

2.1 DECODING MATRIX

$$C = G + P$$

$$\begin{array}{c} C \\ 7 \times 1 \end{array} = \begin{array}{c} G \\ 7 \times 4 \end{array} \begin{bmatrix} 1 & 0 & 1 & 1 \\ 1 & 1 & 0 & 1 \\ 0 & 0 & 0 & 1 \\ 1 & 1 & 1 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 1 & 0 & 0 \\ 1 & 0 & 0 & 0 \end{bmatrix} \begin{array}{c} P \\ 4 \times 1 \end{array} \begin{bmatrix} X_1 \\ X_2 \\ X_3 \\ X_4 \end{bmatrix} = \begin{bmatrix} X_1 + X_3 + X_4 \\ X_1 + X_2 + X_4 \\ X_4 \\ X_1 + X_2 + X_3 \\ X_3 \\ X_2 \\ X_1 \end{bmatrix} \begin{array}{c} y_1 \\ y_2 \\ y_3 \\ y_4 \\ y_5 \\ y_6 \\ y_7 \end{array}$$

... Construyendo R

$$\begin{array}{c} P \\ 4 \times 1 \end{array} \begin{bmatrix} X_1 \\ X_2 \\ X_3 \\ X_4 \end{bmatrix} = \begin{array}{c} R \\ 4 \times 7 \end{array} \begin{array}{c} C \\ 7 \times 1 \end{array} \begin{bmatrix} y_1 \\ y_2 \\ y_3 \\ y_4 \\ y_5 \\ y_6 \\ y_7 \end{bmatrix} = \begin{bmatrix} y_7 \\ y_6 \\ y_5 \\ y_3 \end{bmatrix} \begin{array}{l} \rightarrow \text{fila 1 de } R \\ \rightarrow \text{fila 4 de } R \end{array}$$

$$R = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 1 \\ 0 & 0 & 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 & 0 & 0 \end{bmatrix}$$