INFORMATION AND SYSTEMS SECURITY SOCIETY

UTCTF 2020

Cryptography : [basics] crypto

Value : 50 Pts

Description : Can you make it through all of the encodings ?

Attachment : binary.txt

Solutions :

First download the attachment file «binary.txt». In it there is **binary code**. Use a binary decoder and decode the text.

Source : https://www.rapidtables.com/convert/number/binary-to-ascii.html

Decoded Cipher :

Uh-oh, looks like we have another block of text, with some sort of special encoding. Can you figure out what this encoding is? (hint: if you look carefully, you'll notice that there only characters present are A-Z, a-z, 0-9, and sometimes / and +. See if you can find an encoding that looks like this one.)
TmV3IGNoYWxsZW5nZSEgQ2FuIHlvdSBmaWd1cmUgb3V0IHdoYXQncyBnb2luZyBvbiBoZX
JlPyBJdCBsb29rcyBsaWtlIHRoZSBsZXR0ZXJzIGFyZSBzaGlmdGVkIGJ5IHNvbWUgY29uc3R
hbnQuIChoaW50OiB5b3UgbWlnaHQgd2FudCB0byBzdGFydCBsb29raW5nIHVwIFJvbWFuIHBl
b3BsZSkuCmt2YnNxcmQsIGl5ZSdibyBrdnd5Y2QgZHJvYm8hIFh5ZyBweWIgZHJvIHBzeGt2IC
hreG4gd2tpbG8gZHJvIHJrYm5vY2QuLi4pIHprYmQ6IGsgY2VsY2RzZGVkc3l4IG1zenJvYi4gU
3ggZHJvIHB5dnZ5Z3N4cSBkb2hkLCBTJ2ZvIGRrdW94IHdpIHdvY2NrcW8ga3huIGJvenZrbW9
uIG9mb2JpIGt2enJrbG9kc20gbXJrYmttZG9iIGdzZHIgayBteWJib2N6eXhub3htbyBkeSBrIG5zcH
BvYm94ZCBtcmtia21kb2IgLSB1eHlneCBrYyBrIGNlbGNkc2RlZHN5eCBtc3pyb2IuIE1reCBpe
WUgcHN4biBkcm8gcHN4a3YgcHZrcT8gcnN4ZDogR28gdXh5ZyBkcmtkIGRybyBwdmtxIHNjI
HF5c3hxIGR5IGxvIHlwIGRybyBweWJ3a2QgZWRwdmtxey4uLn0gLSBncnNtciB3b2t4YyBkcmt
kIHNwIGl5ZSBjb28gZHJrZCB6a2Rkb2J4LCBpeWUgdXh5ZyBncmtkIGRybyBteWJib2N6eXhub
3htb2MgcHliIGUsIGQsIHAsIHYgaywga3huIHEga2JvLiBJeWUgbWt4IHpieWxrbHZpIGd5YnUg
eWVkIGRybyBib3drc3hzeHEgbXJrYmttZG9iYyBsaSBib3p2a21zeHEgZHJvdyBreG4gc3hwb2Jic
3hxIG15d3d5eCBneWJuYyBzeCBkcm8gT3hxdnNjciB2a3hxZWtxby4gS3h5ZHJvYiBxYm9rZCB
3b2RyeW4gc2MgZHkgZWNvIHBib2Flb3htaSBreGt2aWNzYzogZ28gdXh5ZyBkcmtkICdvJyBjcn
lnYyBleiB3eWNkIHlwZG94IHN4IGRybyBrdnpya2xvZCwgY3kgZHJrZCdjIHpieWxrbHZpIGRyb
yB3eWNkIG15d3d5eCBtcmtia21kb2Igc3ggZHJvIGRvaGQsIHB5dnZ5Z29uIGxpICdkJywga3huI
GN5IHl4LiBZeG1vIGl5ZSB1eHlnIGsgcG9nIG1ya2JrbWRvYmMsIGl5ZSBta3ggc3hwb2IgZHJvI
GJvY2QgeXAgZHJvIGd5Ym5jIGxrY29uIHl4IG15d3d5eCBneWJuYyBkcmtkIGNyeWcgZXogc3

