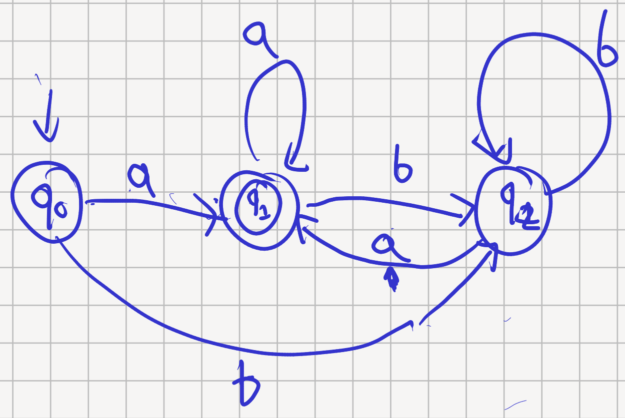


$q_0 = A_0$

$q_1 = A_1$

$q_2 = A_2$

$A_0 = aA_1 \cup bA_2$

$A_1 = aA_1 \cup bA_2 \cup \epsilon$

$A_2 = bA_2 \cup aA_1$

$aa^* = a^+$

$a(a^0 \cup a^1 \cup a^2 \cup \ldots)$

$(a^1 \cup a^2 \cup a^3 \cup$

$\boxed{X = aX \cup b}$

$X = a^*b$

$A1 \to A2 \to A0$

$\boxed{A_1 = a^*(bA_2 \cup \epsilon)}$

$A_1 = a^*bA_2 \cup a^*$

$A_2 = bA_2 \cup a^+bA_2 \cup a^+$

$A_2 = (b \cup a^+b)A_2 \cup a^+$

$A_2 = (b \cup a^+b)^*a^+$

$A_0 = aA_1 \cup bA_2$

$A_0 = a(a^*bA_2 \cup a^*) \cup b(b \cup a^+b)^*a^+$

$A_0 = a(a^*b(b \cup a^+b)^*a^+ \cup a^*) \cup b(b \cup a^+b)^*a^+$

$A2 \to A1 \to A_0$

$A_2 = bA_2 \cup aA_1$

$A_2 = b^*aA_1$

$A_1 = aA_1 \cup bA_2 \cup e$

$A_1 = a^*(bA_2 \cup \epsilon)$

$A_1 = a^*bA_2 \cup a^*$

$A_1 = abb^*a \cup a^*$

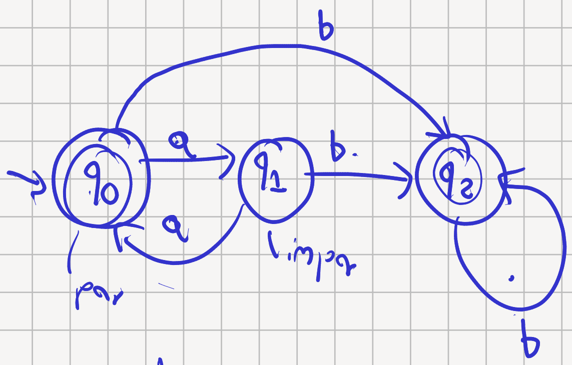
$A_1 = ab^+a \cup a^*$

$A_0 = aA_1 \cup bA_2$

$A_0 = a(ab^+a \cup a^*) \cup$

$b^*a(ab^+a \cup a^*)$

$b^*a^2b^+a \cup b^*a^+$



$$A_0 = aA_1 \cup bA_2 \cup \epsilon$$

$$A_1 = bA_2 \cup aA_0$$

$$A_2 = bA_2 \cup \epsilon$$

$$X = aX \cup b$$

$$A_0 = \underbrace{a^2}_{a} A \cup \underbrace{(ab^+ \cup b^+ \cup \epsilon)}_{b}$$

