Lösung 14. Übung AuD

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a)

- $V = \{S, A, C\}$
- $R = \{S ::= \hat{(}aSdd\hat{|}A\hat{\{}c\hat{\}}d\hat{)}, A ::= \hat{(}aAb\hat{|}ab\hat{)}\}$

b)

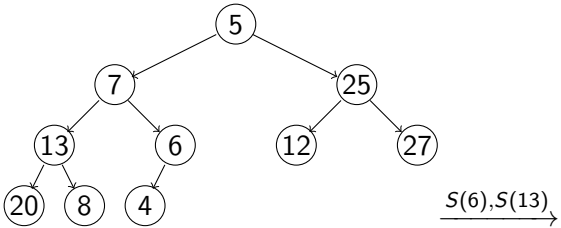
$$f(\varrho)(X) = \{\varepsilon\} \cup (\{a\} \circ \varrho(Y)),$$
$$f(\varrho)(Y) = (\varrho(X) \circ \{b\}) \cup (\varrho(X) \circ \{bb\})$$

$$\begin{pmatrix} X \\ Y \end{pmatrix} : \begin{pmatrix} \emptyset \\ \emptyset \end{pmatrix} \to \begin{pmatrix} \{\varepsilon\} \\ \emptyset \end{pmatrix}$$
$$\to \begin{pmatrix} \{\varepsilon\} \\ \{b, bb\} \end{pmatrix} \to \begin{pmatrix} \{\varepsilon, ab, abb\} \\ \{b, bb\} \end{pmatrix}$$
$$\to \begin{pmatrix} \{\varepsilon, ab, abb\} \\ \{b, bb, abb, abbb, ab^4\} \end{pmatrix} \to \begin{pmatrix} \{\varepsilon, ab, abb, aabb, aabbb, aab^4\} \\ \{b, bb, abb, abbb, ab^4\} \end{pmatrix}$$

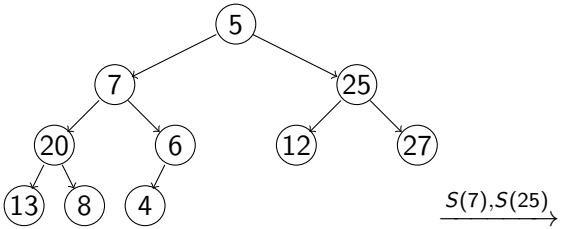
c)

$$W(\mathcal{E}) = \{a^n b^{n+m} | 0 \leq m \leq n\}$$

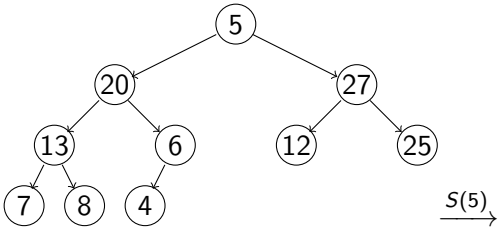
Anfang



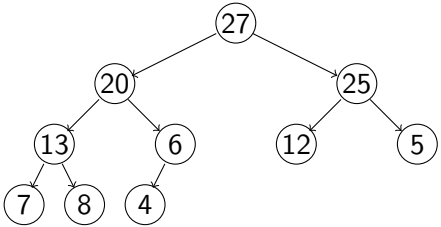
Phase 1



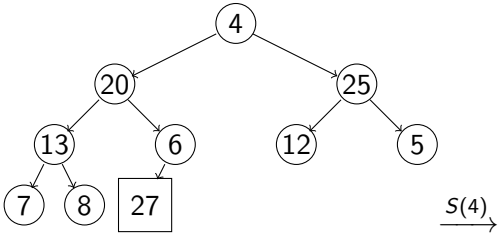
Phase 1



Phase 1



Phase 2



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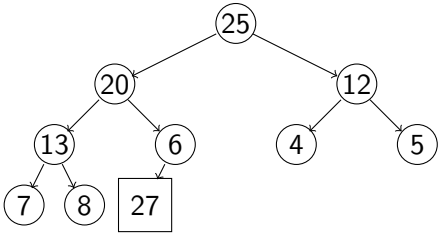

