

CIS 3362 Homework #3: Playfair, Hill, ADFGVX
Due: Check WebCourses for the due date.

1) The following ciphertext was encrypted using the Playfair cipher. The first eight letters of the plaintext are "ifyouare". Determine the secret key and decrypt the whole ciphertext. (Note: I may choose to reveal more of the plaintext, but I haven't made that decision yet.)

aivrpfpspbsbfffngcgaerspvhrevrpniswalscleclfbwhluclumfgrshlsdend
 cwsdpdedpaedpfadzpodplcpawcysiaydclhdbchsfhfavabxskbasxpohwod
 wtcgfepaqptcbetloygiaeabcxbtllplgpuxeugogluefhltcvolcpapscqbx

2) The following was encrypted using the Hill Cipher with a 2 x 2 matrix as the key. Determine both the decryption key as well as the message itself.

AUGRRXULTRFUQGBNULYTAGPONPBVPBSUMOFFFYVYGLYGT
 MCOICEESXFPBUHKCYUIDKRGJEOHDXNHQPBMYPBEHYUNL

3) Let $M = \begin{pmatrix} 17 & 11 \\ 7 & 14 \end{pmatrix}$ be the encryption key for the Hill cipher. What is the corresponding decryption key?

4) You have intercepted a tiny portion of both the plaintext and matching ciphertext of a message encrypted using the Hill cipher with a 2 x 2 matrix key. The plaintext is "BOOK" and the corresponding ciphertext is "ABYE". What are the possible encryption keys based on this information only?

5) **By hand**, using the Hill cipher, encrypt the following plaintext, "HAPPYTUESDAY", with the following encryption key: $\begin{pmatrix} 3 & 7 \\ 14 & 19 \end{pmatrix}$.

6) The following cipher text was encrypted using the ADFGVX cipher with the 6 x 6 key matrix shown below and the keyword "COMPUTER".

Q	W	E	R	1	T
Y	2	U	I	O	3
P	A	4	S	D	5
6	F	G	H	7	J
K	L	Z	8	X	C
V	B	9	N	M	0

Note: the entry in row 1 column 5 is the digit 1(one), the entry in row 2 column 4 is the letter I, the entry in row 2 column 5 is the letter O and the entry in row 6 column six is the digit 0(zero).

AFXFDDXGDFFDGXDGXDGXVGDGDDAXVDXD

By hand, determine the plaintext.