C Floating Point Study Group Teleconference

2022-06-22
8 AM PDT / 10 PM EDT / 3 PM UTC

Attendees: Rajan, Jim, Fred, Vivian, David H, Ian

**New agenda
items** (https://wiki.edg.com/pub/CFP/WebHome/CFP_meeting_agenda_20220622-update.pdf):
None.

Next Meeting(s):
July 27, 2022, 3PM UTC
ISO Zoom teleconference
Please notify the group if this time slot does not work.

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: Make a list of the documents from CFP submitted to WG14.
Fred: See which proposals are missing from the latest C23 draft N2912.
Fred, Rajan, Jim: Review CFP proposals each person submitted to ensure they were integrated correctly into C23.
Fred: Update C26 issue list as per discussion in the CFP June meeting.
Fred: Look to get an excerpt of the C++ standard in the subnormal traits area relating to the HAS_SUBNORMAL paper.
Rajan: Report to WG14 that CFP will be looking at the new C2X draft to ensure everything was integrated correctly.

WG14 meeting:
July 18-22, 2022 (Virtual)

C++ liaison:
None.

C23 integration:
New draft available. N2912.
Jim: We need to make a list of what we have proposed and been accepted. Then compare to the editors report to see what is missing.

Fred: The only outstanding one I know of is the subnormal paper I have.
^Jim: Make a list of the documents from CFP submitted to WG14.

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).
David: Not handled yet.

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

Action items results (from previous meeting):
Everyone: Review the stated corrections for the C26 paper on the wiki (https://wiki.edg.com/pub/CFP/WebHome/C26.HTM).
Jim: For the first issue, why is it a problem? The main body can have more relaxed requirements.
Fred: Different implementations can have different errors so errno != 0 is the only check that can be portably made.
David: If C has said this for a while, it may be problematic to change it. So for tgamma it should be a pole error because the inverse of the gamma function has a zero in that place. But it may be too late for C.
Jim: It may be a domain error since the limit can be different from both directions.
David: log(0.0) is not a pole mathematically. It is a singularity of a different kind. I don't know the history in C but it may be acceptable.
Fred: C also has the issue where the error may occur, not required.
Jim: Every mention of pole error is "may". That should be a wider change than just these functions. For tgamma, these would be domain errors before David made his comments.
Fred: In Annex F, it is different.
Jim: Suggestion to reword the "Problem" for issue 1. Perhaps make the correction "..." for something to discuss next time. lgamma and tgamma are quite different since lgamma does have infinite limits.
Jim: For issue 2, these are step functions for the next representation. They should not overflow.
Fred: I am not sure that is the case for nextafter(). Annex F raises overflow and inexact. Since C99.
David: nextafter was defined wrong in 754 originally. In 2008 we dropped nextafter (which had overflow/underflow) and used nextup instead.
Jim: For issue 3, nextafter takes two arguments. What is the second argument if there is no infinity?
Ian: If it is a variable instead of a constant, you can't know.
Fred: It takes a value for the direction.
Jim: I think this one goes away.
Jim: For issue 4, didn't Vincent offer a correction for this?
Fred: Not sure, I will check.
Rajan: For issue 5, was this a bug or a proposal?
Fred: I can change "Correction" to "Proposal".

Jim: For issue 6, need to check for consistent use of the terms. How are they used in the standard. Also I would not want to refer to LIA-1.

Fred: Since we removed (LIA-1) from the standard, it would be a bad thing.

Jim: For issue 7, perhaps say a proposal by Jacob Navia?

Jim: Put review of the corrections parts of the C26 paper on the wiki on the agenda.

Done.

Jim: Update TS part 4 as per the discussion in the 2022/05/25 meeting (tgmath addition, IEEE conformance required, long double needs to be IEEE). See CFP2438.

Jim: Integrated all the issues we resolved last time. tgmath was added in clause 8. Annex X should be Annex H now.

Other Issues:

Obsoleting *_HAS_SUBNORM macros – follow up (See https://www.open-std.org/jtc1/sc22/wg14/www/docs/n2993.htm)

Fred: Done as per our last meeting discussion.

cr_xxx functions (See CFP2439,2440)

Jim: Our review should catch these. It looks like at least N2715 was not done completely. It needs to be reviewed carefully.

Fred: It is a reserved prefix as I recall. 7.32.8 did reference the cr_ prefix.

Ian's new email address (See CFP2441)

Others?

Fred: The C++ numerics subgroup wants me to discuss the subnormal paper tomorrow. They want to know if they need to change their traits.

Rajan: Note that WG14 hasn't voted this in yet. So that needs to be clear.

^Fred: Look to get an excerpt of the C++ standard in this area.

Regards,

Rajan Bhakta
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