

Lab2 : Attacking Classic Cryptosystems

Lab Report

Submitted by

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Github repository link :

https://github.com/Sadia-Tasnim-Meem/Information_and_Network_Security

Checkpoint 1

The given cipher was created using Caesar cipher. Caesar cipher is a classic encryption method where each letter is mapped to another letter by a shift number. For example, if we shift A by key = 2, A will be mapped to C. To decrypt this type of cipher, we have to find out the key. Here, a simple brute force approach is used to find out the key by shifting it from 0 to 25th letters, and decrypt it simultaneously.

The generated output is:

```
0 odroboewscdrolocdcwkdbmyxdbkmdzvkdpybwyeddrobo
1 pespcpfxtdespmpdedxlcenzyeclneawleqzcxzfeespcp
2 qftqdqgyueftqnqefeymdfoazfdmofbmxmfradyagfftqdq
3 rgurerhzvfgurorfgfznegpbagenpgcyngsbezbhggurer
4 shvsfsiawghvpspghgaofhqcbhfoqhdzohtcfacihhvsfs
5 tiwtgtjbxhiwtqthihbpgirdcigprieapiudgbdjiwtgt
6 ujxuhukcyijxuruijicqhjsedjhqsjfbqjvehcekjxuhu
7 vkyvivldzjkyvsvjkjdriktfekirtkgcrkwfidflkkyviv
8 wlzjwmeaklzwtklkesjlugfljsulhdsxgjegmllzwjw
9 xmaxkxnfblmaxuxlmlftkmvhgmktvmietmyhkfhnmmaxkx
10 ynbylyogcmnbyvymnmgulnwihnlwnjfunzilgionnbyly
11 zoczmzphdnoczwznnonhvmoxjomvxokgvoajmhjpooczms
12 apdanaqieopdaxaopoiwnpykjpnyplhwpbknkqppdana
13 bqebobrfjpqebybpqpjxoqzlkqoxzqmioxqclojlrqebob
14 crfcpcskgqrfzczqrqkypramlrpyarnjyrdmpkmsrrfcpc
15 dsqdqdtlhrsgdadrslzqsbnmsqzbsokzsenqIntssgdqd
16 ethereumisthebestsmartcontractplatformoutthere
17 fuijsfvnjtufcftutnbsudpousbduqmbugpsnpvuuijsf
18 gvjgtgwokuvjgdguvuoctveqpvtcevrncvhqtoqwwvjgtg
19 hwkhuhxplvwkhehvwpdudwfrqwudfwsodwiruprxwwkhuh
20 ixliviymwxlfiwxwqevxgsrxvegxtpexjsvqsyxxlivi
21 jymjwjzrnxyjmjgxyxrfwyhtsywfhuyqfyktwrtzyymjwj
22 kznkxkasoyznkhkyzysgxziutzxgizvrgzluxsuazznkxk
23 laolylbtpzaolilazthyaajvuayhjawshamvytvbaaolyl
24 mbpmzmcuqabpmjmabauizbkwwbzibxtibnwzuwcbbpzmzm
25 ncqnandvrbcqknbcbvjaclxwcajlcuyjcoxavxdccqnan
```

By observing the outputs, it is most likely that the key was 16 and the plaintext was:

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Checkpoint 2

In this task, two ciphers are given to be decrypted with frequency distribution of english characters. Here Frequency analysis was used to decrypt. Frequency analysis is one of the known ciphertext attacks. It is based on the study of the frequency of letters or groups of letters in a ciphertext. In all languages, different letters are used with different frequencies. The frequency array attack is based on the observation that in an English text, not all letters occur with the same frequency. The idea is to find the difference between the maximum occurring letter in the given string and the string of english letters arranged based on frequency and then shift all the letters of the given string with that difference. The string obtained will be one of the possible decrypted strings.

