

# The First Answer Set Programming System Competition

18th October 2006

The *First Answer Set Programming System Competition* is held in conjunction with the *Ninth International Conference on Logic Programming and Nonmonotonic Reasoning* (LPNMR'07). Preliminary versions of this competition were held on the occasion of two Dagstuhl meetings on Answer Set Programming in 2002 and 2005 [2].

The layout of the competition follows the one conducted since many years in the area of Satisfiability Checking [1] along with the related contests in Quantified Boolean Formulas, Pseudo-Boolean Constraints, etc.

The competition will be run *prior* to the LPNMR conference. Its results will be announced at the conference. A summary paper on the competition will be included in the proceedings.

The competition will be run on the Asparagus platform, relying on benchmarks stored there.

## Format of the Competition

There will be three main classes of problems on which solvers will compete:

**MGS** (Modeling, Grounding, Solving) Benchmarks consist of a problem statement, a set of instances given as sets of ground facts, and the names of the predicates (and their arguments) encoding solutions. The overall performance (incl. grounding and solving) will be measured.

**SCore** (Solver, Core language) Benchmarks are ground programs in the format common to `lparsc` and `dlv`, aggregates are not allowed. Instances are classified further into two subgroups: normal and disjunctive. The performance of solvers on ground programs will be measured.

**SLparse** (Solver, Lparse language) Benchmarks are ground programs in the lparse format, aggregates are allowed. The performance of solvers on ground programs in lparse format will be measured.

We will only consider decision problems in this first edition of the competition. Thus, every solver must indicate whether the benchmark instance at hand has an answer set (SAT) or not (UNSAT). For each SAT instance, each solver must output a certificate (that is, an answer set). Each solver's output must conform to the following formats:

**[SAT] Answer Set: atom1 atom2 ... atomN**

The output is one line containing the keywords 'Answer Set:' and the names of the atoms in the answer set. Each atom's name is preceded by a single space. Spaces must not occur within atom names.

**[UNSAT] No Answer Set**

The output is one line containing the keywords 'No Answer Set'.

We will report the number of instances solved within allocated time (which we will fix at 500 - 1000 seconds) and use it as the primary measure of performance. Actual running time will only be used as a tie breaker. We will check the correctness of solutions. Solvers discovered to have bugs will be disqualified.

## Submission and Participation

We strongly encourage to contribute to the competition in two ways:

1. in submitting or designing new benchmarks and
2. in submitting new or updating already running solvers.

The benchmarks for the competition will be collected on the Asparagus platform. Although benchmarks can be submitted anytime to the Asparagus team, only those submitted before the deadline can be taken into account for the competition. The inclusion of benchmarks into Asparagus is subject to the approval by the Competition or the Asparagus steering committee, respectively. It is advisable to first contact the Asparagus team by email ([asparagus@cs.uni-potsdam.de](mailto:asparagus@cs.uni-potsdam.de)) in order to agree upon the upload of the benchmarks.

For all problem classes (MGS, SCORE, and SLparse), we appreciate submissions of non-ground problem encodings and ground problem instances

in separate files. However, we can also accept ground programs (SCore and SLparse), possibly in lparse format (SLparse). To add a problem to the MGS class, you will have to provide

- a textual problem description that also specifies the names and arguments of input and output predicates and
- a set of ground instances (using only input predicates) of your problem.

The submission of a problem encoding is optional and left up to you. We are grateful if you can provide us with a correctness checker, that is, a program or a script able to decide whether the output predicates occurring in some answer set form a solution to a given instance of your problem.

In addition to benchmarks, solvers are collected via Asparagus. You can install your solver(s) at your convenience in Asparagus, once you have obtained an Asparagus account.

For participating in the competition, simply

- obtain an Asparagus account, unless you already have one, and
- register for the respective competition classes.

For details on obtaining an Asparagus account and installing your solver(s), see the HOWTO page at the Asparagus website. For registering for the competition, simply follow the links at the Competition website.

Once you have an Asparagus account, different versions of your solver(s) may run on Asparagus (via different call scripts); up to three of them can be registered for each competition class. Please make sure that your call scripts accept input and produce output according to the Competition Format. (Even existent Asparagus users might have to add call scripts in order to meet the competition requirements!) For problems in the MGS class, you might also like to add encodings to Asparagus; one of the available encodings can be registered per MGS problem.

## Schedule

**10/02/06** — CFP sent out, including invitation to participate in a dry run as well as in the real competition (participation in the dry run is not a condition for the real stage, though)

**10/23/06** — deadline for the dry run submissions

**11/06/06** — dry run over

**11/13/06** — feedback from dry run sent to participants and used to fine-tune final competition

**11/27/06** — deadline for submission to actual competition

**May 2007** — results announced

## Further Information

Further and up-to-date information is available at the website of the competition at <http://asparagus.cs.uni-potsdam.de/contest> and the website of the Asparagus system at <http://asparagus.cs.uni-potsdam.de> .

For further inquiries contact Mirek Truszczyński ([mirek@cs.uky.edu](mailto:mirek@cs.uky.edu)) or Torsten Schaub ([torsten@cs.uni-potsdam.de](mailto:torsten@cs.uni-potsdam.de)), or directly the Asparagus team ([asparagus@cs.uni-potsdam.de](mailto:asparagus@cs.uni-potsdam.de)).

## References

- [1] Daniel Le Berre and Laurent Simon, editors. *Special Volume on the SAT 2005 Competitions and Evaluations*, volume 2 of *Journal on Satisfiability, Boolean Modeling and Computation*. IOS Press, 2006.
- [2] P. Borchert, C. Anger, T. Schaub, and M. Truszczyński. Towards systematic benchmarking in answer set programming: The Dagstuhl initiative. In V. Lifschitz and I. Niemelä, editors, *Proceedings of the Seventh International Conference on Logic Programming and Nonmonotonic Reasoning (LPNMR'04)*, volume 2923, pages 3–7, 2004.