

To: J3
 Subject: Issue 338
 From: Van Snyder
 References: 01-268

Unresolved issue note 338 remarks that the constraints on elemental procedure declarations are not as precisely done as are the ones on pure procedure declarations.

In both areas, constraints are taken away from the syntax rules to which they apply.

This paper proposes to correct both problems, and to reduce some duplication, by consolidating treatment of subprogram declaration prefixes.

This paper moves around some text that is edited by 01-268, so process that paper first. It also deletes some text that would otherwise be edited by that paper, so process this one first.

1 Edits

Edits refer to 01-007r2. 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 immediately following text, while a page and line number followed by + (-) indicates that immediately following text is to be inserted after (before) the indicated line. Remarks are noted in the margin, or appear between [and] in the text.

[Editor: Delete. It is replaced below in a form that applies equally to functions and subroutines.] 259:25-28

[Editor: Delete. It is replaced below in a form that applies equally to functions and subroutines.] 261:12-16

[Editor: Delete. It is replaced below.] 261:19-21

12.5.2.2 $\frac{1}{2}$ Prefixes of FUNCTION and SUBROUTINE statements 261:22+

A prefix of a FUNCTION or SUBROUTINE statement specifies additional attributes of the procedure.

[Editor: Move [258:44 - 259:8] to here.]

[Editor: Move [261:2] to here.]

C1268 (R1227) If PURE or ELEMENTAL appears in a *function-stmt*, all dummy arguments except procedure arguments and arguments with the POINTER attribute shall have INTENT(IN).

C1269 (R1227) If PURE or ELEMENTAL appears in a *subroutine-stmt*, the subprogram shall specify the intents of all dummy arguments except procedure arguments, alternate return indicators, and arguments with the POINTER attribute.

C1270 (R1227) If PURE or ELEMENTAL appears, a local variable declared in the *specification-part* or *internal-subprogram-part* shall not have the SAVE attribute.

[Editor: Move [266:13-15] to here.]

C1271 (R1227) If PURE or ELEMENTAL appears, each dummy procedure or dummy procedure pointer shall have an explicit interface that specifies a pure procedure.

C1273 (R1227) If PURE or ELEMENTAL appears, all internal subprogram declarations shall have the PURE prefix.

C1274 (R1227) If PURE or ELEMENTAL appears, any designator within the subprogram that has a base object that is in common or accessed by host or use association, is a dummy argument of a pure function, is a dummy argument with INTENT(IN) of a pure subroutine, or is an object that is storage associated with any such variable, shall not be used in the following contexts:

- (1) In a variable definition context(16.8.7);
- (2) As the target of a pointer-assignment-stmt;
- (3) As the expr of an assignment-stmt in which the variable is of a derived type if the derived type has a pointer component at any level of component selection; or [Editor: Move [266:34-36] to here.]
- (4) As an actual argument associated with a dummy argument with INTENT (OUT) or INTENT (INOUT) or with the POINTER attribute.

C1275 (R1227) If PURE or ELEMENTAL appears, any procedure referenced within the subprogram, including one referenced via a defined operation, assignment, or finalization, shall be pure.

C1276 (R1227) If PURE or ELEMENTAL appears, the subprogram shall not contain a *print-stmt*, *open-stmt*, *close-stmt*, *wait-stmt*, *backspace-stmt*, *endfile-stmt*, *rewind-stmt*, or *inquire-stmt*.

C1277 (R1227) If PURE or ELEMENTAL appears, the subprogram shall not contain a *read-stmt* that does not have an *io-unit*, or a *read-stmt* or *write-stmt* whose *io-unit* is an *external-file-unit* or *.

[Note to editor: If 01-270 passes, use *int-file-unit* above instead of *external-file-unit*.]

C1278 (R1227) If PURE or ELEMENTAL appears, the subprogram shall not contain a *stop-stmt*.

C1279 (R1227) If ELEMENTAL appears, all dummy arguments shall be scalar and shall not have the POINTER or ALLOCATABLE attribute.

C1280 (R1227) If ELEMENTAL appears in a *function-stmt*, the result shall be scalar and shall not have the POINTER or ALLOCATABLE attribute.

C1281 (R1227) If ELEMENTAL appears, an object designator with a dummy argument as the base object shall not appear in a *specification-expr* within the subprogram except as the argument of one of the intrinsic functions BIT_SIZE, KIND, LEN, or the numeric inquiry functions (13.8.8).

C1282 (R1227) If ELEMENTAL appears, a *dummy-arg* shall not be an asterisk or a dummy procedure.

[Editor: Move [267:1-20] to here. Notice that 01-268 modifies [267:16].]

The *prefix-spec* RECURSIVE shall appear if the procedure directly or indirectly invokes itself or a procedure defined by an ENTRY statement in the same subprogram. Similarly, RECURSIVE shall appear if a procedure defined by an ENTRY statement in the subprogram directly or indirectly invokes itself, another procedure defined by an ENTRY statement in that subprogram, or the procedure defined by the FUNCTION or SUBROUTINE statement.

[Editor: Move [260:1-4] to here (and be careful to do 01-268 first, because it modifies these lines).]

additional constraint applies to the syntax rules for procedure references, actual arguments and pointer assignment. 266:3-4

[Editor: Delete.] 266:5-12

[Moved away from here already.] 266:13-15

[Editor: Insert “(R741, R1217, R1218, R1221)” before “If”.] 266:16

[Editor: Delete.] 266:25-33

[Moved away from here already.] 266:34-36

[Editor: Delete.] 266:37-45

[Moved away from here already.] 267:1-20

[Editor: Delete unresolved issue note 338.] 267:34-45

[Editor: Delete.] 267:46-47

[Editor: Delete.] 268:1-10