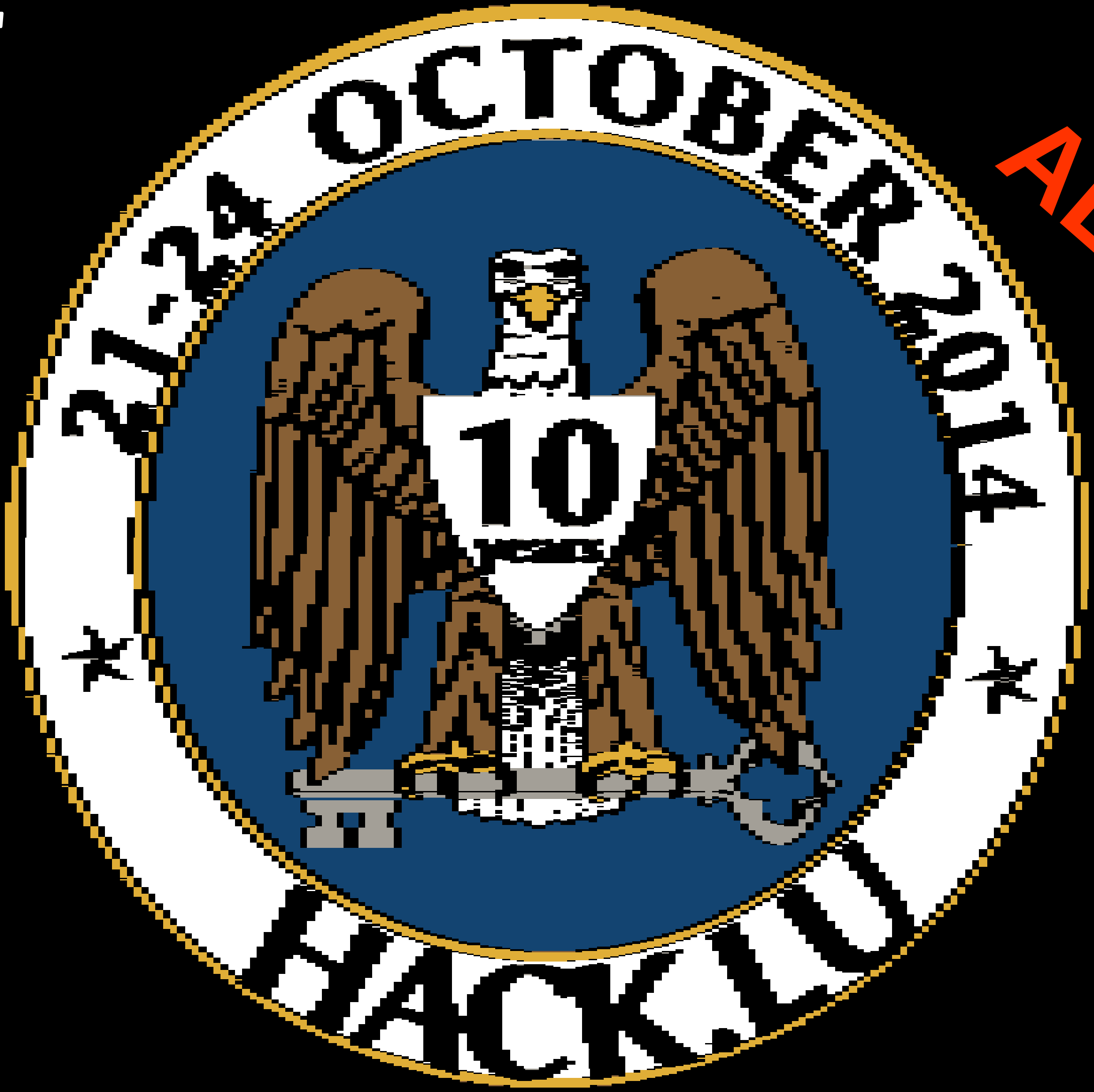
```
$ ElectronicColoringBook.py test.bin
  -p 3 -g 3 -o 3 -P
'#000000#ffffff#134471#ffffff#ffffff#ffffff
 #000000'
```



```
$ ElectronicColoringBook.py test.bin
  -p 3 -g 3 -o 3 -P
'#000000#ffffff#134471#886035#e0ae37#a39f97
 #000000'
```



```
$ ElectronicColoringBook.py test.bin
  -p 3 -g 3 -o 3 -P
'#000000#ffffff#134471#886035#e0ae37#a39f97
 #000000'
```



