Encapsulating Non-Determinism in Functional Logic Computations*

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Abstract. One of the key features of the integration of functional and logic languages is the access to non-deterministic computations from the functional part of the program. In order to ensure the determinism of top-level computations in a functional logic program, which is usually a monadic sequence of I/O operations, one has to encapsulate the non-determinism (i.e., search for solutions) of logic computations. However, an appropriate approach to encapsulation can be quite subtle if some subexpressions are shared, as in lazy evaluation strategies. In this paper we propose a new approach to encapsulate non-deterministic computations for the declarative multi-paradigm language Curry. It is based on providing a primitive I/O action for encapsulation from which various specialized search operators can be derived. In order to provide a formal foundation for this new approach to encapsulation we define its operational semantic.

* This work has been partially supported by the DFG under grant Ha 2457/1-2.