OBDD Exercises

http://d3s.mff.cuni.cz

Behavior models and verification

Department of Distributed and Dependable Systems

D3S

FACULTY OF MATHEMATICS AND PHYSICS
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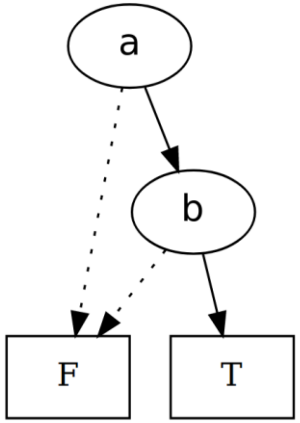
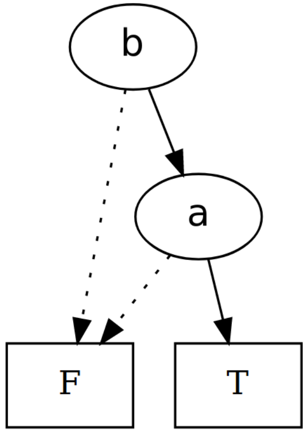
OBDDs

- Represent the following Boolean function using OBDD:
  - $(a \wedge b \wedge \neg c) \vee \big((b \wedge c) \wedge (a \vee \neg b)\big)$
    - Use ordering

$\boldsymbol{a < b < c}$



$\boldsymbol{b < c < a}$

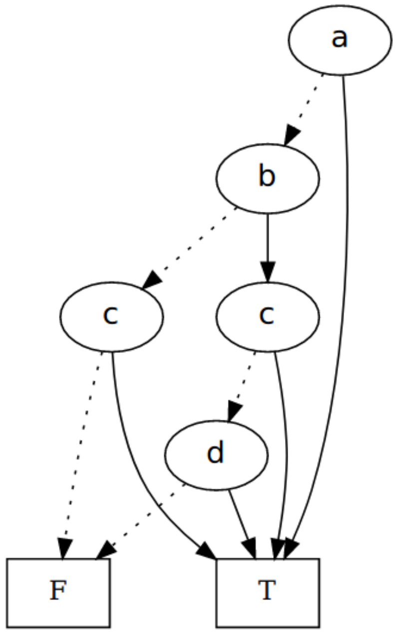


- Write down the simplest formula represented by the OBDD

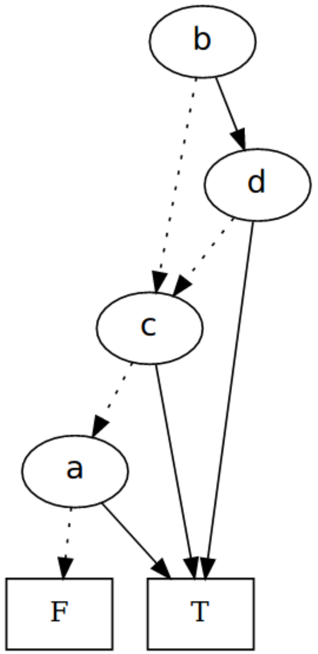
OBDDs

- Represent the following Boolean function using OBDD:
  - $\big(a \vee (b \wedge d)\big) \vee (c \wedge \neg d) \vee (c \wedge \neg a \wedge \neg b)$ – think of the optimal variable ordering

$\boldsymbol{a < b < c < d}$



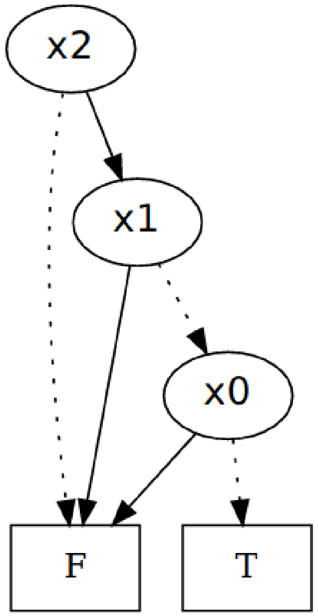
$\boldsymbol{b < d < c < a}$

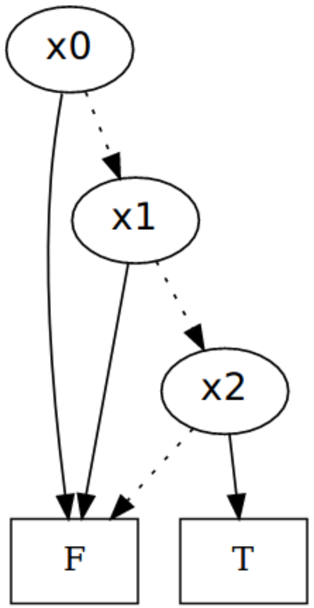


OBDDs

- Using OBDD, represent a subset of {0..15}:
  - $S = \{4, 12\}$
  - Use the characteristic function: $f(x) = 1 \leftrightarrow x \in S$

	$x_3 x_2 x_1 x_0$
4:	0 1 0 0
12:	1 1 0 0





OBDDs

- Using OBDD, represent a subset of {0..15}:
  - {4, 12}
  - {15, 7}
  - {0, 4, 13, 8, 5, 12, 1, 9}
  - {11, 0, 3, 8, 2, 6, 1, 7}

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