

McScM - Feature # 26: Optimize scm cartesian product (or avoid it)

Status:	New	Priority:	Normal
Author:	Grégoire Sutre	Category:	
Created:	07/22/2010	Assignee:	Tristan Le Gall
Updated:	08/23/2011	Due date:	
Subject:	Optimize scm cartesian product (or avoid it)		
Description:	<p>McScM is only able to model-check <code>_flat_</code> models, i.e., models containing a single global automaton. To this end, the tool first computes the cartesian product of the local automata. This operation is crucial, and should be optimized.</p> <p><u>_Suggestions_:</u></p> <ul style="list-style-type: none">* do not use string identifiers (of the form <code>sender_0xreceiver_1x...</code>), as they use a *lot of memory*.* perform the cartesian product in the Scm wrapper module.* compute the cartesian product on-the-fly (selectable by option) <p>However, for realistic scm models with several machines, the cartesian product will simply be too large (for an explicit representation). In the future, McScM should avoid the cartesian product completely. To this end, the input to the model-checker functors will have to expose the local machines composing the model.</p>		

History

07/22/2010 03:54 pm - Grégoire Sutre

- File `petgen.4.scm` added

The attached file resembles the `_peterson_3.scm_` example, but with four processes. It was obtained by the following command :

```
<pre>
python examples/other/peterson_generator.py 4 > petgen.4.scm
</pre>
```

On this `_petgen.4.scm_` example, the computation of the cartesian product requires more that 2 GiB of RAM (on a 64-bit workstation) :

```
<pre>
./bin/mcscm.native -verbose ./petgen.4.scm
MCSCM - Model Checker for Systems of Communicating Machines
Parsing input SCM description... done.
Computing global SCM by cartesian product of local systems...^C
</pre>
```

04/08/2011 01:42 pm - Grégoire Sutre

- Assignee set to Grégoire Sutre

- Target version set to 1.x

- Start date deleted (07/22/2010)

06/23/2011 12:33 pm - Tristan Le Gall

- Assignee changed from Grégoire Sutre to Tristan Le Gall

08/23/2011 06:20 pm - Grégoire Sutre

- Target version changed from 1.x to 1.3

Files

petgen.4.scm	13.3 kB	07/22/2010	Grégoire Sutre
--------------	---------	------------	----------------