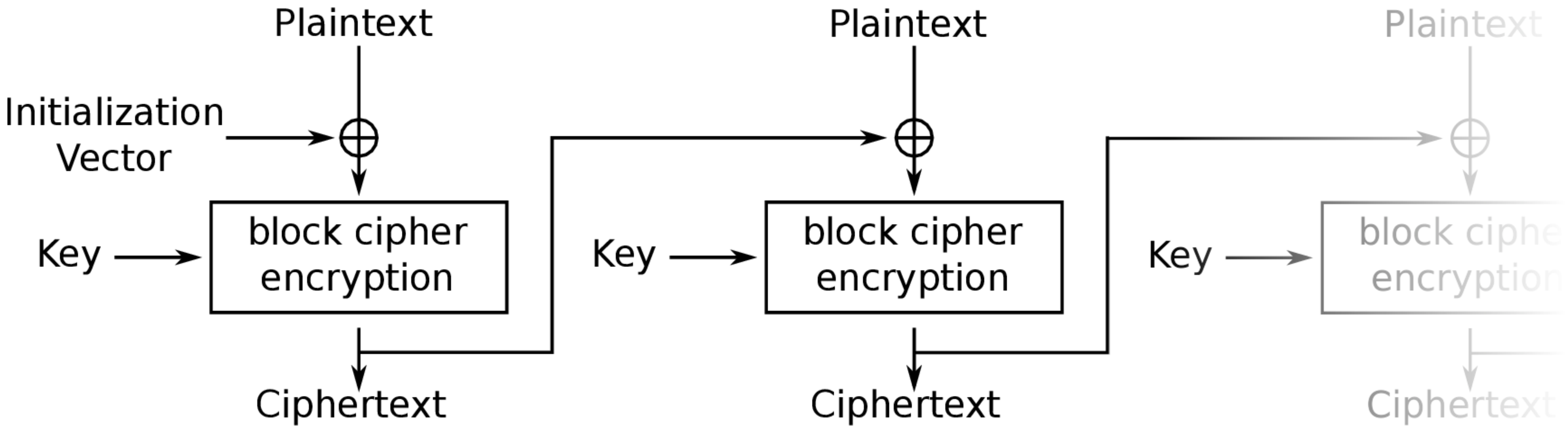
AES 128

What about CBC mode?

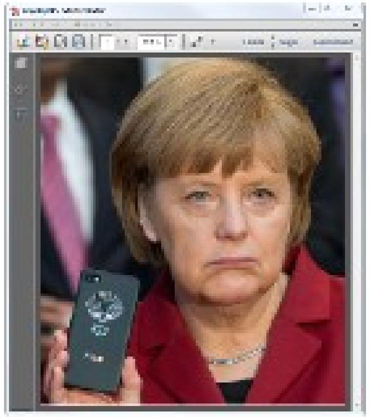
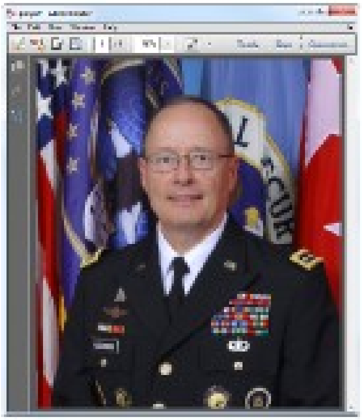
Sneak preview of

