

$$B_j = -D^{-1}(L + U)$$

$$= -D^{-1} \begin{bmatrix} 0 & a_{12} & a_{13} & \dots & a_{1n} \\ a_{21} & 0 & & & \\ a_{31} & a_{32} & 0 & & \\ \vdots & \vdots & \vdots & \ddots & \vdots \\ a_{n1} & \dots & a_{n,n-1} & 0 \end{bmatrix} \begin{bmatrix} 0 & a_{12} & a_{13} & \dots & a_{1n} \\ & 0 & & & \\ & & 0 & & \\ & & & \ddots & \\ & & & & 0 \end{bmatrix}$$

$$= -D^{-1} \begin{bmatrix} 0 & a_{12} & a_{13} & \dots & a_{1n} \\ a_{21} & 0 & & & \\ a_{31} & & 0 & & \\ \vdots & \vdots & \vdots & \ddots & \vdots \\ a_{n1} & \dots & a_{n,n-1} & 0 \end{bmatrix} \begin{bmatrix} 0 & a_{12} & a_{13} & \dots & a_{1n} \\ & 0 & & & \\ & & 0 & & \\ & & & \ddots & \\ & & & & 0 \end{bmatrix}$$

$$= \begin{bmatrix} \frac{1}{a_{11}} & & & & \\ & \frac{1}{a_{22}} & & & \\ & & \ddots & & \\ & & & \ddots & \\ & & & & \frac{1}{a_{nn}} \end{bmatrix} \begin{bmatrix} 0 & a_{12} & a_{13} & \dots & a_{1n} \\ & 0 & & & \\ & & 0 & & \\ & & & \ddots & \\ & & & & 0 \end{bmatrix}$$

IF $\|B_j\|_{\infty} = 1$

$$B_j = \begin{bmatrix} 1 & 0 & 0 & \dots \\ & \ddots & & \\ & & 1 & \\ & & & \ddots \end{bmatrix}$$

→ FIND B_j

$$A = L + D + U$$

$$L = \begin{bmatrix} 0 & & & \\ a_{21} & 0 & & \\ a_{31} & a_{32} & 0 & \\ \vdots & \vdots & \vdots & \ddots \end{bmatrix}$$

$$U = \begin{bmatrix} 0 & a_{12} & a_{13} & \dots & a_{1n} \\ & 0 & & & \\ & & 0 & & \\ & & & \ddots & \\ & & & & 0 \end{bmatrix}$$

$$B_j = -D^{-1}(L + U)$$

$$D = \begin{bmatrix} a_{11} & & & \\ & \ddots & & \\ & & a_{nn} & \\ & & & \ddots \end{bmatrix}$$

$$D^{-1} = \begin{bmatrix} \frac{1}{a_{11}} & & & \\ & \ddots & & \\ & & \frac{1}{a_{nn}} & \\ & & & \ddots \end{bmatrix}$$

$\sum_{j=1}^n |a_{ji}| > |a_{jj}|$
if $j \neq i$
SINGULAR OEA

1. ATTEMPT HW PROBS
- a. DRAFT your prob., SUBMIT
- i. SKYPE IF NECESSARY