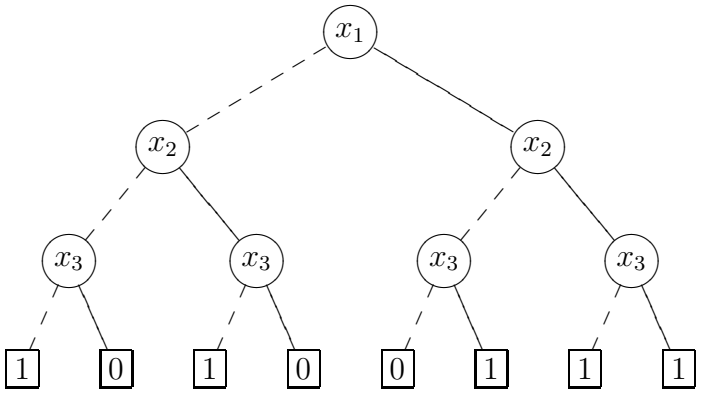
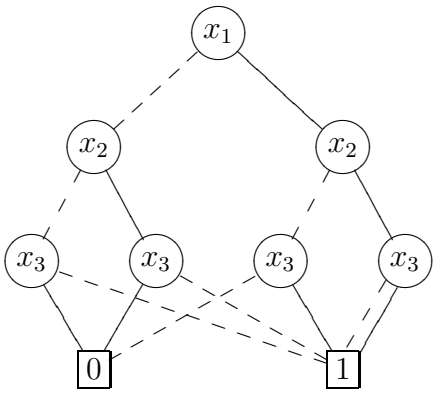
T-79.5102 **Syksy 2005**
Laskennallisen logiikan erikoiskurssi
Laskuharjoitus 2
Ratkaisut

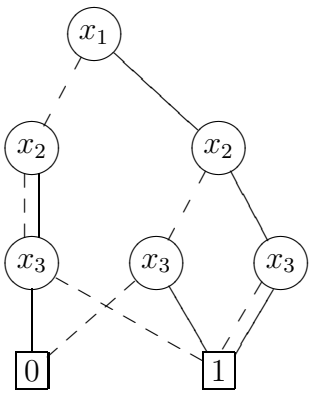
1. Valitaan järjestys $x_1 < x_2 < x_3$. Silloin OBDD on



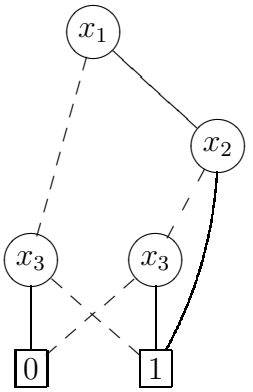
Poistetaan ylimääräiset terminaalit:



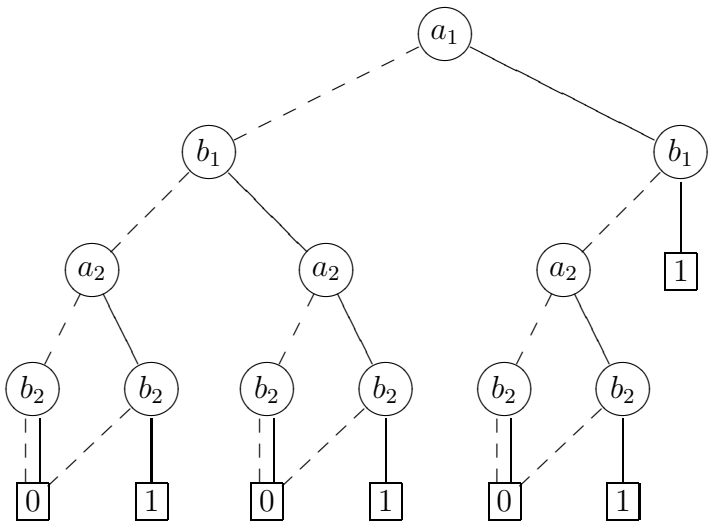
Poistetaan ylimääräiset ei-terminaalit:



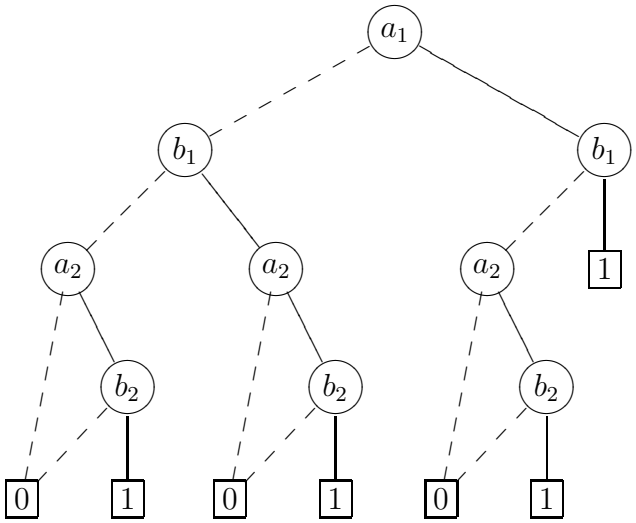
Poistetaan ylimääräiset testit:



