

Aufgabe 1:

a) $\omega_1 = aaba$; $\omega_2 = babba$

b) $\omega_1 = abaa$; $\omega_2 = b$

c) $\mathcal{M} = (\Sigma, Z, \delta, z_0, F)$
 $\Sigma = \{a, b\}$, $Z = \{z_0, z_1, z_2, z_3\}$, $F = \{z_2\}$
 $\delta = \{\delta(z_0, a) = \{z_0, z_1\}, \delta(z_0, b) = \{z_0\}, \delta(z_1, b) = \{z_1, z_2\}, \delta(z_2, b) = \{z_2\}, \delta(z_1, a) = \{z_2\}\}$

Hiermit prüfen:

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Aufgabe 2:

Hier $\{z_0\}$ statt z_0 . (-1 P)

a) $\mathcal{M} = (\Sigma, Z, \delta, z_0, F)$

$\Sigma = \{a, b, c\}$, $F = \{\{z_0\}, \{z_1, z_2\}, \{z_1, z_3\}, \{z_1, z_4\}, \{z_2, z_4\}, \{z_1, z_4\}, \{z_3, z_4\}\}$

$Z = \{\{z_0\}, \{z_1, z_2\}, \{z_1, z_3\}, \{z_1, z_4\}, \{z_2, z_4\}, \{z_1, z_4\}, \{z_3, z_4\}, \{z_4\}\}$

δ	$\{z_0\}$	$\{z_1, z_2\}$	$\{z_1, z_3\}$	$\{z_1, z_4\}$	$\{z_2, z_4\}$	$\{z_1, z_4\}$	$\{z_3, z_4\}$	$\{z_4\}$
a	$\{z_1, z_2\}$	$\{z_1, z_2\}$	$\{z_1, z_4\}$	$\{z_1, z_4\}$	$\{z_1, z_4\}$	$\{z_4\}$	$\{z_3, z_4\}$	$\{z_4\}$
b	$\{z_1, z_2\}$	$\{z_1, z_4\}$	$\{z_1, z_2\}$	$\{z_1, z_4\}$	$\{z_1, z_4\}$	$\{z_1, z_4\}$	$\{z_4\}$	$\{z_4\}$
c	$\{z_1, z_2\}$	$\{z_3, z_4\}$	$\{z_1, z_4\}$	$\{z_1, z_3\}$	$\{z_4\}$	$\{z_1, z_4\}$	$\{z_3, z_4\}$	$\{z_4\}$

b) $L(\mathcal{M}) = \{\omega \in \Sigma^* \mid \omega \text{ endet nicht in Zustand } \{z_4\}\}$ f, keinen Bezug auf \mathcal{M} nehmen! (-3 P)

Hier auch die Menge! (-1 P)

c) $\hat{\delta}((z_0), baac) = \delta(\delta(\delta(\delta(z_0, b), a), a), c))$
 $= \delta(\delta(\delta(\{z_1, z_2\}, a), a), c)$
 $= \delta(\delta(\{z_2, z_4\}, a), c)$
 $= \delta(\{z_3, z_4\}, c)$
 $= \{z_4\}$

\Rightarrow Es gilt: $\omega_1 = baac \notin L(\mathcal{M})$

d) $\hat{\delta}((z_0), aaca) = \delta(\delta(\delta(\delta(z_0, a), a), c), a))$
 $= \delta(\delta(\delta(\{z_1, z_2\}, a), c), a)$
 $= \delta(\delta(\{z_1, z_3\}, c), a)$
 $= \delta(\{z_3, z_4\}, a)$
 $= \{z_3, z_4\}$
 $\Rightarrow \omega_2 = aaca \in L(\mathcal{M})$

Hier sollte der NFA verwendet werden!
(-3 P)

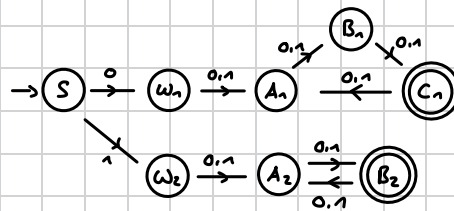
7/15 P

Aufgabe 3:

- a) $G(\Sigma, U, S, P)$
 $\Sigma = \{a, b\}$ ✓ $U = \{z_0, z_1, z_2, z_3, z_4, z_5\}$ ✓
 $S = \{z_0\}$ keine Menge! (-7P)
 $P = \{z_0 \rightarrow az_1 \mid bz_5$
 $z_1 \rightarrow az_2 \mid bz_5$
 $z_2 \rightarrow az_3 \mid bz_5 \mid a$
 $z_3 \rightarrow az_4 \mid bz_4 \mid b$
 $z_4 \rightarrow az_5 \mid bz_4 \mid b$
 $z_5 \rightarrow az_5 \mid bz_5\}$ ✓

- b) $U = (\Sigma, Z, \delta, S, F)$
 $\Sigma = \{0, 1\}$
 $Z = \{S, \omega_1, \omega_2, A_1, B_1, C_1, A_2, B_2\}$
 $F = \{C_1, B_2\}$

δ	S	ω_1	A_1	B_1	C_1	ω_2	A_2	B_2
0	ω_1	A_1	B_1	C_1	A_1	A_2	B_2	A_2
1	ω_2	A_1	B_1	C_1	A_1	A_2	B_2	A_2



Es sollte ein NFA konstruiert werden! (-8P)

6/15 P