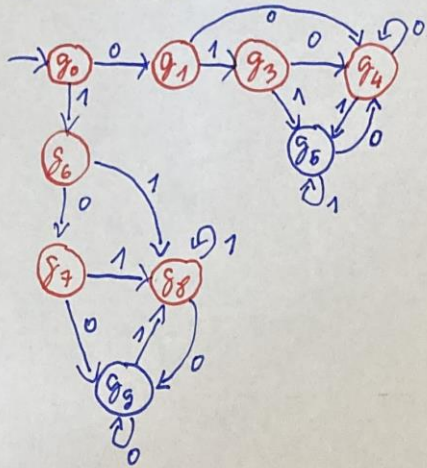
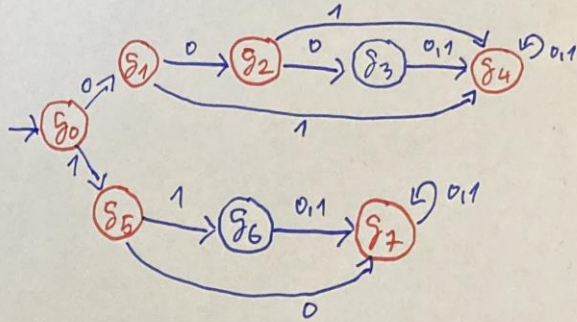


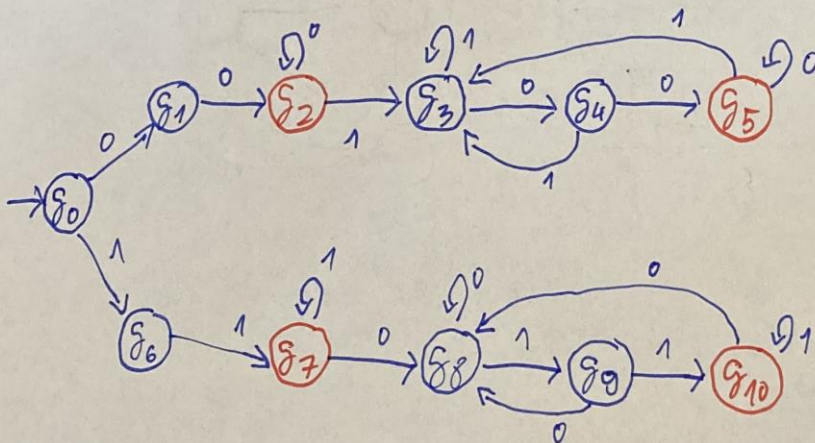
1a) $\Sigma^* \setminus (0\Sigma^1 \cup 1\Sigma^0)$



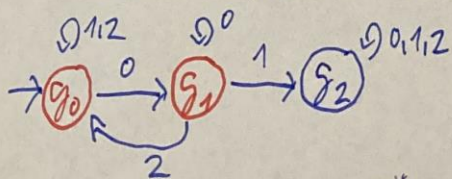
1b) Σ u / m je lib. v. kvone 000 a 113. Netreba L.



1c) Σ u / m začína i končí 00 alebo 113

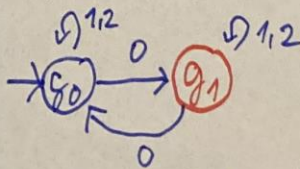


2a) $\Sigma = \{0, 1, 2\}$; Σ u / m neobsahuje podvietežec 013



RE: $((1+2)^* \cdot 0 \cdot (0^* + 2))^*$

2b) $\Sigma = \{0, 1, 2\}$; Σ u / m má lichý počet 03



RE: $0 + (0 \cdot (1+2)^* \cdot 0 \cdot (1+2)^* \cdot 0)^{++}$

3) odstranite ϵ -přechody ϵ -NFA zadaného tab. a poté jej determinizujte:

