CNS LAB 7

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Q. Write a program to implement Vigenère Cipher. Your program must work interactively asking the user to input the key and the plaintext/cipher text and the mode of operation (encrypt/decrypt). The program then must encrypt/decrypt the plaintext/cipher text and the display the output.

Ans.
Plain Text: GOODTOSEEYOU
Keyword: AYUSH
Key: AYUSHAYUSHAY
Cipher Text: ?

Encryption: Use Vigenère square or table.

Cipher Text: GMIV
Decryption: GOOD

Code:

```
def recursive_read(allowed_input, message=""):
    # Recursively reads user input until input is not in allowd_input
    while True:
        user_input = input(message)
        if user_input in allowed_input:
            return user_input



def recursive_read_int(message=""):
    # Recursively reads user input until input is not in allowd_input
    while True:
        user_input = input(message)
        try:
            value = int(user_input)
```

```
            return value
        except:
            pass

m = 26


def multiplicative_inverse(a):
    for i in range(1, m):
        remainder = ((i * m) + 1) % a
        if remainder == 0:
            return ((i * m) + 1) / a

    return 0


def perform_encryption():
    message = input("Enter message: ").upper().replace(" ", "")
    key = input("Enter key: ").upper().replace(" ", "")

    result = ""
    mask = ""

    for i in range(len(message)):
      mask += key[i % len(key)]
      result += chr(((ord(message[i]) - ord('A') + ord(key[(i % len(key))]) -
ord('A')) % m) + ord('A'))
```

```
    print(f"Mask: {mask}")
    print(f"Final string: {result}")


def perform_decryption():
    message = input("Enter message: ").upper().replace(" ", "")
    key = input("Enter key: ").upper().replace(" ", "")

    result = ""
    mask = ""

    for i in range(len(message)):
      mask += key[i % len(key)]
      result += chr(((ord(message[i]) - ord(key[(i % len(key))])) % m) +
ord('A'))


    print(f"Mask: {mask}")
    print(f"Final string: {result}")


is_encrypt = recursive_read(
    ["e", "d"], "Enter 'e' for encryption or 'd' for decryption: ") == "e"
```

```python
if is_encrypt:

    perform_encryption()

else:

    perform_decryption()
```

Output:

```
PS F:\code\github.com\godcrampy\college-notes\cns\lab-07> python .\vignere.py
Enter 'e' for encryption or 'd' for decryption: e
Enter message: SAHIL BONDRE
Enter key: DEF
Mask: DEFDEFDEFDE
Final string: VEMLPGRRIUI
PS F:\code\github.com\godcrampy\college-notes\cns\lab-07> python .\vignere.py
Enter 'e' for encryption or 'd' for decryption: d
Enter message: VEMLPGRRIUI
Enter key: DEF
Mask: DEFDEFDEFDE
Final string: SAHILBONDRE
PS F:\code\github.com\godcrampy\college-notes\cns\lab-07>
```