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INS Practical 6

**Aim : Alice wants to send some confidential information to Bob over a secure network.**

i) Create a system where the key will be generated randomly for encryption, and it will be changed with every message. Send three messages from sender to receiver and also decrypt the message at receiver end.

Code :

```
import random as r
import YSL_io as ysl
ysl.printMGNTA('\n\tOne-time Pad Method\n\t')

def enc(pt, key):
    global a
    ct = ''
    kl = len(key)
    ptl = len(pt)
    if kl < ptl:
        key += pt[:ptl-kl:]
        kl = ptl
    for i in range(ptl):
        ct += chr(((a[pt[i]] + a[key[i]]) % 26) + 97)
    ysl.printRED(f'Cipher text of given plaintext ', end='')
    print(pt, end='')
    ysl.printRED(' : ', end='')
    print(ct, end='\n\n')
    return ct, key

def dec(ct, key):
    global a
    dt = ''
    kl = len(key)
```

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```
    ctl = len(ct)
    if kl < ctl:
        key += ct[:ctl-kl:]
        kl = ctl
    for i in range(ctl):
        dt += chr(((a[ct[i]] - a[key[i]]) % 26) + 97)
    ysl.printRED(f'Decipher text of given ciphertext ', end='')
    print(ct, end='')
    ysl.printRED(' : ', end='')
    print(dt, end='\n\n')

a = {chr(x+97):x for x in range(26)}
n = int(input('Enter number of messages you want to send: '))
keys = []
plaintext = []
ciphertext = []

ysl.printGRN('\nEncryption:\n')
for _ in range(n):
    pt = input('Enter plaintext: ').lower().replace(" ", "")
    plaintext.append(pt)
    key = ''
    for x in range(r.randint(6, 10)):
        key += chr(97 + r.randint(0, 25))
    ct_key = enc(pt, key)
    ciphertext.append(ct_key[0])
    keys.append(ct_key[1])

ysl.printGRN('\nDecryption:\n')
for i in range(n):
    dec(ciphertext[i], keys[i])
```

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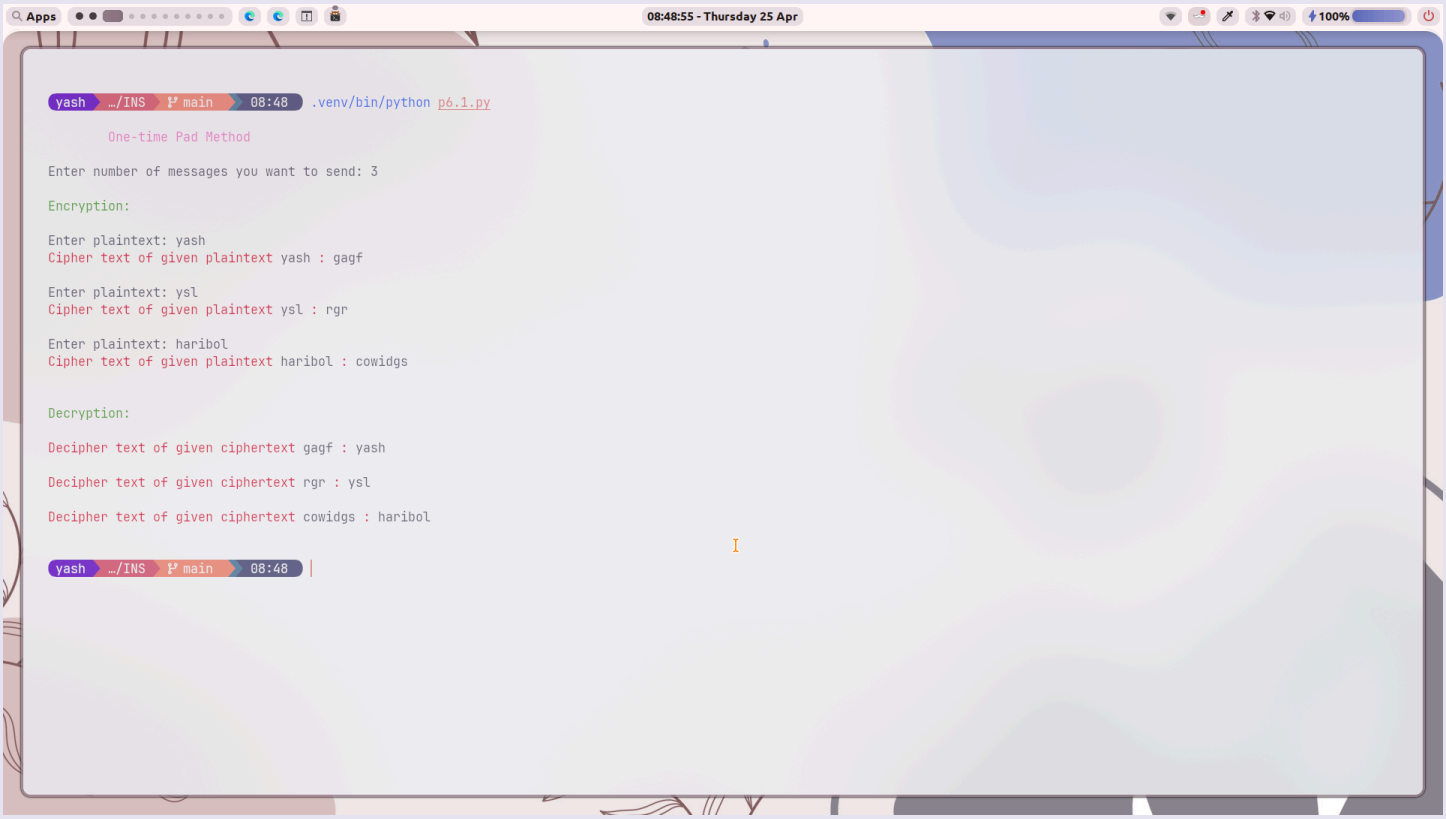
Output :




ii) Provide encryption through vigener table as well. (Use Second Method)

Code :

```
import YSL_io as ysl
k_lst = []

def enc_vig(plain, k):
    enc_txt = ''
    for i in range(len(plain)):
        char = plain[i]
        k_char = k[i]
        enc_char = chr((ord(char) + ord(k_char)) % 26 + ord('A'))
        enc_txt += enc_char
```

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```
    return enc_txt


pt = ysl.inputGRN("\n\tEnter the plain text : ")
k = ysl.inputORNG("\tEnter the key: ")
ysl.printRED(f'\n\tEncrypted text: ', end='')
ysl.printBLU(enc_vig(pt, k))
```

Output :