δ	a	b	ϵ
$\rightarrow q_0$	$\{q_1\}$	\emptyset	$\{q_1, q_2\}$
q_1	$\{q_3\}$	$\{q_1, q_2\}$	\emptyset
q_2	$\{q_4\}$	\emptyset	\emptyset
q_3	\emptyset	$\{q_4\}$	$\{q_4\}$
$*q_4$	$\{q_4\}$	$\{q_2\}$	\emptyset

$$CL(q_0) = \{q_0, q_1, q_2\}$$

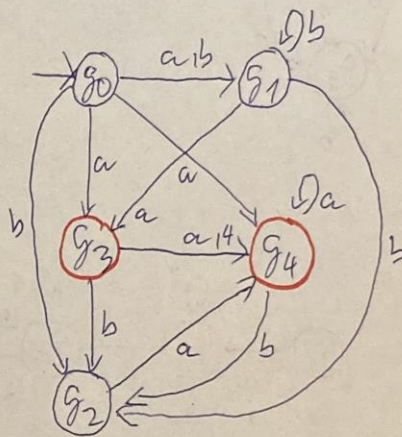
$$CL(q_1) = \{q_1\}$$

$$CL(q_2) = \{q_2\}$$

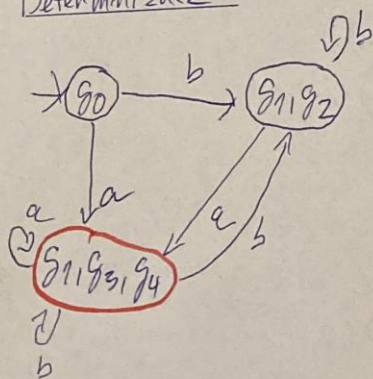
$$CL(q_3) = \{q_3, q_4\}$$

$$CL(q_4) = \{q_4\}$$

δ	a	b
$\rightarrow q_0$	$\{q_1, q_3, q_4\}$	$\{q_1, q_2\}$
q_1	$\{q_3\}$	$\{q_1, q_2\}$
q_2	$\{q_4\}$	\emptyset
$*q_3$	$\{q_4\}$	$\{q_4, q_2\}$
$*q_4$	$\{q_4\}$	$\{q_2\}$

