

1) Key used to encrypt the message
(20 points)

SWING / swing

2) Decrypted (plaintext) message
(20 points)

you get a shiver in the dark it's raining in the park but mean times south of the river you stop and you hold every
thing a band is blowing dixie double four time you feel alright when you hear the music ring well now you step
inside but you don't see too many faces coming in out of the rain they hear the jazz go down competition in oth
er places uh but the horns they blow in that sound way on down south way on down south london town you ch
eck out guitar george he knows all the chords mind it's strictly rhythm he doesn't want to make it cry or sing the
y said an old guitar is all he can afford when he gets up under the light stop play his thing and harry doesn't mind i
f he doesn't make the scene he's got a day time job he's doing alright he can play the honky tonk like anything s
a vinit up for friday night with the sultans were the sultans of swing then a crowd of young boys they're a fool in a
round in the corner drunk and dressed in their best brown baggies and their platform shoes they don't give a d
amn about any trumpet play in band it ain't what they call rock and roll and the sultans yeah the sultan they pl
ay creole creole and then the man he steps right up to the microphone and says at last just as the time bell rin
gs good night now it's time to go home then he makes it fast with one more thing

3) Proof of individual solve (annotated code explaining the steps or handwritten work)

(60 points)

Top Ten Most Common Factors with # of occurrences

[(5, 1342), (2, 983), (10, 664), (3, 637), (4, 487), (15, 436), (20, 322), (6, 304), (25, 257),
(7, 249)]

Most common in index 0

Counter({'l': 26, 'w': 25, 'f': 24, 's': 16, 'a': 16, 'z': 14, 'g': 12, 'j': 9, 'd': 8, 'v': 8, 'k': 7, 'y': 7,
'q': 6, 'm': 6, 'o': 5, 'u': 5, 'e': 3, 'x': 3, 'h': 3, 'n': 2, 't': 2, 'c': 1})

Most common in index 1

Counter({'d': 19, 'k': 18, 'p': 18, 'w': 17, 'a': 17, 'o': 16, 'j': 15, 'e': 14, 'n': 12, 'y': 7, 'c': 7, 'i':
6, 'q': 6, 'u': 6, 'z': 6, 'x': 4, 'h': 4, 's': 4, 'b': 3, 'l': 3, 'g': 2, 'f': 2, 'r': 1, 't': 1})

Most common in index 2

Counter({'m': 25, 'b': 18, 'w': 18, 'a': 16, 'i': 15, 'z': 14, 'q': 14, 'c': 11, 'p': 11, 'v': 11, 'l': 9, 't':
9, 'j': 8, 'u': 7, 'o': 5, 'e': 4, 's': 4, 'g': 3, 'n': 3, 'k': 2, 'r': 1})

Most common in index 3

Counter({'g': 22, 'a': 22, 'r': 20, 'n': 18, 'b': 17, 'u': 16, 'v': 13, 'y': 13, 'l': 11, 'f': 10, 'h': 7, 'e':
7, 'q': 6, 't': 5, 'c': 5, 'j': 5, 'p': 5, 'z': 3, 'm': 1, 's': 1, 'o': 1})

Most common in index 4

Counter({'z': 23, 'u': 20, 'k': 18, 't': 17, 'n': 17, 'o': 14, 'j': 13, 'g': 10, 'y': 10, 'e': 10, 'x': 9, 'm': 8, 'a': 7, 'v': 5, 'r': 5, 'q': 5, 'l': 4, 'c': 4, 's': 4, 'b': 2, 'f': 1, 'i': 1})

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

Next python generates all possible keys. I am looking for 5 letter words. I used the PyEnchant library.

Found words:

SLING
SWING
BLING
OWING

Decrypted Text with key of value SLING

yzugetlshivprintsedarvitsacainiygintseparvbutmpantixesouehoftserivpryoudtopaydyousoldegeryt
singamandidblowntngdiiedofblefzurtixeyouqeelawrighewhenjouhelrthexusiccingwpllnohyouseepi
ndidebftyouoontspetooxanyflcesczmingtnoutzfthecaintseyhelrtheuazzgzdownnompeeitioyinotser
pllcesusbuttsehorysthejblowntnthaesounowayoydowndouthhayonoownszuthlzn doneownyzuchen
koutruitacgeorrehekyowsawlthenhorddmindttsstcictljrhytmsmedzesnthantzmakettcryzrsinrtheyd
aidayoldgfitartsallsecanlfforowhensegetdupunoerthplighestopwayhidthinrandhlrrydzesntxindiqhe
dopsntmlkethpscenphesgzadajtimeuobheddoinralrirhthenanplythesonkyeonkltkeanjthinrsaviyit
upqorfrtdayntghtwtththpsultlnswecethedultaysofshingtsenaccowdajoungmoystseyrelfooltnarofnd
inehecocnerdcunkayddredsedytheicbestmrownmaggipsandeheiralatzrmsowesthpydonegivelda
mnlboutlnytrfmpetalayiybandttainewhateheyclllronkandcollaydthedultaysyeasthesfltandtheyalay
cceolenreolpandtse nthpmanhpsstepdrigheuptoeheminrophzneanosaysltlasejustlstheeimebpllriyg
sgozdnigstnowttstixetogzhomeehenhpmakeditfadtwitsonemzrethtng

