

MATLAB - 4

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Question 1: Use the matrix $\begin{bmatrix} 4 & 1 \\ 3 & 1 \end{bmatrix}$ to obtain the Hill cipher encryption for the plain text message 'UTES'

Code:

```
>> w = 'UTES'

w =

    'UTES'

>> x = double(w);
>> x = reshape(mssg,2,2);
>> x = mssg-65;
>> key = [4 1;3 1]

key =

     4     1
     3     1

>> encrypt = key*x

encrypt =

    -226    -291
    -181    -230

>> encrypt=mod(encrypt,26);
>> encrypt = encrypt +65;
>> encrypt = reshape(encrypt,1,4);
>> disp('The msg that encrypted is:')
The msg that encrypted is:
>> encrypt = char(encrypt)

encrypt =

    'IBVE'

>>
```

Question 2:

Use the matrix $\begin{bmatrix} 4 & 1 \\ 3 & 1 \end{bmatrix}$ to obtain the Hill cipher decryption the above decrypted message (VBIE).

```
>> X = 'VBIE'

X =

    'VBIE'

>> A=double(X);
A=reshape(A,2,2)

A =

    86    73
    66    69

>> A=A-65;
key = [4 1;3 1];
d = inv(key);
d = mod(d,26)

d =

     1     25
    23      4

>>
>> decrypt = d*A;
decrypt = mod(decrypt,26);
decrypt = reshape(decrypt,1,4);
>> decrypt = decrypt +65;
>> decrypt = reshape(decrypt,1,4);
>> disp('THE MSG THAT DECRYPTED IS:')

THE MSG THAT DECRYPTED IS:

>>
>> decrypt = char(decrypt)

decrypt =

    'UTES'

>>
```