

## reading\_between\_the\_lines - 300pts

The task title suggests that we should look in a file for additional information, but I did not solve this one until it was already 2 hints in.

The first hint suggested that I should retrace my steps (key.gif) and the second hint was a link to a gif format specification document.

So I opened key.gif in a hex editor to start reading its contents (hexed.it). I noticed that the gif had more pictures(QR codes) in it but they were not relevant for this task. From the gif format reference, an application extension is specified like this:

- header: 0x21 0xff
- size: 0xb
- identifier: 8 bytes
- authentication code: 3 bytes
- block size: 1 byte (n)
- application data: n bytes
- terminator: 0x0

I specifically read about the application extension because in the hex editor I could find fragments of data that contained the CSC2016 bytes:

000003B0	CC F1 C6 05 00 00 21 FF 0B 43 00 53 00 43 00 32	± ± . . . ! . C . S . C . 2
000003C0	00 30 31 36 28 5D 00 00 00 02 26 01 00 00 00 00	.016(]....&.....
000003D0	00 00 00 2A 1A 09 27 64 19 EF 2B 76 73 23 5B C7	...*...'d.0+vs#[
000003E0	69 0A A4 59 A4 EA 03 AA B3 FE F4 8E D8 00 21 F9	i.nYñΩ.- ·[Ä±.!

I extracted all of the application data blocks (we have only 1 for each picture in the gif) using dd.

000003C0	00 30 31 36 28 5D 00 00 00 02 26 01 00 00 00 00	.016(]....&.....
000003D0	00 00 00 2A 1A 09 27 64 19 EF 2B 76 73 23 5B C7	...*...'d.0+vs#[
000003E0	69 0A A4 59 A4 EA 03 AA B3 FE F4 8E D8 00 21 F9	i.nYñΩ.- ·[Ä±.!

After all this I was not really sure what to do with all these dumps so I tried putting them all together. They didn't yield any result in the beginning but after running binwalk over the file:

```
~/ctf/csc_2016/forensics/reading_between_the_lines$ binwalk compressed_out
```

DECIMAL	HEX	DESCRIPTION
0	0x0	LZMA compressed data, properties: 0x5D, dictionary

With binwalk -e we can extract the file and tadaaaaa:

```
~/ctf/csc_2016/forensics/reading_between_the_lines$ cat 0
This task is part of CSC Romania 2016 (http://www.cybersecuritychallenge.ro),
a qualifying event for ECSC 2016 (http://www.europeancybersecuritychallenge.eu/about/2016).
Please do NOT hand over your solution to others as it will spoil the competition.
csc2016{4VSzu2tybWYvnx2y4uwN4ggaoGK15Mi}
```