

AbsCon 2

XCSP3 Competition in 2017

Christophe Lecoutre

CRIL-CNRS, UMR 8188

Université d'Artois

F-62307 Lens

France

`lecoutre@cril.fr`

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AbsCon 2 is a constraint solver written in Java 8. It has been used as a research platform for many years. In the medium term, AbsCon will be made available on GitHub. AbsCon 2 recognizes XCSP3 [3] by using the Java parser that can be downloaded at <https://github.com/xcsp3team/XCSP3-Java-Tools>. AbsCon is currently under the process of a major revision.

AbsCon 2, in its basic form submitted to the 2017 XCSP3 Competition, performs backtrack search, enforcing (generalized) arc consistency at each node (when possible).

For conducting search, we have used:

- *dom/wdeg* [2] as variable ordering heuristic;
- *lexico* as value ordering heuristic;
- *lc(2)*, last-conflict reasoning with a collecting parameter k set to 2, as described in [9];
- restarts [5], with associated nogood recording [8]. For restarts, we have used a geometric policy with an initial cutoff (number of backtracks) set to 10 and an increasing factor set to 1.1.

For conducting constraint propagation, we have used:

- a variable-oriented propagation scheme [12], where a queue Q records all variables with recently reduced domains (see Chapter 4 in [6]);
- *dom* as revision ordering heuristic (see [1]);
- $AC3^{bit+rm}$ [11] for dealing with binary constraints;
- Compact-Table (CT) [4] for dealing with table constraints of arity greater than or equal to 3.

Because AbsCon 2 was (and is still currently) subject to major modifications, it was not possible to (re-)implement and/or test the following features (by the deadline of the competition):

- CT^{neg} [15] for negative table constraints;
- symmetry breaking, as defined in [10];
- shaving [14] or learning [7] techniques
- Large Neighborhood Search (LNS) [13]
- strong consistencies

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