2012 WALKTHROUGH

~The Beginning~

[Next Section](https://www.3301archive.com/2012-walkthrough/2/)

**Section 1: 4chan**  
*January 4th, 2012*

final.jpg

On **January 4th, 2012** users browsing [4chan](https://www.4chan.org/)‘s ‘paranormal’ board [/x/](https://boards.4channel.org/x/) were greeted with a modest image, [*final.jpg*](https://www.3301archive.com/final-jpg/) . Bearing simple white text on a plain black background, [*final.jpg*](https://www.3301archive.com/final-jpg/) did not immediately grab the attention of many users — [/x/](https://boards.4channel.org/x/) is a chaotic internet back alley populated by conspiracy theorists, LARPers, and that weird kid from school; any image or information posted there is to be taken with a grain of salt.  
Tales of Bigfoot, alien abductions, and nameless egregors are everyday affairs — grabbing the attention of [/x/](https://boards.4channel.org/x/)‘s denizens is not always an easy task.  
  
Gradually throughout the next 48 hours, [*final*.*jpg*](https://www.3301archive.com/final-jpg/) and its associated thread moved up [/x/](https://boards.4channel.org/x/) ‘s popularity rankings. Discussion threads quickly spread to other [4chan](https://www.4chan.org/) boards — namely [/sci/](https://boards.4channel.org/sci/) , the science board, and [/b/](https://boards.4chan.org/b/) , the random board.

[/sci/ Discussion Thread Archive](https://warosu.org/sci/thread/4217623?__cf_chl_jschl_tk__=9f42ca7b7cc72a84884bce65349f2ff8cb68259c-1577584326-0-AXvH4tQRxSywzKyyg_2uIOh4rtiQJU-iX5MUbEeknFOszs2pVvTGQOTOk7YuvBPk4LAD3DZ6pbPmRC31K6qeHvby0Gk1faSx5riqf9_5gFsKpdiaxtr1qjdJkF4uL7I61N2CItp-RiVR9YV6gHe-zfe6GZRmqLyla9slq4-xLPDI0sT4gpgNkQEwF8amwOdq37Vtbg44-Zpngjm5JRynJwxeFVFQsUL6JIkV_BIYu3HFcaBHxIyJcxUsXw-LtHWFkqMJ__Mr-LrQmZOViPS9wFa2vV9j-KqSoIV9zPVzm5zz) ::: [/sci/ Discussion Thread Archive 2](https://warosu.org/sci/thread/S4229423?__cf_chl_jschl_tk__=f7d415d2eb55a00b47540d5655d0878bf6de6c82-1577584328-0-AUswYa90kYYCQhvlSc7SL0YU6Kxo8If2n7n13-foBncI4PVPtitDbC9jNgghTp78A0LcP4ki-uFqaj8VStd3Siq8Hwxi2yMDXFL9-CYxMrM9Y5-vJl7aJZCWUMmFmYDBScLdjXS3eCmbxa5WnPoz3M36OEtsdSRR14ug8QXetREWwymThnIBDk-cmN5qkD-6-UUnyjglcTVfSiMfDD-620kayBeRoXZoGYdkmQw3PeG8XMiGpkhzjSupo_TCQtft-65Z2aKc-kjj4Jg7jyjWmH6j1rMw7zXzKFmqjhhRErWu)  
[/b/ Discussion Thread Archive](https://imgur.com/ke78n)

Accepting **3301**‘s challenge, users were quick to try opening the image in common text editors — for example, the widespread Windows program ‘[Notepad](https://www.3301archive.com/final-jpg-notepad/)‘. Doing this shows the user a dump of the image’s constituent bytes, represented in non-human readable form. Soon, it was noticed that a hidden message, standing out from the jumbled background info, was appended to the end of the image’s raw data. Another method to view the message is to use a [hex editor](https://www.3301archive.com/final-jpg-hexdump/).