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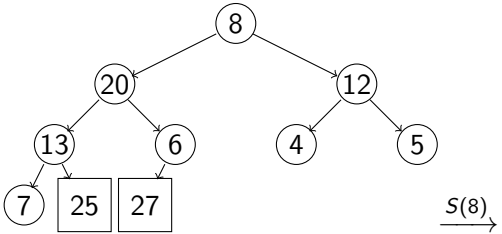
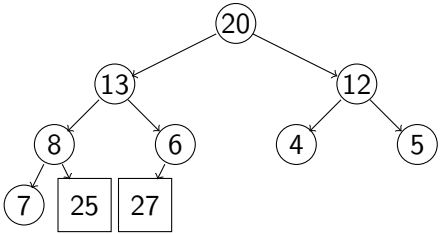


Phase 2



a)

mehrere Lösungen möglich

(1, 0, -)	(2, 6, 1), (3, 2, 1), (4, 7, 1)
(3, 2, 1)	(2, 3, 3), (4, 6, 3), (6, 9, 3)
(2, 3, 3)	(4, 6, 3), (6, 9, 3), (5, 16,2)
(4, 6, 3)	(6, 9, 3), (5, 16,2), (7, 7, 4)
(7, 7, 4)	(6, 9, **3**), (5, 16,2), (8, 18, 7)
(6, 9, **3**)	(5, 12,6), (8, 18, 7)
(5, 12, 6)	(8, 16, 5)
(8, 16, 5)	-

a), b)

Knoten	Distanz	Pfad
1	0	$[1]$
2	3	$[1, 3, 2]$
3	2	$[1, 3]$
4	6	$[1, 3, 4]$
5	12	$[1, 3, 6, 5]$ *oder* $[1, 3, 4, 7, 6, 5]$
6	9	$[1, 3, 6]$ *oder* $[1, 3, 4, 7, 6]$
7	7	$[1, 3, 4, 7]$
8	16	$[1, 3, 6, 5, 8]$ *oder* $[1, 3, 4, 7, 6, 5, 8]$

a)

Objekt	Bereich
g	3-36
f	5-36
a, b	5-16
c	6-16
d, e	18-26
main	28-36
m, n	29-36

b)

Haltepunkt	RM	1	2	3	4	5	6	7	8	9	10
7	-	m 2	n 4								
1	3			a #1	b #2	c 2					
2	3			a #1	b #2	c 3					
4	1:3						d 3	e #2			

b)

Haltepunkt	RM	1	2	3	4	5	6	7	8	9	10
5	1:3		3				d 3	e #2			
1	2:1:3								a #6	b #2	c 3
6	1:3						d 3	e e#2			
3	3	3		a #1	b #2	c 3					

b)

Haltepunkt	RM	1	2	3	4	5	6	7	8	9	10
3	-	m	n								
		3	3								

a)

Position	0	1	2	3	4	5	6	7
Pattern	a	a	b	a	a	a	b	b
Verschiebetabelle	-1	-1	1	-1	-1	2	1	3

b)

Position	0	1	2	3	4	5
Pattern	b	b	a	b	b	c
Verschiebetabelle	-1	-1	1	-1	-1	2

a)

$A(\text{“}A \text{ gewinnt}'') = \{(1,2),(2,1),(2,3)\}$
$A(\text{“}B \text{ gewinnt}'') = \{(1,1),(1,3),(2,2)\}$
$h(\text{“}A \text{ gewinnt}'') = 60$
$h(\text{“}B \text{ gewinnt}'') = 27$

b)

Durch Multiplikation der Einzelwahrscheinlichkeiten, bsp. $q_0(1,2) = q_0^x(1) \cdot q_0^y(2)$

X	(1,2)	(2,1)	(2,3)	(1,1)	(1, 3)	(2,2)
q_0	2/15	1/15	1/5	2/15	2/5	1/15

c)

Errechnet durch Aufteilen des Korpus mit der bedingten Wahrscheinlichkeit, bsp.

$$h_1(1,2) = h(\text{“}Agewinnt''') \cdot \frac{q_0(1,2)}{q_0(1,2) + q_0(2,1) + q_0(2,3)}$$

X	(1,2)	(2,1)	(2,3)	(1,1)	(1, 3)	(2,2)
h_1	20	10	30	6	18	3

c)

Errechnet durch Addieren aller “günstigen” Fälle, bsp.
$h_1^x(1) = h_1(1,1) + h_1(1,2) + h_1(1,3)$

x	1	2
h_1^x	44	43

y	1	2	3
h_1^y	16	23	48

d)

x	1	2
q_1^x	44/87	43/87

y	1	2	3
q_1^y	16/87	23/87	48/87