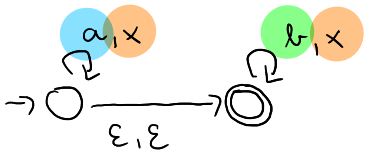
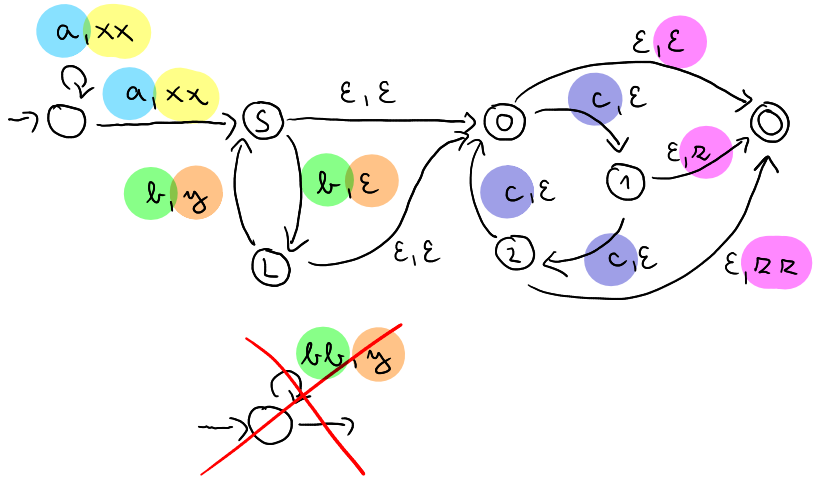
KPA

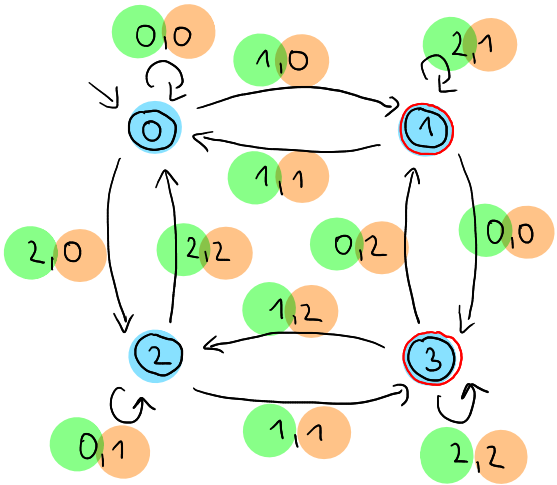
① $(a^i b^j, x^{i+j})$



② $(a^i b^j c^k, x^{2i} y^{\lfloor j/2 \rfloor} z^{k \bmod 3})$: $i > 0$



④



$$(4k+0).3+ \begin{matrix} 0 \\ 1 \\ 2 \end{matrix} = \begin{matrix} 4k.3+4.0+0 \\ 4k.3+4.0+1 \\ 4k.3+4.0+2 \end{matrix}$$

$$(4k+1).3+ \begin{matrix} 0 \\ 1 \\ 2 \end{matrix} = \begin{matrix} 4k.3+4.0+3 \\ 4k.3+4.1+0 \\ 4k.3+4.1+1 \end{matrix}$$

$$(4k+2).3+ \begin{matrix} 0 \\ 1 \\ 2 \end{matrix} = \begin{matrix} 4k.3+4.1+2 \\ 4k.3+4.1+3 \\ 4k.3+4.2+0 \end{matrix}$$

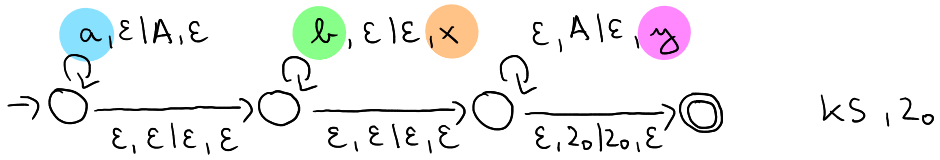
$$(4k+3).3+ \begin{matrix} 0 \\ 1 \\ 2 \end{matrix} = \begin{matrix} 4k.3+4.2+1 \\ 4k.3+4.2+2 \\ 4k.3+4.2+3 \end{matrix}$$

