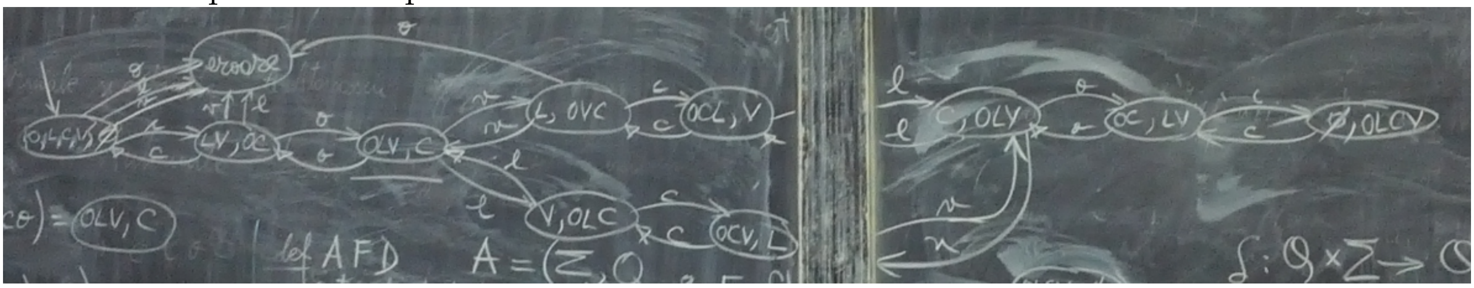
Carti:
Limbaje formale si automate - A. Atanasiu
Introduction to Automata theory, languages and computation. - J. Hopcroft, J. Ullman

$\Sigma_1 = \{0, 1\}$
$\Sigma_2 = \{0, 1, ..., 9\}$
$\Sigma_3 = \{a, b, ..., Z\}$

$a \cdot b = ab \neq ba$
$a \cdot \lambda = \lambda \cdot a = a$
$\alpha \cdot \lambda = \lambda \cdot \alpha = \alpha$

$A \cdot B = \{a_i, b_j / a_i \in A, b_j \in B\}$
$A^0 = \{\lambda\}$
$A^{k+1} = A^k \cdot A$
$\Sigma_1^2 = \Sigma_1 \cdot \Sigma_1 = \{00, 01, 10, 11\}$
$A^1 = A$
$\Sigma_1^3 = \Sigma_1^2 \cdot \Sigma_1 = \{000, 001, 010, ..., 111\}$
$\Sigma_1^k = \{a_1, ..., a_k / a_i \in \Sigma_1\}$
$A^* = \bigcup_{k \geq 0} A^k = A^0 \cup A^1 \cup ...$
$\Sigma_1^* = \{\alpha / \exists k \in \mathbb{N}, \alpha = a_1, ..., a_k, a_i \in \Sigma_1\}$ $\Sigma_2^* =$ toate numerele

Problema capra varza lup:



<u>def.</u> Automat Finit Determinist (AFD): $A = (\Sigma, Q, q_0, F, \delta)$
$\Sigma =$ alfabet (finit)
$Q =$ multimea de stari (finită)
$q_0 =$ starea initială
$F =$ starea finală
$\delta : Q \times \Sigma \to Q =$ functia de tranzitie

$\delta \to \quad \tilde{\delta} : Q \times \Sigma^* \to Q$

$\tilde{\delta}(q, \lambda) = q$

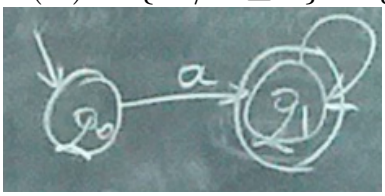
$\tilde{\delta}(q, a \cdot \alpha) = \delta(\underbrace{\delta(q, \lambda)}_{q_1}, \alpha)$

$\tilde{\delta}(q, \lambda) = \tilde{\delta}(\underbrace{\delta(q, \lambda)}_{q'}, \lambda) = \delta(\underbrace{q, a}_{q'})$

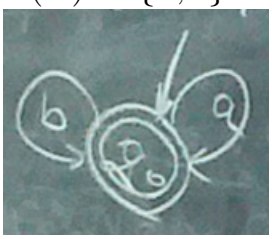
<u>def.</u> $L(A) = \{\alpha \in \Sigma^* / \tilde{\delta}(q_0, \alpha) \in F\}$
$L(A) = \{covcloc, cccovclooo, ...\}$
$L(A) = \{a^n / n \geq 0\} = \{\alpha, a, aa, aaa, ...\}$
$A = (\Sigma, Q, q_0, F, \delta)$
<u>*Obs.*</u> $\lambda \in L(A) \Leftrightarrow \tilde{\delta}(q_0, \lambda) \in F \Leftrightarrow q_0 \in F$
(AFD) $\qquad \tilde{\delta}(q_0, \lambda) = q_0$

$\lambda \notin L(A) \Leftrightarrow q_0 \notin F$

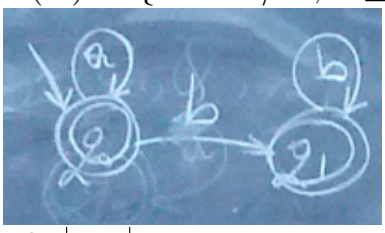
$L(A) = \{a^n / n \geq 1\} = \{a, a^2, a^3, ...\}$



$L(A) = \{a, b\}^* = \{\alpha, a, b, ab, ba, aab, bab, ...\}$

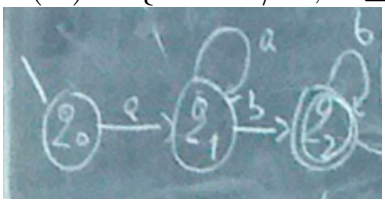


$L(A) = \{a^n \cdot b^m / m, n \geq 0\} = \{\alpha, a, b, ab, a^2b, ab^2, ...\}$

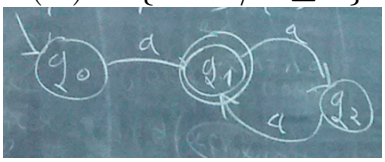


δ	a	b
q_0	q_0	q_1
q_1	$\emptyset$	q_1

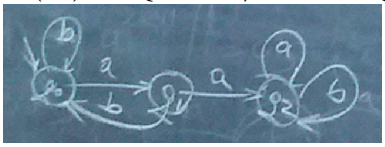
$L(A) = \{a^n \cdot b^m / m, n \geq 1\}$



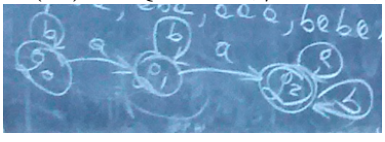
$L(A) = \{a^{2k+1} / k \geq 0\} = \{a, a^3, a^5, a^7, a^9, ...\}$



$L(A) = \{\alpha aa\beta / \alpha, \beta \in \{a, b\}^*\} = \{aa, baa, aab, aaa, ababaaabab, ...\}$



$L(A) = \{\alpha a\beta a\gamma / \alpha, \beta, \gamma \in \{a, b\}^*\}$



Temă: $L(A) = \{\alpha \in \{a, b\}^* /$ nr. par de a, nr. par de b $\}$