Seminar Combinatorial Algorithms

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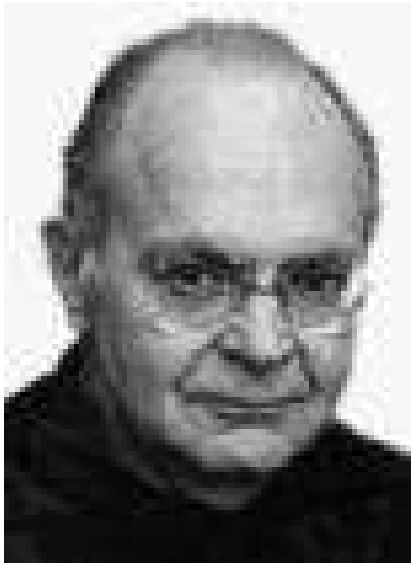
www.liacs.nl/home/kosters/semcom/

Who is Knuth?

`http://www-cs-faculty.stanford.edu/~knuth/`



TEX, Dancing Links, . . .

We use the following book(let):

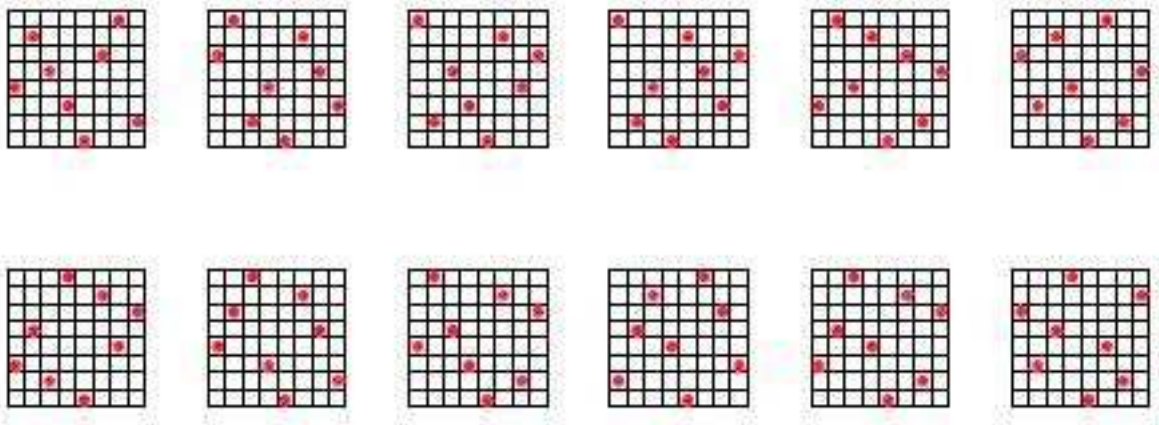
Donald E. Knuth,
The Art of Computer Programming, Volume 4, Combinatorial Algorithms;
Fascicle 1, Bitwise Tricks & Techniques, Binary Decision Diagrams,
Pearson, 2009

See also `http://www.cs.utsa.edu/~wagner/knuth/index.html`.

In the second half of the seminar we will probably discuss papers from our n-Queens bibliography:

`http://www.liacs.nl/home/kosters/nqueens/`

These 322 papers all try —each in its own way— to place n queens on a chessboard, in such a way that no queen attacks another.



First half: act as chairman during discussion of Section 7.1.4 from the book, dealing with Binary Decision Diagrams.
Make a few slides, and heavily use the blackboard.

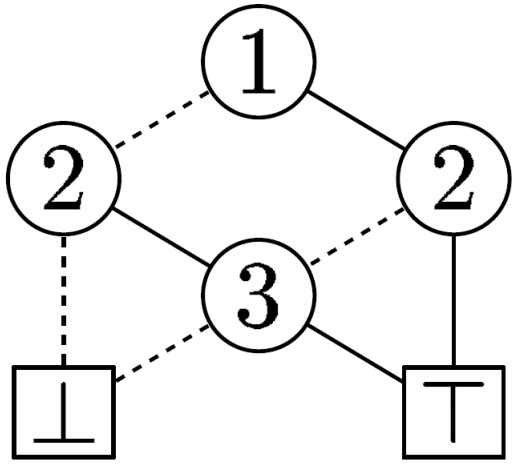
Second half: present n-Queens paper in one hour.
Make several slides, and hardly use the blackboard.

For both: make a 5–10 page report in LaTeX/PDF.

[pages 70-73 from the book]

Binary Decision Diagrams (BDDs) are used to represent Boolean functions.

BDDs must be ordered and reduced.



A Boolean function $f(x_1, \ldots, x_n)$ gives rise to a truth table of order n: the binary string with its 2^n values — in proper order. A bead of order n is a truth table that is *not* a square.

The nodes of a Boolean function's BDD are in one-to-one correspondence with its beads, i.e., its subtables that are beads.