

## Esercizi 3

### 1.1. SAFETY.

Sia  $\tau \notin P$  t.c.  $\tau = \tau_1 \tau_2 \tau_3 \dots$ .

$\exists i \in \mathbb{N} \setminus \{0\}$  t.c.  $\tau_i = \{a, b\}$ .

Prendiamo  $\pi = \tau_1 \dots \tau_i$

$\forall \tau' \in (\mathcal{P}^A)^\omega$ , abbiamo  $\pi \tau' \notin P$  (perché alla posizione  $i$  vediamo  $a$  e  $b$ )

### 1.2. SAFETY

Sia  $\tau \notin P$  t.c.  $\tau = \tau_1 \tau_2 \tau_3 \dots$

$\exists i \in \mathbb{N} \setminus \{0\}$  t.c.  $a \notin \tau_i$

Prendiamo  $\pi = \tau_1 \dots \tau_i$

$\forall \tau' \in (\mathcal{P}^A)^\omega$ , abbiamo  $\pi \tau' \notin P$  (perché alla posizione  $i$  non c'è  $a$ )

### 1.3. NOT SAFETY and NOT LIVENESS

$\rightarrow$  NOT SAFETY.

Prendiamo  $\tau = \emptyset \emptyset \emptyset \dots \emptyset$ .  
 $\tau \notin P$

Sia  $\pi$  un prefisso qualunque di  $\tau$ .

$\pi = \emptyset \dots \emptyset$  e  $\pi \{b\} \{b\} \dots \{b\} \in P$   
 $\Rightarrow P$  non è di SAFETY.

$\Rightarrow$  NOT LIVENESS

Rendiamo  $\Pi$  finito t.c.  $\Pi = \{a\}$

Allora non esiste  $\tau \in (\Sigma^P)^*$  F.c.

$\Pi \tau \in P$  (perché si veda sempre a in  
primo posizione).

Quindi  $P$  non è di LIVENESS

1.4. ~~SAFETY~~

LIVENESS

~~Si a  $\Pi$  appaia almeno una volta~~

Sia  $\Pi$  finito.

Allora  $\Pi \setminus \{b\} \neq \dots \neq \in P$

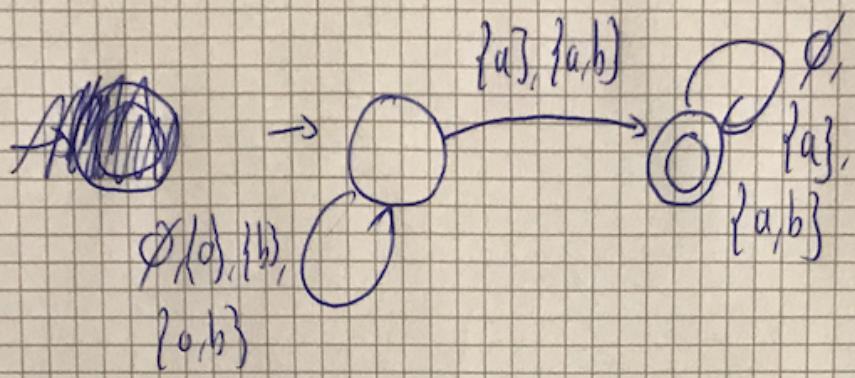
(Se a appare in  $\Pi$ , vediamo b in  $\Pi \setminus \{b\} \neq \dots \neq \dots$   
dopo)

1.5. LIVENESS

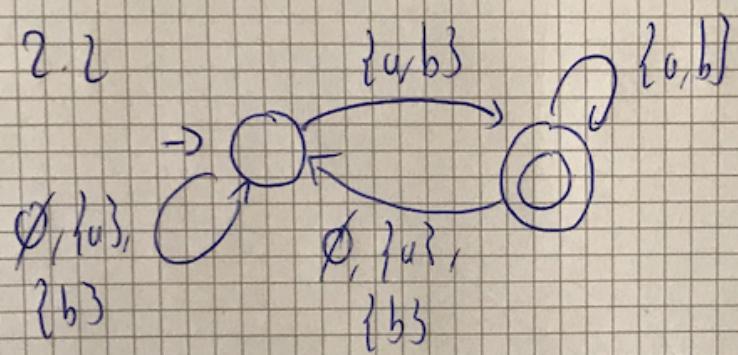
Sia  $\Pi$  finito allora  $\Pi \neq \dots \neq \in P$

In fatti in  $\Pi \neq \dots \neq$  si vede a un numero  
finito di volte!