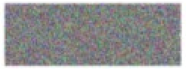
POC || GTFO 0x06

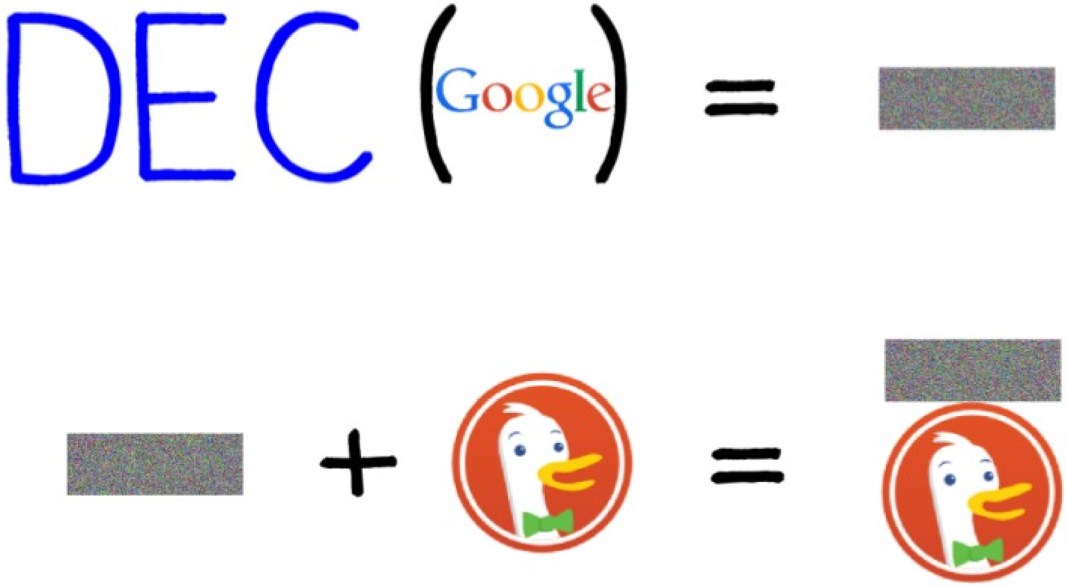
(don't tell Travis)