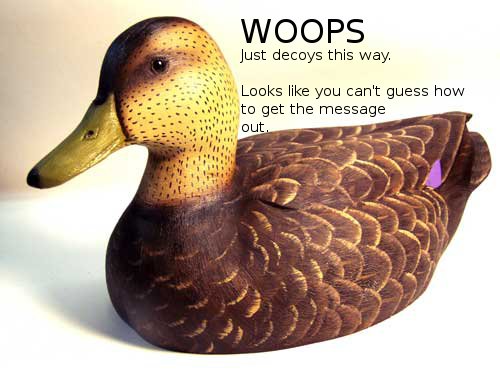
final.jpg Message

TIBERIVS CLAVDIVS CAESAR says  
“lxxt>33m2mqkyv2gsq3q=w]O2ntk”

The above message can be divided into two parts: [plaintext](https://www.3301archive.com/plaintext/) and [ciphertext](https://www.3301archive.com/ciphertext/). The *plaintext*, or unencrypted text, portion is  
  
***TIBERIVS CLAVDIVS CAESAR says***  
  
This is a reference to a particular sort of [cipher](https://www.3301archive.com/cipher/), a [Caesar Cipher](https://www.3301archive.com/caesar-cipher/), to be used with the ciphertext portion of the hidden message. Latin transliterated the modern English letter [**‘U’ as ‘V’**](https://www.3301archive.com/u-vs-v/)*(this will be important in later years)*, so TIBERI**V**S CLA**V**DI**V**S CAESAR becomes TIBERI**U**S CLA**U**DI**U**S CAESAR.  
  
A [Caesar Cipher](https://www.3301archive.com/caesar-cipher/), closely related to a [Shift Cipher](https://www.3301archive.com/shift-cipher/), is one of the simplest and most commonly employed ciphers. It is named after Julius Caesar, who utilized the cipher militarily and personally — [3301](https://www.3301archive.com/3301-name-origin/) is really starting us off gently here. Tiberius Claudius Caesar was the **fourth** Roman emperor *(when designating Augustus as the first, as is standard)* and so we assume that the ciphertext portion of the message was encoded using a Caesar cipher with a shift of **+4** to result in what we see:  
  
***“lxxt>33m2mqkyv2gsq3q=w]O2ntk*“**  
  
Since the plaintext portion of the message introduces the ciphertext portion as something ‘said’, we exclude the above quotation marks when manipulating the ciphertext string. Thus we are working with this sequence:  
  
***lxxt>33m2mqkyv2gsq3q=w]O2ntk***  
  
Perceptive individuals may already notice that the first few characters of the ciphertext string bear a similar format to a URL — four letters, then one punctuation mark followed by two additional characters. ***http://*** would be a good guess as to what this may decode to. Thus, this ciphertext could theoretically have been decoded even without the “Tiberius Claudius Caesar says” plaintext hint.  
  
**Now, let’s work it out:**  
  
Write out the English alphabet, assigning the proper numerical values to each letter based on its position in the alphabet in the form of ***(A=1, B=2, C=3, D=4 … )***. Using this format, assign each letter of the string ***lxxt>33m2mqkyv2gsq3q=w]O2ntk*** a numerical value. Since we are only considering standard English letters with this classical Caesar cipher, ignore the numbers and characters like “**]**” for now, leaving them in place. We’ll get to those in a moment.  
  
**So,** assigning each letter of the string a numerical value of the sort *A=1* where possible and leaving the other characters in place, we are left with the following:  
  
12 24 24 20 **> 3 3** 13 **2** 13 17 11 25 22 **2** 7 19 17 **3** 17 **=** 23 **]** 15 **2** 14 20 11  
  
*\*The unconverted characters have been left in****bold****.*  
  
Because we were given the hint, **Tiberius Claudius Caesar says** , and because Tiberius Claudius Caesar was the ***4th*** roman emperor, we assume that the Caesar Cipher uses a shift of ***4***. This would mean that each of the individual letters enciphered was shifted forward ***4*** places in the alphabet.  
  
Now, consider our above converted string of numbers, subtracting ***4*** from each entry not in bold. You will be left with the following:  
  
8 20 20 16 **> 3 3** 9 **2** 9 13 7 21 18 **2** 3 15 13 **3** 13 **=** 19 **]** 11 **2** 10 16 7  
  
*\*Again, unaltered characters have been left in****bold****.*  
  
We can now convert this string of numbers back to English, using the standard numerical assignments of *(A=1, B=2, C=3 …)* . This gives us a nearly complete URL:  
  
http**>33**i**2**imgur**2**com**3**m**=**s**]**k**2**jpg  
  
**Almost there!** Now we just have to convert the leftover characters  
  
**> 3 3 2 2 3 = ] 2**  
  
to a usable format. As noted at the beginning of this section, we can see that **> 3 3** likely converts to **: / /**  
  
This would match up with another sort of **+4** shift cipher. Whereas a classical Caesar Cipher only considers alphabetic characters, the conversion of **> 3 3** to **: / /** uses a +4 shift of [ASCII](https://www.3301archive.com/ascii/) Table values. Using the same method as before, we shift the leftover characters **> 3 3 2 2 3 = ] 2** by four places on the [ASCII Table](http://www.asciitable.com/).  
  