Approach:

1. First, the english letters are arranged according to their frequency, sorted in a descending order. Thus we gain the string
etaoinshrdlcUumwfgypbvkJxqz
2. Then the frequency of each letter in the given ciphers are found out and sorted.
3. By comparing the i th character, a probable shift is selected.
4. The decryption is carried out based on the probable shift
5. This procedure is run for five times

The generated output is:

Cipher 1

wb l tlgymrjlg lbcB wb elma mlneB cwqqegeby plsB yaene qzrg pege
wbcwntebnldje yz awksriz lklgsjB demlrne zq awn frwmh rbcegnylbcwbi zq yae
tgwbmwtjen zq tns mazawnyzgs lbczq awn wkliwblywoe tgzdwbin wbyz bep
lgelnD wy pln mzkqzgywbi yz hbzp yaly wq lbsyawbialttebec yz nejczb awknejq
deqzge yae klyaeklywmn zq yae qwejc mjrjc de mztjeyejjs pzghec zryClbc azp

njzpps wy tgzmeececB lbc azp kzrbylwbzrn yae zdnylmjenCCyaege prjrc ly jelny
geklwb zbeizzc kwbc yaly prjrc mzbywbre yae genelgma
qv f nfasqgldfa fvWV qv yfgu gfhyV wqkkyayvs jfmV suyhy ktla jyay
qvwqhnyvhfxdy st uqemlct fefamdV xygflhy tk uqh zlqgb lvwyahsfvwqvc tk suy
naqvgqndyh tk nhmgutuqhstam fvwtk uqh qefcqvsqiy natxqvch qvst vyj fayfhX
qs jfh gtektasqvc st bvtj sufs qk fvmsuqvcufnnyvyw st hydwtv uqehydk xyktay suy
efsuyefsqqh tk suy kqydw gtldw xy gtendysydm jtabyw tIsWfwv utj hdtjdm qs
natgyywywV fvW utj etlvsfqvtlh suy txhsfgdyhWWsuyay jtldw fs dyfhs ayefqv
tvycctw eqvw sufs jtldw gtvsvqly suy ayhyfagu
yd n vniayotlni ndeD yd gnoc onpgD eyssgigda rnuD acpgg sbti rgig
ydeypvgdnpflg ab cymutkb nmniulD fgontpg bs cyp htyoj tdegipandeydk bs acg
viydoyvlgp bs vpuocbcypabiu ndebs cyp ymnkydnayqg vibfydkp ydab dgr nignpF
ya rnp obmsbiaydk ab jdbr acna ys nduacydkcnvvgdge ab pglebd cympgls fgsbig
acg mnacgmnayop bs acg sygle obtle fg obmvlglaglu rbijge btaEnde cbr plbrlu ya
viboggegeD nde cbr mbtdanydbtp acg bfpanolgpEEacgig rbtle na lgnpa igmnyd
bdgkbbbe myde acna rbtle obdaydtg acg igpgnioc
ze o wojbzipmoj oefE ze hopd poqhE fztthjheb sovE bdhgh tcuj shjh
zefzqwheqogmh bc dznvulc onojvmE ghpouqh ct dzq iuzpk uefhjqboefzel ct bdh
wjzepzwmhq ct wqvpdcdzqbcjv oefct dzq znolzeobzrh wjcgzelq zebc ehs ojhoqG
zb soq pcntcjbzel bc kecs bdob zt oevbdzeldowwhehf bc qhmfce dznqhmt ghtcjh
bdh nobdhnobzpq ct bdh tzhmf pcumf gh pcnwmhbhmv scjkhf cubFoef dcs
qmcsmv zb wjcphhhfhfE oef dcs ncuebozecuq bdh cgqbopmhqFFbdhj h scumf ob
mhoqb jhnoze cehlccf nzef bdob scumf pcebzeuh bdh jhqhojpd
in x fxskiydvxs xnoN in qxym yxqzN oiccsqkn bxeN kmqzq clds bqsq
inoizfqnzxpqv kl miwedul xwxsevN pqyxdzq lc miz rdiyt dnoqszkxnoinu lc kmq
fsinyifvqz lc fzeymlmizklse xnolc miz iwxuinxkiaq fslpinuz inkl nqb xsqxzP ik bxz
ylwclskinu kl tnlb kmxk ic xnekminumxffqnqo kl zqvoln miwzqvc pqclsq kmq
wxkmqwxkiyz lc kmq ciqvo yldvo pq ylvfvqkqve blstqo ldkOxno mlb zvlbve ik
fslyqqoqoN xno mlb wldnkxinldz kmq lpzkxyvqzOOkmqsq bldvo xk vxqzk sqwxin
lnqullo wino kmxk bldvo ylnkindq kmq sqzqxsym

