```
dict1 ={'a':0, 'b':1, 'c':2, 'd':3, 'e':4, 'f':5, 'g':6, 'h':7, 'i':8, 'j':9, 'k':10, 'l':11, 'm':12, 'n':13, 'o':14, 'p':15, 'q':16, 'r':17, 's':18, 't':19, 'u':20, 'v':21, 'w':
dict2 = {'A':0, 'B':1, 'C':2, 'D':3, 'E':4, 'F':5, 'G':6, 'H':7, 'I':8, 'J':9, 'K':10, 'L':11, 'M':12, 'N':13, 'O':14, 'P':15, 'Q':16, 'R':17, 'S':18, 'T':19, 'U':20, 'V':21, 'W'

```

```
key_list1 = list(dict1.keys())
val_list1 = list(dict1.values())


key_list = list(dict2.keys())
val_list = list(dict2.values())

print(key_list)
print(val_list)
```

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

Q1. Implement the following message ”cryptography is a very simple subject to understand” using Additive/shift/Caesar with key 19

```
# Encryption

C = (input('Enter a Stirng'))
k = 19
P = ''
C = C.upper()
for i in C:
    if(i == ' '):
        P = P+' '
        continue
    z = (k+dict2[i])%26
    P = P + key_list[val_list.index(z)]
print(P)

# Decryption

M = ''
for i in P:
    if(i == ' '):
        M = M+' '
        continue
    x = dict2[i]-k
    if(x<0):
        x = x+26
    M = M + key_list1[val_list1.index(x)]
print(M)
```

```
Enter a Stirng cryptography is a very simple subject to understand
 VKRIMHZKTIAR BL T OXKR LBFIEX LNUCXVM MH NGWXKLMTGW
 cryptography is a very simple subject to understand
```

Q2. Write a program to perform a brute force attack on the following encrypted message

IOL LUHXIG MYHNYHWY AYHYLUNIL WUH BYFJ SIO WIGY OJ QCNB ZOH LUHXIG MYHNYHWYM ZIL UHS JOLJIMY DOMN YHNYL SIOL JULUGYNYLM CHNI IOL NIIF UHX MYY QBUN CN WUH WIGY OJ QCNB