Remember, we’re shifting the ciphertext ***backwards*** by four places, even though we’re calling it a +4 shift. This is because it is the original hidden message that was shifted four places ***forward*** — **since we’re breaking the code instead of creating it, we’re working in reverse.**  
  
The result of this [ASCII Table Shift Cipher](https://www.3301archive.com/ascii-table-shift-cipher/) turns the leftover characters from **> 3 3 2 2 3 = ] 2** into  
  
**: / / . . / 9 y .**  
  
We now have a complete URL of the form  
  
[**http://i.imgur.com/m9sYK.jpg**](http://i.imgur.com/m9sYK.jpg)

*Welcome to the game.*

**Section 2: Imgur Decoy**  
January 4th, 2012

m9sYK.jpg (random name assigned by imgur)

The [URL](http://i.imgur.com/m9sYK.jpg) revealed by decoding the [hidden message](https://www.3301archive.com/final-jpg-first-hidden-message/) in [final.jpg](https://www.3301archive.com/final-jpg/) led to an [image](https://www.3301archive.com/m9syk-jpg/) on the media hosting website [imgur](https://imgur.com/). The Image, depicting a decoy duck, displayed the following text:

**m9sYK.jpg Text**

WOOPS  
Just decoys this way.  
  
Looks like you can’t guess how  
to get the message out.

As it turns out, the image references a particular steganographical application named [Outguess](https://www.3301archive.com/outguess/). For those who already have experience with this program, the words ‘**out**‘ and ‘**guess**‘ were a dead giveaway.  
  
[*Steganography*](https://www.3301archive.com/steganography/), a similar field to cryptography, refers to the practice of concealing a message within in image, file, video, or another message. The decoy duck image is telling us that the [message](https://www.3301archive.com/final-jpg-first-hidden-message/) we decoded from [final.jpg](https://www.3301archive.com/final-jpg/) to arrive at this URL was merely an intermediary step, a decoy — the actual message is hidden within [final.jpg](https://www.3301archive.com/final-jpg/) steganographically, and can be recovered with the tool [Outguess](https://www.3301archive.com/outguess/).  
  
When we apply [Outguess](https://www.3301archive.com/outguess/) to [final.jpg](https://www.3301archive.com/final-jpg/), we uncover the [true hidden message](https://www.3301archive.com/final-jpg-outguess/):

**final.jpg Outguess data**

Here is a book code. To find the book, and more information, go to http://www.reddit.com/r/a2e7j6ic78h0j/

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 62:12  63:6  64:8  65:5  66:18  67:45  68:10  69:2  70:17  71:9  72:20  73:2  74:34  75:13  76:21 | 48:43  49:17  50:13  51:4  52:2  53:18  54:4  55:6  56:4  57:24  58:64  59:5  60:37  61:60 | 33:3  34:25  35:10  36:7  37:20  38:10  39:32  40:4  41:40  42:11  43:9  44:13  45:6  46:3  47:5 | 17:5  18:14  19:7  20:31  21:12  22:36  23:2  24:3  25:5  26:65  27:5  28:1  29:2  30:18  31:32  32:10 | 1:20  2:3  3:5  4:20  5:5  6:53  7:1  8:8  9:2  10:4  11:8  12:4  13:13  14:4  15:8  16:4 |

Good luck.

3301

And with that, we’re off to the races.  
  
The message hidden within final.jpg, revealed with Outguess, contained two more clues:  
  
**First**, a link to a particular [subreddit](https://old.reddit.com/r/a2e7j6ic78h0j/).  
  
**Second**, a [book code](https://www.3301archive.com/book-code/) to be decrypted — with the necessary book being found at the above subreddit.  
  
