Question

Use single letter frequency attack to decipher the the following message.You know that it has been created with an additive (Shift) cipher.

PXPXKXENVDRUXVTNLXHYMXGMAXYKXJNXGVRFXMAHWGXXWLEHGZXKVBIAXKMXQM

SOLUTION

Code:-

```
message='PXPXKXENVDRUXVTNLXHYMXGMAXYKXJNXGVRFXMAHWGXXWLEHGZXKVBIAXKMXQM'
LETTERS='ABCDEFGHIJKLMNOPQRSTUVWXYZ'
FREQ='ETAOINSHRLDCUMWFGYPBVKJXQZ'
box=''
box2=[]
j=0
for q in FREQ:
        w=LETTERS.find(q)
        key=0
        box2.append(w)
        w=key
print('KEYS:-'+str(box2)+'\n\n\n DECRYPTION:-')
for key in box2:

        if len(box)==len(message):
        j=j+1
        print('***'*10)
        print(box)
        box=''
        for x in message:
        y=LETTERS.find(x)
        d=(y-key)%26
        a=LETTERS[d]
        box=box+str(a)
```

Input:- None

Output:-

KEYS:-[4, 19, 0, 14, 8, 13, 18, 7, 17, 11, 3, 2, 20, 12, 22, 5, 6, 24, 15, 1, 21, 10, 9, 23, 16, 25]

 DECRYPTION:-

****
LTLTGTAJRZNQTRPJHTDUITCIWTUGTFJTCRNBTIWDSCTTSHADCVTGRXEWTGITMI
****
WEWERELUCKYBECAUSEOFTENTHEFREQUENCYMETHODNEEDSLONGERCIPHERTEXT
****
PXPXKXENVDRUXVTNLXHYMXGMAXYKXJNXGVRFXMAHWGXXWLEHGZXKVBIAXKMXQM
****
BJBJWJQZHPDGJHFZXJTKYJSYMJKWJVZJSHDRJYMTISJJIXQTSLJWHNUMJWYJCY
****
HPHPCPWFNVJMPNLFDPZQEPYESPQCPBFPYNJXPESZOYPPODWZYRPCNTASPCEPIE
****
CKCKXKRAIQEHKIGAYKULZKTZNKLXKWAKTIESKZNUJTKKJYRUTMKXIOVNKXZKDZ
****
XFXFSFMVDLZCFDBVTFPGUFOUIFGSFRVFODZNFUIPEOFFETMPOHFSDJQIFSUFYU
****
IQIQDQXGOWKNQOMGEQARFQZFTQRDQCGQZOKYQFTAPZQQPEXAZSQDOUBTQDFQJF
****

YGYGTGNWEMADGECWUGQHVGPVJGHTGSWGPEAOGVJQFPGGFUNQPIGTEKRJGTVGZV
****
EMEMZMTCKSGJMKICAMWNBMVBPMNZMYCMVKGUMBPWLVMMLATWVOMZKQXPMZBMFB
****
MUMUHUBKSAORUSQKIUEVJUDJXUVHUGKUDSOCUJXETDUUTIBEDWUHSYFXUHJUNJ
****
NVNVIVCLTBPSVTRLJVFWKVEKYVWIVHLVETPDVKYFUEVVUJCFEXVITZGYVIKVOK
****
VDVDQDKTBJXADBZTRDNESDMSGDEQDPTDMBXLDSGNCMDDCRKNMFDQBHOGDQSDWS
****
DLDLYLSBJRFILJHBZLVMALUAOLMYLXBLUJFTLAOVKULLKZSVUNLYJPWOLYALEA
****
TBTBOBIRZHVYBZXRPBLCQBKQEBCOBNRBKZVJBQELAKBBAPILKDBOZFMEBOQBUQ
****
KSKSFSZIQYMPSQOIGSCTHSBHVSTFSEISBQMASHVCRBSSRGZCBUSFQWDVSFHSLH
****
JRJRERYHPXLORPNHFRBSGRAGURSERDHRAPLZRGUBQARRQFYBATREPVCUREGRKG
****
RZRZMZGPXFTWZXVPNZJAOZIOCZAMZLPZIXTHZOCJYIZZYNGJIBZMXDKCZMOZSO
****
AIAIVIPYGOCFIGEYWISJXIRXLIJVIUYIRGCQIXLSHRIIHWPSRKIVGMTLIVXIBX
****
OWOWJWDMUCQTWUSMKWGXLWFLZWXJWIMWFUQEWLZGVFWWVKDGFYWJUAHZWJLWPL
****
UCUCPCJSAIWZCAYSQCMDRCLRFCDPCOSCLAWKCRFMBLCCBQJMLECPAGNFCPRCVR
****
FNFNANUDLTHKNLJDBNXOCNWCQNOANZDNWLHVNCQXMWNNMBUXWPNALRYQNACNGC
****
GOGOBOVEMUILOMKECOYPDOXDROPBOAEOXMIWODRYNXOONCVYXQOBMSZROBDOHD
****
SASANAHQYGUXAYWQOAKBPAJPDABNAMQAJYUIAPDKZJAAZOHKJCANYELDANPATP
****
ZHZHUHOXFNBEHFDXVHRIWHQWKHIUHTXHQFBPHWKRGQHHGVORQJHUFLSKHUWHAW

Process finished with exit code 0

KEYS:-[4, 19, 0, 14, 8, 13, 18, 7, 17, 11, 3, 2, 20, 12, 22, 5, 6, 24, 15, 1, 21, 10, 9, 23, 16, 25]

 DECRYPTION:-

*****************************|
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****
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****
PXPXKXENVDRUXVTNLXHYMXGMAXYKXJNXGVRFXMAHWGXXWLEHGZXKVBIAXKMXQM
****
BJBJWJQZHPDGJHFZXJTKYJSYMJKWJVZJSHDRJYMTISJJIXQTSLJWHNUMJWYJCY

KEYS:-[4 19, 0, 14, 8, 13, 18, 7, 17, 11, 3, 2, 20, 12, 22, 5, 6, 24, 15, 1, 21, 10, 9, 23, 16, 25]

 DECRYPTION:-

*****************************|
LTLTGTAJRZNQTRPJHTDUITCIWTUGTFJTCRNBTIWDSCTTSHADCVTGRXEWTGITMI
****
WEWERELUCKYBECAUSEOFTENTHEFREQUENCYMETHODNEEDSLONGERCIPHERTEXT
****
PXPXKXENVDRUXVTNLXHYMXGMAXYKXJNXGVRFXMAHWGXXWLEHGZXKVBIAXKMXQM
****
BJBJWJQZHPDGJHFZXJTKYJSYMJKWJVZJSHDRJYMTISJJIXQTSLJWHNUMJWYJCY

I've marked the key and the text with red for convenience and also seperated the output using *.**

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REG ID-**********