CS 450: TOPICS: Cryptography PROGRAMMING PROJECT 1 -- AFFINE CIPHER

Write a program in any programming language of your choice that deciphers any string cipher text made up of the 26 lowercase letters {a, b, c, …, x, y, z} given that the text has been encrypted using an affine cipher. Your program should do a brute force search, trying all possible keys. It should output the encryption key k =(a, b) and the corresponding plain text. Your program should stop when an "understandable" plaintext message is decrypted. Please submit your code and 2 runs of your program deciphering 2 different cipher texts. One of them can be the example below. The other can be from the Exercise we did in class.

A complete sample run is provided in the attached txt file. An excerpt of it is here:

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Decrypting the cipher text:
'vwduwljudeehghyhubwklqjlfrxogilqgsohdvhuhwxuqdqbeoxhsulqwviruydxowdqg
dodupghvljqedvhgrqzklfkedqnbrxghflghrqldpvhwwlqjxsvdihkrxvhfr'

Encryption key: a = 1 b = 1
Decryption equation: x = 1 *(y - 1)

Plaintext:
uvctvkitcddgfgxgtavjkpikeqwnfhkpfrngcugtgvwtpcpadnwgrtkpvuhqtxcwnvcpfc
nctofgukipdcugfqpyjkejdcpmaqwfgekfgqpkcougvvkpiwruchgjqwugeq

Hit enter to continue search or 'S' key to stop:
Encryption key: a = 3 b = 1
Decryption equation: x = 9 *(y - 1)

Plaintext:
yhsphmupsbbctczcpahdmfumkoqntlmftxncsycpchqpfsfabnqcxpmfhylopzsqnhsfts
nspwtcymufbsyctofidmkdbsfeaoqtckmtcofmswychhmfuqxyslcdoqycko

Hit enter to continue search or 'S' key to stop:
Encryption key: a = 5 b = 1
Decryption equation: x = 21 *(y - 1)

Plaintext:
ezqjzcmjqllwbwpwjazhcdmcgyunbrcdbtnwqewjwzujdqdalnuwtjcdzeryjpqunzqdbq
nqjibwecmdlqewbydkhcghlqdsayubwgcbwydcqiewzzcdmuteqrwhyuewgy

Hit enter to continue search or 'S' key to stop:
Encryption key: a = 7 b = 1
Decryption equation: x = 15 *(y - 1)

Plaintext:
odezduqzettmxmhmzadfurquigsnxburxvnmeomzmdszreratnsmvzurdobgzhesnderxe
nezcxmouqrteomxgrwfuifteryagsxmiuxmgruecomddurqsvoebmfgsomig

Hit enter to continue search or 'S' key to stop:
Encryption key: a = 9 b = 1
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Decryption equation: x = 3 *(y - 1)

Plaintext:
ilgfleyfgjjspsrsfalbetyemwonpvetpznsgisfsloftgtajnoszfetlivwfrgonlgtpg
ngfqpsieytjgispwtubembjgtkawopsmepswtegqislletyozigvsbwoismw

Hit enter to continue search or 'S' key to stop:
Encryption key: a = 11 b = 1
Decryption equation: x = 19 *(y - 1)

Plaintext:
qjmxjiwxmffkrkvkxajpizwiyscnrdizrlnkmqkxkjcxzmzafncklxizjqdsxvmcnjmzrm
nmxgrkqiwzfmqkrszopiypfmzuascrkyirkszimgqkjjizwclqmdkpscqkys

Hit enter to continue search or 'S' key to stop:
Encryption key: a = 15 b = 1
Decryption equation: x = 7 *(y - 1)

Plaintext:
krodrsedovvqjqfqdarlsbesciynjxsbjpnqokqdqrydbobavnyqpdsbrkxidfoynrobjo
nodujqksebvokqjibmlsclvobgaiyjqcsjqibsoukqrrsbeypkoxqliykqci

Hit enter to continue search or 'S' key to stop:
Encryption key: a = 17 b = 1
Decryption equation: x = 23 *(y - 1)

Plaintext:
spuvpwcvurrilijivapzwhcwoemnlfwhlbniusivipmvhuharnmibvwhpsfevjumnpuhlu
nuvkliswchrusilehgzwozruhqaemliowliehwuksippwhcmbsufizemsioe

Hit enter to continue search or 'S' key to stop:
Encryption key: a = 19 b = 1
Decryption equation: x = 11 *(y - 1)

Plaintext:
mxwbxgkbwhhodotobaxvgjkgsuindzgjdfnowmoboxibjwjahniofbgjxmzubtwinxwjdw
nwbydomgkjhwmodujevgsvhwjcauidosgdoujgwymoxxgjkifmwzovuimosu

Hit enter to continue search or 'S' key to stop:
Encryption key: a = 21 b = 1
Decryption equation: x = 5 *(y - 1)

Plaintext:
wbkrbyorkppezelerabtyxoyucgnzjyxzhnekwerebgrxkxapngehryxbwjcrlkgnbkxzk
nkrszewyoxpkwezcxqtyutpkxiacgzeuyzecxykswebbyxoghwkjetcgweuc

Hit enter to continue search or 'S' key to stop:
Encryption key: a = 23 b = 1
Decryption equation: x = 17 *(y - 1)

Plaintext:
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ctiltoglizzyhybylatxovgoqmknhpovhdnyicylytklvivaznkydlovtcpmlbikntivhi
nilehycogvzicyhmvsxoqxzivwamkhyqohymvoiecyttovgkdcipyxmkcyqm

Hit enter to continue search or 'S' key to stop:
Encryption key: a = 25 b = 1
Decryption equation: x = 25 *(y - 1)

Plaintext:
gfyhfqshyxxuvuduhafrqlsqwkenvtqlvjnuyguhufehlylaxneujhqlfgtkhdyenfylvy
nyhmvugqslxyguvklcrqwrxyloakevuwqvuklqymguffqlsejgyturkeguwk

Hit enter to continue search or 'S' key to stop:
Encryption key: a = 1 b = 2
Decryption equation: x = 1 *(y - 2)

……..   many lines later

Hit enter to continue search or 'S' key to stop:
Encryption key: a = 25 b = 2
Decryption equation: x = 25 *(y - 2)

Plaintext:
hgzigrtizyyvwvevibgsrmtrxlfowurmwkovzhvivgfimzmbyofvkirmghuliezfogzmwz
ozinwvhrtmyzhvwlmdsrxsyzmpblfwvxrwvlmrznhvggrmtfkhzuvslfhvxl

Hit enter to continue search or 'S' key to stop:
Encryption key: a = 1 b = 3
Decryption equation: x = 1 *(y - 3)

Plaintext:
startigrabbedeverythingicouldfindpleasereturnanyblueprintsforvaultanda
larmdesignbasedonwhichbankyoudecideoniamsettingupsafehouseco

Hit enter to continue search or 'S' key to stop: S

The plain text message below was encrypted with a = 1 and b= 3
startigrabbedeverythingicouldfindpleasereturnanyblueprintsforvaultanda
larmdesignbasedonwhichbankyoudecideoniamsettingupsafehouseco
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