

Proposal for C2X WG14 N2476

Title: Names and locations
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Proposal category: technical
Reference: N2426, N2454

Problem:

N2426 raised issues about the names introduced into C2X by the inclusion of approved parts of TS 18661. The changes suggested below address some of these issues. The suggested changes also address the mistaken location of some floating-point macros.

Suggested change 1 below replaces the **cr** prefix with **cr_** for correctly rounded math functions, to reduce the likelihood of conflict with user names. It also opens the way for **cr_sqrt** to be a name for correctly rounded square root (**crsqr** is reserved for complex reciprocal square root), though this is not suggested here. (The **sqrt** function is already correctly rounded on all IEC 60559 implementations.)

Suggested changes 2-4 duplicate the macros for infinities and NaNs from **<math.h>** into **<float.h>**, and obsolesce their use from **<math.h>**. Infinities and NaNs pertain to floating-point arithmetic in general, not just math functions. These macros were mistakenly put into **<math.h>** originally to model **HUGE_VAL** which the standard uses only to specify math functions.

Relocated in **<float.h>**, the **SNAN** macros naturally have a type prefix as used for other type macros in **<float.h>** instead of a type suffix as used for **HUGE_VAL** in **<math.h>**.

Suggested change 1:

In 7.31.8#4, for all the functions in the list, replace the **cr** prefix with **cr_** and in the last sentence replace “The **cr** prefix” with “The **cr_** prefix”.

Suggested change 2:

Copy 7.12#7-#10 (**INFINITY**, **DEC_INFINITY**, **NAN**, and **DEC_NAN**) to 5.2.4.2.2, between #13 and #14. (Leave **HUGE_VAL** macros just in 7.12 without change. They are used only for math function specifications.)

Suggested change 3:

If suggested change 2 is approved, after 7.12 #10, add the paragraph:

Use of the macros **INFINITY**, **DEC_INFINITY**, **NAN**, and **DEC_NAN** in `<math.h>` is an obsolescent feature. Instead, use the same macros in `<float.h>`.

Suggested change 4:

Copy 7.12 #11 and #12 to 5.2.4.2.2, before #14 (prior to any of the changes above), remove suffixes (**F**, **L**, **D32**, **D64**, **D128**), and add prefixes (**FLT_**, **DBL_**, **LDBL_**, **D32_**, **D64_**, **D128_**).