

Subject: Integrating left-hand functions
From: Van Snyder
References: UK-007, UK-008

1 Introduction

UK-007 allows a pointer function as an actual argument that corresponds to a dummy argument that does not have INTENT(IN); the actual argument is the result's target. UK-008 allows a pointer function as the left-hand side of an intrinsic assignment; the value is assigned to the result's target. Conspicuously absent are several remaining cases of variable definition contexts (16.5.7) [423:29ff]

2 Specification

Allow a pointer function reference everywhere a variable other than a named variable is allowed. In all cases, the variable is the target of the function's result.
This paper proposes to change the fundamental definition of *variable* to include the “lvalue” case. Cases where “lvalue” is not allowed are (almost) already covered by using “named variable”.

3 Syntax

No new syntax is required, although new syntax rules are needed and some syntax rules require change.

4 Edits

Edits refer to 04-007. Page and line numbers are displayed in the margin. Absent other instructions, a page and line number or line number range implies all of the indicated text is to be replaced by associated text, while a page and line number followed by + (-) indicates that associated text is to be inserted after (before) the indicated line. Remarks are noted in the margin, or appear between [and] in the text.

18 [Editor: Invent some blather about <i>variable</i> having more meanings.]	xiii
19 [The <i>do-variable</i> is exactly what's needed here – constraints and all.]	67:18-19
20 R401 <i>ac-do-variable</i> is <i>do-variable</i>	
21 [The <i>do-variable</i> is exactly what's needed here – constraints and all.]	87:34
22 R402 <i>data-i-do-variable</i> is <i>do-variable</i>	
23 [Editor: Delete because <i>do-variable</i> is exactly what's needed here – constraints and all.]	88:4
24 or <i>expr</i>	103:6+
25 C601 ¹ / ₂ (R601) The <i>expr</i> shall be a reference to a function that has a pointer result.	103:7+
26 A variable is either the data object denoted by <i>designator</i> or the target of <i>expr</i> .	
27 [Editor: Replace the RHS of <i>do-variable</i> (R831) with “ <i>scalar-int-variable-name</i> ” since we really want to strip everything else off.]	165:16
29 [Editor: Delete “named scalar”.]	165:17
30 [Editor: Add a new paragraph:]	424:4+
31 If a reference to a function appears in a variable-definition context the result of the function reference shall be a pointer that is associated with a definable target. That target is the variable that becomes defined or undefined.	

5 Integration with 014

Delete the edits for these two places introduced by 05-278r2 (but maybe keep the revision of C715, revised to refer to R734, for aesthetic reasons).

1	[In the edit introduced by 06-138r2, replace the first “ <i>scalar-int-variable</i> ” by “variable” and the second	183:32+
2	by “the variable”, since it’s the variable, not the syntax term, that gets a value (probably need this	
3	anyway).]	
4	In 06-014r0, delete ”assigned” before ”variable” from edits for the following places:	
5	[116:12] [138:15+] [138:18] [138:18] [138:19-139:1] [139:1] [139:2+1-6] [139:2+8-11] [139:3-] [138:3-12 s/b	
6	139:3-12] [139:21] [139:22-23] [139:23] [140:1] [140:2-3] [140:4-5] [141:1-3] [141:3+2-5] [141:4-5] [141:6-11]	
7	[141:12-13] [141:14-23] [142:0+6] [142:1-2] [142:27-30] [146:30] [147:19, 23] [148:5] [286:31]	
8	In 06-014r0, delete edits for the following places: [420:11-13] [423:28+2-3], or at least delete ”assigned”	
9	before ”variable”	
10	In 06-014r0, delete edit for [425:26+]	
11	6 Editorial suggestions	
12	We probably need this stuff anyway, so we might as well say it here to avoid forgetting it.	
13	[Editor: Add a new third paragraph in 8.1.4.3:]	161:23+
14	If the selector is a pointer it shall be associated with a target; the target is associated with the associating	
15	entity.	
16	[Editor: Insert “nonpointer” before “variable”.]	189:21
17	If a pointer appears in the contexts specified above for a nonpointer variable, the pointer shall be	189:26+ New ¶
18	associated with a target that has the ASYNCHRONOUS attribute.	
19	[Editor: Replace “ <i>scalar-default-char-variable</i> ”, “ <i>scalar-int-variable</i> ” and “ <i>scalar-default-logical-variab-</i>	211:21-216:12
20	<i>le</i> ” by “variable” throughout 9.9.1.2 through 9.9.1.32, since it’s the variable, not the syntax term, that	
21	gets a value.]	
22	[Editor: Replace “ <i>scalar-int-variable</i> ” by “variable”, since it’s the variable, not the syntax term, that	216:25
23	gets a value.]	
24	[Editor: Replace “ <i>scalar-int-variable</i> ” by “variable”, since it’s the variable, not the syntax term, that	217:17
25	gets a value.]	
26	[Editor: Replace “ <i>iomsg-variable</i> ” by “variable in the IOMSG= specifier”, since it’s the variable, not	217:19
27	the syntax term, that gets a value.]	
28	[Editor: Replace “ <i>scalar-int-variable</i> ” by “variable”, since it’s the variable, not the syntax term, that	217:20-21
29	gets a value.]	
30	[Editor: Replace “ <i>scalar-int-variable</i> ” by “variable”, since it’s the variable, not the syntax term, that	217:40
31	gets a value.]	
32	[Editor: Replace “ <i>iomsg-variable</i> ” by “variable in the IOMSG= specifier”, since it’s the variable, not	217:42
33	the syntax term, that gets a value.]	
34	[Editor: Replace “ <i>scalar-int-variable</i> ” by “variable”, since it’s the variable, not the syntax term, that	218:14
35	gets a value.]	
36	[Editor: Replace “ <i>iomsg-variable</i> ” by “variable in the IOMSG= specifier”, since it’s the variable, not	218:16
37	the syntax term, that gets a value.]	
38	[Editor: Replace “ <i>scalar-int-variable</i> ” by “variable”, since it’s the variable, not the syntax term, that	218:17
39	gets a value.]	
40	[Editor: Replace “An ... or” by “a <i>scalar-int-variable</i> in an IOSTAT= or SIZE= specifier, or an <i>iomsg-</i>	423:41
41	<i>variable</i> in an”.]	
42	[Editor: Replace “definable variable” by “variable” (or “ <i>scalar-default-char-variable</i> , <i>scalar-int-variable</i> ,”	423:42

1 or *scalar-default-logical-variable*”?).]