$$A_2 = b^* \epsilon = b^*$$

$$A_1 = bb^* \epsilon \cup aA_0$$

$$A_1 = b^+ \cup aA_0$$

$$A_0 = a(b^+ \cup aA_0) \cup b^+ \cup \epsilon$$

$$A_0 = ab^+ \cup \boxed{a^2 A_0} \cup b^+ \cup \epsilon$$

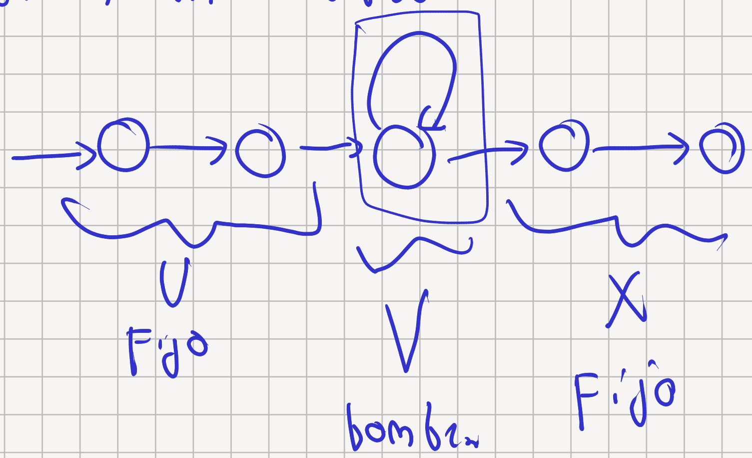
$$A_0 = (a^2)^* (ab^+ \cup b^+ \cup \epsilon)$$

$$A_0 = (a^2)^* ab^+ \cup (a^2)^* b^+ \cup (a^2)^*$$

$$(a^2)^* = \{\epsilon, aa, aaaa, aaaaaa, \ldots\}$$

$$(aa)^* = \{(aa)^0 \cup (aa)^1 \cup (aa)^2 \cup \ldots$$

Teorema del bombeo



$L_1 \to$ $x \in L_1$

$x_n \in L_1$

$\uparrow$

$\geq n$

$P(n) \to P(n+1)$

Inductiva

$ab^n a \geq$ long n

n cte

lcma

$\underbrace{ab^n}_{U}\ \underbrace{b^i}_{V}\ \underbrace{a}_{X}$

$i=3$

$$ab^n b^3 a = ab^{n+3}a \in L$$

$\underbrace{ab^n}_{U}\ \underbrace{\epsilon^i}_{V}\ \underbrace{a}_{X} \Big\} \geq n$

bomba

$\underbrace{\epsilon}_{U}\ \underbrace{\epsilon^i}_{V}\ \underbrace{ab^n a}_{X}$

$i=4$

$\underbrace{a}_{U}\ \underbrace{b^n b^i}_{V}\ \underbrace{a}_{X}$

$a^n b^n$ $n \geq 0$

$a^n \underbrace{\epsilon^i} b^n$ $n \to \infty$

$\in a^i a^n b^n$ $n \to \infty$

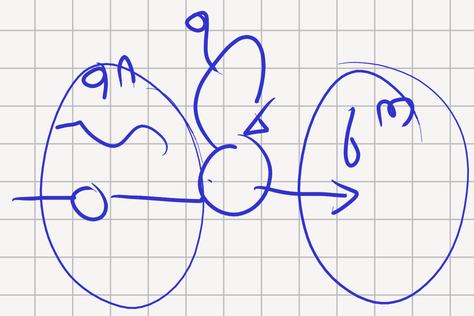
$i = 4$

$\in a^4 a^n b^n$

$a^{n+4} b^n \in L$? X $n+4 = n$ X

$a^n b^m$ $n, m \geq 0$

$\underbrace{a^n}_{\checkmark} \underbrace{a^i}_{\checkmark} \underbrace{b^m}_{X}$ $i = 4$



$a^{n+4} b^m \in L$?