Cipher 2

kmokr dyj zefq fmnv ywt zefq ienaomyf6 ywt vyt keew uve drwtef rc uve jvmfe
crfjmluq qeyfj6 ezef jmwne vmj fegyfybykoe tmjyiieyfywne ywt awelienuet feuafw8
uve fmnvej ve vyt kfraxvu kynb cfrg vmj ufyzcoj vyt wrd kenrge y ornyo oexewt6
ywt mu dyj iriaoyfoq keomezeombizd]dbsxq2];6 X3Et6 dvyuezef uve rot crob
gmxvu jyj6 uvyu uve vmoo yu kyx ewt dyj caoo rc uawweoj juacct dmuv

ufeyjafe8 ywt mc uvyu dyj wru ewraxv crf cyge6 uvefe dyj yojr vmj ifrorwxet
zmxraf ur gyfzeo yu8 umge drfe rw6 kau mu jeeget ur vyze omuuoe eccenu
rwgf8 kyxxmwj8 yu wmweuq ve dyj ganv uve jyge yj yu cmcuq8 yu
wmweuq7wmwe uveq kexyw ur nyoo vmg deoo7ifejefzetE kau awnvywxet draot
vyze keew weyfef uve gyfb8 uvefe defe jrge uvyu jvrrb uvemf veytj ywt uvraxvu
uvmj dyj urr ganv rc y xrrt uvmwxE mu jeeget awcymf uvyu ywqrwe jvraot irjejj
2yiiyfewuoq3 iefieuayo qrauv yj deoo yj 2feiauetoq3 mwelvyajumkoe deyouv8 mu
dmoo vyze ur ke iymt crf6 uveq jytm8 mu mju1u wyuafyo6 ywt ufrakoe dmoo
nrge rc mu+ kau jr cyf ufrakoe vyt wru nrgeE ywt yj gf8 kyxxmwj dyj xewefraj
dmuv vmj grweq6 grju ierioe defe dmoomwx ur crfxmze vmg vmj rttmumej ywt
vmj xrrt crfuawe8 ve fegymwet rw zmjmmwx uefgj dmuv vmj feoyumzej 2elneiu6
rc nrafje6 uve jynbzmoockyxxmwjej36 ywt ve vyt gywq tezruet ytgmfefj ygrwx
uve vrkkmu j rc irrf ywt awmgirfuywu cygmomej8 kau ve vyt wr norje cfmewtj6
awumo jrge rc vmj qrawxef nrajmwj kexyw ur xfrd ai8 uve eoteju rc uveje6 ywt
kmokr1j cyzrafmue6 dyj qrawx cfrtr kyxxmwj8 dvew kmokr dyj wmweuq7wmwe
ve ytriuat cfrtr yj vmj vemf6 ywt kfraxvu vmg ur omze yu kyx ewtE ywt uvevriej rc
uve jynbzmooe7 kyxxmwjej defe cmwyooq tyjvet8 kmokr ywt cfrtr vyiiwet ur
vyze uve jyge kmfuvtyq6 jeiuegkef <<wt8 qra vyt keuuaf nrge ywt omze vefe6
cfrtr gq oyt6 jytm kmokr rwe tyqE ywt uvew de nyw neoekfyue raf
kmfuvtyq7iyfumej nrgcrfuykoq urxeuvef8 yu uvyu umge cfrtr dyj jumoo mw vmj
udeewj6 yj uve vrkkmu j nyooet uve mffejirwjmko e udewumej keudeew nvmtvrrt
ywt nrgmwx rc yxe yu uvmfuq7uvfee

