

$$BV_1 = V_2 \quad BV_2 = V_3 \quad BV_3 = V_2 + V_3$$

$$\Rightarrow B \begin{matrix} & V_1 & V_2 & V_3 \\ \begin{pmatrix} 1 & 1 & 0 \\ 0 & 1 & 0 \\ 2 & 0 & 1 \end{pmatrix} & & & \end{matrix} = \begin{matrix} & V_2 & V_3 & V_2+V_3 \\ \begin{pmatrix} 1 & 0 & 1 \\ 1 & 0 & 1 \\ 0 & 1 & 1 \end{pmatrix} & & & \end{matrix} \quad BA = C$$

$A \qquad C$

$$\Rightarrow B = C \cdot A^{-1} \quad A^{-1} = \begin{pmatrix} 1 & -1 & 0 \\ 0 & 1 & 0 \\ -2 & 2 & 1 \end{pmatrix}$$

$$\Rightarrow B = \begin{pmatrix} -2 & 1 & 1 \\ -2 & 1 & 1 \\ -2 & 3 & 1 \end{pmatrix}$$