3301 would go on to use this [subreddit](https://old.reddit.com/r/a2e7j6ic78h0j/) to convey numerous bits of important information, especially regarding [**how to verify messages from them.**](https://www.3301archive.com/pgp/)

**Section 3: Subreddit**  
January 5th-6th, 2012

Using [Outguess](https://www.3301archive.com/outguess/) on [*final.jpg*](https://www.3301archive.com/final-jpg/) gave us a [book code and a link](https://www.3301archive.com/final-jpg-outguess/), **https://reddit.com/r/a2e7j6ic78h0j/** . Reddit has had many format updates since then, so we will be working from <https://old.reddit.com/r/a2e7j6ic78h0j/> to maintain the original viewing experience. As apparent from the URL, the name of this subreddit is **a2e7j6ic78h0j** . A subreddit is a subdivision of Reddit devoted to a particular topic, and is designated by **/r/** in the URL.  
  
Upon viewing the subreddit, one of the first things that may catch a solver’s eye is the header:

r/a2e7j6ic78h0j header image

As you can see, the header contains a series of symbols mainly consisting of dots and bars. Perceptive solvers will notice that the number of symbols is the same as the number of characters in the subreddit’s name, 13. Thus, one might assume that there is some correlation between the header symbols and the subreddit name.  
  
As it turns out, the symbols depicted in the subreddit header are Mayan numerals. Their Arabic numeral equivalents are:  
  
**10 2 14 7 19 6 18 12 7 8 17 0 19**  
  
This set of numbers corresponds to the name of the subreddit, which is:  
  
**a2e7j6ic78h0j**  
  
Specifically, we can see that both the header and the name have a **2** in the second position, a **7** in the fourth position, a **6** in the sixth position, a **7** in the ninth position, an **8** in the tenth position, and a **0** in the 12th position.  
  
This leaves us with the leftover letters:  
**a e j i c h j**  
  
We reason that these also correspond to the header symbols. **a** is in the place of **10**, **e** is in the place of **14**, and so on.  
  
Searching for more hints, we turn our attention further down the page, to the description of the subreddit. This reveals that the subreddit name has been extended several characters in the description, giving us the following string:  
  
**a2e7j6ic78h0j7eiejd0120**  
  
Continuing the operations detailed above, we can convert the string  
  
**a2e7j6ic78h0j7eiejd0120**  
  
into:  
  
**10 2 14 7 19 6 18 12 7 8 17 0 19 7 14 18 14 19 13 0 1 2 0**  
  
But what do we do with this string of twenty three numbers? One option would be to convert these numbers to letters the same way we did with the Caesar Cipher in the very first step. This time, instead of designating that A=1, B=2, C=3, D=4… we designate the values A=0, B=1, C=2, D=3…  
This is called [indexing by zero](https://www.3301archive.com/index-by-zero/), as opposed to indexing by one. Doing this converts the string  
**10 2 14 7 19 6 18 12 7 8 17 0 19 7 14 18 14 19 13 0 1 2 0**  
  
into:  
 **k c o h t g s m h i r a t h o s o t n a b c a**  
  
Now that we’ve done this, we turn our attention towards the posts made in the subreddit — each one an apparently random pseudosentence string of jumbled letters. In the [Outguess](https://www.3301archive.com/final-jpg-outguess/) of [*final.jpg*](https://www.3301archive.com/final-jpg/) , we were given a book code, and told that the book was to be found on this subreddit. These scrambled posts seem to represent a good possibility for this book, and it seems likely that the **k c o h t g s m h i r a t h o s o t n a b c a** string we just decoded serves as some sort of key to breaking this encrypted book.  
  
Near each of the posts and by the subreddit description, we can see that a Reddit profile named ‘**CageThrottleUs**‘, assigned as ‘moderator’ of the subreddit is the author of each post. ‘**CageThrottleUs**‘ is an anagram of ‘**Charlotte Guest**‘, the woman who first translated the medieval Welsh collection of stories, ‘The Mabinogion’, into modern English. And thus we now have a lead on what this encrypted book’s origin is, as well as an apparent key to decode it.  
  
As well as scrambled text posts, we also observe that two images have been posted to the subreddit, ‘[Welcome](http://i.imgur.com/KXLOP.jpg)‘ and ‘Problems?’ .  
  
  
header 7A35090F ‘[The Lady of the Fountain](http://www.gutenberg.org/files/5160/5160-h/5160-h.htm#page2)‘