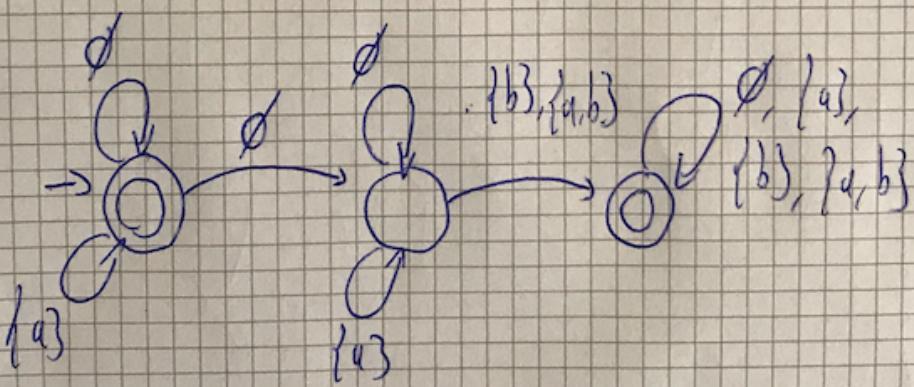
2.1



2.2

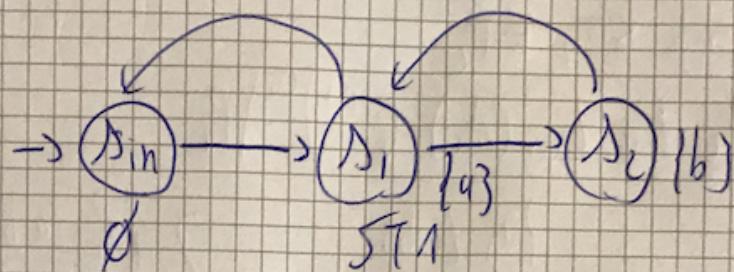


2.3

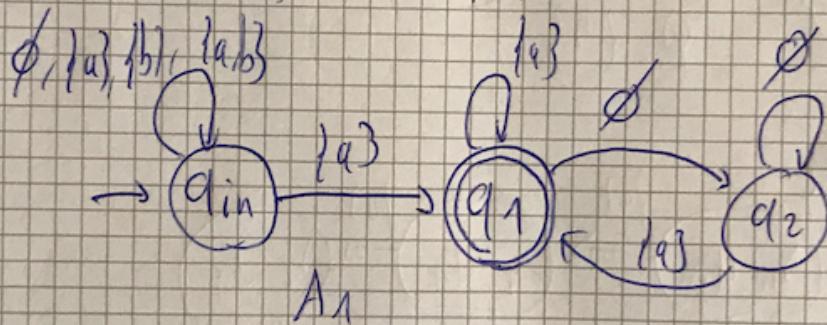


- Abbiamo  $ST_1 \neq P_1$  perché non faccio un ciclo solo vedendo a e mai b.

