Date: Tue, 26 Mar 91 16:11 GMT
From: Brian <UDAA000@HAZEL.CC.KCL.AC.UK>
Subject: Two-valued datatypes revisited

What follows is the text of a letter sent today to Sigplan Notices in reply to a letter in last month's issue.

Dr Nicolescu was kind enough to send me an initial draft of his letter [1] disagreeing with my view of two-valued datatypes [2]. We have to agree to differ! I objected to Dr Boute's original arguments [3] because they were based on a mathematical approach, and Dr Nicolescu, though making a rather different point, equally appeals to mathematical properties.

I do in fact have some sympathy with his concerns about IMPLIES. In my experience this is the logical operator that even the more numerate beginners find hardest to understand, and my impression is that this is a common finding.   However, I cannot agree that imposing a completely artificial ordering on the truth values so that you can overload >= is an appropriate solution. It may help the more numerate to get it right, but they won't necessarily understand it any better, and the less numerate will if anything be even more confused.

I do not believe (and I too am a mathematician by training!) that TRUE and FALSE and their associated operators are the private property of mathematicians, or even of logicians.   They belong to everyone.   I agree that

   (NOT more_than_five_years_old) OR female

is not an especially elegant formulation, but to borrow David Hill's phrase again, at least you are using the terms that you mean, in the sense of the application, rather than   substitutes.   (In fact the greatest improvement would come from using linguistic means rather than mathematical bracketing to show the scope of the NOT.) In the same issue, Dr Bernecky [4] falls into exactly the same trap; in arguing in favour of (in effect) BIT rather than BOOLEAN, he fails to realise that languages actually need both.

What our discipline needs from mathematics is its rigour, not necessarily its formalism.

Yours sincerely

B. L. Meek

[1] R. Nicolescu, Sigplan Notices of the ACM, 26, 2, pp 9-10, February 1991

[2]   B.L. Meek, Two-valued datatypes, Sigplan Notices of the ACM, 25, 8, pp 75-79, August 1990

[3] R.T. Boute, A heretical view on type embedding, Sigplan Notices of the ACM, 25, 1, pp 25-28, January 1991

[4] R. Bernecky, Fortran 90 arrays, Sigplan Notices of the ACM, 26, 2, pp 83-96, February 1991