

Alternatives to proposed replacement text in N2166

WG 14 N2186
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Ref.: WG14 N2166, Evaluation formats, by Willem Wakker

1. This change defines “evaluation format” along the lines of N2166’s proposed replacement text #1-3, but leaves the specification in clause 5. It also addresses two related issues not covered in N2166: it clarifies that evaluation methods affect the implicit conversion of operands by the usual arithmetic conversions and that evaluation methods do not affect results of function calls.

Replace 5.2.4.2.2#9 with:

The values of floating type yielded by operators subject to the usual arithmetic conversions, including the values yielded by the implicit conversion of operands, and the values of floating constants are evaluated to a format whose range and precision may be greater than required by the type. Such a format is called an *evaluation format*. In all cases, assignment and cast operators yield values in the format of the type. The extent to which evaluation formats are used is characterized by the value of **FLT_EVAL_METHOD**: 24)

...

The value of **FLT_EVAL_METHOD** does not characterize values returned by function calls (see 6.8.6.4, F.6).

2. This change is a minor modification of N2166’s proposed replacement text #4.

At the end of 6.3.1.8p2 add “See 5.2.4.2.2 regarding evaluation formats.” and remove note 63.

3. This change is an alternative to N2166’s proposed replacement text #6. It uses words similar to those in 6.3.1.8p2 for usual arithmetic conversions

After 6.4.4.2#4 add:

[4a] The values of floating constants may be represented in greater range and precision than that required by the type (determined by the suffix); the types are not changed thereby. See 5.2.4.2.2 regarding evaluation formats. *)

*) Hexadecimal floating constants can be used to obtain exact values in the semantic type that are independent of the evaluation format. Casts produce values in the semantic type, though depend on the rounding mode and may raise the inexact floating-point exception.