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 as a *scalar-int-variable* or *iomsg-variable* in an input/output statement, as an *internal-file-variable* in a WRITE statement, as an *input-item* in a READ statement, as a *stat-variable* or *errmsg-variable* in an ALLOCATE or DEALLOCATE statement, or as a *variable* that is a *selector* in a SELECT TYPE or ASSOCIATE construct. In all cases, the variable is the target of the function's result.

3 Syntax

No new syntax is required, although two new syntax rules are needed and several 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.

These edits depend upon those from 05-278r2. In particular, upon the definitions of *assigned-variable* and **assigned variable**

[Editor: Add another sentence in the third paragarph in 2.4.6: "If a data pointer is associated with a target, the target is a variable (2.4.3.1.1)." (probably need this anyway).] 18:29

[Editor: In the right-hand-side of the definition of *stat-variable* (R625), replace "*scalar-int-variable* by "*scalar-int-assignment-variable*".] 110:17

[Editor: Insert the following new syntax rule:] 110:17+

R625$\frac{1}{2}$ *int-assignment-variable* **is** *assignment-variable*

[Editor: In the right-hand-side of the definition of *errmsg-variable* (R626), replace "*scalar-default-char-variable*" by "*scalar-default-char-asg-variable*".] 110:18

[Editor: Insert the following new syntax rule:] 110:18+

R626$\frac{1}{2}$ *default-char-asg-variable* **is** *assignment-variable*

[Editor: Insert the following new constraints:] 111:5+

C621$\frac{1}{3}$ (R625$\frac{1}{2}$) *int-assignment-variable* shall be of type integer.

C621$\frac{2}{3}$ (R626$\frac{1}{2}$) *default-char-asg-variable* shall be of type default character.

[Editor: Within C808, replace "not a *variable*" by "neither a *variable* nor an *expr* that has a pointer result,".] 160:14

[Editor: Within the first sentence in the first paragraph in 8.1.4.3, replace "associated" by "corresponding" (probably need this anyway).] 161:16

[Editor: Add a new third paragraph in 8.1.4.3 (probably need this anyway):] 161:23+

If the selector is a pointer it shall be associated with a target; the target is associated with the associating entity.

[Editor: Replace *char-variable* by *assigned-variable* in R903, C901 and C902.] 178:25-27

[Editor: In the right-hand-side of the definition of *connect-spec* (R905), replace "IOSTAT = *scalar-int-variable*" by "IOSTAT = *scalar-int-assignment-variable*".] 181:33

[Editor: In the right-hand-side of the definition of *iomsg-variable* (R907), replace "*scalar-default-char-variable*" by "*scalar-default-char-asg-variable*".] 181:41

[Editor: In the right-hand-side of the definition of *close-spec* (R909), replace "IOSTAT = *scalar-int-variable*" by "IOSTAT = *scalar-int-assignment-variable*".] 185:22

[Editor: In the right-hand-side of the definition of *io-control-spec* (R913), replace "ID = *scalar-int-variable*" by "ID = *scalar-int-assignment-variable*".] 187:2

[Editor: In the right-hand-side of the definition of *io-control-spec* (R913), replace "IOSTAT = *scalar-int-variable*" by "IOSTAT = *scalar-int-assignment-variable*".] 187:4

[Editor: In the right-hand-side of the definition of *io-control-spec* (R913), replace "SIZE = *scalar-int-variable*" by "SIZE = *scalar-int-assignment-variable*".] 187:10

[Editor: In the right-hand-side of the definition of *input-item* (R915), replace "*variable*" by "*assignment-variable*".] 191:30

[Editor: Replace "*scalar-default-char-variable*" by "*scalar-default-char-asg-variable*" and "*scalar-int-variable*" by "*scalar-int-assignment-variable*" throughout.] 210:9-211:1

[Editor: Replace "*scalar-default-char-variable*" and "*scalar-int-variable*" by "assigned variable" throughout 9.9.1.2 through 9.9.1.32, since it's the variable, not the syntax term, that gets a value (probably need something like this anyway).] 211:21-216:12

[Editor: Replace "*scalar-int-variable*" by "assigned variable", since it's the variable, not the syntax term, that gets a value (probably need something like this anyway).] 217:17

[Editor: Replace "*iomsg-variable*" by "assigned variable in the IOMSG= specifier", since it's the variable, not the syntax term, that gets a value (probably need something like this anyway).] 217:19

[Editor: Replace "*scalar-int-variable*" by "assigned variable", since it's the variable, not the syntax term, that gets a value (probably need this anyway).] 217:20-21

[Editor: Replace "*scalar-int-variable*" by "assigned variable", since it's the variable, not the syntax term, that gets a value (probably need something like this anyway).] 217:40

[Editor: Replace "*iomsg-variable*" by "assigned variable in the IOMSG= specifier", since it's the variable, not the syntax term, that gets a value (probably need something like this anyway).] 217:42

[Editor: Replace "*scalar-int-variable*" by "assigned variable", since it's the variable, not the syntax term, that gets a value (probably need something like this anyway).] 218:14

[Editor: Replace "*iomsg-variable*" by "assigned variable in the IOMSG= specifier", since it's the variable, not the syntax term, that gets a value (probably need something like this anyway).] 218:16

[Editor: Replace "*scalar-int-variable*" by "assigned variable", since it's the variable, not the syntax term, that gets a value (probably need something like this anyway).] 218:17

[Editor: Replace "An ... or" by "A *scalar-int-assignment-variable* in an IOSTAT= or SIZE= specifier, or an *iomsg-variable* in an" (probably need something like this anyway).] 423:41

[Editor: Replace "definable variable" by "*scalar-int-assignment-variable*, *scalar-default-char-asg-variable* 423:42

or *iomsg-variable*".]

[Editor: Add a new paragraph:] 424:4+

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

Given the edit in the previous section for [424:4+], the second sentence in the edit for 138:15+ that was added by 05-278r2 might not be really needed (but it probably doesn't hurt anything):

The **assigned variable** denoted by *assigned-variable* is the *variable* or the target of the result of *expr*. The result of the function reference shall be a pointer that is associated with a definable target. 138:15+ New ¶

[In the edit introduced by 06-138r2, replace "*scalar-int-variable*" by "*scalar-int-assignment-variable*".] 181:33+

[In the edit introduced by 06-138r2, replace the first "*scalar-int-variable*" by "assigned variable" and the second by "the assigned variable", since it's the variable, not the syntax term, that gets a value (probably need this anyway).] 183:32+