

Petri Nets Verification

Prerequisites

- BPEL2PNML version 1.1: A tool for translating BPEL to Petri nets represented using the Petri Net Markup Language (PNML). (<http://yawlfoundation.org/babeltools/>),
- BPEL2OWFN version 2.0.3: BPEL2oWFN translates BPEL into an oWFN (open Workflow Net). This oWFN can be used to: check for deadlocks or any other Petri net property, or check any temporal logic formula with a variety of model checking tools. (<https://www.gnu.org/software/bpel2owfn/>),
- LoLA version 2.0: A Low Level Petri Net Analyzer.\\ (<http://service-technology.org/lola/>),
- WofBPEL version 1.0.2: A tool for formal analysis of BPEL processes. This tool takes as input Petri net and checks for unreachable BPEL activities and for concurrent activities that may enter in competition for the same inbound message.\\ (<http://yawlfoundation.org/babeltools/>),
- Graphviz version 2.38: Graph visualization tool (<http://www.graphviz.org/>).

Verification steps

BPEL → BPEL2PNML → Petri Net in PNML format → WofBPEL → verification results

BPEL → BPEL2OWFN → Petri Net in oWFN format → LoLA + CTL formula → verification results

BPEL2OWFN has been used in two different modes (mode=choreography and mode=petrinet).
Output files have postfix 'ch' or 'pn' to indicate used mode.

Files (other samples also added in MODELCHECKING\petrinet)

HandleCaseProcess.bat	Command file to run all transformations
HandleCaseProcess.bpel	Source BPEL (modified to be able to use the tooling)
HandleCaseProcess.bpel.org	Original BPEL file
HandleCaseProcess.wofbpel	Result WofBPEL verification
HandleCaseProcessBPEL2OWFN_CH.info	Additional information about the transformation process
HandleCaseProcessBPEL2OWFN_PN.info	Additional information about the transformation process
HandleCaseProcessBPEL2PNML.info	Additional information about the transformation process
HandleCaseProcessBPEL2PNML.xml	Result of BPEL to PNML transformation
HandleCaseProcessverify.bat	Run LoLA + CTL formula verification
HandleCaseProcessverify.output	LoLA + CTL formula verification results
HandleCaseProcess_ch.bmp	Visualization of generated Petri Net created with Graphviz
HandleCaseProcess_ch.dot	Graphical format generated with BPEL2OWFN. Graphviz input
HandleCaseProcess_ch.info	Additional information about generated Petri Net
HandleCaseProcess_ch.lola	Result of BPEL to Petri Net transformation
HandleCaseProcess_ch.task	Additional information about generated Petri Net
HandleCaseProcess_ch.xml	Additional information about generated Petri Net
HandleCaseProcess_pn.info	Additional information about generated Petri Net
HandleCaseProcess_pn.lola	Result of BPEL to Petri Net transformation
HandleCaseProcess_pn.task	Additional information about generated Petri Net
HandleCaseProcess_pn.xml	Additional information about generated Petri Net