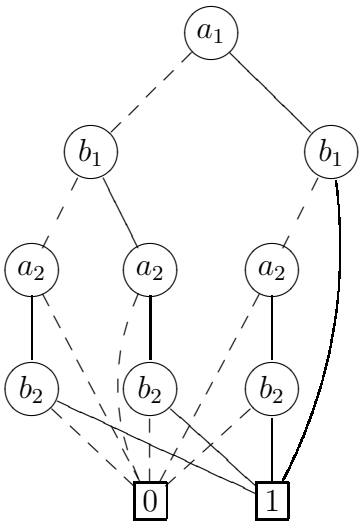
2. a) Järjestys $a_1 < b_1 < a_2 < b_2$:



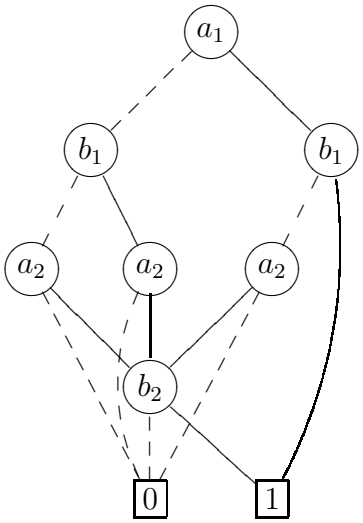
Poistetaan ylimääräiset testit:



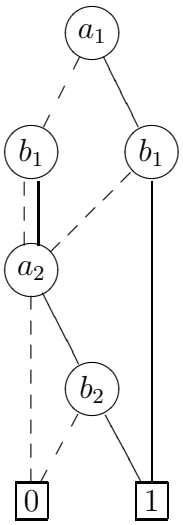
Poistetaan ylimääräiset terminaalit:



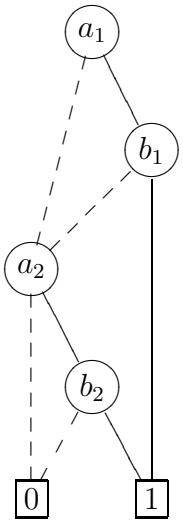
Poistetaan ylimääräiset ei-terminaalit:



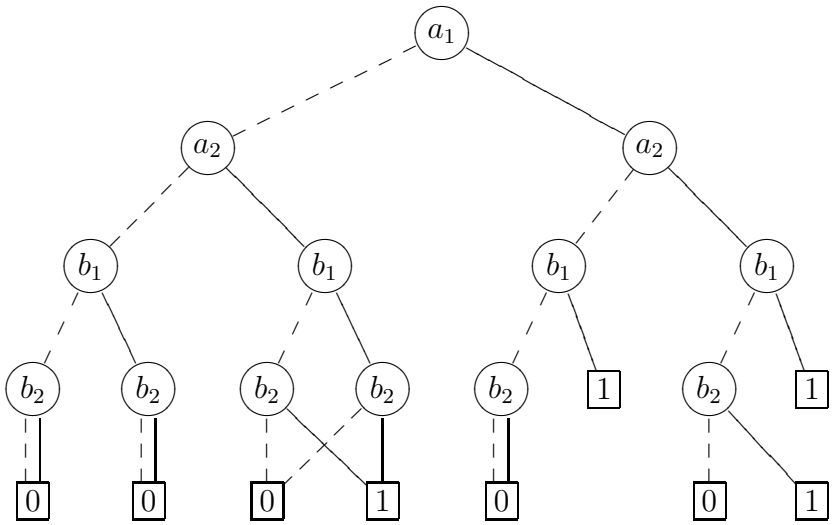
Poistetaan ylimääräiset ei-terminaalit:



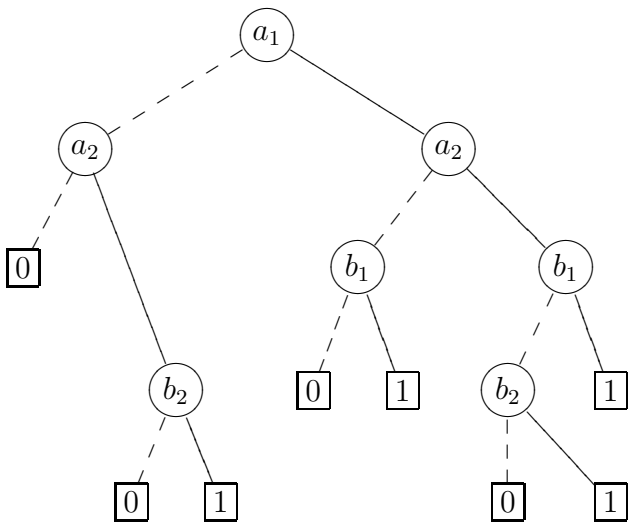
Poistetaan ylimääräiset testit:



