$$A = \begin{pmatrix} 2 & 1 & 4 & 2 \\ 4 & 3 & 9 & 5 \\ 4 & 2 & 7 & 3 \\ 2 & 4 & 5 & 2 \\ 4 & 2 & 3 & 2 \\ 4 & 3 & 4 & 1 \end{pmatrix} \quad L = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 0 & 1 \end{pmatrix} \quad U = \begin{pmatrix} 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \end{pmatrix} \quad m = 6 \quad n = 4$$

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1. cyklus - $j = 0, \ldots, 3$

$j = 0$:

$$V = \begin{pmatrix} 2 \\ 4 \\ 4 \\ 2 \\ 4 \\ 4 \end{pmatrix} \quad L = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 & 0 \\ 2 & 1 & 0 & 0 & 0 & 0 \\ 2 & 0 & 1 & 0 & 0 & 0 \\ 1 & 0 & 0 & 1 & 0 & 0 \\ 2 & 0 & 0 & 0 & 1 & 0 \\ 2 & 0 & 0 & 0 & 0 & 1 \end{pmatrix} \quad U = \begin{pmatrix} 2 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \end{pmatrix}$$

$j = 1$:

$z = (0)$

$z_0 = (1 - 0)/1 = 1 \Rightarrow z = (1)$

$$U = \begin{pmatrix} 2 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \end{pmatrix} \quad V = \begin{pmatrix} 3 \\ 2 \\ 4 \\ 2 \\ 3 \end{pmatrix} - \begin{pmatrix} 2 \\ 2 \\ 1 \\ 2 \\ 2 \end{pmatrix} \cdot (1) = \begin{pmatrix} 3 \\ 2 \\ 4 \\ 2 \\ 3 \end{pmatrix} - \begin{pmatrix} 2 \\ 2 \\ 1 \\ 2 \\ 2 \end{pmatrix} = \begin{pmatrix} 1 \\ 0 \\ 3 \\ 0 \\ 1 \end{pmatrix}$$

$$L = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 & 0 \\ 2 & 1 & 0 & 0 & 0 & 0 \\ 2 & 0 & 1 & 0 & 0 & 0 \\ 1 & 3 & 0 & 1 & 0 & 0 \\ 2 & 0 & 0 & 0 & 1 & 0 \\ 2 & 1 & 0 & 0 & 0 & 1 \end{pmatrix} \qquad U = \begin{pmatrix} 2 & 1 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \end{pmatrix}$$

$j = 2$:

$$z = \begin{pmatrix} 0 \\ 0 \end{pmatrix}$$

$$\left.\begin{array}{l} i=0: \; z_0 = (4-0)/1 = 4 \\ i=1: \; z_1 = (9 - 2 \cdot 4)/1 = 1 \end{array}\right\} \Rightarrow z = \begin{pmatrix} 4 \\ 1 \end{pmatrix}$$

$$U = \begin{pmatrix} 2 & 1 & 4 & 0 \\ 0 & 1 & 1 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \end{pmatrix} \qquad V = \begin{pmatrix} 7 \\ 5 \\ 3 \\ 4 \end{pmatrix} - \begin{pmatrix} 2 & 0 \\ 1 & 3 \\ 2 & 0 \\ 2 & 1 \end{pmatrix} \begin{pmatrix} 4 \\ 1 \end{pmatrix} = \begin{pmatrix} 7 \\ 5 \\ 3 \\ 4 \end{pmatrix} - \begin{pmatrix} 8 \\ 7 \\ 8 \\ 9 \end{pmatrix} = \begin{pmatrix} -1 \\ -2 \\ -5 \\ -5 \end{pmatrix}$$

$$L = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 & 0 \\ 2 & 1 & 0 & 0 & 0 & 0 \\ 2 & 0 & 1 & 0 & 0 & 0 \\ 1 & 3 & 2 & 1 & 0 & 0 \\ 2 & 0 & 5 & 0 & 1 & 0 \\ 2 & 1 & 5 & 0 & 0 & 1 \end{pmatrix} \qquad U = \begin{pmatrix} 2 & 1 & 4 & 0 \\ 0 & 1 & 1 & 0 \\ 0 & 0 & -1 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \end{pmatrix}$$

