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Vigenere Cipher

Method 1

```
def encrypt(M, K):
    E=[]
    for i in range (len(M)):
        E.append(alphabet[int(M[i])][int(K[i%len(key)])])
    print (E)

def decrypt(M, K):
    D = []
    for i in range(len(M)):
        col_index = alphabet[0].index(alphabet[int(K[i % len(K)])][0])
        row_index = alphabet[col_index].index(alphabet[0][M[i]])
        D.append(alphabet[0][row_index])
    print(D)

alphabet = [['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'],
            ['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', 'A'],
            ['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'],
            ['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','C'],
            ['E','F','G','H','I','J','K','L','M','N','O', 'P', 'Q', 'R', 'S', 'T', 'U', 'V', 'W', 'X', 'Y', 'Z', 'A', 'B','C', 'D'],
            ['F','G','H','I','J','K','L','M','N','O', 'P', 'Q', 'R', 'S', 'T', 'U', 'V', 'W', 'X', 'Y', 'Z', 'A', 'B','C', 'D','E'],
            ['G','H','I','J','K','L','M','N','O', 'P', 'Q', 'R', 'S', 'T', 'U', 'V', 'W', 'X', 'Y', 'Z', 'A', 'B','C', 'D','E','F'],
            ['H','I','J','K','L','M','N','O', 'P', 'Q', 'R', 'S', 'T', 'U', 'V', 'W', 'X', 'Y', 'Z', 'A', 'B','C', 'D','E','F','G'],
            ['I','J','K','L','M','N','O', 'P', 'Q', 'R', 'S', 'T', 'U', 'V', 'W', 'X', 'Y', 'Z', 'A', 'B','C', 'D','E','F','G','H'],
            ['J','K','L','M','N','O', 'P', 'Q', 'R', 'S', 'T', 'U', 'V', 'W', 'X', 'Y', 'Z', 'A', 'B','C', 'D','E','F','G','H','I'],
            ['K','L','M','N','O', 'P', 'Q', 'R', 'S', 'T', 'U', 'V', 'W', 'X', 'Y', 'Z', 'A', 'B','C', 'D','E','F','G','H','I', 'J'],
            ['L','M','N','O', 'P', 'Q', 'R', 'S', 'T', 'U', 'V', 'W', 'X', 'Y', 'Z', 'A', 'B','C', 'D','E','F','G','H','I', 'J','K'],
            ['M','N','O', 'P', 'Q', 'R', 'S', 'T', 'U', 'V', 'W', 'X', 'Y', 'Z', 'A', 'B','C', 'D','E','F','G','H','I', 'J','K','L'],
            ['N','O', 'P', 'Q', 'R', 'S', 'T', 'U', 'V', 'W', 'X', 'Y', 'Z', 'A', 'B','C', 'D','E','F','G','H','I', 'J','K','L','M'],
            ['O', 'P', 'Q', 'R', 'S', 'T', 'U', 'V', 'W', 'X', 'Y', 'Z', 'A', 'B','C', 'D','E','F','G','H','I', 'J','K','L','M','N'],
            ['P', 'Q', 'R', 'S', 'T', 'U', 'V', 'W', 'X', 'Y', 'Z', 'A', 'B','C', 'D','E','F','G','H','I', 'J','K','L','M','N','O'],
            ['Q', 'R', 'S', 'T', 'U', 'V', 'W', 'X', 'Y', 'Z', 'A', 'B','C', 'D','E','F','G','H','I', 'J','K','L','M','N','O','P'],
            ['R', 'S', 'T', 'U', 'V', 'W', 'X', 'Y', 'Z', 'A', 'B','C', 'D','E','F','G','H','I', 'J','K','L','M','N','O','P','Q'],
            ['S', 'T', 'U', 'V', 'W', 'X', 'Y', 'Z', 'A', 'B','C', 'D','E','F','G','H','I', 'J','K','L','M','N','O','P','Q','R'],
            ['T', 'U', 'V', 'W', 'X', 'Y', 'Z', 'A', 'B','C', 'D','E','F','G','H','I', 'J','K','L','M','N','O','P','Q','R','S'],
