

# MCS 425: Codes and Cryptography (Fall 2020)

## Homework 1

Due at 12:00pm CDT, Monday, Sep 14

Programming code that goes with the textbook can be found here:

- MATLAB: <http://www.math.umd.edu/~lcw/MatlabCode>
- Mathematica: <http://www.math.umd.edu/~lcw/MathematicaCode>
- Maple: <http://www.math.umd.edu/~lcw/MapleCode>

1. The following message has been encrypted with a shift cipher. Decrypt the message.

rnxxntsfgtwy

2. The following message has been encrypted with an affine cipher. What are the encryption and decryption keys?

fdwuqrudcrwmejgfdweojmeupevigiwbwjimdwjwmdwjwoflolrcfswfuajenwlemeifdwsjeuujw  
bobwlerlunjersqnpwfmwrrfdwneborufcrwueumvveucrfdwrejcmufjonuchvemrcrfdwpc  
qwwbejlufdwpojadwufdwncnvejuelfdwmovladwjjiqrhcvlwlfldwojsqggierlhjesjerfvwe  
bwufdwvogwumjwxnlerlorsfdwojcnwrorspqluajcmuunejjcmuerlnoswcruhovvmlmofdfdw  
zcichunjorsmwjswfforsfdwojrufujwelifdwhvowumjwpqttorsevcrsfdwmevvumejgwlp  
ifdwuqrudorw

3. The following message has been encrypted with a Vigenère cipher. Recover the encryption key and the first two words of the plaintext.

bflqvctzktifodeeyguvwvihmapjmwttuwzqpkpqqpkqoeakpqsfpizhrfubyivzegxvvoieiiiox  
tmovngbakgrxtmrrtssgzbtqhrzqhtjqsrtuidsjelosbgcfeizwzeayidhcvaeehicytizwzwr  
survjcolpcoavxkpywrrzpxdszqezvbpvptbugtsgmrnlhigjidcxkqexwvdiizkmpapxawhzj  
xiifjdipbaggwakwivunyizbuwxenqehzxiiflawdsgmrnbvaacgzmgizkmpbvizwiymeihtpq  
qtjidiymdiufzqxtiuqhrfubyirbuscrtxchvkgvtpkqsgvbugpcipzpekqwtxqytdqtebem  
czvfivvzrerkwmdorbuscrtssgzbtqhrvpjpbqvrubyizvsxttppsafokvthcuvtkpqtjwxyi  
zwzwifjqgdeburjrtxcpiubxtubtigvmjmhkqzjdiumxxfvfltfzqxxtixpnjmoygvaoldmexwr  
bbvdminpntizrdkjqfgfsqrtmmzaxkprazuuxtukaqelburvgwiigrvqbpdxixjbtidemfmbvx  
mhqlbfltmegwvuqwpimysglujuzkgpikgwgtzvbpvptbugtkpmriymnihkbtidimfmrtrxcqimm  
opstqfjkkaqelbmxxfvmpapaqgjimyiryzmhda