

To: J3
From: Malcolm Cohen
Subject: Pointers are a mess
Date: 5th June 2001

1. Introduction

The term "procedure pointer" is nowhere defined. Section 12.3.2.3 tells us how to declare one (or rather, given various combinations of attributes, when is it that we have one), but not what it actually is.

There is no term "data pointer" (neither defined nor used). This would not be so bad if the term "pointer" were not defined in such a way as to exclude procedure pointers.

We should clean up our terminology.

The glossary definition of pointer similarly excludes procedure pointers.

Also, the glossary definition of "target", apart from being long-winded, verbose, repetitious and incomplete (it does not include procedures as targets), does not quite accord with the usage in the rest of the standard. It defines target as being a thingy with the TARGET attribute, whereas virtually everywhere it is actually being used as meaning whatever a pointer is associated with.

2. Proposal

That we define and use "data pointer" and "procedure pointer", and define a bare "pointer" to be all-inclusive.

Also, all of these should include pointer function results (i.e. should not insist on being a variable). We know how to spell "pointer variable" if we want it.

We should simplify and expand the glossary description of TARGET.

3. Another problem

7.1.4.1 discussing the appearance of a pointer as a primary, is comprehensively broken. This will be addressed in another paper.

4. Edits to 01-007r1

[18:24-30] Replace with

"A **data pointer** is a data entity that has the POINTER attribute. A **procedure pointer** is a procedure entity that has the POINTER attribute. A **pointer** is either a data pointer or a procedure pointer.

A pointer is **associated** with a **target** by pointer assignment (7.5.2). A data pointer may also be associated with a target by allocation (6.3.1). A pointer is **disassociated** following execution of a NULLIFY statement, following pointer association with a disassociated pointer, by default initialization, or by explicit initialization. A data pointer may also be disassociated by execution of a DEALLOCATE statement. A disassociated pointer is not currently associated with a target (14.6.2).

A pointer that is not currently associated shall not be referenced or defined.

If a data pointer is an array, the rank is declared, but the extents are determined when the pointer is associated with a target."

[405:1] Change "A variable" to "An entity".

{Cope with procedure pointers and pointer function results.}

SUGGESTION:

[405:1-3] Delete "A pointer ... rank."

{Delete unnecessary verbiage. There are lots of interesting things about pointers, just pulling two of them out of the hat here is not terribly useful.}

[407:25-27] Replace with

"**target** (2.4.6, 5.1.2.13, 6.3.1.3): A data entity that has the TARGET attribute, or an entity that is associated with a pointer."