

Algorithmen zur Visualisierung von Graphen

Teile & Herrsche-Algorithmen: Zeichnen von Bäumen

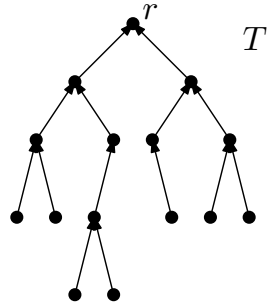
Vorlesung im Sommersemester 2009

Martin Nöllenburg

02.07.2009

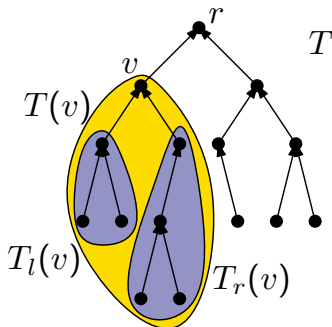
Notation Binärbäume

- » Binärbaum $T = (V, A)$ mit Wurzel $r \in V$
- » Kanten zeigen Richtung r



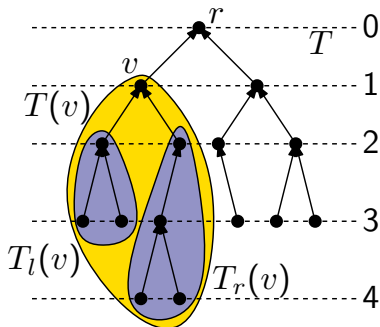
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- » Teilbaum $T(v)$ für Knoten $v \in V$ mit linkem und rechtem Teilbaum $T_l(v)$ und $T_r(v)$



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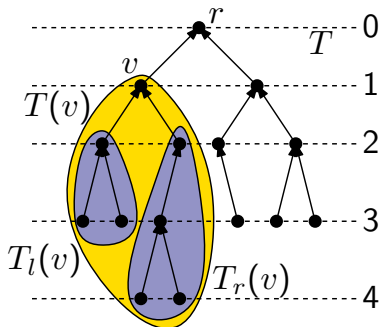
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- » Tiefe $t(v)$: Abstand von r



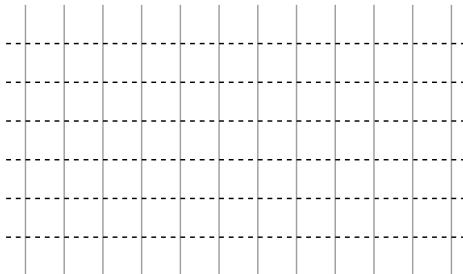
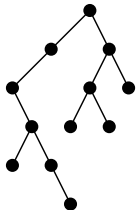
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- » preorder-, inorder- und postorder-Knotennummerierung

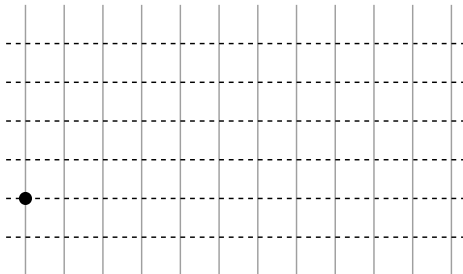
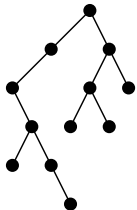
$$v < T_l(v) < T_r(v) \quad T_l(v) < v < T_r(v) \quad T_l(v) < T_r(v) < v$$



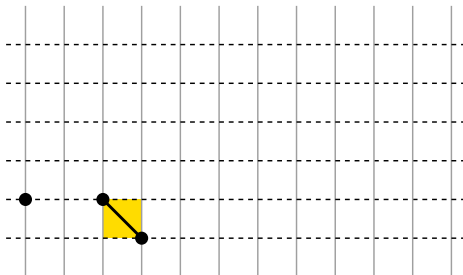
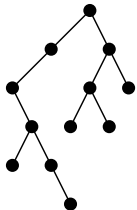
Beispiel 1



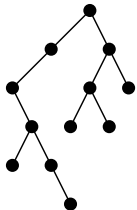
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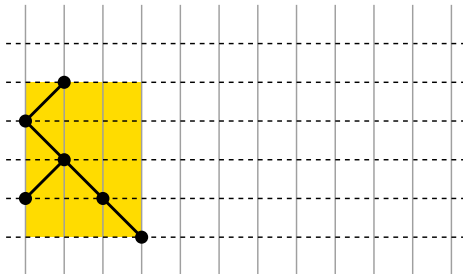
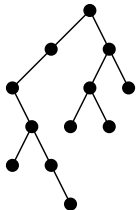
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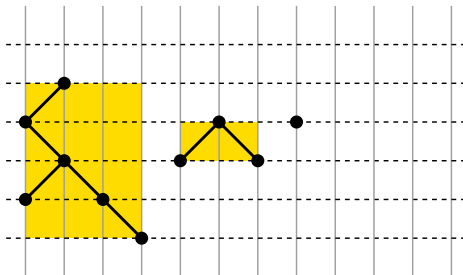
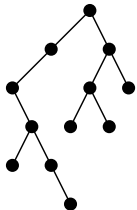
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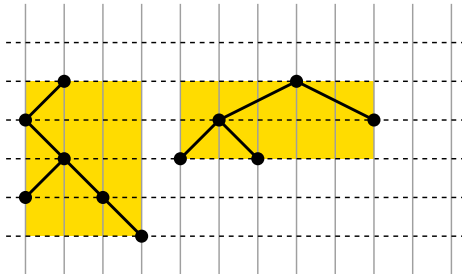
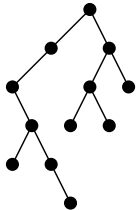
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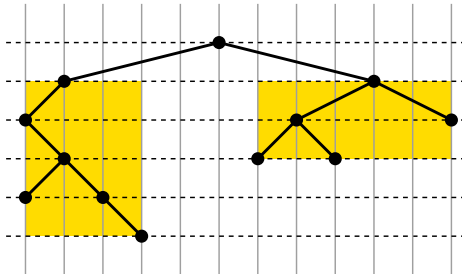
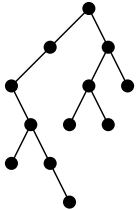
Beispiel 1



