Lab - Caesar Cipher Program to Encrypt and Decrypt Data

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# This Caesar Cipher program performs both encryption and decryption of data

# For encryption: Caesar_Cipher(TextToBeEncrypted, + Key)
# For decryption: Caesar_Cipher(TextToBeDecrypted, - Key)

def Caesar_Cipher(text, key):

  plain_text = text
  # Take care of keys greater than 26 by performing the modulo operation
  offset = key % 26
  letters = "ABCDEFGHIJKLMNOPQRSTUVWXYZ"
  cipher_text = ""

  # Perform the right or left shifts
  if offset < 0:
      shifted_letters = letters[abs(offset):] + letters[:abs(offset)]
  elif offset > 0:
      shifted_letters = letters[-offset:] + letters[:-offset]
  else:
      shifted_letters = letters

  # Add on the lower case letter to the original
  upper_lower_letters = letters + letters.lower()    # lower case letters
  upper_lower_shifted_letters = shifted_letters + shifted_letters.lower()
  size = len(upper_lower_letters)

  for text in plain_text:
    if text in upper_lower_letters: # Handle characters (i.e., symbols, etc.) that aren't letters
      for i in range(size):
        if text == upper_lower_letters[i]:
          cipher_text = cipher_text + upper_lower_shifted_letters[i]
    else:
      cipher_text = cipher_text + text

  # Print the resulted encryption or decryption
  print(cipher_text)


'''
Test encryption (ex. +3) and decryption (ex. -3) of the Caesar Cipher function

  Examples:
    textENCR = "The Quick-Brown Fox Jumps Over The Lazy Dog."
    textDECR = "Qeb Nrfzh-Yoltk Clu Grjmp Lsbo Qeb Ixwv Ald."

'''
plain_text = input("Enter your plain-text for encryption or cipher-text for decryption: ")
key = int(input("Enter offset value (e.g. '3' or '-3'): "))
Caesar_Cipher(plain_text, key) # Function call
```

```
Enter your plain-text for encryption or cipher-text for decryption: Ebiil T3loia!
Enter offset value (e.g. '3' or '-3'): -3
Hello W3orld!
```

Testing Caesar Cipher program for encryption and decryption.

```
# Encryption Example
text = "Alice! We will attack on the second day at noon."
Caesar_Cipher(text, 3)
```

```
Xifzb! Tb tfii xqqxzh lk qeb pbzlka axv xq kllk.
```

```
# Decryption Example
Caesar_Cipher('Xifzb! Tb tfii xqqxzh lk qeb pbzlka axv xq kllk.', -3)
```

```
Alice! We will attack on the second day at noon.
```

Reference:

https://colab.research.google.com/drive/1xrbBR5TW52EEmbVThFGA4IxPv-bIFyYm?usp=sharing&pli=1#scrollTo=HXk8bm9UWgRw

https://teachen.info/cspp/unit4/lab04-02.html