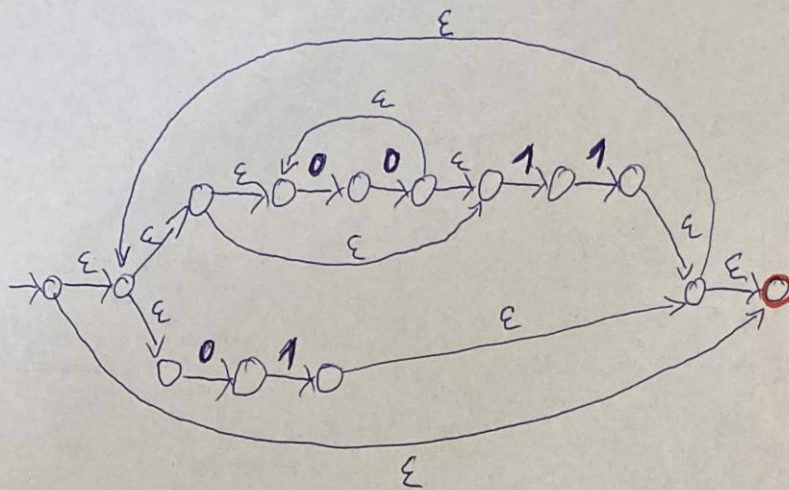


Determinizace

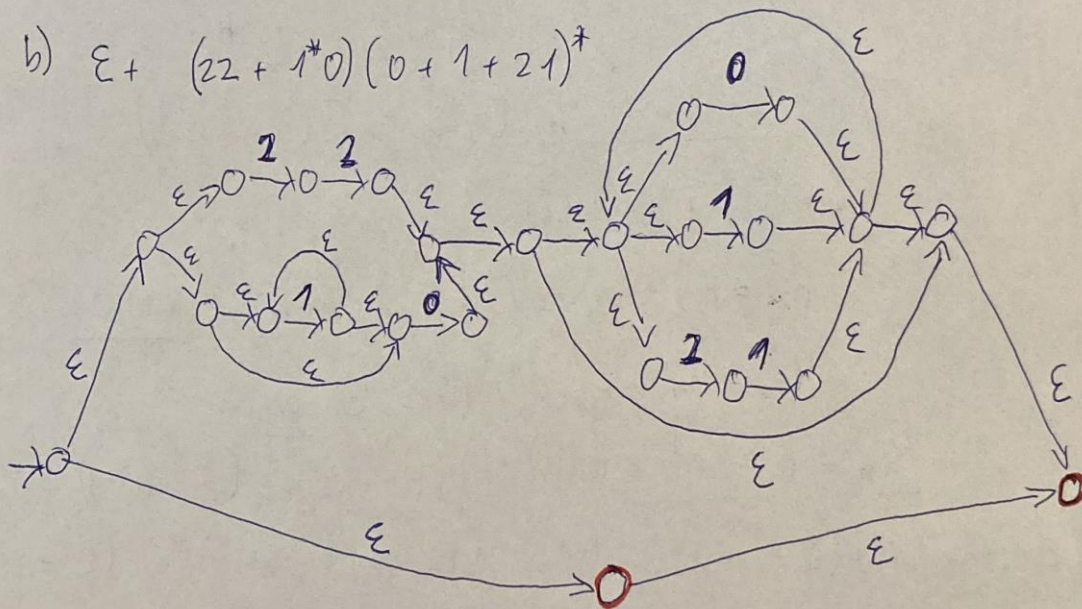


4) převeďte NE na ϵ -NFA

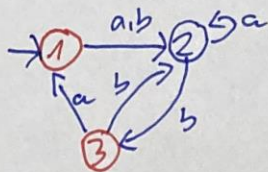
a) $((00)^*11)^+01$



b) $\epsilon + (22 + 1^*0)(0 + 1 + 21)^*$



5) pomocí konstrukce L-cast převést DFA na RE



$$R = R_{11}^3 + R_{13}^3$$

R_{11}^3 :

$$R_{11}^3 = R_{11}^2 + R_{13}^2 (R_{23}^2)^* R_{21}^2$$

$$R_{11}^2 = R_{11}^1 + R_{12}^1 (R_{22}^1)^* R_{21}^1 = \varepsilon + (a+b)a^* \emptyset = \underline{\underline{\varepsilon}}$$

$$R_{13}^2 = R_{13}^1 + R_{12}^1 (R_{22}^1)^* R_{23}^1 = \emptyset + (a+b)a^* b = \underline{\underline{(a+b)a^* b}}$$

$$R_{33}^2 = R_{33}^1 + R_{32}^1 (R_{22}^1)^* R_{23}^1 = \varepsilon + ba^* b$$

$$R_{21}^2 = R_{21}^1 + R_{22}^1 (R_{22}^1)^* R_{23}^1 = \underline{\underline{a + ba^* b}}$$

$$R_{11}^3 = \varepsilon + ((a+b)a^* b) \cdot (\varepsilon + ba^* b)^* \cdot (a + ba^* b)$$

$$R_{13}^3 = R_{13}^2 + R_{13}^2 (R_{23}^2)^* R_{23}^2$$

$$R_{13}^2 = R_{13}^1 + R_{12}^1 (R_{22}^1)^* R_{23}^1 = \emptyset + (a+b)a^* b = \underline{\underline{(a+b)a^* b}}$$

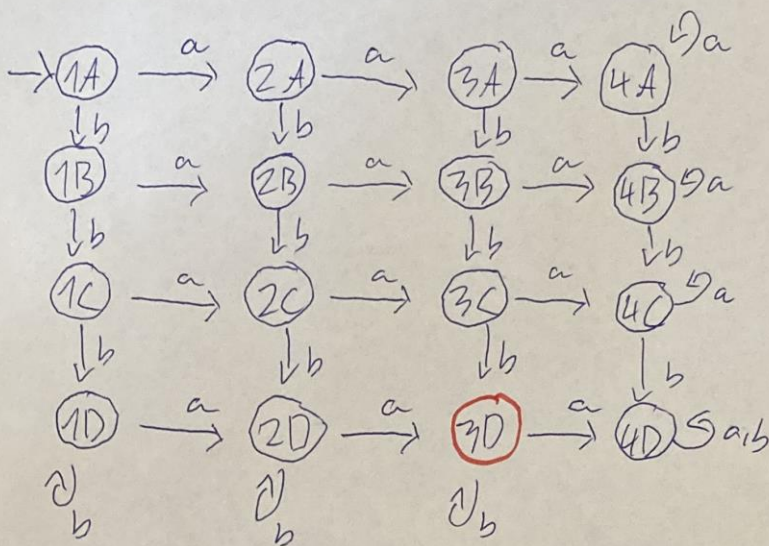
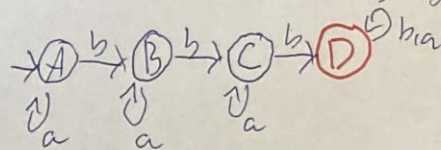
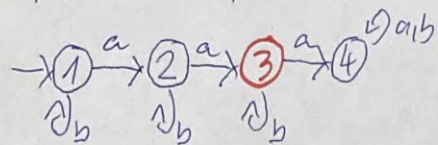
$$R_{23}^2 = R_{23}^1 + R_{22}^1 (R_{22}^1)^* R_{23}^1 = \underline{\underline{\varepsilon + ba^* b}}$$

