

Practical Applications of a Constraint Framework

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Abstract

In 2011 we decided to modernize a couple of applications by means of techniques from logic programming. In the focus there were an application for the automatic extraction of process profiles from catalogue texts and an application for the manual configuration of bill of materials from process profiles. Of interest was the technique of constraint programming. Our requirements were availability in a JVM and adaptability through declarative rules.

Part of our requirements point to so called constraint handling rules (CHR). All of our requirements are not covered by existing solutions. We therefore decided to develop a custom solution. In 2012 we could complete first prototypes based on forward chaining rules. Since 2013 we additionally base our prototypes on attribute variables, which allow the connection of constraints with Prolog unification.

Our experience is largely positive. In some cases the old applications did already use a constraint store, which we could replace by a more efficient variant. In other cases we replaced algorithms based on decision trees by more economic algorithms based on constraint solvers. The work also showed some gaps of classical constraint solving concerning our applications.

References

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