SMT-LIB Status Report

SMT'19

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Plan

- Strings
- SMT-LIB benchmarks update
- C++ API
- SMT-LIB 3.0

Update on theory of strings

- Working Session on the SMT-LIB theory of strings at MOSCA'19, the first Meeting on String Constraints and Applications, last May.
  https://mosca19.github.io/index.html
- Audience at the MOSCA session included most of the developers of string solvers.
- Cesare presented a revised version of the theory, DRAFT 2.1, at http://smtlib.cs.uiowa.edu/theories-UnicodeStrings.shtml
- Main difference between Draft 2.1 and original proposal is the elimination of the character sort Char wich was considered to have more cons than pros.

Update on theory of strings

- Conclusion of the MOSCA discussion was that the current draft was satisfactory, with a few minor suggested changes:
  - have (str.substr s i o) return the empty string in the following corner cases:
    - negative index i
    - negative offset o
    - i+o greater than the length of s
  - add a replaceAll function
  - add a replaceRegexp function

SMT-LIB benchmark updates

- Added 49,005 new benchmarks in new logics:
  - non-incremental: QF_BVFPLRA (1), QF_FPLRA (13), QF_S (1976), QF_SLIA (46,350), UFDTNIA (1)
  - incremental: QF_AUFBVLIA (441), QF_AUFBVNIA (44), QF_UFBVLIA (179)
- Added 17,890 new benchmarks in existing logics:
  - non-incremental: FP (2,415), QF_ABV (17), QF_AUFBV (25), QF_BV (1594), QF_UFBV (10), QF_UFNIA (471), UFDTLIA (24), UFNIA (10,105)
  - incremental: QF_ABV (1,257), QF_ABVFP (60), QF_AUFBV (21), QF_BV (1,771), QF_BVFP (117), QF_UFBV (3)

SMT-LIB benchmark updates

- Updated statuses of 3039 previously unknown non-incremental benchmarks (based on the results from 2 or more solvers from SMT-COMP'18)
- Updated 79255 statuses of previously unknown incremental check-sat calls (based on the results from 2 or more solvers from SMT-COMP'18)
- Removed duplicate benchmarks

SMT-LIB benchmark updates

GitLab changes:

- Benchmarks with size $\geq$ 10M are now stored via git LFS. Please refer to the repository's README on how to check out the repository.
- Unified Sage2 and QF_BV repositories into one repository. A fresh checkout is required since the git history of the repository has been rewritten.

Thank you to the 11 submitters of the new benchmarks:

- Alexandre Gonzalvez, Andres Nötzli, Andrew Reynolds, Bernhard Gleiss, Clifford Wolf, Jie-Hong Roland Jiang, Makai Mann, Mathias Preiner, Matthias Güdemann, Thomas Bunk, Yoni Zohar

SMT-LIB benchmarks (reminder)

New version of benchmark library. For access, see

http://smtlib.org/benchmarks.shtml

- Available via git
- Available as downloadable zip files
- Available on StarExec

Process to Submit Benchmarks (reminder)

- https://clc-gitlab.cs.uiowa.edu:2443/SMT-LIB-benchmarks-tmp/benchmarks-pending
- README file provides the checklist for submitted benchmarks
- benchmarks put in the git repository (world readable), checked, cleaned
- submitters can follow the process
- benchmarks without issues are put in the devel branch of the main repositories (organized by logic)
- devel becomes master, once a year, before the competition
- official benchmarks with issues go back to `benchmarks-pending`

SMT-LIB C++ API

New SMT-LIB-based Solver-independent C++ API

https://github.com/makaimann/smt-switch

How to contribute

- Start a discussion on the SMT-LIB mailing list
- Write a theory proposal and send it to us, the organizers
- Volunteer to lead a work group
- Bug us, repeatedly