jlnjq cxi ydep elmu xvs ydep hdmznlxEO xvs uxs jddv tud cqvsde qb tud iuled
bqeilktp pdxeiO dyde ilvmd uli edfxeajnd slxhhdexxvmd xvs zvdkhdmtds
edtzevQ tud elmudi ud uxs jeqzwut jxma beqf uli texydni uxs vqc jdmqfd x nqmxn
ndwdvsO xvs lt cxi hqhznxenp jdnldydnlahycvcarwpKvTO qL^sO cuxtdyde tud
qns bqna flwut ixpO tuxt tud ulnn xt jxw dvs cxi bznn qb tzvvdni itzbbds cltu
tedxizedQ xvs lb tuxt cxi vqt dvqzwb bqe bxfdo tuded cxi xniq uli heqnqvwds
ylwqze tq fxeydn xtQ tlfd cqed qvO jzt lt iddfds tq uxyd nltnnd dbbdmt qvfeQ
jxwwlviQ xt vlvdtp ud cxi fzmud tud ixfd xi xt blbtpQ xt vlvdtpPvlvd tudp jdwxv tq
mxnn ulf cdnnPhedideyds^ jzt zvmuxvwds cqzns uxyd jddv vdxede tud fxeaQ
tuded cded iqfd tuxt iuqqa tudle udxsi xvs tuqzwut tuli cxi tqf fzmud qb x wqqf
tulvw^ lt iddfds zvbxe tuxt xvpqvd iuqzns hqiidi KxhxedvtnpL hdehdtzn pqztu
xi cdnn xi KedhztdsnpL lvdkuxzitljnd cdxntuQ lt clnn uxyd tq jd hxls bqeO tudp
ixlsQ lt livJt vxtzxnO xvs teqzjnd clnn mqfd qb ltD jzt iq bxe teqzjnd uxs vqt
mqfd^ xvs xi feQ jxwwlvi cxi wdvdeqzi cltu uli fqvdpO fqit hdqhnd cded clnnlvw tq
bqewlyd ulf uli qssltidi xvs uli wqqf bqetzvdQ ud edfxlvds qv yliltlvw tdefi cltu uli

ednxtlydi KdkmdhtO qb mqzeidO tud ixmaylnndjxwwlvidiLO xvs ud uxs fxvp
sdyqtds xsfledeti xfqvw tud uqjjlti qb hqqe xvs zvlfhqetxvt bxflnldiQ jzt ud uxs vq
mnqid beldvsiO zvtln iqfd qb uli pqzvwde mqzilvi jdwxv tq weqc zhQ tud dnsdit qb
tudidO xvs jlnjqJi bxyqzeltO cxi pqzvw beqsq jxwwlviQ cudv jlnjq cxi vlvdtpPvlvd
ud xsqhtds beqsq xi uli udleO xvs jeqzwut ulf tq nlyd xt jxw dvs^ xvs tuduqhdi qb
tud ixmaylnndP jxwwlvidi cded blvxnnp sxiudsQ jlnjq xvs beqsq uxhhdvds tq uxyd
tud ixfd jletusxpO idhtdfjde UUvsQ pqz uxs jdttdde mqfd xvs nlyd udedO beqsq fp
nxsO ixls jlnjq qvd sxp^ xvs tudv cd mxv mdndjextd qze jletusxpPhxetldi
mqfbqetxjnp tqwdtudeQ xt tuxt tlf beqsq cxi itltn lv uli tcddviO xi tud uqjjlti
mxnnds tud leedihqvijnd tcdvtldi jdtcddv mulnsuqqqs xvs mqflvw qb xwd xt
tuletpPtuedd