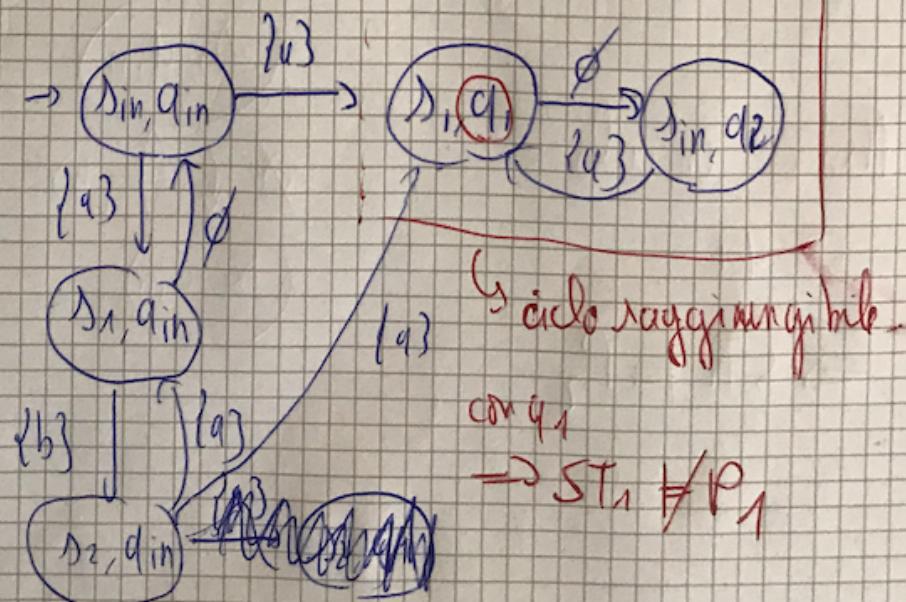
Abbiamo



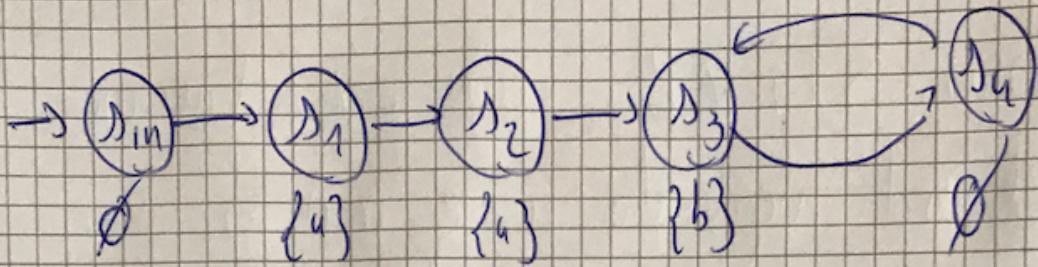
- e A<sub>1</sub>, f.c  $L_{\omega}(A_1) = (\mathbb{Z}^{PA})^{\omega} \setminus P_1$ .



$ST_1 \otimes A_1$

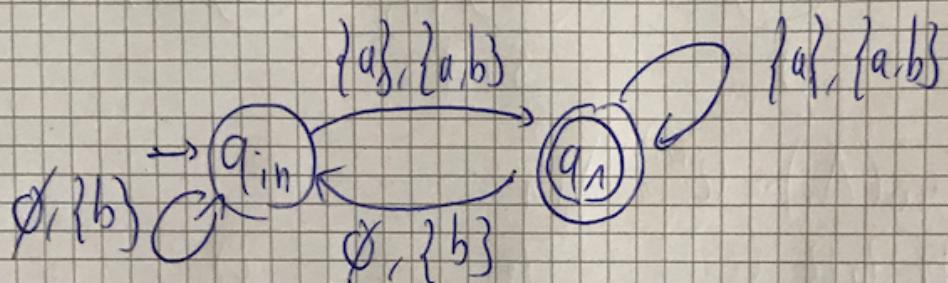


2.

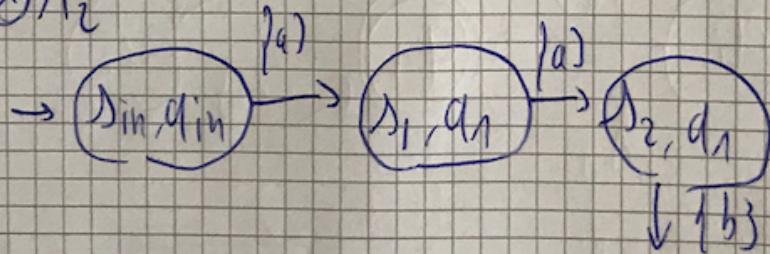


Abbiamo  $ST_2 \models P_2$

Sia  $A_2$  t. q  $L_w(A_2) = (a^*)^\omega \setminus P_2$



$ST_2 \otimes A_2$



Non c'è un ciclo

on  $q_1$

$\Rightarrow ST_2 \not\models P_2$

