Subject: Proposed change to MERGE (or maybe to PRESENT)
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Reference: 01-121

1 Background

People occasionally ask for two things concerning optional dummy arguments: "make a local variable if it's not present," and "let me specify a default initial value (maybe only for ones that are not intent(out)) if it's not present."

These are a bit much to ask for at this point in the development cycle, but a very small change to MERGE (or maybe one to PRESENT instead) would provide a simplified way to use optional arguments.

2 Proposal A

Make the TSOURCE and FSOURCE arguments of the MERGE intrinsic function optional. Specify that MERGE does not access the TSOURCE argument if the MASK argument is false, and does not access the FSOURCE argument if the MASK argument is true.

This specification has the additional benefit in the elemental case that elements of the TSOURCE and FSOURCE arguments that are not accessed need not be defined.

3 Proposal B

Specify an alternate definition of PRESENT with an additional DEFAULT argument. The result has the same type, type parameters and bounds as A if A is present, or DEFAULT if A is not present.

4 Edits to implement proposal A

Edits refer to 01-007. 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 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: After the argument name (TSOURCE or FSOURCE) insert "(optional)" twice.	318:5,6
TSOURCE is not referenced if MASK is false, and FSOURCE is not referenced if MASK is true.	318:9+ same ¶
[Editor: "1" ⇒ "?"; "0" ⇒ "?".]	318:10
[Editor: before "and" insert ", where ? indicates an undefined array element,".]	318:10$\frac{1}{2}$
The value of MERGE(OPTIONAL_ARG, DEFAULT, PRESENT(OPTIONAL_ARG)) is OPTIONAL_ARG if OPTIONAL_ARG is present, and DEFAULT otherwise.	318:16+ same ¶

5 Edits to implement proposal B

This proposal is incompatible with the proposal in 01-121.

PRESENT(A, DEFAULT)	Select optional argument or default value	282:29+

[Editor: after "argument" insert "A" thrice.]	259:8,16,19

13.17.87$\frac{1}{2}$ PRESENT (A,DEFAULT)   324:26+

Description. Select the value of an optional dummy argument, or a default value, depending on whether the dummy argument is present.

Class. Transformational function. [Elemental won't work because it would require the sizes of A and DEFAULT to be the same, which could be difficult in case A is not present, and irrelevant if it is. We can't finesse this by making A optional, because then this instance of PRESENT would be indistinguishable from the other one in the one-actual-argument case.]

Arguments.

A   Shall be the name of an optional dummy argument that is accessible in the subprogram in which the PRESENT function reference appears. The actual argument may have any type, kind type parameters and rank. It shall not be a dummy procedure. The dummy argument A has no INTENT attribute.

DEFAULT   Shall have the same type, kind type parameters and rank as A. It shall not be an optional dummy argument that is not present.

Result Characteristics. The type, kind type parameters and rank are the same as A. If the actual argument A is present, the bounds of the result are the same as A; otherwise they are the same as DEFAULT.

Result Value. If A is present the result value is the same as the value of A; otherwise it is the same as the value of DEFAULT.

Example. The value of PRESENT(A,0) is the value of A if A is present, and zero otherwise.