Titolo nota 15/10/2015

$$\Lambda^+ = \Lambda^* \setminus \{\varepsilon\}$$

$$\Lambda = \{a, b\}$$

$L = \{\alpha b \mid \alpha \in \Lambda^+$ e $|\alpha|_a$ è un numero pari$\}$

$bb \in L$

$baab \in L$

$\underbrace{aababa}_{\text{pari}}\,\underbrace{b}_{b} \in L$

$b \notin L$

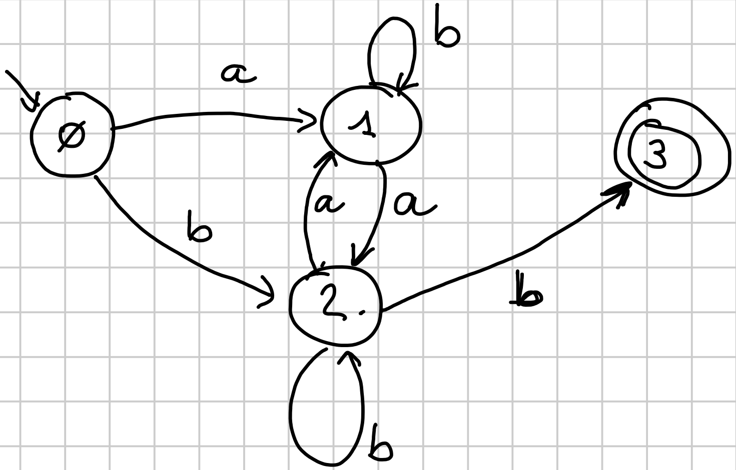
$baa \notin L$

$abaab \notin L$

$|\alpha|_a$ numero di occorrenze di a in α

$$|abaabb|_a = 3$$

Def. un ASF che riconosce L



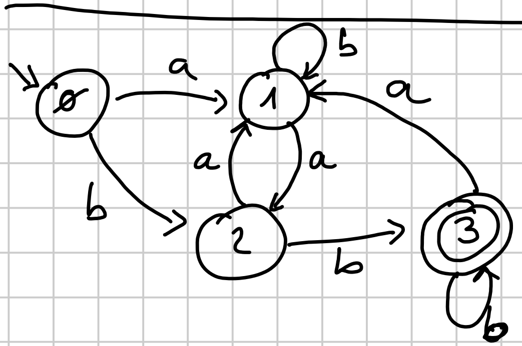
bb

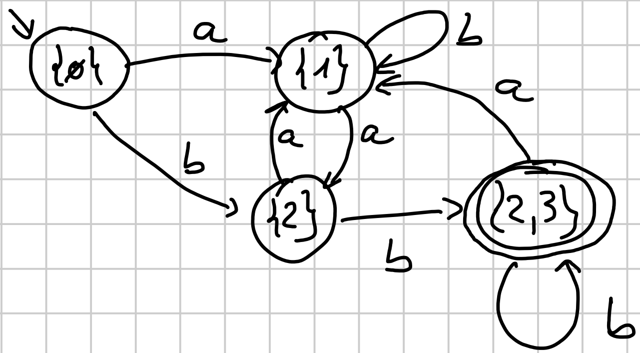
$\emptyset \xrightarrow{b} 2 \xrightarrow{b} 2$

$2 \xrightarrow{b} 3$

aaab

$\emptyset \xrightarrow{a} 1 \xrightarrow{a} 2 \xrightarrow{a} 1 \xrightarrow{b} 1$ ← non è riconosciuta





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$\Lambda = \{\emptyset, 1, 2, \dots, 9\}$ $0012 \in L$ $\varepsilon \in L$

L è il linguaggio dei numeri naturali multipli di 3 (anche lo $\emptyset$)

n è multiplo di 3 se $\exists\, \underline{m \in \mathbb{N}}.\ 3 \cdot m = n$ $3 \cdot \emptyset = \emptyset$

