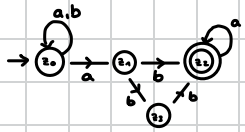
Übungsblatt 3 — Raphael Kaya

Aufgabe 1:

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

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

c)



$\mathcal{A} = (\Sigma, Z, \hat{\delta}, z_0, F)$

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

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

Aufgabe 2:

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

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

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

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

b) $L(\mathcal{A}) = \{\omega \in \Sigma^* \mid \omega \text{ endet nicht in Zustand } \{z_4\}\}$

c) $\hat{\delta}((z_0), baac) = \delta(\delta(\delta(\delta(z_0,b),a),a),c)$

$= \delta(\delta(\delta(\{z_1,z_2\},a),a),c)$

$= \delta(\delta(\{z_2,z_4\},a),c)$

$= \delta(\{z_2,z_4\},c)$

$= \{z_4\}$

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

d) $\hat{\delta}((z_0), aaca) = \delta(\delta(\delta(\delta(z_0,a)),a),c),a)$

$= \delta(\delta(\delta(\{z_1,z_3\},a),c),a)$

$= \delta(\delta(\{z_2,z_3\},c),a)$

$= \delta(\{z_3,z_4\},a)$

$= \{z_3,z_4\}$

$\Rightarrow \omega_2 = aaca \in L(\mathcal{A})$

Aufgabe 3:

a) $G(\Sigma, N, S, P)$

$\Sigma = \{a, b\}$, $N = \{z_0, z_1, z_2, z_3, z_4, z_5\}$

$S = \{z_0\}$

$P = \{ z_0 \to az_1 \mid bz_5$

$z_1 \to az_2 \mid bz_5$

$z_2 \to az_3 \mid bz_5 \mid a$

$z_3 \to az_4 \mid bz_4 \mid b$

$z_4 \to az_3 \mid bz_4 \mid b$

$z_5 \to az_5 \mid bz_5 \}$

b) $M = (\Sigma, Z, \delta, S, F)$

$\Sigma = \{0, 1\}$

$Z = \{ S, \omega_1, \omega_2, A_1, B_1, C_1, A_2, B_2 \}$

$F = \{ C_1, B_2 \}$

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