moqmt fal bghs hopx ayv bghs kgpcqoah8 ayv xav mggy wxg ftyvgh te wxg lxohg
ethlonws sgahl8 gbgh loypg xol hgiahdamqg volakkgahaypg ayv cygnkgpwwg
hgwchy: wxg hopxgl xg xav mhiczxw mapd ehti xol whabgql xav ytf mgptig a
qtpaq qgzgyv8 ayv ow fal ktkcqahqs mgqogbgqodkbf_fduzs4_=8 Z5Gv8
fxawgbgh wxg tqv etqd iozxw las8 wxaw wxg xoqq aw maz gyv fal ecqq te
wcyygql lwceegv fowx whgalchg: ayv oe wxaw fal ytw gytctx eth eaig8 wxghg fal
aqlt xol khtqtyzgv boztch wt iahbgq aw: woig fthg ty8 mcw ow lggigv wt xabg
qowwqg geegpw tyih: mazzoil: aw yoygws xg fal icpx wxg laig al aw eoews: aw
yoygws9yoyg wxgs mgzay wt paqq xoi fgqq9khglghbgvG mcw cypxayzgv ftcqv
xabg mggy ygahgh wxg iaht: wxghg fghg ltig wxaw lxttd wxgoh xgavl ayv
wxtczxw wxol fal wtt icpx te a zttv wxoyzG ow lggigv cyeah wxaw aystyg lxtcqv
ktllgl 4akkahgywqs5 kghkgwcaq stcw al fgqq al 4hgkcwgvqs5 oygnxacwomqg
fgaqwx: ow foqq xabg wt mg kaov eth8 wxgs laov: ow oly3w yawchaq8 ayv
whbcmqg foqq ptig te ow- mcw lt eah whbcmqg xav ytw ptigG ayv al ih: mazzoil
fal zgyghtcl fowx xol itygs8 itlw kgtkqg fghg foqqoyz wt ethzobg xoi xol tvvowogl
ayv xol zttv ethwcyg: xg hgiaoayg ty bolowoyz wghil fowx xol hggawobgl
4gnpgkw8 te ptchlgl8 wxg lapdboqqgmazzoilgl58 ayv xg xav iays vgbtwgv
aviohghl aityz wxg xtmowl te kthh ayv cyoikthwayw eaioqogl: mcw xg xav yt
pqtig ehogyvl8 cywoq ltig te xol stcyzgh ptcloyl mgzay wt zhtf ck: wxg gqvglw te
wxglgl8 ayv moqmt3l eabtchowg8 fal stcyz ehtvt mazzoil: fxgy moqmt fal
yoygws9yoyg xg avtkwgv ehtvt al xol xgoh8 ayv mhiczxw xoi wt qobg aw maz
gyvG ayv wxgxtkgl te wxg lapdboqqg9 mazzoilgl fghg eoyaqq valxgv: moqmt
ayv ehtvt xakkgygv wt xabg wxg laig mohwxvas8 lgkwgimgh >>yv: stc xav
mgwwgh ptig ayv qobg xghg8 ehtvt is qav8 laov moqmt tyg vasG ayv wxgy fg
pay pgqgmhawg tch mohwxvas9kahwogl ptiethwamqs wtzgwxgh: aw wxaw woig

ehtvt fal lwoqq oy xol wfggyl8 al wxg xtmowl paqqgv wxg ohhglktylomqg
wfgywogl mgwfggy pxoqvxttv ayv ptioyz te azg aw wxohws9wxhgg
hjlho avg wbcn cjks vtq wbcn fbkxljvcM vtq svq hbbt rsb aotqbc oz rsb gsjcb
zocgjirn nbvcgM bwbc gjtkb sjg cbdvcyvhlb qjgvffbvctkb vtq xtbifbkrbq cbrxctO
rsb cjsbg sb svq hcoxusr hvky zcod sjg rcwblg svq toa hbkodb v lokvl lbubtqM
vtq jr avg fofxlvcIn hbljbwblijfwataypunitRM oJ\qM asvrwbcb rsb olq zoly djusr
gvnM rsvr rsb sjll vr hvu btq avg zxll oz rxttblg grxzzbq ajrs rcbvgxcbO vtq jz rsvr
avg tor btocus zoc zvdbM rsbcb avg vlgo sjg fcolotubq wjuoxc ro dvcwbl vrO rjdb
aocb otM hxr jr gbbdbq ro svwb ljrllb bzzbkr otcdO hvuujtgO vr tjtrn sb avg dxks
rsb gvdb vg vr zjzrnO vr tjtrnNtjtb rsbn hbuvr ro kvll sjd abllNfcbgbcwbq\ hxr
xtksvtubq aoxlq svwb hbbt tbvcbc rsb dvcyO rsbcb abcb godb rsvr gsooy rsbjc
sbvqg vtq rsoxusr rsjg avg roo dxks oz v uooq rsjtu\ jr gbbdbq xtzvjc rsvr vtnotb
gsoxlq foggbgg lvffvcbrlnJ fbcfbrxvl noxrs vg abll vg lcbfxbqlnJ jtbisvxgrjhlb
abvlrsO jr ajll svwb ro hb fvjq zocM rsbn gvjqO jr jgtHr tvrxcvlM vtq rcoxhlb ajll
kodb oz jrB hxr go zvc rcoxhlb svq tor kodb\ vtq vg dcO hvuujtg avg ubtbcxg
ajrs sjg dotbnM dogr fboflb abcb ajlljtu ro zocujwb sjd sjg oqqrjbg vtq sjg uooq
zocrxtbO sb cbdvjtbq ot wjgjrtu rbcdg ajrs sjg cblvrjwbq lbikbfrM oz koxcgbM rsb
gvkywjllbhvuujtgbgJM vtq sb svq dvtu qbworbq vqdjcbcg vdotu rsb sohhjrg oz
fooc vtq xtjdfocrvtr zvdjlbqO hxr sb svq to klogb zcjbttqgM xtrjl godb oz sjg
noxtubc koxgjtg hbuvr ro ucoa xfO rsb blqbgz oz rsbgM vtq hjlhoHg zvwoxcjrbM
avg noxtu zcoqo hvuujtgO asbt hjlho avg tjtrnNtjtb sb vqofrbq zcoqo vg sjg
sbjcbM vtq hcoxusr sjd ro ljwb vr hvu btq\ vtq rsbsofbg oz rsb gvkywjllbN
hvuujtgbg abcb zjtvlln qvgsbqO hjlho vtq zcoqo svffbtbq ro svwb rsb gvdb
hjcrsqvnM gbfrbdhbc SStqO nox svq hbrbcb kodb vtq ljwb sbcbM zcoqo dn lvqM
gvjq hjlho otb qvn\ vtq rsbt ab kvv kblbhcvrb oxc hjcrsqvnNfvcjrbg kodzocrvhln
roubrsbcO vr rsvr rjdb zcoqo avg grjll jt sjg rabbtgM vg rsb sohhjrg kvllbq rsb
jccbgfotgjhlb rabtrjbg hbrabbt ksjlqsooq vtq kodjtu oz vub vr rsjcrnNrscbb
gikgn zuf vabm bijr usp vabm eajwkiubL usp rup gaas qra znspab ny qra friba
ynbfihqm maubfL avab fisja rif bacubxugka pifueeaubusja usp wsaheajqap
baqwbsN qra bijraf ra rup gbnwtrq gujx ybnc rif qbuvakf rup snz gajnca u knjuk
kataspl usp iq zuf enewkubkm gakiavakixevzszxotmHsQL nl[pL zruqavab qra
nkp ynkx citrq fumL qruq qra rikk uq gut asp zuf ywkk ny qwssakf fqwyypap ziqr
qbaufwbaN usp iy qruq zuf snq asnwtr ynb yucaL qra zuf ukfn rif ebknstap
vitnwb qn cubvak uqN qica znba nsL gwq iq faacap qn ruva kiqqka ayyajq nscbN
guttisfN uq sisaqm ra zuf cwjr qra fuca uf uq yiyqmN uq sisaqmMsisa qram gatus
qn jukk ric zakkMebafabvap[gwq wsjrustap znwkp ruva gaas saubab qra cubxN
qra zaba fnca qruq frnnx qraib raupf usp qrnwtrq qrif zuf qnn cwjr ny u tnnp

