

Enhancements to Derived-Type I/O Specs, Syntax, Edits

by Craig T. Dedo
August 13, 1998

1. Rationale

This paper is a response to resolution T.8 in paper J3 / 98-169 (WG5-N1323). In this resolution, WG5 "notes with concern that the current proposal for derived type input / output is both inadequate and not amenable to extension and urges the primary development body to consider the changes proposed in WG5-N1322". The paper WG5-N1322 proposes, "For derived-type I/O, provide more flexibility in the interfaces of user-defined derived type I/O routines for formatted I/O and in the syntax of the DT edit descriptor, in particular, to allow a variable number of integer values ... instead of a maximum of 3".

2. Technical Specification

The JOR subgroup proposes that the DT edit descriptor be revised to replace the w.d.m designation with an optional list of constants separated by commas and enclosed in parentheses. The list may be of any length. This list of constants shall correspond to an argument to the user-defined READ (FORMATTED) and WRITE (FORMATTED) subroutines. This argument shall be an assumed-shape array of type default integer and with a number of elements the same as the number of items in the list.

3. Syntax

The DT edit descriptor is changed to the following format:

DT[*char-literal-constant*] [(a,b,c...)]

where:

char-literal-constant is an optional character string literal of default kind.

(a,b,c, ...) is an optional comma-separated list of default integer constants enclosed in parentheses.

4. Edits

Page and line references are to document 98-007r2.

In section 9.4.4.4.3:

[168:44] Replace "w, d, m" with "v_list".

[169:1] Replace the line with:

```
INTEGER, INTENT(IN) :: v_list(:)
```

[169:22] Replace "w, d, m" with "v_list".

[169:29] Replace the line with:

```
INTEGER, INTENT(IN) :: v_list(:)
```

[170:19-21] Change the item list to read:

- "DT" concatenated with the *char-literal-constant* of the edit descriptor, if any, if the parent data transfer statement contained a format specification and the list item's corresponding edit descriptor was a DT edit descriptor.

1 [170:27-29] Change the paragraph to read:
2 The **v_list** argument shall have the user-specified values from the *v-list* of the edit descriptor. **v_list**
3 shall have the same number of elements, in the same order, as *v-list* if *v-list* is present; otherwise **v_list**
4 is a zero-sized array. **v_list** is a zero-sized array if the data transfer statement specified list-directed
5 or namelist formatting.

6 [170:42-43] Change Note 9.40 to read:
7 The user's procedure may choose to interpret an element of the **v_list** argument as a field width, but
8 it is not required. If it does, it would be appropriate to fill an output field with asterisks if the width
9 is too small.

10 In section 10.2.1:

11 [185:2] In R1005, change the line to read:
12 **or** DT[*char-literal-constant*] [(*v-list*)]

13 [185:6+] Add a rule R101x:
14 R101x *v* **is** *signed-int-literal-constant*

15 [185:10] Change the constraint to read:
16 Constraint: *w, m, d, e,* and *v* shall not have kind parameters specified for them.

17 [185:11-12] Change the constraint to read:
18 Constraint: The *char-literal-constant* in the DT edit descriptor shall not have a kind type parameter
19 specified for it.

20 [185:13] Change "and D" to "D, and DT".

21 In section 10.3:

22 [186:42] Add to the end of the sentence, after the word "parenthesis", the words, "that is not part of
23 a DT edit descriptor".

24 In section 10.5.5:

25 [193:37-41] Change the paragraph to read:
26 The DT edit descriptor may contain a character literal constant. The character value "DT"
27 concatenated with the character literal constant is passed to the user-defined derived-type input /
28 output procedure as the **iotype** argument (9.4.4.4.3). The *v* values are passed to the user-defined
29 derived-type input / output procedure as the **v_list** array argument.

30 [194:1-3] Replace note 10.17:

31 **NOTE 10.17**

32 For the edit descriptor DT'Link List'(10,4,2), **iotype** is "DTLink List" and **v_list** is (/10,4,2/).

33 **END NOTE**

34 **5. References**

35 J3 / 98-169 (aka ISO/IEC JTC1/SC22/WG5-N1323), Resolutions of the WG5 Meeting on 8 to 12 June
36 1998 in Trollhättan, Sweden.

37 ISO/IEC JTC1/SC22/WG5-N1322, Proposal for More Flexible Derived-Type I/O Facility

38 [End of J3 / 98-189]