Assume that Additive Cipher is used for encrypting this message.

```
1
2 P = input('Enter the text->')
3 P = P.lower()
4 for k in range(1,26):
5     M = ''
6     for i in P:
7         if(i == ' '):
8             M = M+' '
9             continue
10        x = dict1[i]-k
11        if(x<0):
12            x = x+26
13        M = M + key_list1[val_list1.index(x)]
14    print(M)
```

```
Enter the text->IOL LUHXIG MYHNYHWY AYHYLUNIL WUH BYFJ SIO WIGY OJ QCNB ZOH LUHXIG MYHNYHWYM ZIL UHS JOLJIMY DOMN YHNYL SIOL JULUGYNYLM CHNI IOL NIIF UHX MYY QBUN CN WUH WIGY O
hnk ktgwhf lxgmxgvx zxgxktmhk vtg axei rhn vhfx ni pbma yng ktgwhf lxgmxgvxl yhk tgr inkihlx cnlm xgmxk rhnk itktfxmxkl bgmh hnk mhhe tgw lxx patm bm vtg vhfx ni pbma
gmj jsfvge kwflwfuw ywfwjslgj usf zwdh qgm ugew mh oalz xmf jsfvge kwflwfuwk xgj sfq hmjhgkw bmkl wflwj qgmj hsjsewlwjk aflg gmj lggd sfv kww ozsl al usf ugew mh oalz
fli ireufd jvekvetv xvevirkfi tre yvcg pfl tfdv lg nzky wle ireufd jvekvetvj wfi rep gligfjv aljk vekvi pfli grirdvkvij zekf fli kffc reu jvv nyrk zk tre tfdv lg nzky
ekh hqdtec iudjudsu wuduhqjeh sqd xubf oek secu kf myjx vkd hqdtec iudjudsui veh qdo fkhfeiu zkij udjuh oekh fqhqcujuhi ydje ekh jeeb qdt iuu mxqj yj sqd secu kf myjx
djg gpcsdb htcitcrt vtctgpidg rpc wtae ndj rdbt je lxiw ujc gpcsdb htcitcrth udg pcn ejgedht yjhi tcitg ndjg epgpbtitgh xcid djg idda pcs htt lwpi xi rpc rdbt je lxiw
cif fobrca gsbhsbqs usbsfohcf qob vszd mci qcas id kwhv tib fobrca gsbhsbqsg tcf obm difdcgs xigh sbhsf mcif dofoashsfg wbhc cif hccz obr gss kvoh wh qob qcas id kwhv
bhe enaqbz fragrapr trarengbe pna uryc lbh pbzr hc jvgu sha enaqbz fragraprf sbe nal checbfr whfg ragre lbhe cnenzrgref vagb bhe gbby naq frr jung vg pna pbzr hc jvgu
agd dmzpay eqzfqzoq sqzqdmfad omz tqxb kag oayq gb iuft rgz dmzpay eqzfqzoqe rad mzk bgdbaeq vgef qzfqd kagd bmdmyqfqde uzfa agd faax mzp eqq itmf uf omz oayq gb iuft
zfc clyozx dpyepynp rpypclezc nly spwa jzf nzxp fa htes qfy clyozx dpyepynpd qzc lyj afcazdp ufde pyepc jzfc alclxpepcd tyez zfc ezzw lyo dpp hsle te nly nzxp fa htes
yeb bkxnyw coxdoxmo qoxobkdyb mkx rovz iye mywo ez gsdr pex bkxnyw coxdoxmoc pyb kxi zebzyco tecd oxdob iyeb zkbkwodobc sxdy yeb dyyv kxn coo grkd sd mkx mywo ez gsdr
xda ajwmxv bnwcnwln pnwnajcxa ljw qnuy hxd lxvn dy frcq odw ajwmxv bnwcnwlnb oxa jwh ydayxbn sdbc nwcna hxda yjajvncnab rwcx xda cxxu jwm bnn fqjc rc ljw lxvn dy frcq
wcz zivlwu amvbmvkm omvmzibwz kiv pmtx gwc kwum cx eqbp ncv zivlwu amvbmvkma nwz ivg xczxwam rcab mvbmz gwcz xiziumbmza qvbw wcz bwwt ivl amm epib qb kiv kwum cx eqbp
vby yhukvt zlualujl nlulyhavy jhu olsw fvb jvtl bw dpao mbu yhukvt zlualujlz mvy huf wbywvzl qbza lualy fvby whyhtlalyz puav vby avvs huk zll doha pa jhu jvtl bw dpao
uax xgtjus yktzktik mktkxgzux igt nkrv eua iusk av cozn lat xgtjus yktzktiky lux gte vaxvuyk payz ktzkx euax vgxgskzkxy otzu uax zuur gtj ykk cngz oz igt iusk av cozn
tzw wfsitr xjsyjshj ljsjwfytw hfs mjqu dtz htrj zu bnym kzs wfsitr xjsyjshjx ktw fsd uzwutxj ozxy jsyjw dtzw ufwfrjyjwx nsyt tzw yttq fsi xjj bmfy ny hfs htrj zu bnym
syv verhsq wirxirgi kirivexsv ger lipt csy gsqi yt amxl jyr verhsq wirxirgiw jsv erc tyvtswi nywx irxiv csyv teveqixivw mrxs syv xssp erh wii alex mx ger gsqi yt amxl
rxu udqgrp vhqwhqfh jhqhudwru fdq khos brx frph xs zlwk ixq udqgrp vhqwhqfhv iru dqb sxusrvh mxvw hqwhu brxu sdudphwhuv lqwr rxu wrro dqg vhh zkdw lw fdq frph xs zlwk
qwt tcpfqo ugpvgpeg igpgtcvqt ecp jgnr aqw eqog wr ykvj hwp tcpfqo ugpvgpegu hqt cpa rwtrqug lwuv gpvgt aqwt rctcogvgtu kpvq qwt vqqn cpf ugg yjcv kv ecp eqog wr ykvj
pvs sboepn tfoufodf hfofsbups dbo ifmq zpv dpnf vq xjui gvo sboepn tfoufodft gps boz qvsqptf kvtu foufs zpvs qbsbnfufst joup pvs uppm boe tff xibu ju dbo dpnf vq xjui
our random sentence generator can help you come up with fun random sentences for any purpose just enter your parameters into our tool and see what it can come up with
ntq qzmcnl rdmsdmbd fdmdqzsnq bzm gdko xnt bnld to vhsg etm qzmcnl rdmsdmbdr enq zmx otqonrd itrs dmsdq xntq ozqzldsdqr hmsn ntq snnk zmc rdd vgzs hs bzm bnld to vhsg
msp pylbmk qclrclac eclcpyrmp ayl fcjn wms amkc sn ugrf dsl pylbmk qclrclacq dmp ylw nspnmqc hsqr clrcp wmsp nypykcrcpq glrm msp rmmj ylb qcc ufyr gr ayl amkc sn ugrf
lro oxkalj pbkqbkzb dbkboxqlo zxk ebim vlr zljb rm tfqe crk oxkalj pbkqbkzbp clo xkv mromlpb grpq bkqbo vlro mxoxjbqbop fkql lro qlli xka pbb texq fq zxk zljb rm tfqe
kqn nwjzki oajpajya cajanwpkn ywj dahl ukq ykia ql sepd bqj nwjzki oajpajyao bkn wju lqnlkoa fqop ajpan ukqn lwnwiapano ejpk kqn pkkh wjz oaa sdwp ep ywj ykia ql sepd
jpm mviyjh nziozixz bzizmvojm xvi czgk tjp xjhz pk rdoc api mviyjh nziozixzn ajm vit kpmkjnz epno ziozm tjpm kvmvhzozmn dioj jpm ojjg viy nzz rcvo do xvi xjhz pk rdoc
```

