LFA

24.04.2024

Seminar 5

Automate push-down

$APD = (Q, \Sigma, \Gamma, \delta, q_0, F, z_0)$

Q = mult. stări, finită și nevidă

$\Sigma = \{a, b, c, \dots\}$ alfabetul de intrare

$\Gamma = \{A, B, C, \dots\}$ alfabetul din stivă

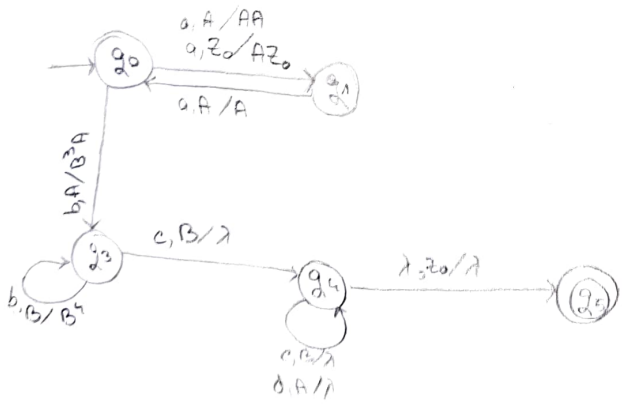
$q_0 \in Q$ stare inițială, unică

$F \subset Q$ mult. stări finale (poate fi vidă)

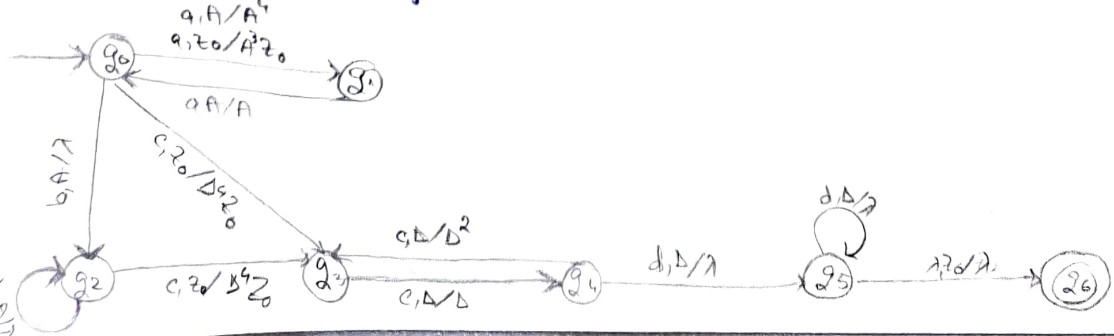
$z_0 \in \Gamma$ simbolul inițial al stivei

$\delta : Q \times (\Sigma \cup \{\lambda\}) \times \Gamma \to 2^{Q \times \Gamma^*}$

① $L_2 = \{a^{2m} b^k c^{3k} d^m \mid m \geq 1, k \geq 1\}$



② $L_3 = \{a^{2m} b^{3m} c^{2k} d^{k+3} \mid m \geq 0, k \geq 1\}$



Gramatică

$G = (N, T, S, P)$

$N = \{A, B, C, \dots\}$ mult. simboluri neterminale

$T = \{a, b, c, \dots\}$ mult. simboluri terminale

$S \in N$ simbolul de start

P = mult. producții

Gramatici regulate

$A \to aB \mid a \mid \lambda$; $A, B \in N$, $a \in T$

Gramatici independente de context

$A \to \alpha$, $A \in N$, $\alpha \in (N \cup T)^*$

① $L_4 = \{a^{2m} b^{3k} \mid m \geq 1, k \geq 0\}$

$S \to aA$

$A \to aS \mid aB$

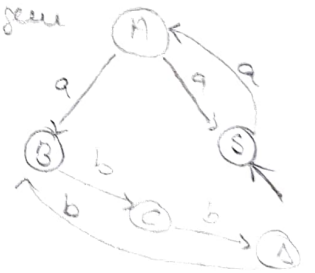
$B \to bC \mid \lambda$

$C \to bD$

$D \to bB$

| Imramnă → ; de ex: $A \to aS \mid aB$

→ Imramnă step — Imramnă w. de gen



$S \overset{1}{\Longrightarrow} aA \overset{3}{\Longrightarrow} aaB \overset{4}{\Longrightarrow} aabC \overset{6}{\Longrightarrow} aabbD \overset{4}{\Longrightarrow} aabbbB \overset{7}{\Longrightarrow} aabbbbB \overset{5}{\Longrightarrow} aabbb$

② $L_6 = \{a^m b^k c^{2k} d^m \mid m \geq 1, k \geq 0\}$

$S \to aSd \mid aAd$

$A \to bAc^2 \mid \lambda$

③ $L_8 = \{a^m b^{2m} c^{2k} d^k \mid m \geq 0, k \geq 1\}$

$S \to AB$

$A \to aAb^2 \mid \lambda$

$B \to ccBd \mid ccd$