Decrypted Text with key of value **SWING**

you get a shiver in the dark it's raining in the park but mean times south of the river you stop and you hold every thing a band is blowing dixie double four time you feel alright when you hear the music ring well now you step inside but you don't see too many faces coming in out of the rain they hear the jazz go down competition in other places uh but the horns they blow in that sound way on down south way on down south london town you check out guitar george he knows all the chords mind it's strictly rhythm he doesn't want to make it cry or sing the ysaïdan old guitar is all he can afford when he gets up under the light to play his thing and harry doesn't mind if he doesn't make the scene he's got a day time job he's doing alright he can play the honky tonk like anything's a vinyl up for Friday night with the sultans were the sultans of swing then a crowd of young boys they're a fool in a round in the corner drunk and dressed in their best brown baggies and their platform shoes they don't give a damn about any trumpet play in band it ain't what they call rock and roll and the sultans yeah the sultan they play creole creole and then the man he steps right up to the microphone and says at last just as the time bell rings good night now it's time to go home then he makes it fast with one more thing

Decrypted Text with key of value **BLING**

pzuke lshimprinksedaivitsrcainzyginksepaivbutdpantzxesolehofkserimpryoldtoprydyolsoldvgeryksingrmandzdblontngdziiedffblewzurtzxe yolqeelr wrigyewheejouhvlrthvxusitcingnpllnfhyoujee pie didesftyoloontjpetofxanywlce stzminxt noukzft hvcainkseyhvlrthvuazzxzdownompveitifyinokserp c lceslsbutksehoiysthvjlontnthresoueowayfydowedoutyhayoeoownjzuthczndoeoownpzuchvnkoukruitrcgeoirehebyowsrwlthvnhorudminuttsskcictjrhysmheuzesnk hantkzmakvtcrpzrsierthepdai dryoldxfitaitalsal csecaelffoiowheesegekdupueoertyplig yestogwayhzdthierandy lrryuzesnkxindzqhe d fpsntdlketypsceephesxztadrjtimvuobhvddoieralrzhthvnanpclythvsonkpeonkctkeaejthiersavzyit ugqorfitdayetghtntthtysulklnswvcethvdltrysofjhingksenatcowdrjounxmoyskseyrvlfoocnarnffndie ehcfncnerucunkryddr vdsedzythezcbeskmrowemaggzpsanueheialatwzrmsfwestypdoeegivlda melbouklnytifmpek alazybybanuttaieewhakeheytl lrfnkanucollrydthvdltrysyersthejftaedthepalaytc eolvnreocpandksentypmanypstegdrigyeuptfehemznropyzneaeosayjltlajejusk lsthveimespllrzygsg fznixstnonttstzxt oxzhomvehenypmakvdi frdtwiksonedzretytng

Decrypted Text with key of value **OWING**

cougexashizerinxhedavkitserainmnginxhepavkbutqeantmmesoythofxherizeryoystopendyoyholdi veryxhingebandmsbloaingdmxiedsublejourtmmeyoyfeelelrigltwheryouhiarthimusigringaellnswyo uwtepirsidefutyoydontweetosmanyjacesgominkinoxofthirainxheyhiarthijazzkodowrcompitisnin oxherppacesyhbutxhehovnsthiybloainthetsoudwaysndowrsoutlwayordownwouthpondortowncou chickouxguitergeovgeheonowsellthichorhsminhitssxri ctpyrhyxhmhehoesnxwantxomakiitrcorsirg thecsaidenoldkuitavisalphecarafov dwherhehexsupurdertlelignstotlayhmsthirgandlarryhoesnxmi ndmfhedsesntqaketlescereheskotadey timijobhisdoirgalrmghthicanppaythihonkctonkpikearythirg savmnitutforvidayrightaithtlesulxanswirethisultensofwwingxhenagrowdeyounkboysxheyriafoopin arsundirtheCSRnerhrunkenddrissedmnthemrbesxbrowrbaggmesanhtheivplatjormsslestleydortgivi adamrabouxanytvumpexplaymnbanhitairtwhaxtheygallrsckanhrollendthisultensyeehthewultarsth ecplaygreolicreopeandxhentlemanlestetsrigltuptsthemmcroploneardsaywatlawtjuxasthitimefellr mngsgsodnikhtnoaitstmmetokohomithenlemakisitfestwixhoneqoretling