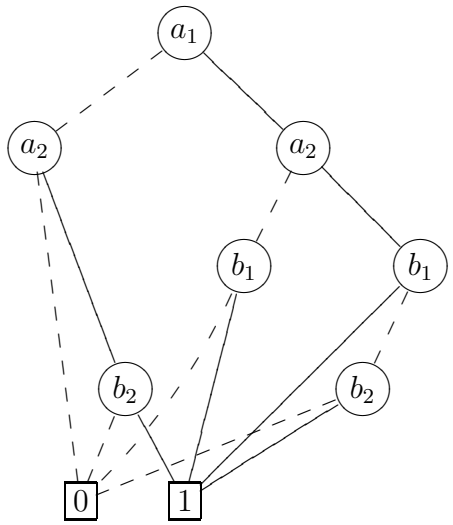
b) Järjestys $a_1 < a_2 < b_1 < b_2$:



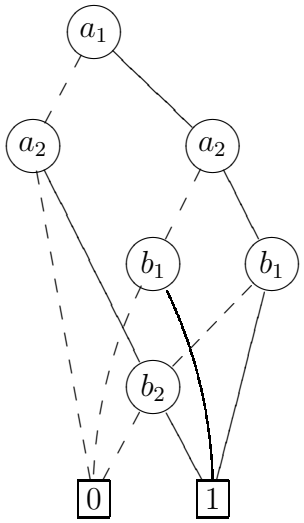
Poistetaan ylimääräiset testit ja ei-terminaalit:



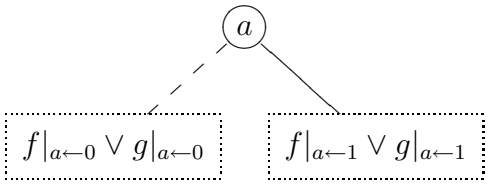
Poistetaan ylimääräiset terminaalit:



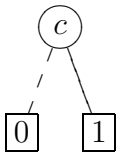
Poistetaan ylimääräiset ei-terminaalit:

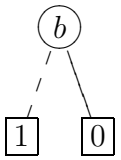


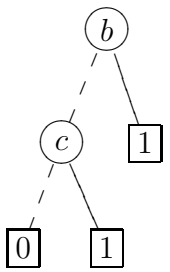
3. Muuttujien järjestys on $a < b < c$. OBDD versio $f \vee g$:stä on tällöin:



missä

$f|_{a\leftarrow 0} =$ 

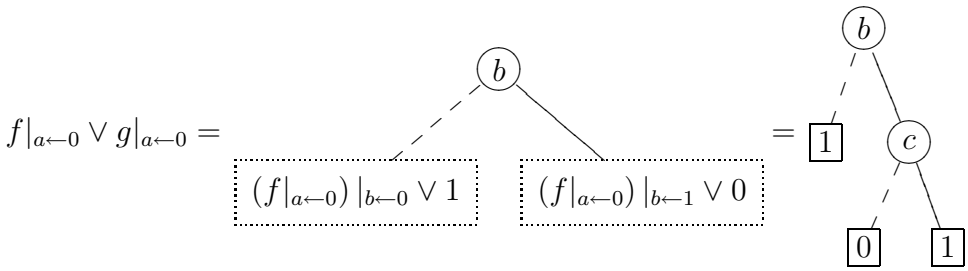
, $g|_{a\leftarrow 0} =$ 

, $f|_{a\leftarrow 1} =$ 

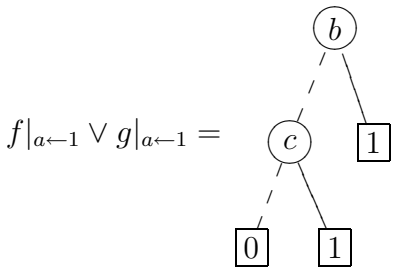
ja

$$g|_{a\leftarrow 1} = \boxed{0}$$

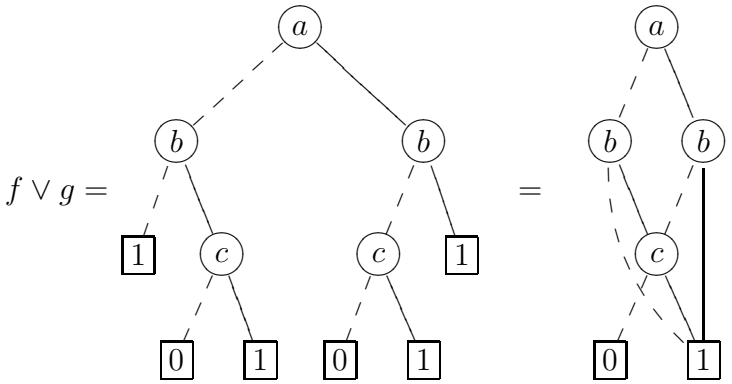
Nyt


$f|_{a\leftarrow 0} \vee g|_{a\leftarrow 0} =$
b
$(f|_{a\leftarrow 0})\,|_{b\leftarrow 0} \vee 1$
$(f|_{a\leftarrow 0})\,|_{b\leftarrow 1} \vee 0$
$=$
b
1
c
0
1

ja


$f|_{a\leftarrow 1} \vee g|_{a\leftarrow 1} =$
b
c
1
0
1

Täten


$f \vee g =$
a
b
b
1
c
c
1
0
1
0
1
$=$
a
b
b
c
0
1