Updated Vigenere Cipher, Dec 1, 2015

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Problem Definition

- The original Vigenere cipher was not entirely secure; it was vulnerable to cryptanalysis based on its repeating key

Competitive Analysis

Classical Vigenere cipher without one time pad or substitution table

- Pros: Faster to perform, simpler to implement
- Cons: Vulnerable to techniques that can determine the length of the repeating key, allowing the cipher to be easily broken

Potential Applications

- Protection of information stored in a file
- Authentication (if used as a hash function, as in POSIX crypt())

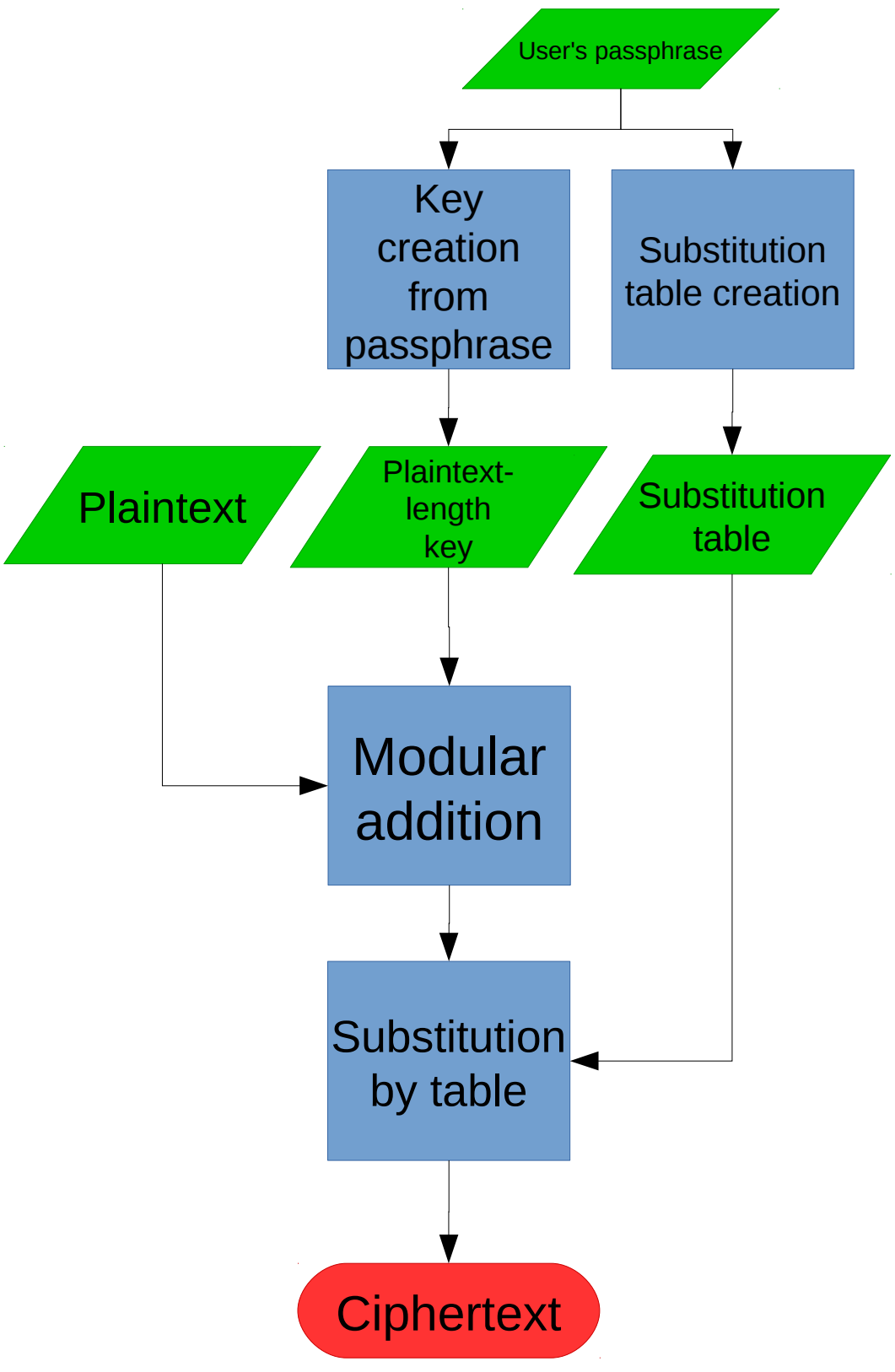
Future Improvement Ideas

- Improve key generation procedure, to reduce efficiency of dictionary attacks against passphrase
- Increase security of keys created from short passphrases

Solution Specifications

- This implementation provides a method for generating a plaintext-length random key from a given passphrase
- It also adds a step to the encipherment process: a substitution table, generated based on the key, applied immediately after Vigenere's modular addition

Components in blue are actions performed by the updated cipher program (implemented in Python)



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