

9.2 $Uv = y$

$$\begin{bmatrix} v_1 & 0 & 0 & 0 \\ 0 & v_2 & c_2 & 0 \\ 0 & 0 & v_3 & c_3 \\ 0 & 0 & 0 & v_4 \end{bmatrix} \begin{bmatrix} u_1 \\ u_2 \\ u_3 \\ u_4 \end{bmatrix} = \begin{bmatrix} y_1 \\ y_2 \\ y_3 \\ y_4 \end{bmatrix}$$

$$v_4 u_4 = y_4$$

$$v_3 u_3 + c_3 u_4 = y_3$$

$$v_2 u_2 + c_2 u_3 = y_2$$

$$v_1 u_1 + c_1 u_2 = y_1$$

$$u_4 = \frac{y_4}{v_4}$$

$$u_3 = \frac{1}{v_3} (y_3 - c_3 u_4)$$

$$u_2 = \frac{1}{v_2} (y_2 - c_2 u_3)$$

$$u_1 = \frac{1}{v_1} (y_1 - c_1 u_2)$$

$\left\{ \begin{array}{l} n = 4, \\ 4 \text{ DIVIDES,} \\ 3 \text{ MULT'S,} \\ 3 \text{ SUB'S} \end{array} \right.$

→ n DIVIDES,
 $n-1$ MULTIPLICATIONS,
 $n-1$ SUBTRACTIONS

$\left\{ \begin{array}{l} \text{FOR BACK. SUB., THE} \\ \text{OPERATION COUNT IS} \\ O(n) \end{array} \right.$