

OCL Tool Support

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Agenda

- Tool features
- List of tools
- Octopus (version 2.2.0)
- Demo of Octopus
- USE (version 2.3.1)
- Demo of OCLE

Desired features

- Syntax checking
 - Grammar
 - Type checking
 - Undefined class, attributes, ...
- Semantic checking
 - Constraint incompatibility: conflicting constraints
 - Validation of OCL constraints
- Generate Java code
- Generate SQL statements

	Syntax	Verification	Constraint Incompatibility	Java code	SQL
OCL compiler – Cybernetic [1]	✓		✓		
OCL compiler – University of Dresden [2]	✓		✓	✓	✓
USE [3]	✓	✓		✓	
Octopus [4]	✓			✓	
OCLE [5]	✓			✓	

Other tools

- Oclarity: Plugin for Rational Rose. (<http://www.empowertec.de/products/rational-rose-ocl.htm>)
- OCL Parser (<http://www-306.ibm.com/software/awdtools/library/standards/ocl-download.html>)
- Open Source Library for OCL (OSLO), University of Kent, 2005 (<http://oslo-project.berlios.de/>)
- PWAN, 1999 (<http://pwan.sourceforge.net/index.html>)
- “KeY”, University of Karlsruhe, 1998 (<http://key-project.org>)

Tools

- Octopus: <http://www.klasse.nl/ocl/index.html>
- OCLE: <http://lci.cs.ubbcluj.ro/ocle/index.htm>

Octopus (version 2.2.0)

- Plugin for Eclipse
- Conforms to OCL version 2
- Can perform syntax checking on OCL expressions
- Can transform UML model and OCL constraints to Java code

Steps in using Octopus

- Create Java project or an Octopus project
- Create the UML model
- Create OCL expressions
- Check the OCL expressions
- Generate Java code

Creating a project

- File → New → Project → Java → Java Project
- Add Octopus Nature to the project

Create UML model

- Import through XML Metadata Interchange (XMI) file or
- Textual representation of UML:
 - Each package in separate file. Subfolders represent sub-packages.
 - File must begin with “<package> DIRNAME” and ends with “<endpackage>”
 - Class is written between “<class>” and “<endclass>” tags.
 - Each association is written near the end of file along with the multiplicity.

XMI support

- Supports XMI generated by following tools:
 - Poseidon for UML Standard Edition 2.4.1 (URL: <http://www.gentleware.com>)
 - Rational Rose Enterprise Edition 2002.05.20 (URL: <http://www.ibm.com/software/rational>)
 - MagicDraw 7.5 beta (URL: <http://www.magicdraw.com>)
 - Together
 - Objectteering
 - Enterprise Architect

View UML model

- Octopus → Show UML model
- “Add UML elements” icon

Create and check OCL expressions

- Import from examples
- Project → Clean, Project → Build Project
or set the Project → Build automatically

USE (version 2.3.1)

- Standalone application.
- Conforms to OCL version 2.
- Can perform syntax checks.
- UML model and OCL constraints are verified by creating objects and assigning values to them.
- Can generate Java code.

OCLE (version 2.0)

- Conforms to OCL version 2
- Can perform syntax checking on OCL expressions
- Transform the UML model to Java code

References

- [1] OCL compiler, Cybernetic Intelligence GmBH, 1994
<http://www.cybernetic.org/>
- [2] Dresden OCL toolkit, 1999,
<http://dresden-ocl.sourceforge.net/index.html>
- [3] USE, Martin Gogolla, Mark Richters, 2001,
<http://www.db.informatik.uni-bremen.de/projects/USE/>
- [4] Octopus, 1997, <http://www.klasse.nl/octopus/index.html>
- [5] OCLE, 1999, <http://lci.cs.ubbcluj.ro/ocle/index.htm>