

Proposal for C23 WG14 N2751

Title: signbit cleanup with typo fix
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Proposal category: Technical
Reference: N2596, N2650

This version is identical to N2650, except it corrects the name of the relevant IEC 60559 operation from `isSignBit` to `isSignMinus`, .

The current specification for the `signbit` macro (7.12.3.7) doesn't cover cases where the argument value is unsigned, except for unsigned zeros which are mentioned in a (non-normative) footnote. The suggested changes below move the unsigned zero case from the footnote to the Description, and say that other unsigned cases are implementation defined. Though moving the specification for unsigned zero is technically a substantive change, we don't expect it to affect any implementations.

Current Annex F doesn't explicitly state the IEC 60559 requirement for bit-level determination of the sign. The following suggested changes add this specification, which is not a substantive change since Annex F adopts IEC 60559 by reference.

Also included below is an update regarding `signbit`, to sync with current IEC 60559.

Suggested changes:

Changes for 7.12.3.7:

Description

The `signbit` macro determines whether the sign of its argument value is negative.²⁵³ *If the argument value is an unsigned zero, its sign is regarded as positive. Otherwise, if the argument value is unsigned, the result value (zero or non-zero) is implementation defined.*

Returns

The `signbit` macro returns a nonzero value if and only if the sign of its argument value is *determined to be* negative.

²⁵³The `signbit` macro ~~reports~~ *determines* the sign of all values, including infinities, zeros, and NaNs. ~~If zero is unsigned, it is treated as positive.~~

In F.3, after #6, add the paragraph:

[6a] The **signbit** macro, providing the IEC 60559 isSignMinus operation, determines the sign of its argument value as the sign bit of the value's representation. This applies to all values, including NaNs whose sign bit is not generally interpreted by IEC 60559.

Change F.3 #6:

The C classification macros fpclassify, iscanonical, isfinite, isinf, isnan, isnormal, issignaling, issubnormal, ~~and~~ **iszero**, **and signbit** provide the IEC 60559 operations indicated in the table above provided their arguments are in the format of their semantic type.