ggZHJvIE94cXZzY3Igdmt4cWVrcW8uCnJnaG54c2RmeXNkdGdodSEgcWdmIGlzYWsgY3Rod
HVpa2UgZGlrIHprbnRoaGt4IHJ4cWxkZ254c2xpcSByaXN5eWtobmsuIGlreGsgdHUgcyBjeXNuI
GNneCBzeXkgcWdmeCBpc3hlIGtjY2d4ZHU6IGZkY3lzbntoMHZfZGk0ZHVfdmk0ZF90X3I0e
XlfcnhxbGQwfS4gcWdmIHZ0eXkgY3RoZSBkaXNkIHMgeWdkIGdjIHJ4cWxkZ254c2xpcSB0d
SBwZnVkIHpmdHlldGhuIGdjYyBkaXR1IHVneGQgZ2MgenN1dHIgYmhndnlrZW5rLCBzaGUg
dGQgeGtzeXlxIHR1IGhnZCB1ZyB6c2Ugc2Nka3ggc3l5LiBpZ2xrIHFnZiBraHBncWtlIGRpayBy
aXN5eWtobmsh

Reading the hint and i thinking of **base64**, decode it.

Source : https://www.base64decode.org/

Decoded Cipher :

New challenge! Can you figure out what's going on here? It looks like the letters are shifted by some constant. (hint: you might want to start looking up Roman people).
kvbsqrd, iye'bo kvwycd drobo! Xyg pyb dro psxkv (kxn wkilo dro rkbnocd...) zkbd: k celcdsdedsyx mszrob. Sx dro pyvvygsxq dohd, S'fo dkuox wi wocckqo kxn bozvkmon ofobi kvzrklodsm mrkbkmdob gsdr k mybboczyxnoxmo dy k nsppoboxd mrkbkmdob - uxygx kc k celcdsdedsyx mszrob. Mkx iye psxn dro psxkv pvkq? rsxd: Go uxyg drkd dro pvkq sc qysxq dy lo yp dro pybwkd edpvkq{...} - grsmr wokxc drkd sp iye coo drkd zkddobx, iye uxyg grkd dro mybboczyxnoxmoc pyb e, d, p, v k, kxn q kbo. Iye mkx zbylklvi gybu yed dro bowksxsxq mrkbkmdobc li bozvkmsxq drow kxn sxpobbsxq mywwyx gybnc sx dro Oxqvscr vkxqekqo. Kxydrob qbokd wodryn sc dy eco pboaeoxmi kxkvicsc: go uxyg drkd 'o' crygc ez wycd ypdox sx dro kvzrklod, cy drkd'c zbylklvi dro wycd mywwyx mrkbkmdob sx dro dohd, pyvvygon li 'd', kxn cy yx. Yxmo iye uxyg k pog mrkbkmdobc, iye mkx sxpob dro bocd yp dro gybnc lkcon yx mywwyx gybnc drkd cryg ez sx dro Oxqvscr vkxqekqo.
rghnxsdfysdtghu! qgf isak cthtuike dik zknthhkx rxqldgnxsliq risyykhnk. ikxk tu s cysn cgx syy qgfx isxe kccgxdu: fdcysn{h0v_di4du_vi4d_t_r4yy_rxqld0}. qgf vtyy cthe disd s ygd gc rxqldgnxsliq tu pfud zftyethn gcc ditu ugxd gc zsutr bhgvykenk, she td xksyyq tu hgd ug zse scdkx syy. iglk qgf khpgqke dik risyykhnk!

Reading the hint and i thinking of **Caesar Cipher**, decode it.