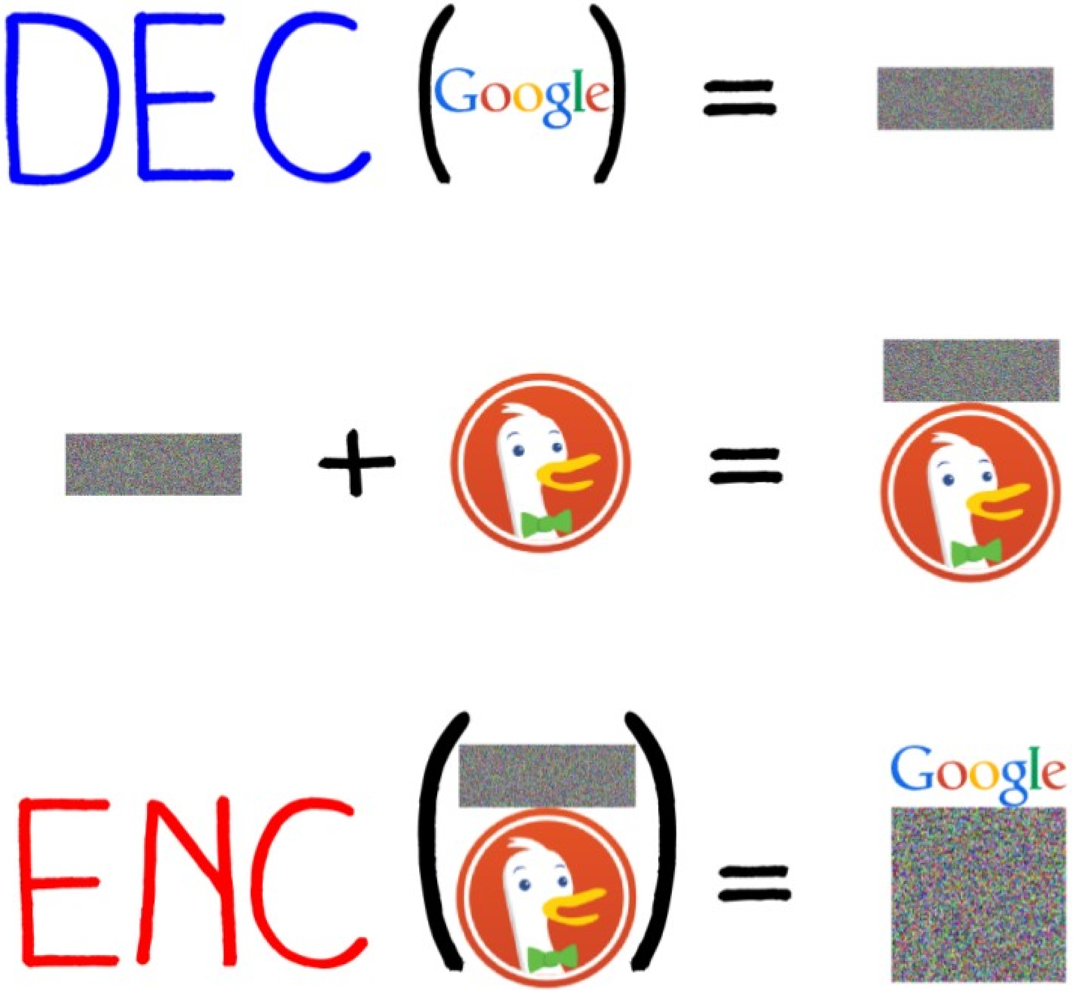


Angecryption
by Corkami

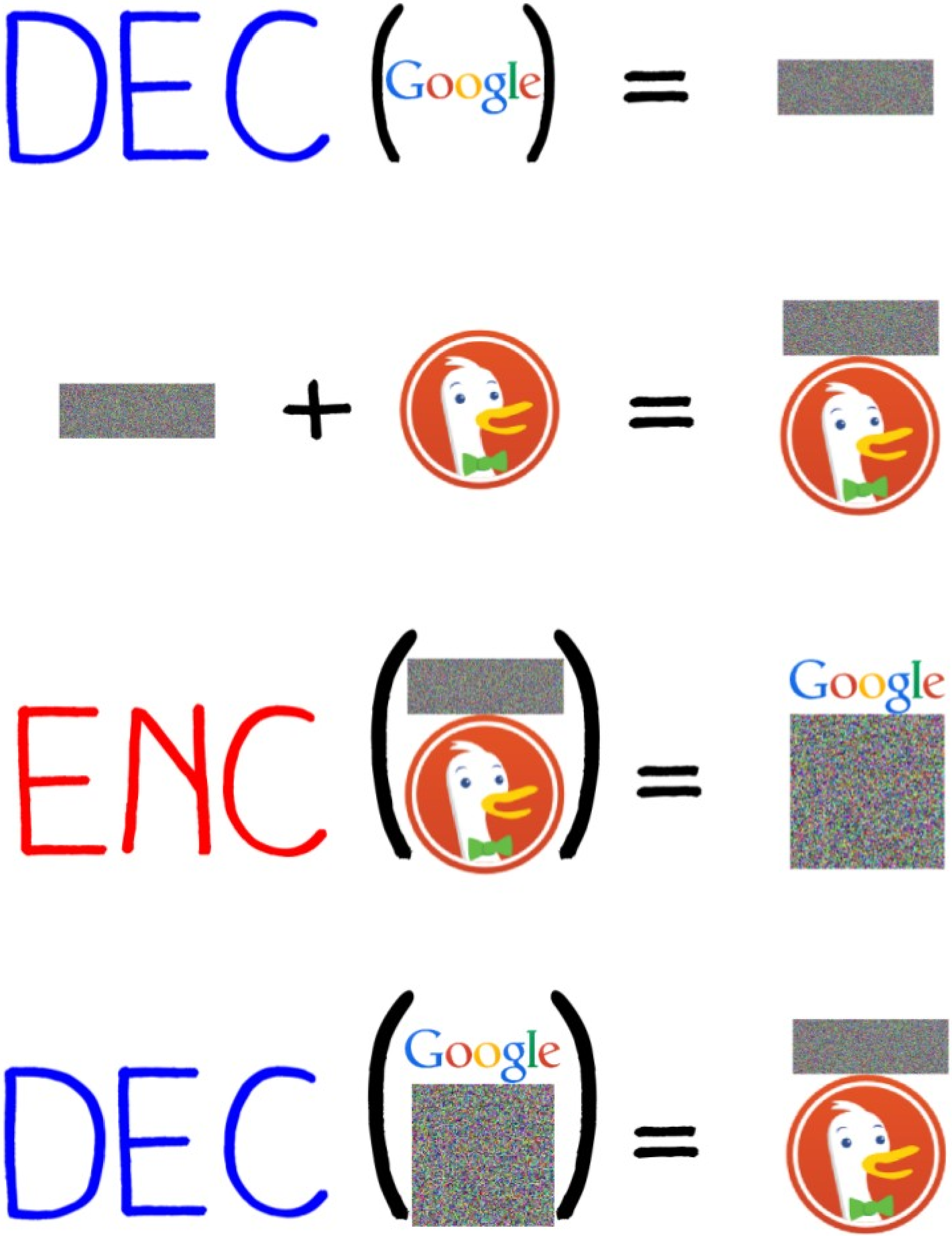
AES() = 

DEC (Google) = 


