Linear Algebra
BSAI- 3rd Sem

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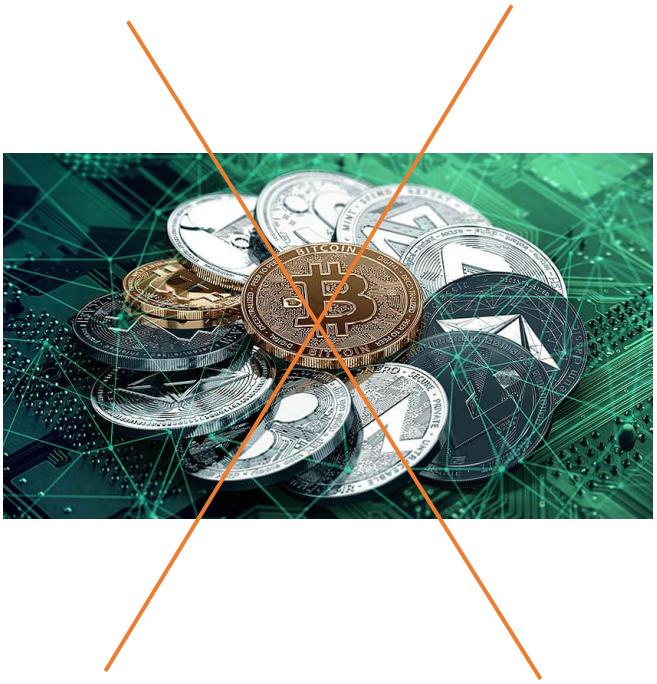
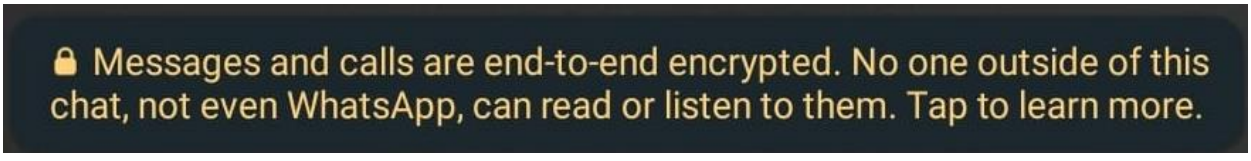
BSAI-144

Cryptography





CRYPTOGRAPHY

S	A	L	A	M		B	R	O
19	1	12	1	13		2	18	15
					0			0

Space represented "0"

Plane text → encrypt/encode → Coded

Coded → decrypt/decode → Plane text

let your encrypted Matrix

$$A = \begin{bmatrix} 10 & 1 \\ 9 & 1 \end{bmatrix}$$

If ~~p~~ encryted matrix is 2 by 2, then divide your plane text matrix in 2Xn.

$$P = \begin{bmatrix} 19 & 1 & 12 & 1 & 13 \\ 0 & 2 & 18 & 15 & 0 \end{bmatrix}$$

Now multiply your "encryted" Matrix & "plane text" matrix.

$$A \times P = \begin{bmatrix} 10 & 1 \\ 9 & 1 \end{bmatrix} \begin{bmatrix} 19 & 1 & 12 & 1 & 13 \\ 0 & 2 & 18 & 15 & 0 \end{bmatrix}$$

$$C = \begin{bmatrix} 190 & 12 & 138 & 25 & 130 \\ 171 & 11 & 126 & 24 & 117 \end{bmatrix}$$

This matrix is called coded matrix which is denoted by "C".