qrist[iq faacap wsyuib qruq usmnsa frnwkp enffaff Hueeubasqkml eabeaqwuk
mnwqr uf zakk uf Hbaewqapkml isahruwfqigka zaukqrN iq zikk ruva qn ga euip
ynbL qram fuipN iq ifsGq suqwbukL usp qbnwgka zikk jnca ny iqA gwq fn yub
qbnwgka rup snq jnca[usp uf cbN guttisf zuf tasabnwf ziqr rif cnsamL cnfq
eaneka zaba zikkist qn ynbtiva ric rif nppiqiaf usp rif tnnp ynbqwsaN ra bacuisap
ns vifiqist qabcf ziqr rif bakuqivaf HahjaeqL ny jnwbfaL qra fujxvikkaguttisfaFIL
usp ra rup cusm pavnqap upcibabf ucnst qra rnggiqf ny ennb usp wsicenbqusq
yucikiafN gwq ra rup sn jknfa ybiaspfL wsqik fnca ny rif mnwstab jnwfisf gatus qn
tbnz weN qra akpafq ny qrafaL usp gikgnGf yuvnwbiqaL zuf mnwst ybnpn
guttisfN zras gikgn zuf sisaqmMsisa ra upneqap ybnpn uf rif raibL usp gbnwtrq
ric qn kiva uq gut asp[usp qarneaf ny qra fujxvikkaM guttisfaf zaba yisukkm
pufrapN

From the output, no meaning message cannot to be retrieved. As the approach is more like brute force, with some modifications, this does not work well. Also only 5 of the many possible outcomes are examined here, because of the size of the given cipher texts. It is inefficient to check all the outcomes manually without any background data to find out whether the dryption is meaningful or not. To conclude, a more sophisticated approach with more detailed context is seemingly required to decrypt these ciphers.