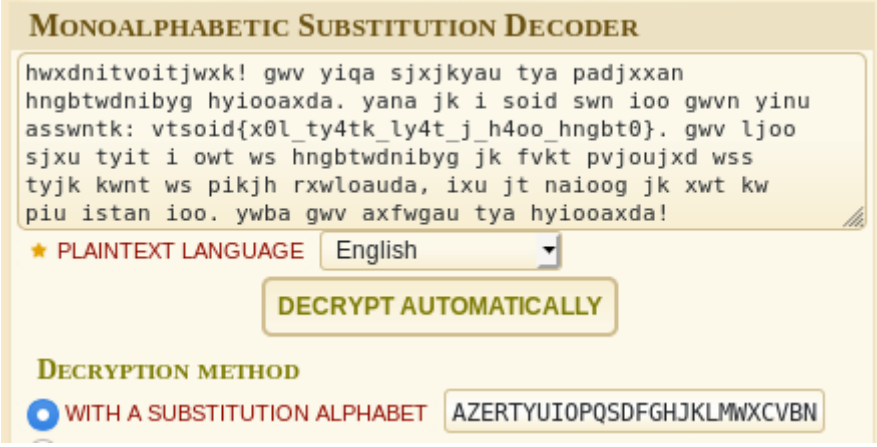
Source : https://cryptii.com/pipes/caesar-cipher (Using shift +10)

Decoded Cipher :

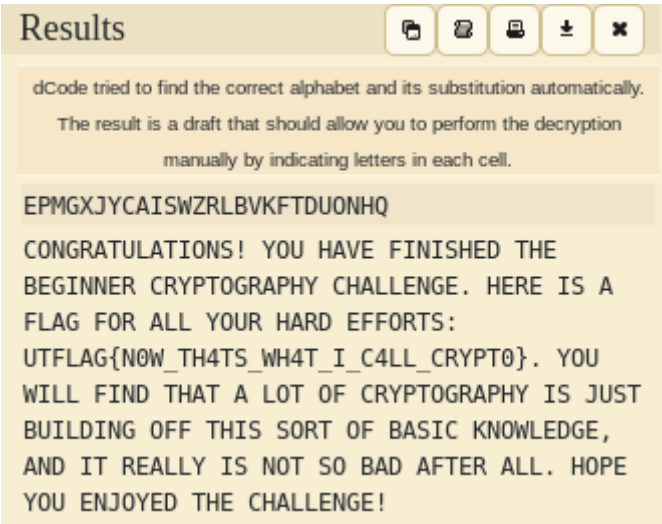
alright, you're almost there! Now for the final (and maybe the hardest...) part: a substitution cipher. In the following text, I've taken my message and replaced every alphabetic character with a correspondence to a different character - known as a substitution cipher. Can you find the final flag? hint: We know that the flag is going to be of the format utflag{...} - which means that if you see that pattern, you know what the correspondences for u, t, f, l a, and g are. You can probably work out the remaining characters by replacing them and inferring common words in the English language. Another great method is to use frequency analysis: we know that 'e' shows up most often in the alphabet, so that's probably the most common character in the text, followed by 't', and so on. Once you know a few characters, you can infer the rest of the words based on common words that show up in the English language.
hwxdnitvoitjwxk! gwv yiqa sjxjkyau tya padjxxan hngbtwdnibyg hyiooaxda. yana jk i soid swn ioo gwvn yinu asswntk: vtsoid{x0l_ty4tk_ly4t_j_h4oo_hngbt0}. gwv ljoo sjxu tyit i owt ws hngbtwdnibyg jk fvkt pvjoujxd wss tyjk kwnt ws pikjh rxwloauda, ixu jt naioog jk xwt kw piu istan ioo. ywba gwv axfwgau tya hyiooaxda!

Reading it, and i was thinking to use **Monoalphabetic Substitution** using **English language**.

Source : https://www.dcode.fr/monoalphabetic-substitution



Decoded Cipher :



Flag : utflag{n0w_th4ts_wh4t_i_c4ll_crypt0}