Abstract:

Surprising and disturbing negative results are proved about the ability to type check queries in the only existing proposed standard for object-oriented databases. The first of these negative results is that it is not possible to type check OQL queries in the type system underlying the ODMG Object Model and its definition language ODL. The second negative result is that OQL queries cannot be type checked in the type system of the Java binding of the ODMG Standard either. An expected positive result is that type checking of OQL queries presents no problem for the type system of the C++ binding of the ODMG Standard. This type system can also handle static type checking of queries with order by clause which involve further subtleties. Only dynamic type checking of queries with order by clause is possible in the type system of the Java binding.

Different options are outlined for fixing the ODMG Object Model and for extending the type systems of its language bindings in order to make type checking of OQL queries possible. Results that clarify when static versus dynamic type checking of OQL queries is possible are also established. A type system that is strictly more powerful than any of the type systems of the ODMG Standard is required in order to type properly ordered collections and indices. Perhaps the most disturbing negative result of all is that neither static nor the standard dynamic object-oriented type checking is possible for Java OQL. A sophisticated run-time linguistic reflection technology is required in order to provide a type-safe implementation technique. This is in spite of the fact that Java OQL combines features of two strongly and mostly statically typed languages. Contrary to one of the promises of object-oriented database technology, this result shows that the impedance mismatch does not disappear in the technology proposed by the ODMG Standard.

Friday, January 30, 1998
3:00 PM in Room 335 Jabara Hall

Please join us to welcome our speaker and enjoy refreshments before the lecture at 2:30 p.m. in room 353 Jabara Hall