            ['U', 'V', 'W', 'X', 'Y', 'Z', 'A', 'B','C', 'D','E','F','G','H','I', 'J','K','L','M','N','O','P','Q','R','S','T'],
            ['V', 'W', 'X', 'Y', 'Z', 'A', 'B','C', 'D','E','F','G','H','I', 'J','K','L','M','N','O','P','Q','R','S','T','U'],
            ['W', 'X', 'Y', 'Z', 'A', 'B','C', 'D','E','F','G','H','I', 'J','K','L','M','N','O','P','Q','R','S','T','U','V'],
            ['X', 'Y', 'Z', 'A', 'B','C', 'D','E','F','G','H','I', 'J','K','L','M','N','O','P','Q','R','S','T','U','V','W'],
            ['Y', 'Z', 'A', 'B','C', 'D','E','F','G','H','I', 'J','K','L','M','N','O','P','Q','R','S','T','U','V','W','X'],
            ['Z', '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']
        ]

message = str(input("Input message in uppercase : "))
key = str(input("Input Key in uppercase : "))
temp = []
M=[]
K=[]

for i in range(len(message)):
        if message[i].isalpha():
            temp.append(ord(message[i]))
            M.append(temp[-1] - ord('A'))

for i in range(len(key)):
        if key[i].isalpha():
            temp.append(ord(key[i]))
            K.append(temp[-1] - ord('A'))

choice = int(input("1. Encrypt\n2. Decrypt\n"))

if (choice == 1):
    encrypt(M, K)
if (choice == 2):
    decrypt(M, K)
```

```
Input message in uppercase : GIVE MONEY
Input Key in uppercase : LOCK
1. Encrypt
2. Decrypt
1
['R', 'W', 'X', 'O', 'X', 'C', 'P', 'O', 'J']
```

```
Input message in uppercase : RWXO XCPOJ
Input Key in uppercase : LOCK
1. Encrypt
2. Decrypt
2
['G', 'I', 'V', 'E', 'M', 'O', 'N', 'E', 'Y']
```

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Method 2

```python
alphabet = ['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']

def encrypt(M, K):
    E=[]
    for i in range (len(M)):
        E.append(alphabet[(int(M[i]) + int(K[i%len(key)])) % 26 ])
    print (E)

def decrypt(M, K):
    D = []
    for i in range (len(M)):
        D.append(alphabet[(int(M[i]) - int(K[i%len(key)]) + 26) % 26 ])
    print(D)

message = str(input("Input message in uppercase : "))
key = str(input("Input Key in uppercase : "))
temp = []
M=[]
K=[]

for i in range(len(message)):
        if message[i].isalpha():
            temp.append(ord(message[i]))
            M.append(temp[-1] - ord('A'))

for i in range(len(key)):
        if key[i].isalpha():
            temp.append(ord(key[i]))
            K.append(temp[-1] - ord('A'))

choice = int(input("1. Encrypt\n2. Decrypt\n"))

if (choice == 1):
    encrypt(M, K)
if (choice == 2):
    decrypt(M, K)
```

```
Input message in uppercase : SHE IS LISTENING
Input Key in uppercase : PASCAL
1. Encrypt
2. Decrypt
1
['H', 'H', 'W', 'K', 'S', 'W', 'X', 'S', 'L', 'G', 'N', 'T', 'C', 'G']
```

```
Input message in uppercase : HHW KS WXSLGNTCG
Input Key in uppercase : PASCAL
1. Encrypt
2. Decrypt
2
['S', 'H', 'E', 'I', 'S', 'L', 'I', 'S', 'T', 'E', 'N', 'I', 'N', 'G']
```