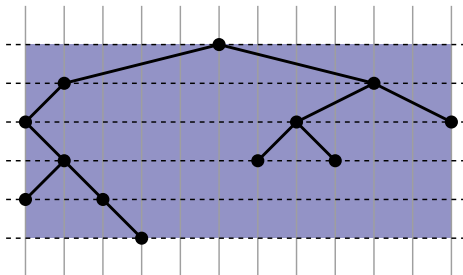
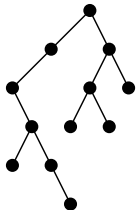
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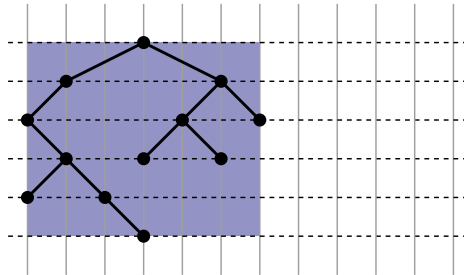
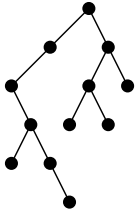


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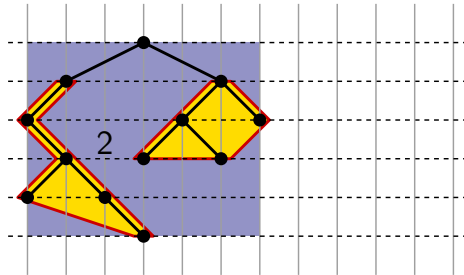
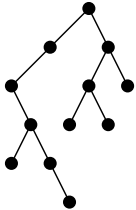
- geringere Breite
- Knoten zentriert über Nachfolgern

Beispiel 1



Aber es geht noch besser!

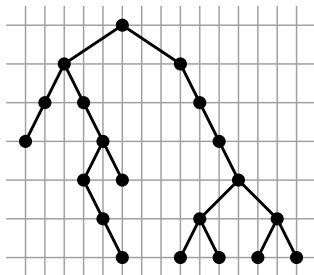
Beispiel 1



Aber es geht noch besser!

Beispiel 2

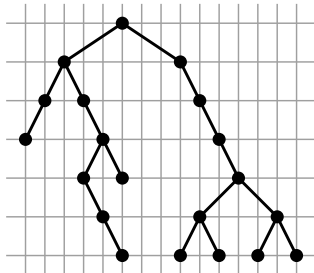
Algorithmus von Reingold & Tilford



Breite 14

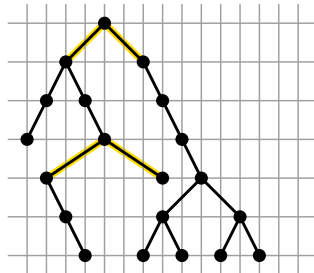
Beispiel 2

Algorithmus von Reingold & Tilford



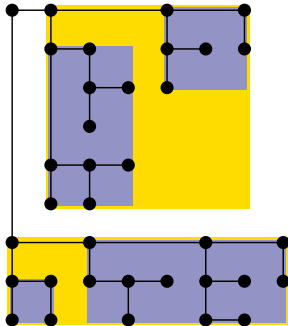
Breite 14

Platzoptimales Layout

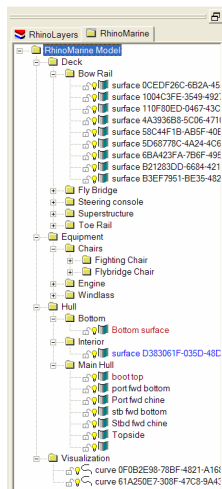
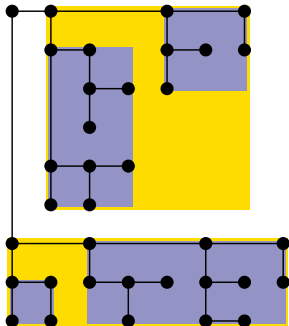


Breite 12

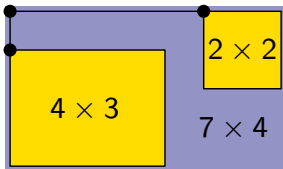
Beispiel hv-Layout



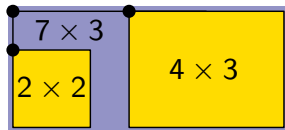
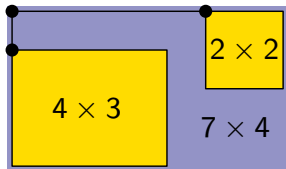
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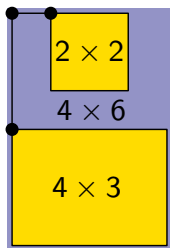
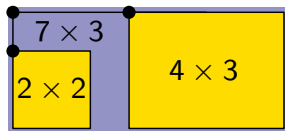
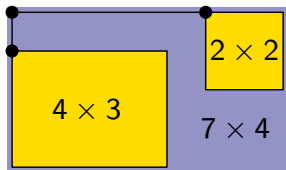
Horizontal-/Vertikalkombination



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