la somma delle cifre modulo 3

5 modulo 3 = 2

4 " 3 = 1

3 " 3 = $\emptyset$

7 modulo 3 = 1

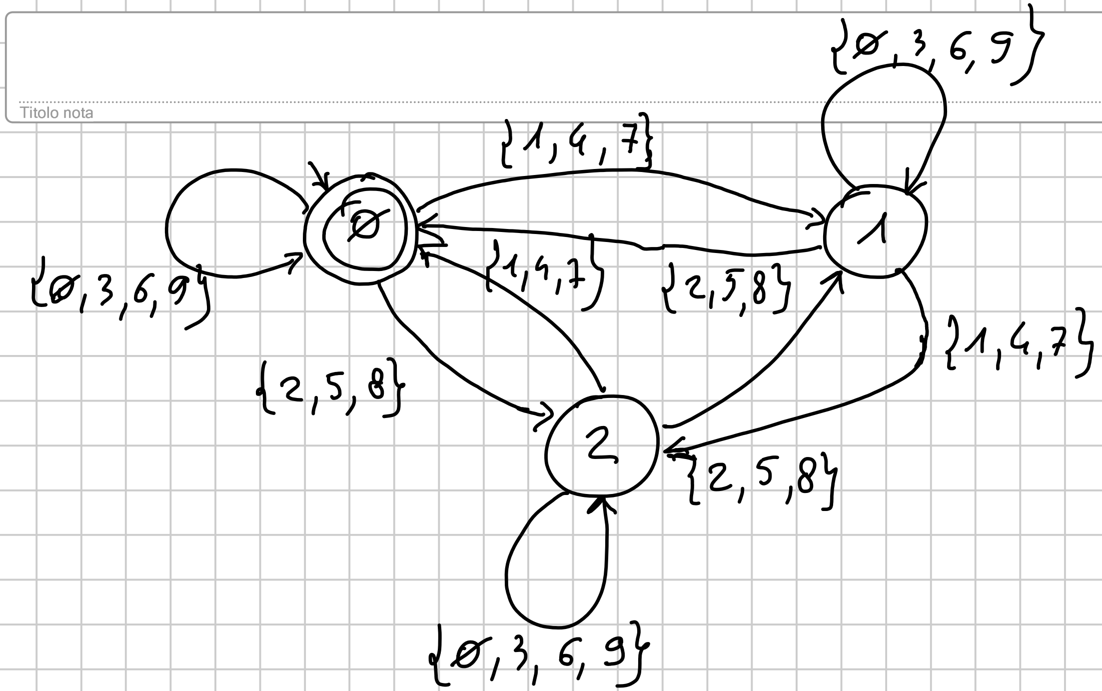
1631

$1+6 \bmod 3 = 1+3 \bmod 3 =$

$1+1 \bmod 3 = 2$

732

$1+3 \bmod 3 = 1+2 \bmod 3 = \emptyset$



ε

$\emptyset$

30012

$\emptyset \xrightarrow{3} \emptyset \xrightarrow{\emptyset} \emptyset \xrightarrow{\emptyset} \emptyset \xrightarrow{1} 1 \xrightarrow{2} \underline{\underline{\emptyset}}$

136

$\emptyset \xrightarrow{1} 1 \xrightarrow{3} 1 \xrightarrow{6}$

1+3 mod 3] 1+6 mod 3 = 1

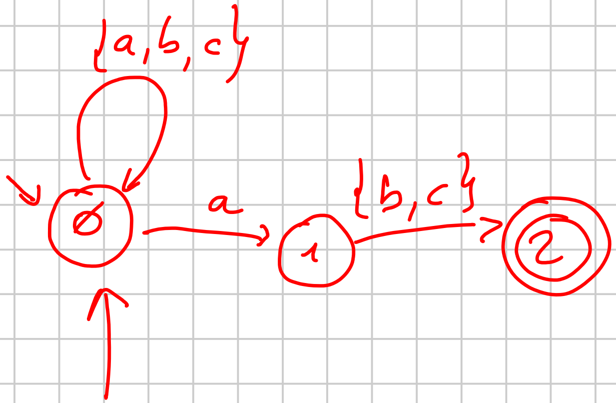
$L = \{\alpha ac \mid \alpha \in \Sigma^*\} \cup \{\alpha ab \mid \alpha \in \Sigma^*\}$