DEC
Google



DEC (Google) =
+ =
ENC ( ) =
Google

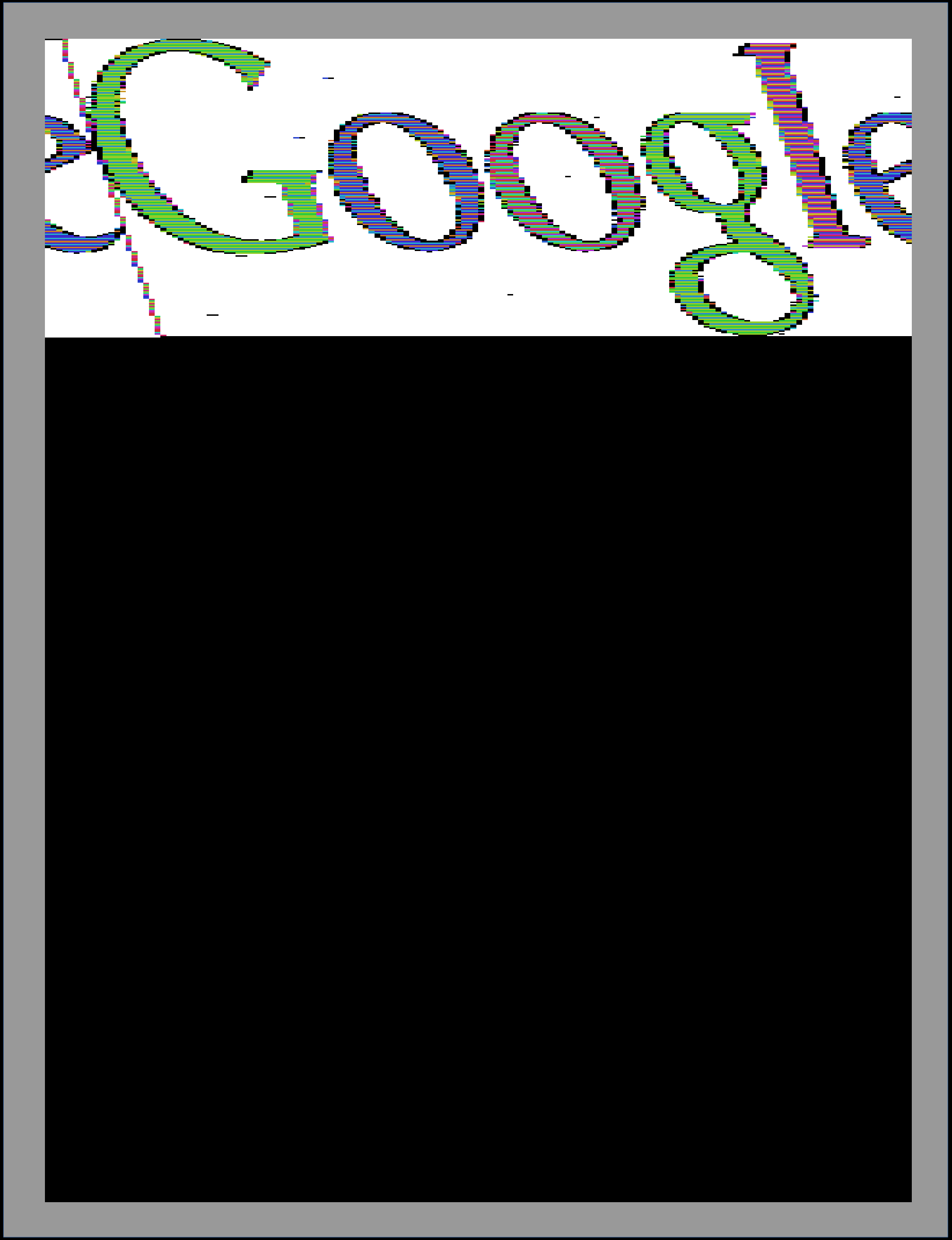


DEC
Google
=
+
=
ENC
=
Google