Q3. Write a program to perform a statistical attack on the following encrypted message

”NBYLY ULY U FIN IZ JINYHNCUF OMYM ZIL IOL LUHXIG MYHNYHWY AYHYLUNIL ZLIG AYNNCHA NBY WLYUNCPY DOCWYM ZFIQCHA NI MYLPCHA UM CHMJCLUNCIH ZIL FSLCWM MWLCJNM IL VLUCHMNILGCHA IZ UHS MILN NBYLY CM HI MBILNUAY IZ OMY WUMYM MIGYNCGYM QY UFF HYYX U ECWEMNULN NI AYN NBIMY WLYUNCPY DOCWYM ZFIQCHA MCHWY SIO HYPYL EHIQ QBUN GUS MJULE SIOL HYRN VLCFFCUHN CXYU NBCM NIIF YRJUHXM IH NBY LUHXIG QILX AYHYLUNIL VS LYNOLHCHA U ZOFF MYHNYHWY”

Assume that Additive Cipher is used for encrypting this message.

```
def occurances(cipher):
    totals = []
    for letter in key_list:
        totals.append((cipher.count(letter), letter))
    totals.sort()
    print(totals)
    return totals
```

```
cipher = "NBYLY ULY U FIN IZ JINYHNCUF OMYM ZIL IOL LUHXIG MYHNYHWY AYHYLUNIL ZLIG AYNNCHA NBY WLYUNCPY DOCWYM ZFIQCHA NI MYLPCHA UM CHMJCLUNCIH ZIL FSLCWM MWLCJNM IL VLUCHMNILGC
cipher = cipher.upper()
inputDensity = occurances(cipher)
k = dict2[inputDensity[-1][1]]-dict2['E']
M = ''
for i in cipher:
    if(i == ' '):
        M = M+' '
        continue
    x = dict2[i]-k
    if(x<0):
        x = x+26
    M = M + key_list1[val_list1.index(x)]
print(M)
```

```
[(0, 'K'), (0, 'T'), (2, 'D'), (2, 'R'), (3, 'V'), (4, 'E'), (4, 'P'), (5, 'J'), (6, 'Q'), (6, 'S'), (6, 'X'), (7, 'G'), (8, 'B'), (9, 'O'), (9, 'Z'), (11, 'A'), (11, 'W'), (12
there are a lot of potential uses for our random sentence generator from getting the creative juices flowing to serving as inspiration for lyrics scripts or brainstorming of ar
```

```
print(inputDensity[-1])
print(inputDensity[-1][1])
print(inputDensity[-1][0])

```

```
(44, 'Y')
Y
44
```

```
1
```