classmate

Date 4.2.2020
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SOLVING AX = B

$\max c^T x$

$Ax \leq b \rightarrow A'x = b$

$x \geq 0$

$x \in \mathbb{R}^n \Rightarrow$ int soln.

if A in TU

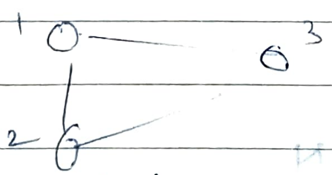
& b is int.

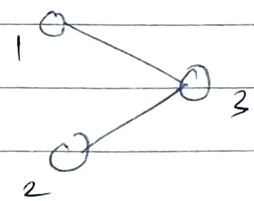
$Ax = b$

$x = A^{-1} b = \frac{1}{|A|} \, CF(A)' \, [b]$

$T \rightarrow TU \Rightarrow$

$-1, 0, 1$





(E)

$$
(V)\quad \begin{array}{c} 1 \\ 2 \\ 3 \end{array}
\begin{bmatrix} 1 & 1 & 0 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{bmatrix}
\qquad
\begin{bmatrix} 1 & 0 \\ 0 & 1 \\ 1 & 1 \end{bmatrix}
$$

$|B| \quad -2$

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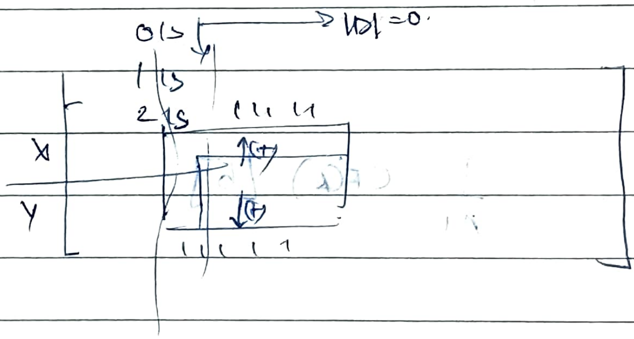
A for BPG is TU.

X Y

all elements either 0 or 1

all submatrices of 1×1 are TU.

if every $n \times n$ submatrices is TU
all $(n+1) \times (n+1)$ matrices is TU.



rows of this matrices are linearly independent

A

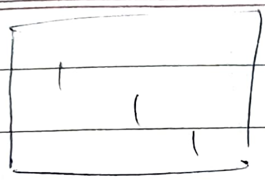
least sqr

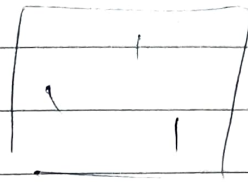
$A x = b$

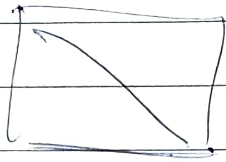
LN

sqrt non sing.

$x = A^{-1} b$.







$$\begin{array}{cccc} \left[\begin{array}{c|c} a_{11} & 0 \\ \hline A_{12} & A_{22}\end{array}\right] & \begin{bmatrix}x_1\\x_2\end{bmatrix} & = & \begin{bmatrix}b_1\\B_2\end{bmatrix} \\ n-1\times 1 \quad (n-1)\times(n-1) & (n-1)\times 1 & & (n-1)\times 1 \end{array}$$

$$x_1 = \frac{b_1}{a_{11}}$$

$$A_{12}x_1 + A_{22}x_2 = B_2$$

Lower triangular matrix,

PD - positive desparare.

$Ax = b$

$\downarrow$ ——— costley step,

$LL^T x = b.$

$Lv = b$

$L^T x = v$

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$$A \begin{bmatrix} x_i & x_i \\ | & | \end{bmatrix} = \begin{bmatrix} b_i & b_i \\ | & | \end{bmatrix}$$

$$A [x_i] = [b_i]$$

i9 lhjz (b) (c)

$$MIS + MVC = |V|$$