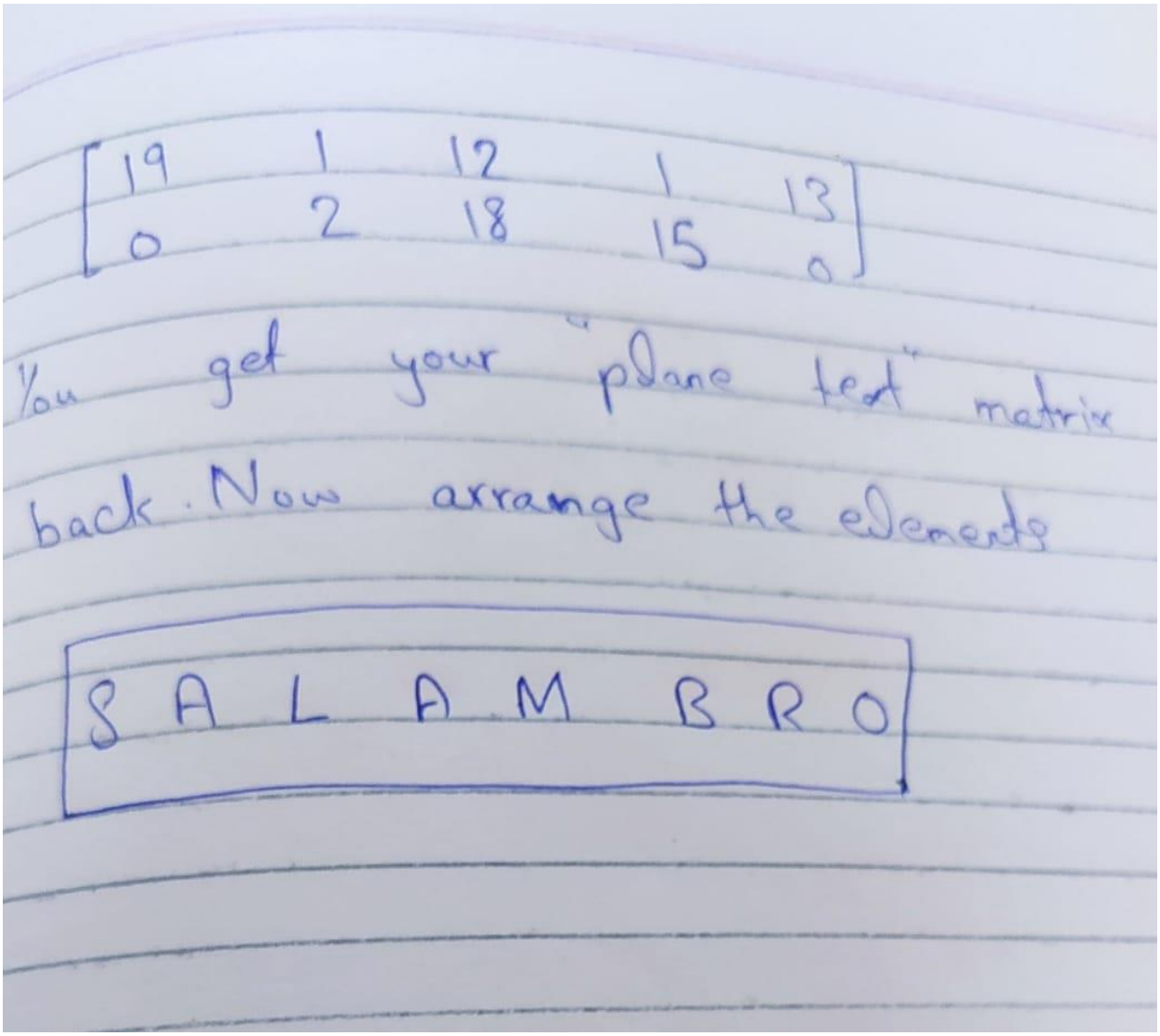
$$A^{-1} = \frac{Adj\,A}{|A|} \Rightarrow \frac{\begin{bmatrix} 1 & -1 \\ -9 & 10 \end{bmatrix}}{1}$$

$$A^{-1} = \begin{bmatrix} 1 & -1 \\ -9 & 10 \end{bmatrix}$$

For decrytion,

$$A^{-1} C$$

$$\begin{bmatrix} 1 & -1 \\ -9 & 10 \end{bmatrix} \begin{bmatrix} 190 & 12 & 138 & 25 & 130 \\ 171 & 11 & 126 & 24 & 117 \end{bmatrix}$$


19 1 12 1 13
0 2 18 15 0
You get your "plane text" matrix back. Now arrange the elements
SALAM BRO

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