Subject: Swap statements would be useful
From: Van Snyder
Reference: 03-258r1, section 2.6

Number

TBD

Title

Swap statements would be useful.

Submitted By

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Status

For consideration.

Basic Functionality

Provide statements to swap values and poiners.

Rationale

One sometimes needs to exchange two variables, or more rarely two pointers. This requires declaring a temporary variable. But then the next one to maintain the code wonders "Is this temporary variable used anywhere else?" Also, simple compilers don't bother to ask themselves that question and answer it, so they don't produce as efficient a translation as they might otherwise. This dataflow question would be easier to answer if constructs were scoping units (see that proposal) so that one could create a "very local" temporary variable. But this makes the program more bulky.

It would therefore be useful to have statements to exchange data and pointers.

Estimated Impact

Minor. Could bootstrap from descriptions of intrinsic assignment, defined assignment and pointer assignment.

Detailed Specification

Examples of syntax of such statements are `A :=: B` and `A <=> B`. The former could be used wherever `A=B` and `B=A` are both permitted. The latter could be used wherever `A=>B` and `B=>A` are both permitted. These are simple to implement, simple to describe, improve readability of programs, and are more likely to be optimized by a simple compiler.

To avoid creating temporary variables in ways that may not be workable when exchanging objects of complicated types, it would be useful to allow to define the exchange statement, as can be done with the assignment statement. For the same reasons as argued in the proposal to allow to define pointer assignment (q.v.), it should be possible to define pointer exchange.

History