$\Sigma = \{a, b, c\}$

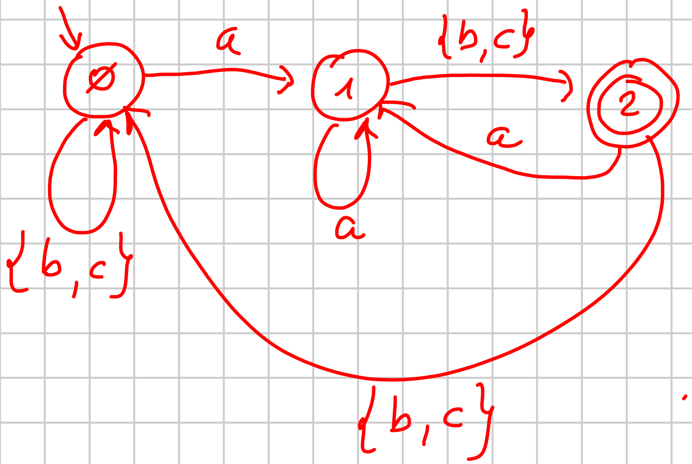
$abac \in L$

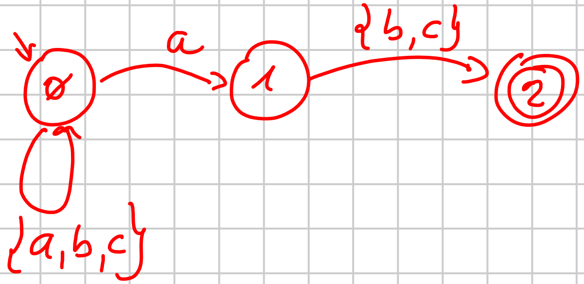
$ab \in L$ $\qquad ac \in L$

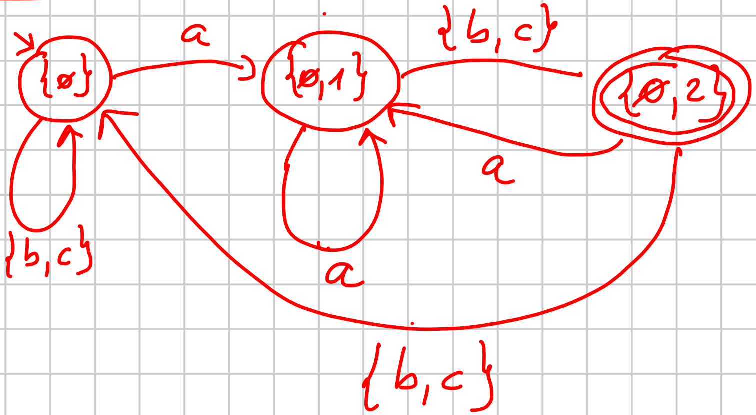
$baa \notin L$ $\qquad \underbrace{abcca}_{\alpha}ab \in L$



$aacab$


∅
a
1
{b,c}
2
a
a
{b,c}
{b,c}


∅
a
1
{b,c}
2
{a,b,c}


{∅}
a
{∅,1}
{b,c}
{∅,2}
a
a
{b,c}
{b,c}

$$L = \{ \underbrace{a^n b^n}\underbrace{{}^{+m} c^m} \mid n, m > 0 \}$$

$$L = \{ \underbrace{a^n b^n}\, \underbrace{b^m c^m} \mid n, m > 0 \}$$

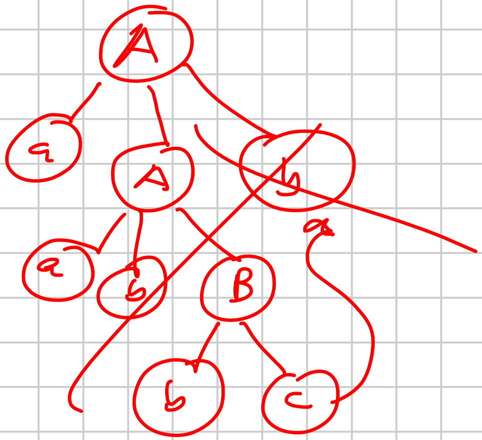
$a\cancel{b}B$

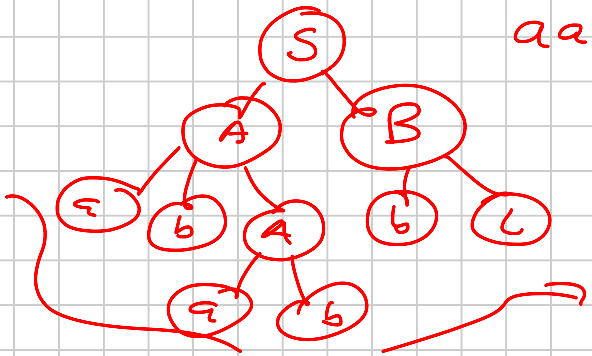
$S \to AB$

$A \to ab \mid aAb \leftarrow a^n b^n$

$B \to bc \mid bBc \leftarrow b^k c^k$

$\cancel{abA}$





aabbbc

ababbc

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$L = \{ a^n b^{n+m} c^m \mid n, m > 0 \}$ non è regolare

$a^{n-s} b^{n+1} c \notin L$

$n - s < n$

$\forall n \in \mathbb{N} . \exists w \in L . |w| \geq n \Rightarrow$

$\left(\forall x, y, z . \; w = xyz \wedge |xy| \leq n \wedge y \neq \varepsilon \Rightarrow \exists i \in \mathbb{N} . \; x y^i z \notin L \right)$

$n - s + 1 \neq n + 1$

Qualunque sia $n \in \mathbb{N}$ prendo la stringa $w = a^n b^{n+1} c \in L$ e $|w| \geq n$

$x = a^t \quad 0 \leq t < n$

$y = a^s \quad 0 < s \leq n - t$

$z = a^{n-t-s} b^{n+1} c$

Tutte le modolizzazioni $xyz = w$ e tali che $|xy| \leq n$ e $y \neq \varepsilon$ sono rappresentate da queste

$x y^0 z = a^t a^{n-t-s} b^{n+1} c = a^{n-s} b^{n+1} c$

$t + n - t - s = n - s$ dato che $s > 0$

$n - s < n$