$j = 3$:

$$z = \begin{pmatrix} 0 \\ 0 \\ 0 \end{pmatrix}$$

$i = 0$: $z_0 = (2 - 0)/1 = 2$

$i = 1$: $z_1 = (5 - 2 \cdot 2)/1 = 1$

$i = 2$: $z_2 = \left(3 - (2\,0) \cdot \begin{pmatrix} 2 \\ 1 \end{pmatrix}\right)/1 = (3 - 4)/1 = -1$

$\Rightarrow z = \begin{pmatrix} 2 \\ 1 \\ -1 \end{pmatrix}$

$$U = \begin{pmatrix} 2 & 1 & 4 & 2 \\ 0 & 1 & 1 & 1 \\ 0 & 0 & -1 & -1 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \end{pmatrix}$$

$$V = \begin{pmatrix} 2 \\ 2 \\ 1 \end{pmatrix} - \begin{pmatrix} 1 & 3 & 2 \\ 2 & 0 & 5 \\ 2 & 1 & 5 \end{pmatrix} \begin{pmatrix} 2 \\ 1 \\ -1 \end{pmatrix} = \begin{pmatrix} 2 \\ 2 \\ 1 \end{pmatrix} - \begin{pmatrix} 3 \\ -1 \\ 0 \end{pmatrix} = \begin{pmatrix} -1 \\ 3 \\ 1 \end{pmatrix}$$

$$L = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 & 0 \\ 2 & 1 & 0 & 0 & 0 & 0 \\ 2 & 0 & 1 & 0 & 0 & 0 \\ 1 & 1 & 2 & 1 & 0 & 0 \\ 2 & 0 & 5 & & & \\ 2 & 1 & 5 & & & \end{pmatrix}$$

$$U = \begin{pmatrix} 2 & 1 & 4 & 2 \\ 0 & 1 & 1 & 1 \\ 0 & 0 & -1 & -1 \\ 0 & 0 & 0 & -1 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \end{pmatrix}$$

$j = n - 1 = 3$

2. cyklus – $j = 4, \dots, 5$

~~$j = 4$:~~

~~$L_{43} = \left(2 - (4 \; 5) \begin{pmatrix} 2 \\ 1 \\ -1 \end{pmatrix}\right) / (-1) = (2 - 7) / (-1) = 5$~~

~~$j = 5$:~~

~~$L_{53} = \left(1 - \right.$~~

$j = 4$:

$$L_{43} = \left(2 - (2 \; 0 \; 5) \begin{pmatrix} 2 \\ 1 \\ -1 \end{pmatrix}\right) / (-1) = (2 - (-1)) / (-1) = -3$$

$j = 5$:

$$L_{53} = \left(1 - (2 \; 1 \; 5) \begin{pmatrix} 2 \\ 1 \\ -1 \end{pmatrix}\right) / (-1) = (1 - 0) / (-1) = -1$$

Výsledek:

$$L = \begin{pmatrix} 1 & 0 & 0 & 0 & 0 & 0 \\ 2 & 1 & 0 & 0 & 0 & 0 \\ 2 & 0 & 1 & 0 & 0 & 0 \\ 1 & 3 & 2 & 1 & 0 & 0 \\ 2 & 0 & 5 & -3 & 1 & 0 \\ 2 & 1 & 5 & -1 & 0 & 1 \end{pmatrix} \qquad U = \begin{pmatrix} 2 & 1 & 4 & 2 \\ 0 & 1 & 1 & 1 \\ 0 & 0 & -1 & -1 \\ 0 & 0 & 0 & -1 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \end{pmatrix}$$