DEC
Google
=

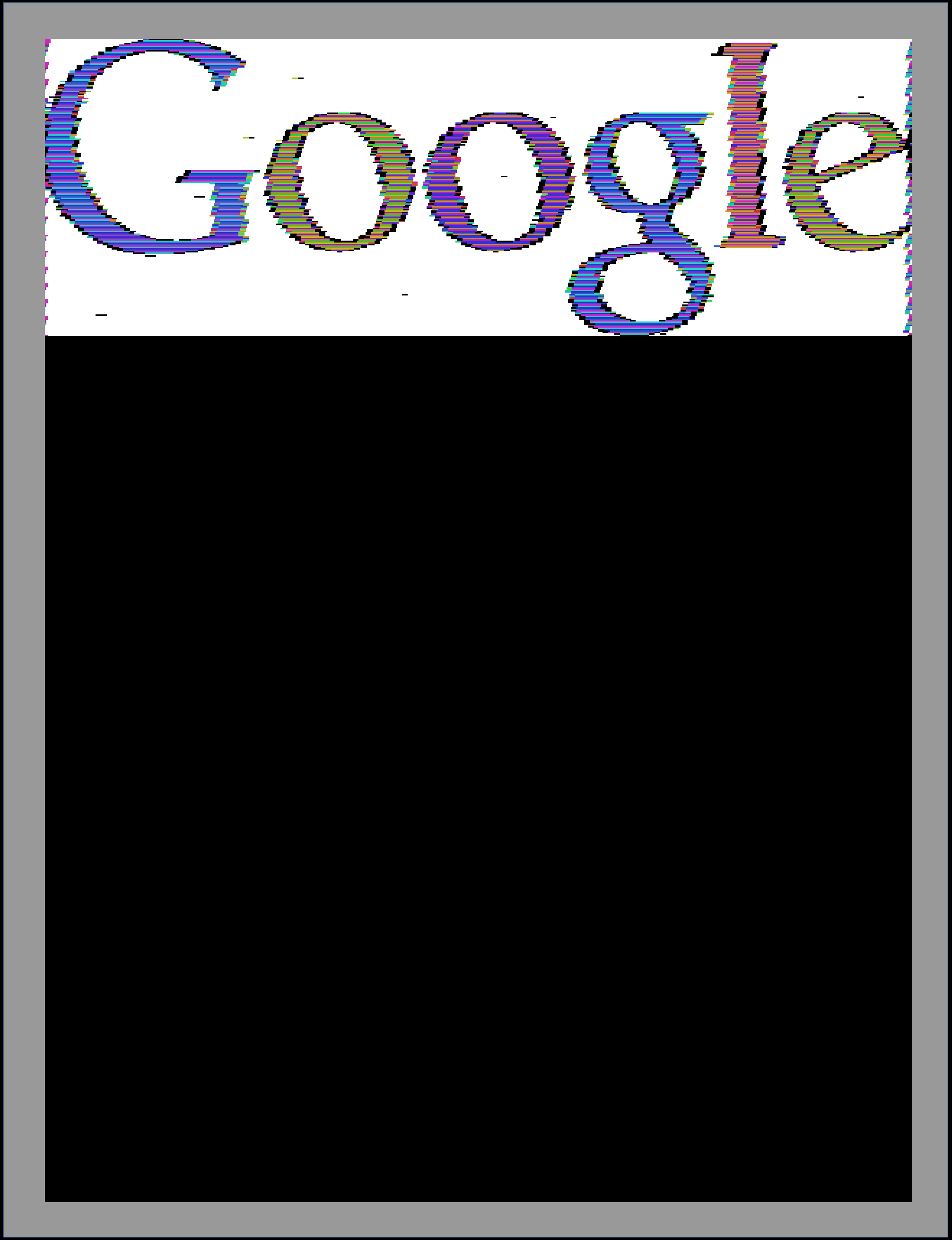
IV

ENC
=
Google

```
$ ElectronicColoringBook.py encrypted.png
  -p4 -c255
