Lab1. Cryptanalysis of simple substitution ciphers

Report

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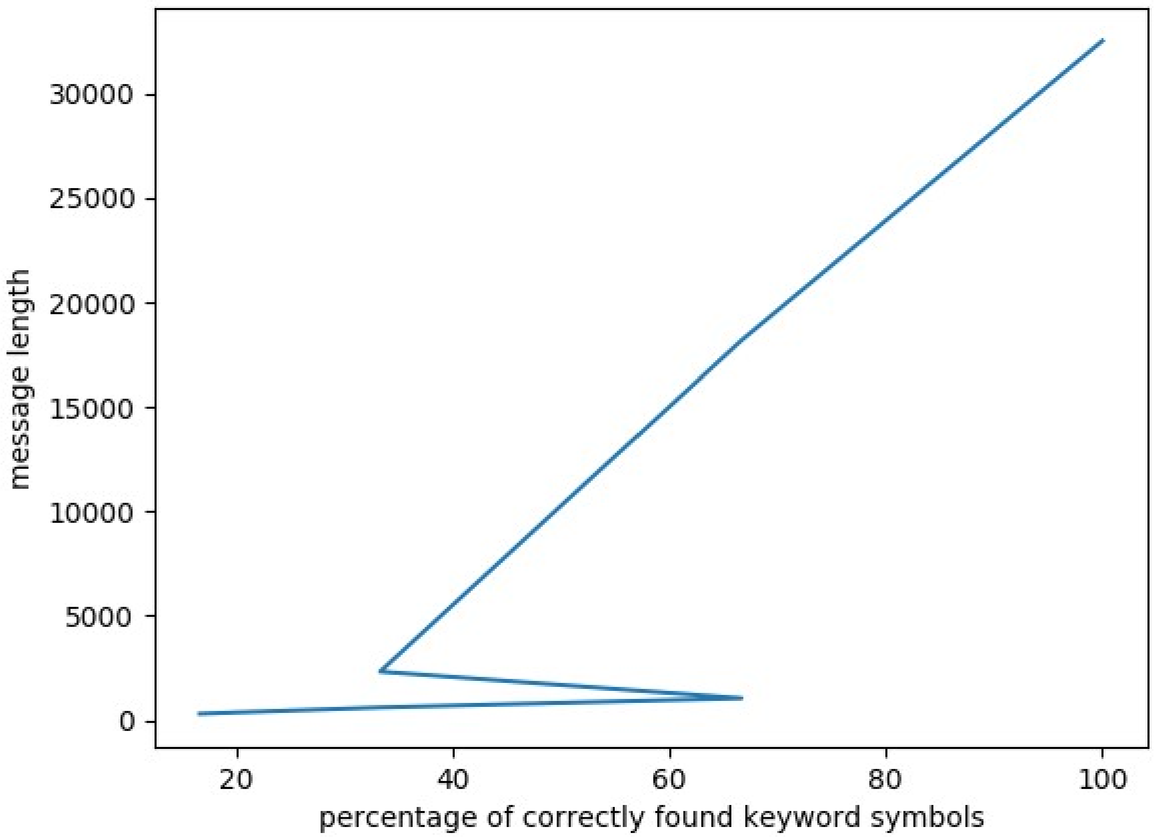
Method results and analysis

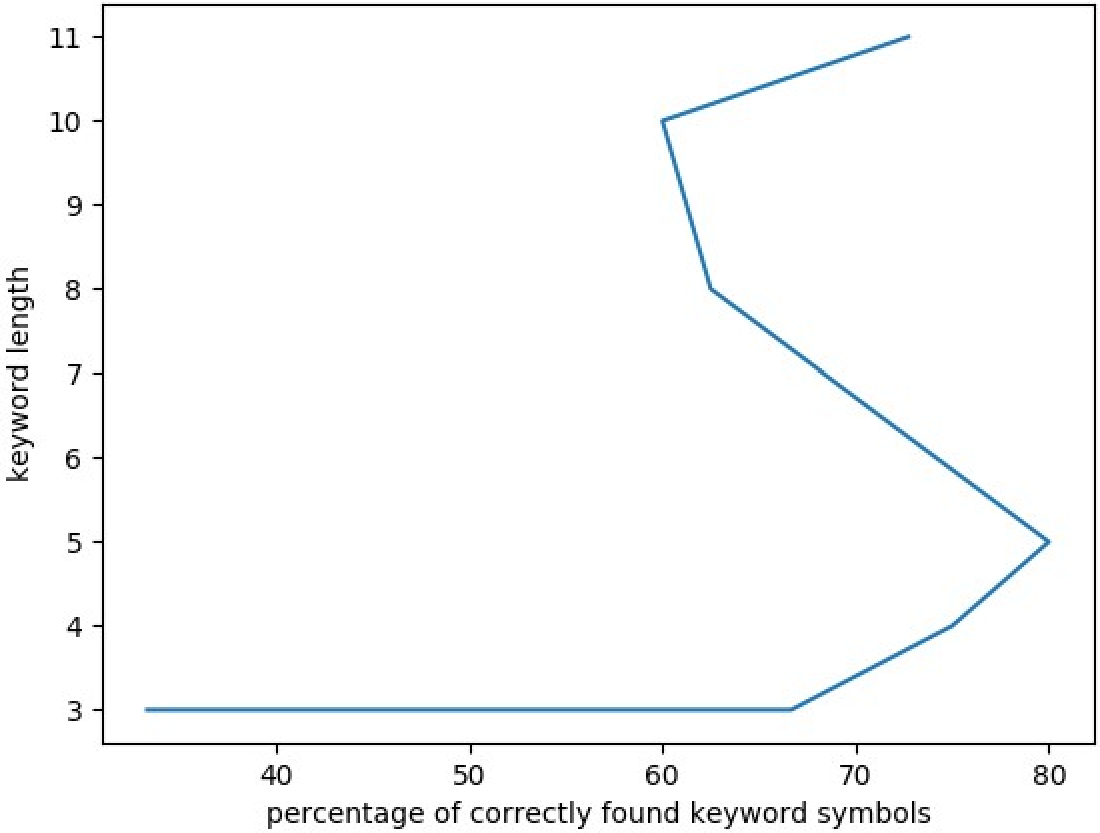
Kasiski's method attack result depending on the length of the message

Message length	Expected keyword	Actual keyword	Key match correctness in percentages
307	EDITOR	AHJIQR	17%
607	EDITOR	WDDDCR	33%
1049	EDITOR	WDIHOR	67%
2326	EDITOR	EDIHMJ	33%
18180	EDITOR	EDIHOJ	67%
32529	EDITOR	EDITOR	100%



Kasiski's method attack result depending on the length of the key

Message length	Expected keyword	Actual keyword	Key match correctness in percentages
17860	MAP	OAL	33%
17860	LOG	LMG	67%
17860	NODE	NMDE	75%
17860	KAFKA	KAFQA	80%
17860	DOCUMENT	DMCGMENH	63%
17860	COORDINATE	CMMRDINAHW	60%
17860	APPLICATION	ALLLICAHION	73%



Remarks

- In some executions the key length was not found correctly on the first try, for example, after increasing key length. In such cases the parameters used in logic that filters garbage data (random matches of l-grammas) are changed manually according to the input data (message length, key length).
- Firstly in Vigenere cipher logic the method of frequency analysis was used to decrypt strings encrypted by Caesar cipher (these strings are composed from symbols on exact position of a string encrypted with Vigenere cipher), but it gave wrong results. Thus the other implementation of decryption is used. It is based on shifting the most frequent symbol in a string to 'E' (as the most frequent symbol in English alphabet).