---

no terminal

$S \to aS \mid \epsilon$ $\{\epsilon, a, aa, aaa,$

terminal

$S \to aA \mid bB$ $a^+ \cup b^+$

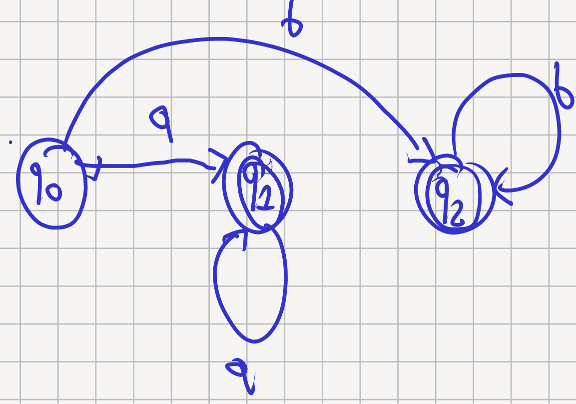
$\to A \to aA \mid \epsilon$

$B \to bB \mid \epsilon$

$A_0 = aA_1 \cup bA_2$

$A_1 = aA_1 \cup \epsilon$

$A_2 = bA_2 \cup \epsilon$



$A_1 = a^*$

$A_2 = b^*$

$A_0 = aa^* \cup bb^*$

$A_0 = a^+ \cup b^+$

:)

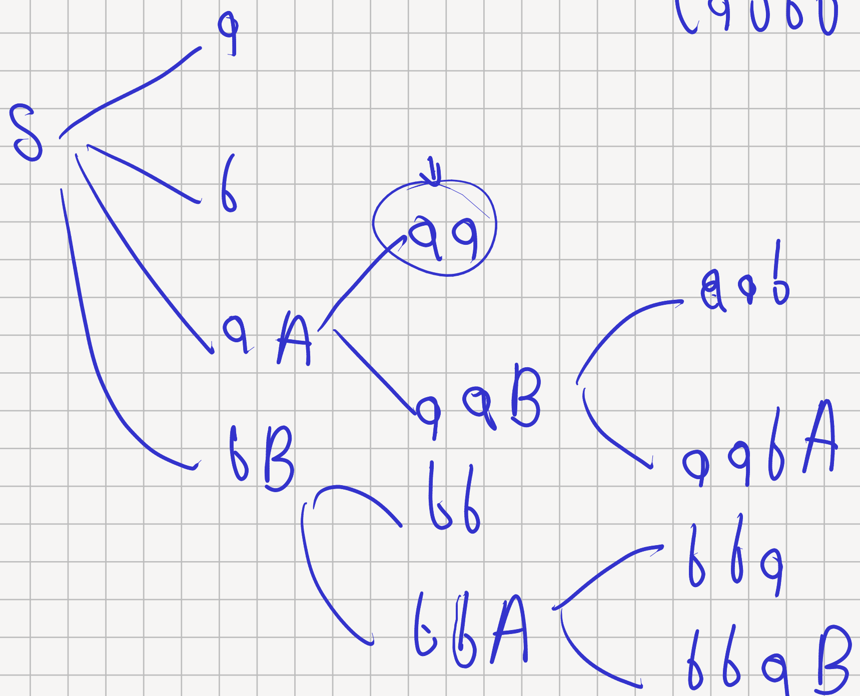
$S \to aA \mid bB \mid a \mid b$

$A \to a \mid aB$

$B \to b \mid bA$

$L = \{a, b, aaba, aababa,$
$bba,$

$(a \cup b \cup aa(ab)^* \cup bb(ba)^*)$



$S \to aA \mid bB \mid \underline{a} \mid \underline{b}$

$A \to a \mid aB$

$B \to b \mid bA$

1) $A_0 = aA_1 \cup bA_2 \cup a \cup b$

2) $A_1 = a\boxed{A_2} \cup a$

3) $A_2 = b\underline{A_1} \cup b$

$A_2 = b(aA_2 \cup a) \cup b$

$A_2 = baA_2 \cup ba \cup b$

$\to A_2 = (ba)^*(ba \cup b)$

$A_1 = abA_1 \cup ab \cup a$

$\to A_1 = (ab)^*(ab \cup a)$

$A_0 = a((ab)^*(ab \cup a)) \cup$
$b((ba)^*(ba \cup \underline{b})) \cup a \cup b$

$A_0 = a(ab)^*ab \cup a(ab)^*a \cup$
$b(ba)^*ba \cup b(ba)^*b \cup a \cup b$

$A_0 = a(ab)^+ \cup a(ab)^*a \cup b(ba)^+ \cup b(ba)^*b \cup a \cup b$

$S \to aA \mid bB \mid \underline{a} \mid \underline{b}$

$A \to a \mid aB$

$B \to b \mid bA$

$a(ab)^+$

aab

aabab