```



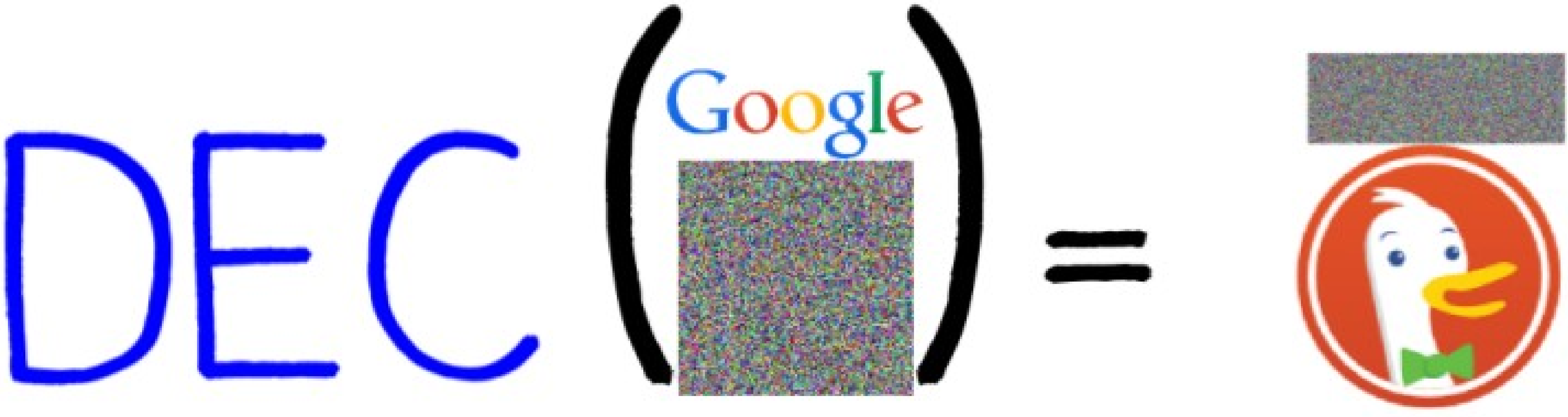
```
$ ElectronicColoringBook.py combined.png
  -p4 -c255 -o3 -x 600.345
```



