Notes

Caesar_Cipher_Encryption.py

Introduction
This is a simple implementation of the Caesar cipher encryption technique in Python. The Caesar cipher is one of the simplest and most widely known encryption techniques. It works by replacing each letter in the plaintext message by a letter a fixed number of positions down the alphabet. This fixed number is called the key. The method is named after Julius Caesar, who used it in his private correspondence.

Encryption Formula
The encryption formula for the Caesar cipher is as follows:

$En(x) = (x + n) \bmod 26$
where x is the plaintext message and n is the key. The value 26 is used because there are 26 letters in the alphabet. The mod operation ensures that the result is always within the range of the alphabet.

Decryption Formula
The decryption formula for the Caesar cipher is as follows:

$Dn(x) = (x - n) \bmod 26$

How it Works
The Caesar cipher is a substitution cipher in which each letter in the alphabet is replaced by a letter some fixed number of positions down the alphabet. For example, with a right shift of 2, C would replace A, D would become B and so on. The following table shows the encryption and decryption alphabets for a right shift of 2:

Plain: A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
Cipher: C D E F G H I J K L M N O P Q R S T U V W X Y Z A B

Usage
To use the Caesar cipher encryption in Python, simply run the Caesar_Cipher.py file and follow the prompts. Enter the plaintext message and the key (an integer between 1 and 25) when prompted. The script will then encrypt the message and display the ciphertext.

References
https://en.wikipedia.org/wiki/Caesar_cipher

Credits
This script was created by Anthony Constant (AC). If you have any questions or suggestions, you can contact him at anthonyconstant.co.uk/

License

REPL.IT
Share Link: https://replit.com/@Ant94x/CaesarCipher?v=1

GitHub
Share Link: https://github.com/Anthony-Constant/Caesar-Cipher-Encryption

PYTHON COPY & PASTED LOCAL SOURCE CODE

```
# Caesar_Cipher.py
# Created a Caesar Cipher Encryption in Python
# Author: Anthony Constant (AC)

################################## SOME NOTES ##########################################

#In cryptography, a Caesar cipher is one of the most simplest and mostly wide known techniques.

## Encryption formula
## En(x) = (x + n) mod 26

## Decryption formula
## Dn(x) = (x - n) mod 26

## we use mod 26 because there are 26 letters in the alphabet.
## in this instance x is our plaintext message respectively.
## in this instance n is our key.

######################### HOW DOES IT WORK ################################################

## It is a type of substituion cipher in which each letter in the alphabet is replaced by a letter some fixed number of positions
(indexes) down the alphabet.

## For example, with a right shift of 2, C would replace A, D would become B and so on... The method is named after Julius Caesar, who
used it in his private corresponence.

## for instance, here is a Caesar cipher using right rotation of 2 spaces below.

## Plain:  A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

## Cipher: C D E F G H I J K L M N O P Q R S T U V W X Y Z A B

## USE CASE:
```

```
## Plaintext: Hello

##Ciphertext: jgnnq

## Now the message is encrypted!

############################## REFERENCES ##################################################

## https://en.wikipedia.org/wiki/Caesar_cipher

#########################################################################################
############################## START PROJECT HERE ########################################
#########################################################################################

## create a function for encryption so we can implement a Ceasar Cipher
## passing string as the parameter and the key (shift)
def encryption(string,shift):

    cipher = '' ## create an empty string to place the ciphertext in this variable

    for char in string: ## here we must extract each character from the string
        if char == ' ':## if the string character is uppercase
            ## first check the order of character for example: A = 1 B = 2 and so on... Each letter has its corresponding index number
            ## Get the shift variable from the user which is provided to us.
            ## we substract -65 because the UpperCase alphabet starts from 65. Has 65 characters/Indexes
            ## then add mod 26 and add it back to 65 due to the ASCII value table starting from 65
            cipher = cipher + char
        elif char.isupper():
            cipher = cipher+chr((ord(char)+shift-65)%26+65)
        else:
            cipher = cipher+chr((ord(char)+shift-97)%26+97)




    return cipher
```

```
def replay(): ## create replay function to quit the program

    return input('\nDo you want to encrypt a new message? Enter Yes or No: ').lower().startswith('y')


while True: # create an endless loop until user quits the program

    ## GET USER INPUT
    print("\nCaesar Cipher Encryption ")
    print("Encoded by AC\n ")

    user_input = input("Enter message:  ")
    s = int(input("\nEnter amount of shifts (key): "))

    print("The plaintext is: ", user_input)
    print("\nThe encrypted message is: ",encryption(user_input,s ))

    if not replay():
        break
```