Linguagens livres de contexto

$\mathcal{L}_1 = \{w \in \Sigma^* = \{0,1\}^* \mid w = u1^{|u|_0},\ u \in \Sigma^*\}$

$\mathcal{L}_2 = \{w \in \Sigma^* = \{0,1\}^* \mid w = 0^m u,\ |u|_0 \leqslant m,\ m \in \mathbb{N}^+,\ u \in \Sigma^*\}$

$\mathcal{L}_3 = \{w \in \Sigma^* = \{0,1\}^* \mid w = 1^5 u,\ 2 \cdot |w|_0 = 3 \cdot |w|_1,\ u \in \Sigma^*\}$

$\mathcal{L}_4 = \{w \in \Sigma^* = \{0,1\}^* \mid w = uv,\ |u|_1 \geqslant |u|_0 + 4,\ u,v \in \Sigma^*\}$

$\mathcal{L}_5 = \{w \in \Sigma^* = \{0,1\}^* \mid w = uv,\ |u| = |v|,\ |v|_1 \geqslant 1,\ u,v \in \Sigma^*\}$

$\mathcal{L}_6 = \{w \in \Sigma^* = \{0,1\}^* \mid w = uv,\ |u| \geqslant |v|,\ v = r1s,\ u,r,s \in \Sigma^*\}$

$\mathcal{L}_7 = \{w \in \Sigma^* = \{0,1\}^* \mid w = uv^R v,\ u \in \Sigma^*,\ v \in \Sigma^+\}$

$\mathcal{L}_8 = \{w \in \Sigma^* = \{0,1\}^* \mid w = u0v,\ |w| = 2 \cdot k + 1,\ |u| = |v|,\ k \in \mathbb{N},\ u,v \in \Sigma^+\}$

$\mathcal{L}_9 = \{w \in \Sigma^* = \{0,1\}^* \mid w = cuc,\ c \in \Sigma,\ u \in \Sigma^+,\ |w|_0 = |w|_1\}$

$\mathcal{L}_{10} = \{w \in \Sigma^* = \{0,1\}^* \mid |w| = 3 \cdot |w|_0\}$

$\mathcal{L}_{11} = \{w \in \Sigma^* = \{0,1\}^* \mid |w|_0 \neq |w|_1\}$

$\mathcal{L}_{12} = \{w \in \Sigma^* = \{0,1\}^* \mid |w|_0 = 2 \cdot |w|_1\}$

$\mathcal{L}_{13} = \{w \in \Sigma^* = \{0,1\}^* \mid |w|_{101} = |w|_{010}\}$

$\mathcal{L}_{14} = \{w \in \Sigma^* = \{0,1\}^* \mid w = 0^m 1^n,\ m \neq n \text{ e } 2 \cdot m \neq n,\ m,n \in \mathbb{N}\}$

$\mathcal{L}_{15} = \{w \in \Sigma^* = \{0,1\}^* \mid w = 0^m 1^n,\ 3 \cdot m \leqslant n \leqslant 5 \cdot m,\ m,n \in \mathbb{N}\}$

$\mathcal{L}_{16} = \{w \in \Sigma^* = \{0,1\}^* \mid w = (01)^n 0^n,\ n \in \mathbb{N}\}$

$\mathcal{L}_{17} = \{w \in \Sigma^* = \{0,1\}^* \mid w = (01)^m 0^n,\ n \geqslant 2 \cdot m,\ m,n \in \mathbb{N}\}$

$\mathcal{L}_{18} = \{w \in \Sigma^* = \{0,1\}^* \mid w = 110(10)^n 0^{n-1},\ n \in \mathbb{N}\}$

$\mathcal{L}_{19} = \{w \in \Sigma^* = \{0,1\}^* \mid w = 0^m 1^m 0^n,\ m,n \in \mathbb{N}\}$

$\mathcal{L}_{20} = \{w \in \Sigma^* = \{0,1\}^* \mid w = 0^m 1^n 0^q,\ m + q \leqslant n,\ m,n,q \in \mathbb{N}\}$

$\mathcal{L}_{21} = \{w \in \Sigma^* = \{0,1\}^* \mid w = 0^m 1^n 0^q,\ n \neq m+q,\ m,n,q \in \mathbb{N}\}$

$\mathcal{L}_{22} = \{w \in \Sigma^* = \{0,1\}^* \mid w = 0^m 1^n 0^q,\ m \neq q,\ m,n,q \in \mathbb{N}\}$

$\mathcal{L}_{23} = \{w \in \Sigma^* = \{0,1\}^* \mid w = 0^m 1^n 0^q,\ q = 2 \cdot (m+n),\ m,n,q \in \mathbb{N}\}$

$\mathcal{L}_{24} = \{w \in \Sigma^* = \{0,1\}^* \mid w = 0^m 1^n 0^q,\ m > 5,\ n > 3,\ q \leqslant n,\ m,n,q \in \mathbb{N}\}$

$\mathcal{L}_{25} = \{w \in \Sigma^* = \{0,1\}^* \mid w = 0^m 1^n 0^q,\ m \leqslant 2 \cdot n \text{ ou } n \leqslant 3 \cdot q,\ m,n,q \in \mathbb{N}\}$

$\mathcal{L}_{26} = \{w \in \Sigma^* = \{0,1\}^* \mid w = 0^m 1^n 0^q,\ m = 1 \Rightarrow n = q,\ m,n,q \in \mathbb{N}\}$

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

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

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

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

$\mathcal{L}_{31} = \{w \in \Sigma^* = \{0,1\}^* \mid w = (01)^n 0^m (01)^n,\ m < 3,\ m,n \in \mathbb{N}\}$

$\mathcal{L}_{32} = \{w \in \Sigma^* = \{0,1\}^* \mid w = (01)^n (01^{m_n})^n,\ m_n, n \in \mathbb{N}^+\}$

$\mathcal{L}_{33} = \{w \in \Sigma^* = \{0,1\}^* \mid w = 1^m (01)^n (10)^n,\ m \geqslant 4,\ m,n \in \mathbb{N}^+\}$

$\mathcal{L}_{34} = \{w \in \Sigma^* = \{0,1\}^* \mid w = 0^m 10^n 10^q \text{ ou } w = 0^n 10^{2n},\ m,n,q \in \mathbb{N}\}$

$\mathcal{L}_{35} = \{w \in \Sigma^* = \{0,1\}^* \mid w = 0^n 10^{2n} \text{ ou } w = 1^n 01^{3n},\ n \in \mathbb{N}\}$

$\mathcal{L}_{36} = \{w \in \Sigma^* = \{0,1\}^* \mid w = 0^m 1^n 0^q 1^r 0^s 1^t,\ m+q+r+t = n+s,\ m,n,q,r,s,t \in \mathbb{N}\}$

$\mathcal{L}_{37} = \{w \in \Sigma^* = \{0,1\}^* \mid w = 0^m 1^n 0^q 1^r 0^s 1^t,\ m+q+r = n+s+t,\ m,n,q,r,s,t \in \mathbb{N}\}$