Tablog: Functional and Relational Programming in One Framework

Tablog\textsuperscript{1,2} is a logic programming language that combines functional and relational programming into a unified framework. It incorporates advantages of two of the leading programming languages for symbolic manipulation—Prolog and Lisp—by including both relations and functions and adding the power of unification as a binding mechanism.

Though in many circles the term logic programming is considered synonymous with programming in Prolog, this is a very narrow interpretation. A more general definition refers to the use of some subset of first-order predicate logic as a programming language. Tablog falls under this definition. Once we follow this wider interpretation, we can probably call Prolog and its variants relational programming languages, given their emphasis on using predicates to describe computations.

An even broader definition of the concept of logic programming includes any programming language that is based on a formal logic system. In this broader sense, for example, (pure) Lisp is also a logic programming language, based on the lambda calculus, and so are the various languages based on equational logic.

While Prolog excludes functions and true negation, Tablog does not. The inclusion of real negation, conditionals, and equivalence makes Tablog richer and more convenient than Prolog even as a purely relational language. The inclusion of functions and equality enables Tablog to enjoy many of the features of functional languages.

A program in Tablog is a list of formulas in quantifier-free, first-order logic with equality and is usually more natural than the corresponding program in either Lisp or Prolog. The inclusion of equivalence, negation, conditionals, functions, and equality in Tablog lets the programmer combine functional and relational programming in the same framework.

Unlike Lisp, which simulates predicates using functions, or Prolog, which simulates functions using predicates, Tablog uses both predicate and function symbols naturally, just as predicate logic does. Relations defined by predicates can still be conveniently used to implement multiple-valued functions. An important advantage over Lisp is the use of unification as the binding mechanism; this makes it

Looking For A Programming Language That's Even Better Than C?

It's Here!

C++, an extension of C, retains the efficiency and notational convenience of C while producing programs which are shorter, easier to understand, and easier to maintain than traditional C programs.

Its designer and implementer, Dr. Bjarne Stroustrup, has written a definitive reference and guide called The C++ Programming Language, which shows you how to put this exciting new language to work for you.

\textcopyright Addision-Wesley Publishing Company • We publish the leaders.

I've been looking for a language like C++!

Please send me (Qty.) ______ copies of The C++ Programming Language, by Bjarne Stroustrup, at $22.95 each (12078).

☐ I've enclosed a check for $______, the total of my order plus my local state sales tax.
(Addison-Wesley will pay postage and handling.)

Please charge to my:
☐ VISA

☐ MasterCard (Interbank #______)

Account #____________________ Exp. date____

Signature ______________________

(I understand there is a slight shipping and handling fee when I charge.)

Name ______________________ Title ______________________

Company ______________________

Address ______________________

City/State ______________________ Zip ______

Phone # ______________________

☐ Please put me on your mailing list.

\textcopyright Addison-Wesley Publishing Company

Attn: Carolyn Berry

Reading, Massachusetts 01867 • (617) 944-3700