$$R_{13}^3 = (a+b)a^* b + ((a+b)a^* b) \cdot (\varepsilon + ba^* b)^* \cdot (\varepsilon + ba^* b)$$

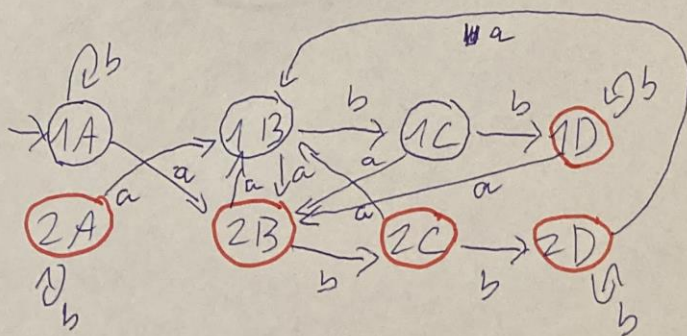
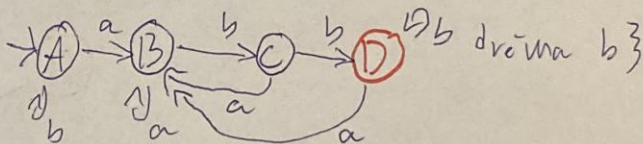
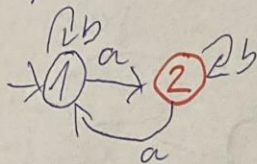
$$R_{11}^3 + R_{13}^3 = \varepsilon + ((a+b)a^* b) \cdot (\varepsilon + ba^* b)^* (a + ba^* b) + ((a+b)a^* b) + ((a+b)a^* b) \cdot (\varepsilon + ba^* b)^* (\varepsilon + ba^* b)$$

6) pomocí svého nové konstrukce sestavte DFA pro jazyk nad abecedou $\Sigma = \{a, b\}$

a) $\{u \mid u \text{ má přesně dva symboly } a\} \cap \{u \mid u \text{ má alespoň tři symboly } b\}$



b) $\{u \mid u \text{ má lichý počet } a\} \cup \{u \mid u \text{ obsahuje } a \text{ se navzájemně alespoň dvěma } b\}$



8) minimalizujte DFA a výsledný automat vyznačte

	a	b
$\rightarrow s_0$	s_1	s_1
s_1	s_1	s_1
$s_1: s_3$	s_1	s_2
s_4	s_1	s_1
s_6	s_1	s_1
s_4	s_1	s_2
<hr/>		
$*s_2$	s_2	s_1
$s_2: *s_5$	s_2	s_1
$*s_8$	s_2	s_1

\Rightarrow

	a	b
s_3	s_1	s_2
s_4	s_1	s_2
<hr/>		
$*s_2$	s_2	s_1
$*s_5$	s_2	s_3
$*s_8$	s_2	s_1
<hr/>		
$\rightarrow s_0$	s_1	s_1
s_1	s_1	s_3
s_4	s_1	s_3
s_6	s_1	s_1

	a	b
s_3	s_3	s_5
s_4	s_1	s_5
<hr/>		
$*s_2$	s_2	s_4
$*s_5$	s_2	s_4
<hr/>		
$\rightarrow s_0$	s_4	s_1
s_6	s_4	s_1
<hr/>		
s_1	s_4	s_4
s_4	s_4	s_4
<hr/>		
$*s_8$	s_2	s_1

