WG14 N3115
Meeting notes

C Floating Point Study Group Teleconference

2023-02-28
8 AM PST / 10 PM EST / 4 PM UTC

Attendees:
Damian McGuckin,
David Hough,
Fred Tydeman,
Hans Boehm,
Ian McIntosh,
Jim Thomas,
Mike Cowlishaw,
Paul Zimmermann,
Rajan Bhakta,
Vivian Van Loan

New agenda items (https://wiki.edg.com/pub/CFP/WebHome/CFP_meeting_agenda-20230228-update.pdf**):**
None.

Previous meeting minutes:
https://wiki.edg.com/pub/CFP/WebHome/n3100.pdf
(Posted on CFP wiki)

Next Meeting(s):
March 29, 8 AM PDT / 11 PM EDT / 3 PM UTC
ISO Zoom teleconference
Please notify the group if this time slot does not work.

Last meeting carry-over action items:
Done unless specified otherwise.
Details below in "Carry-over action items results" section.

Last meeting action items:
Done unless specified otherwise.
Details below in “Action items results” section.

New action items:
Jim to submit [Cfp-interest 2684] as a CD2 comment.
Jim to submit [Cfp-interest 2686] as a CD2 comment.

C++ liaison:

Floating point rounding modes
Lots of email discussion
Hans presented slides (will be emailed to reflector after meeting).
fenv rounding issues
interacts with constexpr
FENV_ACCESS not supported in C++
Uses:
 interval arithmetic
 run same code with different rounding modes to assess the effect of round-off errors
Problems
 no constant folding
 effect on library functions
 rounding of signed constants
 global FP state
Solutions
 deprecate fesetround()
 add static rounding to C++
 correctly rounded math functions with extra argument
  (to indicate rounding direction)
 correctly rounded FP types
David Hough: Dynamic rounding and compilers are a bad mix.
 Static rounding modes are much better.
 Likes dynamic exception modes (for debugging)

Carry-over action items results:

David H: Get an example for the scaled reduction functions (perhaps by asking Jason or Jim or looking into the IEEE references). - Not done.

See https://754r.ucbtest.org/background/traps-and-wraps.txt

David H: Get an example for the augmented arithmetic functions (perhaps by asking Jason or Jim or looking into the IEEE references). - Not done.

Action item results (from previous meeting):

Jim: CFP response to US42-169 should be copy the nextafter returns section, changing "nextafter" to "nexttorward".

Jim: Add in a link to CFP 2657 into CFP's response for GB-287.

Jim: Submit a CD comment resolution document for US42-169, GB-286, GB-287.

Done:

N3105 2023/02/08 Thomas, Issues with CFP response to NB comments - N3101 update
N3105 accept by WG14

Jim: Look at FENV_ROUND and use similar words from FENV_DEC_ROUND (7.6.3#2) to show the distinction between constant rounding modes and dynamic rounding.

Done:

- [Cfp-interest 2684] Re: floating constants issue *Jim Thomas*

Jim: Add in something about assuming the decimal point is a single character to the comment for the #define MAXSIZE (or mention the C locale is assumed) in H.12.2#4 as a CD2 comment after clearing it with Vincent and an FYI to WG14.
Done:

- [Cfp-interest 2686] Re: incorrect example H.12.2p4 *Jim Thomas*

Discussion:

"floating types" and float_t, double_t.
Jim to submit CD2 comment to italicize “real floating types” in 6.2.5#14.
Re definition of float_t, double_t
Fred: Microsoft eval method is not any of float, double, long double,
so, what should float_t be?
No resolution yet for CD2 comment
To be continued in email discussion

"width" issue
No resolution yet for CD2 comment
To be continued in email discussion

TS Part 4 -- minor formatting updates

TS Part 5 -- redone as four separate features
It still has a few issues to be resolved