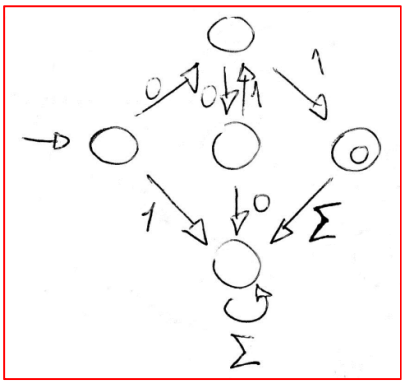
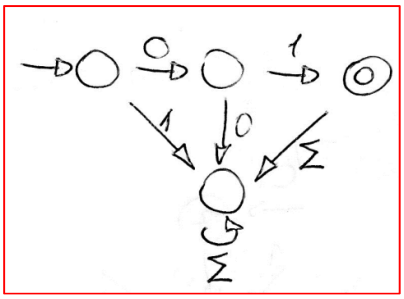
Universidade Federal de Pernambuco (UFPE)
Centro de Informática (CIn)

Informática Teórica
(IF689)
1º Semestre de 2010
1ª Mini-Prova
26 de Março de 2010

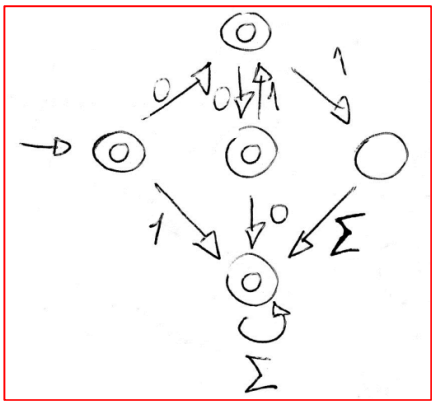
1. (4.0) Determine as linguagens graficamente através de AFDs. Considere $\Sigma = \{0, 1\}$:
   a. (1.0) L1 = {01, 0011, 001011, 00101011, 0010101011, ...};



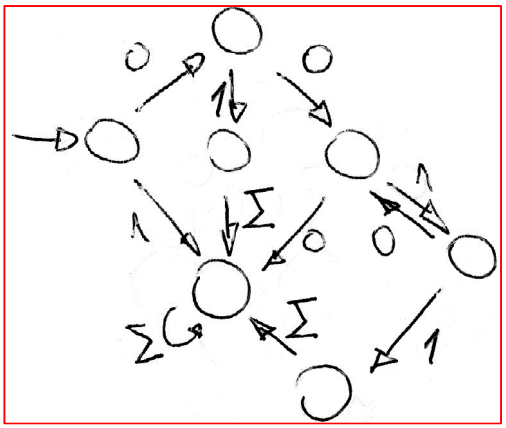
   b. (1.0) L2 = {w ∈ L1 | w tem o dígito 1 na segunda posição};



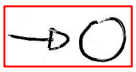
   c. Construa estes AFDs usando os algoritmos.
      i. (1.0) L3 = $\overline{L1}$;



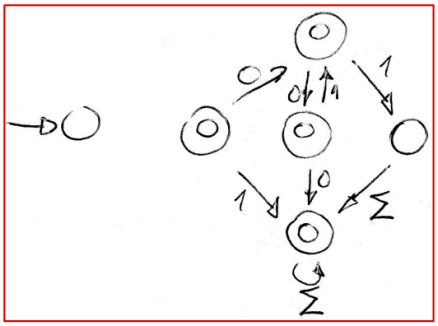
ii. (1.0) L4 = L2 ∩ L3.



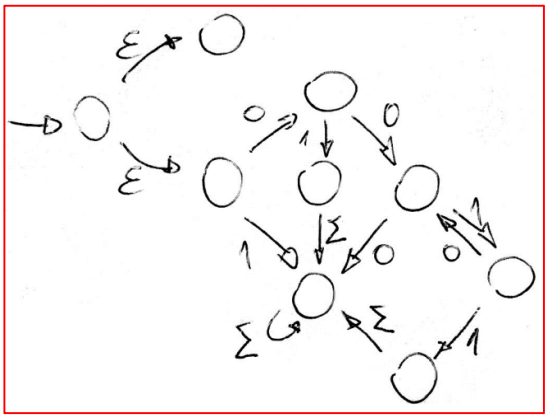
2. (4.0) Determine as linguagens graficamente através de AFNs. Considere Σ = {0, 1}:
   a. Construa este AFN com o menor número de estados e transições;
      i. (1.0) L5 = { w ∈ Σ | |w| > 1}.



   b. Construa estes AFNs usando os algoritmos.
      i. (1.0) L6 = L5 ∘ L3;



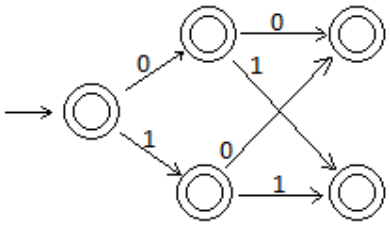
      ii. (1.0) L7 = L5 ∪ L4;



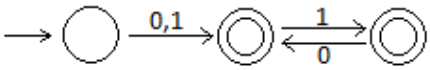
      iii. (1.0) L8 = L5*.

3. (2.0) Determine o conjunto gerado pelos autômatos usando o esquema da compreensão.

a. (1.0)



b. (1.0)



$\{w \in \Sigma^* \mid \lvert w \rvert \leq 2\}$	$\{w \in \Sigma^* \mid w = xy$ e $\lvert x \rvert = 1$ e y tem 1 nas posições ímpares e 0 nas posições pares$\}$