

Assignment #3

Assignment Overview

In this assignment you will create a simpler, modified version of your solution for A2 (**encryption and decryption of plain-text messages**), in which you are expected to demonstrate your understanding of **functions** and (text) **file operations** in Python.

Project Specification

In this assignment you will implement the Caesar cypher, with the following twists and simplifications (relative to A2):

- You **only** need to encrypt (**uppercase and lowercase**) **letters**. All other characters from the plain text should bypass the encryption algorithm and be written unchanged onto the cyphertext (and eventually saved to the output file).
- The key will be fixed (i.e., hardcoded) and equal to 3.
- You must have **two functions** (one called ***encrypt*** and another called ***decrypt***), with the proper choice of parameters (e.g., input string (word) and key).
 - **These functions must operate at a word level.**
 - Reading from (and writing to) files, traversing file contents and breaking the text down into individual strings (which are then passed as parameters to the ***encrypt*** and ***decrypt*** functions), and handling **other tasks** (reading input from user, printing messages on the screen, etc.) **should be done outside of the two functions above.**
 - You are encouraged, of course, to write meaningful additional functions for certain tasks that might appear again later in your life as a Python programmer.

Your program will:

1. Print a brief (2-5 lines) message explaining the purpose of this “app”.
2. Prompt for:
 - The input filename (from which the plaintext or cyphertext will be read)
 - The choice of operation (E/D, for encrypt/decrypt).
3. Process the file contents according to the encryption/decryption algorithm.
4. Save the result of the encryption/decryption algorithm into a text file, whose name should be the same as the input file + a standard suffix (***_enc*** for encrypted and ***_dec*** for decrypted).
 - For example, if the input file is ***mammamia.txt*** and the choice of operation is **E**, the output file should be called ***mammamia_enc.txt***. If the input file is ***mariotime.txt*** and the choice of operation is **D**, the output file should be called ***mariotime_dec.txt***.
5. Print a meaningful message (success or failure, name of output file) and ask if the user wants to submit another file or quit.

Deliverables

You must submit (via Canvas):

- The file **a3_FAUusername.py** (where “FAUusername” is your FAU username; in my case the file would be called **a3_omarques.py**)
 - o This is your source code solution; be sure to include your name, date, assignment number and comments describing your code.
- A **README.md** file with “project notes” (describing what my TA and I cannot see by looking at your source code and/or running your program).
 - o Examples: design decisions, documented limitations, future improvements, etc.
- A **screenshot of the results** produced by your code (make sure to show input and output for at least one run).

Notes and Hints:

- Follow the “cardinal rules” of programming in Python (as per the textbook).
- Start by breaking the program down into parts and solve smaller problems before producing the final solution.
- Try to handle special cases and prevent runtime errors to the best of your knowledge.
- Don’t overdo it!

Bonus opportunities:

This is an odd-numbered assignment.

There are no bonus opportunities (unless, of course, you guess my zoom background in lectures 5 or 6). 😊