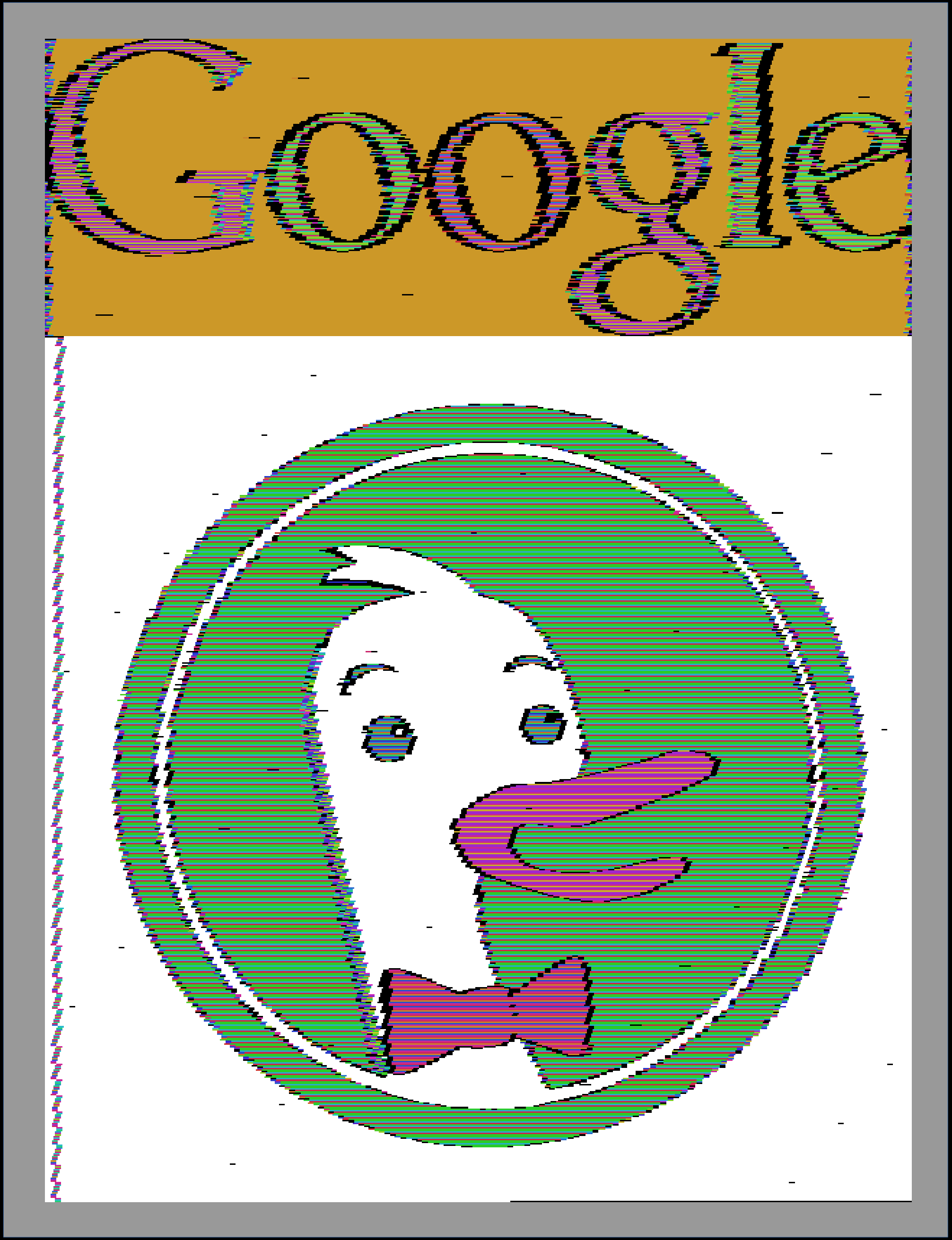
plaintext

CBC
encrypted

no repetition
= black


DEC
Google
=

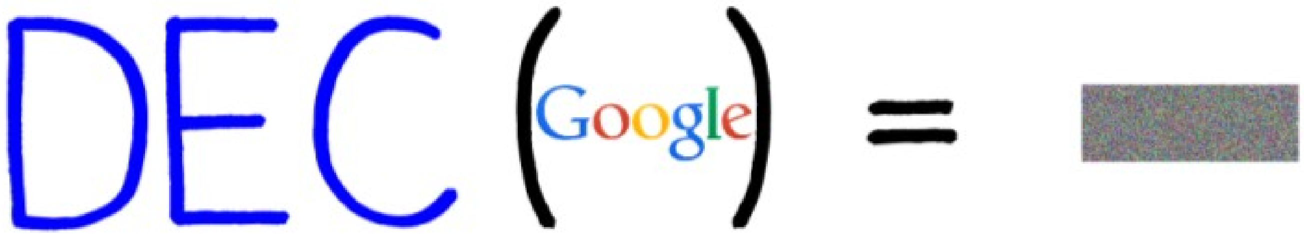
```
$ ElectronicColoringBook.py decrypted.png
  -p4 -c255 -o3 -x 600.345
```



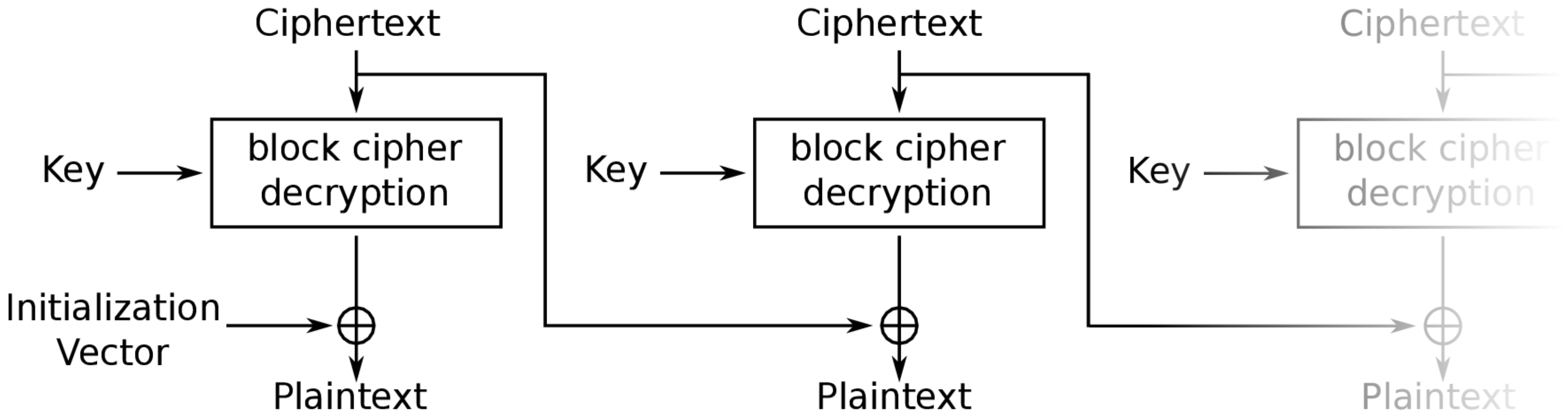
¡¿CBC ?!

plaintext

How comes?



CBC decryption mode:



More in

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