

CRYPTOGRAPHY STUDENT PACK

Let's break some codes together!

First Code: Reverse Letters

Description:

Pros:

Cons:

Second Code: Shift Cipher (Caesar Cipher)

Description:

Pros:

Cons:

Example:

Encode the phrase:

Long Island is in New York

Answer:

Decode the phrase:

olleH dlrow, ym eman si asiL

Answer:

Example:

Encode the phrase using a shift by 4:

changing the order of the letters

Answer:

Decode the phrase using a shift by 4:

Tmdde mw qc jezsvmxi jssh

Answer:

Third Code: Substitution Cipher

Description:

Note: Here, the red letters are the Plaintext or Uncoded message, the black are what we get from applying the code!

Pros:

Cons:

Example:

Encode the phrase:

The quick brown fox jumps over the lazy dog.

Using the substitution:

A	B	C	D	E	F	G	H	I	J	K	L	M
Z	Y	X	W	V	U	T	S	R	Q	P	O	N

N	O	P	Q	R	S	T	U	V	W	X	Y	Z
M	L	K	J	I	H	G	F	E	D	C	B	A

Answer:

Example:

Decode the phrase:

Rgf'z Egxfz Ngxk Eioeatfl Wtygkt Zitn Iqzei

Using the substitution cipher:

A	B	C	D	E	F	G	H	I	J	K	L	M
Q	W	E	R	T	Y	U	I	O	P	A	S	D

N	O	P	Q	R	S	T	U	V	W	X	Y	Z
F	G	H	J	K	L	Z	X	C	V	B	N	M

Note: Again, the red text is the original alphabet, before coding - in other words, if you want to decode the letter "G", you look for the black "G", and the red letter above it is the original.

Answer:

Letter	Relative frequency in the English language
e	12.702%
t	9.056%
a	8.167%
o	7.507%
i	6.966%
n	6.749%
s	6.327%
h	6.094%
r	5.987%
d	4.253%
l	4.025%
c	2.782%
u	2.758%
m	2.406%
w	2.360%
f	2.228%
g	2.015%
y	1.974%
p	1.929%
b	1.492%
v	0.978%
k	0.772%

j	0.153%
x	0.150%
q	0.095%
z	0.074%

Very Common words to look out for:

gnoL dnalsl si a ylesned detalupop dnalsi ni eht
 tsaehuot trap fo eht .S.U etats fo weN kroY, ni eht
 nretsaehton detinU setatS. tA weN kroY robraH, ti si
 yletamixorppa 53.0 selim morf nattahnaM dnalsl dna
 sdnexed drawtsae revo 001 selim otni eht citnalTA
 naecO. ehT dnalsi sesirpmoc ruof seitnuoc; sgniK dna
 sneeuQ seitnuoc (eht weN kroY ytiC shguorob fo
 nylkoorB dna ,sneeuQ ylevitcepser) dna uassaN
 ytnuoC erahs eht nretsew driht fo eht dnalsi, elihw
 kloffuS ytnuoC seipucco eht nretsae owt sdriht. eroM
 naht flah fo weN kroY s'ytiC stnediser evil no gnoL
 dnalsl, ni nylkoorB dna ni sneeuQ. revewoH, elpoep
 ni eht weN kroY natiloportem aera yllaiuqolloc esu eht
 mret gnoL dnalsl (ro eht dnalsl) ot refer ylevisulcxe ot
 uassaN dna kloffuS seitnuoc, dna ylesrevnoc, yolpme
 eht mret eht ytiC ot naem nattahnaM enola.

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

Method of encryption:

Pylshuk pz hu pzshuk pu aol Uvyao Hashuapj. Pa pz
zlwlyhalk myvt Nylha lypahpu av paz lhza if aol
Uvyao Johuuls, aol Pypzo Zlh, huk Za Nlvynl'z
Johuuls. Pylshuk pz aol zljvuk-shynlza pzshuk vm aol
lypapzo Pzslz, aol aopyk-shynlza pu Lbyvwl, huk aol
adluaplao-shynlza vu Lhyao.

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

Nlvwvspapjhssf, Pylshuk pz kpcpklk iladllu aol
Ylwbispij vm Pylshuk (vmmpjphssf uhtlk Pylshuk),
dopjo jvclyz mpcl-zpeaoz vm aol pzshuk, huk
Uvyaolyu Pylshuk, dopjo pz whya vm aol Bupalk
Rpunkvt. Pu 2011, aol wwwbshapvu vm Pylshuk dhz
hivba 6.6 tpsspvu, yhurpun pa aol zljvuk-tvza
wwwsvbz pzshuk pu Lbyvwl hmaly Nylha lypahpu.
Hz vm 2016, 4.8 tpsspvu spcl pu aol Ylwbispij vm
Pylshuk, huk 1.8 tpsspvu spcl pu Uvyaolyu Pylshuk.

Method of encryption:

jpho zmjp t luid lwxx ntq t wtxh nwj, ajtqlupv wjn
 whojzyp xzp dtqlhx lwtp tpsjph hyqh, ntq djxhfhx
 lhtqupv ljxljuqh djx ulq qyjnpqhq. lwph jph bts, lwh
 uxtlh ljxljuqh tpqnhxhb atoc: "nwj bj sjz lwupc sjz txh?
 lwxx'h'q pj bhpsupv sjz'xh qnudl, azl hfhp sjz otp ah
 ahtlhp!" lwh wtxh qgzhtyhb nulw ytzvwlhx. "ahtlhp up t
 xtoh? as nwji? pj! sjz, qzxhys! u ahl lwxx'h'q pjajbs up
 lwh njxyb lwtl otp nup tvtupql ih, u'i qj qmhhbs. pjn,
 nws bjp'l sjz lxs?" tppjshb as qzow axtvvupv, lwh
 ljxljuqh toohmlhb lwh owtyyhpvh. t ojzxqh ntq
 mytpphb, tpb lwh phrl bts tl btnp lwxs qljbb tl lwh
 qltxlupv yuph. lwh wtxh stnphb qyhmuys tq lwh ihhc
 ljxljuqh lxzbvhhb qyjnyj jdd.

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

Method:

M bxmgle xchrkl vte tmcf hkliqs un Rdibmv Prodg,
ihokj xae akxetb czd zqfk utlgd tnm kzke amk, tnm
xqre tcet vtcoe eww ioatf qxvmef aybqziypkzg zpkzgy
bq tavxgz. Hgztk Pubvqr xwnxej wxqr ovuudk pke
bripweza yutnwwf wgszgz ax. Qze yucxl nipp crwuqd
uv vte rmvfex jgeijm jum gvf te ytgbt uv, pat qvqiito jq
wga ubeiqcx, nub mzocqps hk ece fguqgs, twv
wnuekzg nm yaurl dq wusgz it i hqw nwwds' zqoq be
Ute Dazuxee'a uorkio ms ypg apkvgp tnm hdotb faox
bq buz wwv tnm oulq jqftrmu, zox bjmt nm yaurl ubetl
vte tmzf fke yqeqa dqito rdojlgp atl runipgp be pke
cucuun Jcfxee ... Pg ootfz't qvqi tniv mt zpke vkza
yosmpf, pkwrxe smgfito kz skktqt gtn avkz vte
iwwztxg yqrk pqxdovi gp zpgur mtceska czd yiaunm
qp tuyppg vuqeqs: ' Zw Jmrxg Ratzmt – fhk jqk wnw

Nuvkl!'

Code Word:

