

$$\leq = \frac{1 \mid \dots \mid 1}{\vdots \mid \ddots \mid \vdots} \\ \frac{0 \mid \dots \mid 1}{\vdots \mid \ddots \mid \vdots}$$

$$i \leq j = \begin{cases} 1 & i \leq j \\ 0 & i > j \end{cases}$$

$$\leq^{-1} = \frac{1 \mid -1 \mid 0 \mid 0 \mid 0}{0 \mid 1 \mid -1 \mid 0 \mid 0} \\ \frac{0 \mid 0 \mid 1 \mid -1 \mid 0}{0 \mid 0 \mid 0 \mid 1 \mid -1} \\ \frac{0 \mid 0 \mid 0 \mid 0 \mid 1}{0 \mid 0 \mid 0 \mid 0 \mid 1}$$

$$i \leq^{-1} j = \begin{cases} 1 & i = j \\ -1 & j = i + 1 \\ 0 & j > i + 1 \end{cases}$$