$\boxed{541} : 4 = \boxed{135}$ ZBYTEK 1

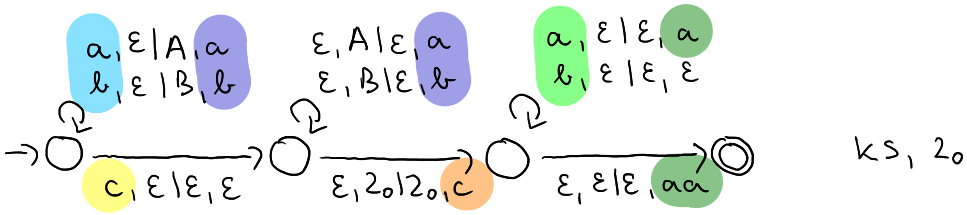
14
21
1

ZPA

① $(a^i b^i, x^i y^i)$

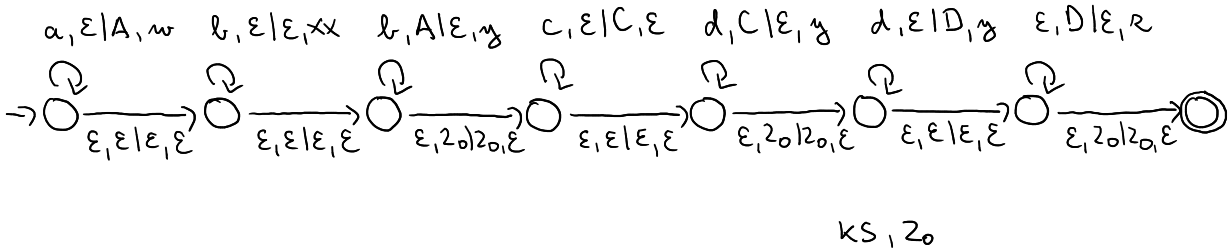


② $(w c w, w w^R c a^i)$: $i = |w|_a + 2$



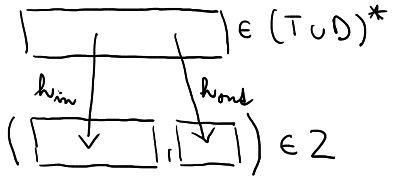
⑤ $(a^r b^s c^t d^u, w^r x^{2s-2r} y^{r+u} z^{u-t})$: $0 \le r \le s$, $0 \le t \le u$

VSTUP:	a^r	b^{s-r}	b^r	c^t	d^t	d^{u-t}	ε
VÝSTUP:	w^r	$(xx)^{s-r}$	y^r	ε	y^t	y^{u-t}	z^{u-t}



PG (N, T, D, R, S)

↳ $A \to \alpha \quad A \in N,\ \alpha \in (N \cup T \cup D)^*$

$S \Rightarrow \dots \Rightarrow \dots \Rightarrow$  $\in (T \cup D)^*$

$\in 2$

RPG $A \to axB$, $A \to ax$ $\Big\}$ $A, B \in N,\ a \in \Delta,\ x \in D^*$

$\to S \to \varepsilon \dots$

① (w, w)

$\to S' \to \varepsilon \mid \cancel{S} \mid a a S \mid b b S \mid a a \mid b b$

$\cancel{\to S} \to a a S \mid b b S \mid \cancel{\varepsilon} \mid a a \mid b b$

BPG

② $(u c v, w c w^2) : |w| > 0$

$\to S \to U c V$

$U \to a a U \mid b b U \mid \varepsilon$

$V \to a a V a \mid b b V b \mid a a a \mid b b b$

④ $(u c v, x^{|w|} y^{|w|_b - |w|_a}) : \quad |w|_a \le |w|_b \le 3|w|_a$

$\to S \to a x S b \mid a x S b b y \mid a x S b b b y y \mid b x S \mid S a \mid c$