Linguagens que não são livres de contexto

Linguagens definidas sobre o alfabeto $\Sigma = \{0, 1\}$:

$\mathcal{L}_1 = \{w \in \Sigma^* \mid w = uuu,\ u \in \Sigma^*\}$.

$\mathcal{L}_2 = \{w \in \Sigma^* \mid w = uu,\ u \in \Sigma^*\}$.

$\mathcal{L}_3 = \{w \in \Sigma^* \mid \{0^n \mid n \in \mathbb{N}$ e n é um quadrado perfeito$\}$.

$\mathcal{L}_4 = \{w \in \Sigma^* \mid \{0^n \mid n \in \mathbb{N}$ e n é primo$\}$.

$\mathcal{L}_5 = \{w \in \Sigma^* \mid \{0^{n!} \mid n \in \mathbb{N}\}$.

$\mathcal{L}_6 = \{w \in \Sigma^* \mid \{0^{2^n} \mid n \in \mathbb{N}\}$.

$\mathcal{L}_7 = \{w \in \Sigma^* \mid \{0^n\#0^{2n}\#0^{3n} \mid n \in \mathbb{N}\}$.

$\mathcal{L}_8 = \{w \in \Sigma^* \mid \{0^n1^{2n} \mid n \in \mathbb{N}^+\}$.

$\mathcal{L}_9 = \{w \in \Sigma^* \mid \{0^n1^{3n} \mid n \in \mathbb{N}^+\}$.

$\mathcal{L}_{10} = \{w \in \Sigma^* \mid \{0^n1^{n^2} \mid n \in \mathbb{N}\}$.

$\mathcal{L}_{11} = \{w \in \Sigma^* \mid \{0^{2n}1^{n+m} \mid m, n \in \mathbb{N},\ n \geqslant m \geqslant 0\}$.

$\mathcal{L}_{12} = \{w \in \Sigma^* \mid \{0^m1^n0^{mn} \mid m, n \in \mathbb{N}\}$.

$\mathcal{L}_{13} = \{w \in \Sigma^* \mid \{0^n1^{2n}0^n \mid n \in \mathbb{N}\}$.

$\mathcal{L}_{14} = \{w \in \Sigma^* \mid \{0^n1^n0^m \mid m, n \in \mathbb{N},\ n \geqslant m \geqslant 0\}$.

$\mathcal{L}_{15} = \{w \in \Sigma^* \mid \{0^n1^n0^n1^n \mid n \in \mathbb{N}\}$.

$\mathcal{L}_{16} = \{w \in \Sigma^* \mid \{0^m1^m0^n1^m \mid m, n \in \mathbb{N}\}$.

$\mathcal{L}_{17} = \{w \in \Sigma^* \mid \{0^m1^n0^m1^m \mid m, n \in \mathbb{N}\}$.

$\mathcal{L}_{18} = \{w \in \Sigma^* \mid \{0^k1^\ell0^m1^n \mid k, \ell, m, n \in \mathbb{N},\ k = 0$ ou $\ell = m = n\}$.

$\mathcal{L}_{19} = \{w \in \Sigma^* \mid \{0^k1^\ell0^m1^n \mid k, \ell, m, n \in \mathbb{N},\ k < m$ ou $\ell > n\}$.

$\mathcal{L}_{20} = \{w \in \Sigma^* \mid \{ww^R0^{|w|} \mid w \in \{0, 1\}^*\}$.

$\mathcal{L}_{21} = \{w \in \Sigma^* \mid \{w \in \{0, 1\}^* \mid w = w^R$ e $|w|_0 = |w|_1\}$.

$\mathcal{L}_{22} = \{w \in \Sigma^* \mid \{ww^Rw \mid w \in \{0, 1\}^*\}$.

Linguagens definidas sobre o alfabeto $\Sigma = \{0, 1, \#\}$:

$\mathcal{L}_{23} = \{w \in \Sigma^* \mid \{x\#y \mid x, y \in \{0, 1\}^*$ e x é subcadeia de $y\}$.

$\mathcal{L}_{24} = \{w \in \Sigma^* \mid \{w\#x\#w^R \mid w, x \in \{0, 1\}^*$ e $|w| = |x|\}$.

$\mathcal{L}_{25} = \{w \in \Sigma^* \mid \{u\#u \mid u \in \{0, 1\}^*\}$.

Linguagens definidas sobre o alfabeto $\Sigma = \{0, 1, 2\}$:

$\mathcal{L}_{26} = \{w \in \Sigma^* \mid \ \{0^n 1^m 2^n \mid m, n \in \mathbb{N},\ n > m \geqslant 0\}$.

$\mathcal{L}_{27} = \{w \in \Sigma^* \mid \ \{0^n 1^n 2^n \mid n \in \mathbb{N}^+\}$.

$\mathcal{L}_{28} = \{w \in \Sigma^* \mid \ \{0^n 1^m 2^{2m} \mid m, n \in \mathbb{N},\ n > m \geqslant 0\}$.

$\mathcal{L}_{29} = \{w \in \Sigma^* \mid \ \{0^\ell 1^m 2^n \mid \ell, m, n \in \mathbb{N}^+,\ n = \ell \cdot m\}$.

$\mathcal{L}_{30} = \{w \in \Sigma^* \mid \ \{0^\ell 1^m 2^n \mid \ell, m, n \in \mathbb{N}^+, 0 < \ell < m < n\}$.

$\mathcal{L}_{31} = \{w \in \Sigma^* \mid \ \{0^\ell 1^m 2^n \mid \ell, m, n \in \mathbb{N}^+,\ \ell = \max\{m, n\}\}$.

$\mathcal{L}_{32} = \{w \in \Sigma^* \mid \ \{0^\ell 1^m 2^n \mid \ell, m, n \in \mathbb{N}^+,\ \ell \neq m,\ m \neq n,\ n \neq \ell\}\}$.

$\mathcal{L}_{33} = \{w \in \Sigma^* \mid \ \{0^n 1 (12)^n 2^n \mid n \in \mathbb{N}^+\}$.

$\mathcal{L}_{34} = \{w \in \Sigma^* \mid \ \{w \in \{0, 1, 2\}^* \mid |w|_0 = |w|_1 \text{ e } |w|_0 > |w|_2\}$.

$\mathcal{L}_{35} = \{w \in \Sigma^* \mid \ \{w \in \{0, 1, 2\}^* \mid |w|_0 > |w|_1 > |w|_2\}$.