A Computational Model for TROLL *light*

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TROLL *light* is a language for conceptual modeling of information systems. It is designed to describe the Universe of Discourse (UoD) as a system of concurrently existing and interacting objects. TROLL *light* objects have observable properties modeled by attributes, and the behavior of objects is described by events. Possible object observations may be restricted by constraints, whereas event occurrences may be restricted to specified life cycles. TROLL *light* objects are organized in an object hierarchy established by sub-objects relationships. Communication among objects is supported by event calling. Apart from introducing the various possibilities for the syntactical description of objects, we aim to describe how the state of an object community may be changed by event occurrences.

As a basis for our language we took the specification language TROLL. However, TROLL *light* is not just a subset of TROLL. Some details have been added or modified in order to round off TROLL *light*. This was necessary because we needed a clear and balanced semantic basis for our specification language. In particular we want to stress the fact that in TROLL *light* classes are understood as composite objects having the class extension as sub-objects. Therefore in contrast to TROLL an extra notion of class is not needed in TROLL *light*. This leads to a more orthogonal use of object descriptions. Over and above that concepts like class attributes, meta-classes, or heterogeneous classes are inherent in TROLL *light* while they had to be introduced in TROLL by additional language features. Second TROLL *light* incorporates a query calculus providing a general declarative query facility for object-oriented databases. For instance, terms of this calculus may be used in object specifications to describe derivation rules for attributes, or to query object communities in an ad hoc manner.

Our specification language is described in more detail in [CGH92], the accompanying specification environment is outlined in [VHG+93], and the operational semantics of the language is presented in [GCH93].

References

[CGH92] S. Conrad, M. Gogolla, and R. Herzig. TROLL *light*: A Core Language for Specifying Objects. Informatik-Bericht 92–02, Technische Universität Braunschweig, 1992.

[GCH93] M. Gogolla, S. Conrad, and R. Herzig. Sketching Concepts and Computational Model of TROLL *light*. In A. Miola, editor, *Proc. 3rd Int. Conf. Design and Implementation of Symbolic Computation Systems (DISCO'93)*. Springer, LNCS Series, 1993.

[VHG+93] N. Vlachantonis, R. Herzig, M. Gogolla, G. Denker, S. Conrad, and H.-D. Ehrich. Towards Reliable Information Systems: The KORSO Approach. In C. Rolland, editor, *Proc. 5th Int. Conf. Advanced Information Systems Engineering (CAiSE'93)*. Springer, LNCS Series, 1993.