A Logical View of Constraint Modelling and Reformulation

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Abstract

Constraint modelling and reformulation involve selection of a problem description from among many distinct but hopefully correct descriptions, in one or more specification or modelling languages. We are interested in a formal notion of correctness that can be used in verifying or automating such processes. Toward this end, we formulate the tasks defined in constraint modelling languages in terms of classes of finite (or meta-finite) structures. We then view specification and modelling languages as logics defining classes of structures, and model reformulation as logically defined transformations. We give examples using languages and problems from the constraint modelling literature.