Obtaining Certain and Consistent Answers from Integration Systems (abstract)

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We address the problem of obtaining certain, minimal and consistent answers to queries posed to a mediated integration system under the local-as-view paradigm. For this, we first give a specification in answer sets programming of the minimal legal global instances. Next we identify conditions under which certain and minimal answers [4] can be computed from the program. Finally, with the purpose of computing the query answers that are consistent wrt a set IC of global integrity constraints, we combine this program with another one that specifies the repairs of the minimal global instances wrt IC. Now, we describe in more detail this general process.

The minimal legal global instances of a systems that integrates open sources are specified using logic programs with *choice constructs* [8] and stable models semantics [6]. This program is inspired by the inverse-rules algorithm [7], and uses auxiliary Skolem predicates whose functionality is enforced with the *choice construct*. We also show how the program for open sources has to be modified in *the mixed case*, i.e. when open, closed and clopen sources coexist [5].

In order to obtain answers to global queries, a query program has to be combined with the specification program and be run under the skeptical stable model semantics. It turns out that in the mixed case, minimal answers can be retrieved for $Datalog^\neg$ queries and certain answers, for monotone queries. We also investigate conditions on the source descriptions under which certain answers can also be obtained for $Datalog^\neg$ queries and/or in polynomial time [5].

An integration system is consistent if all of its minimal legal instances satisfy the integrity constraints [4]. Consistent answers from an inconsistent integration systems are those that can be obtained from all the repairs of all the minimal legal instances wrt the global ICs [1, 4]. To retrieve consistent answers the specification program needs to be combined with another logic program that specifies the repairs. For this, logic programs with annotations and stable model semantics can be used to specify the repairs of single relational databases [1], as presented in [3, 2].

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