

# MysteryTwister C3

THE CRYPTO CHALLENGE CONTEST

## WEAKENED HANDYCIPHER – PART 3

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# Introduction

Handycipher is a low-tech stream cipher, simple enough to permit pen-and-paper encrypting and decrypting of messages, while providing a significantly high level of security. Handycipher was first published in 2014 and then further improved.

Handycipher consists of a core cipher augmented by a random interspersing of null characters throughout the ciphertext as decoys intended to thwart attacks based on recognizing patterns in the ciphertext.

The core cipher incorporates two ciphers based on the same key: a simple substitution cipher and a nondeterministic homophonic substitution cipher.

# Challenge

*This challenge uses an intentionally weakened version of Handycipher (HC) and is offered only as an exercise meant to explore the extent to which HC's security depends on the admixture of null characters.*

The third challenge of the weakened Handycipher series is a ciphertext-only challenge. Your task is to discover the 2,085-character plaintext message  $M_9$ , and the key  $K_9$ , given only the 5,965-character ciphertext  $C_9$  generated by  $E(K_9, M_9)$  where  $E$  is the core cipher part within Handycipher.

$C_9$  is given as a text file within the additional zip file. This zip file also contains an extra PDF that describes in detail how Handycipher works. The solution consists of the four surnames mentioned in  $M_9$ . Please enter the names in the order in which they appear in the text, separated by commas.

**Hint:** The plaintext contains a village name – but no surname – starting with M.

# References

In the document "MTC3\_Handycipher\_Description.pdf" the cipher is explained in detail. You can find it within the additional zip file.

Another detailed explanation can be found at  
<http://eprint.iacr.org/2014/257.pdf>

Successful cryptanalysis of earlier versions of Handycipher can be found here – however, it's more fun to try by yourself 😊  
<https://oilulio.wordpress.com/2014/06/19/handycipher-decrypt/>  
<https://oilulio.wordpress.com/2014/07/28/breaking-handycipher-2/>

# Additional Files

The additional zip archive contains the following files:

- MTC3\_Handycipher\_Description.pdf
  - ➡ detailed explanation of Handycipher
- c9.txt
  - ➡ the complete ciphertext for WHC-03 (Weakened Handycipher challenge, Part 3)
- handycipher.zip
  - ➡ Python code and test files for Handycipher