WG14 N3257
Meeting notes

C Floating Point Study Group Teleconference

2024-04-10
8 AM PDT / 11 PM EDT / 3 PM UTC

Attendees: Rajan, Jim, Fred, Jerome, Ted Johnson (HPE), David H., Damian

New agenda items (https://wiki.edg.com/pub/CFP/WebHome/CFP%20meeting%20agenda-20240313-update.pdf):
None.

Previous meeting notes:
See [CFP 3041] (https://mailman.oakapple.net/pipermail/cfp-interest/2024-March/003055.html).

Next Meeting(s):
May 22, 2024, 3PM UTC
ISO Zoom teleconference
Please notify the group if this time slot does not work.

New action items:
Jim/Jerome/Damian: Follow up on C26 issue 1. - (Carry over).
Damian: Get a list of editorial issues in Annex G and send them out for future submission to WG14. - (Carry over).
Fred: Put the text after issue 4 in c26d into issue 5. - Done.
Jerome: C26: Issue 1: Revamp to remove the "may" for negative errors.
Fred: Create a C26 issue to clear up 7.12.1#1 to ensure SIGFPE is not interpreted as being allowed for any clause 7 functions.
Rajan/Jim: Look to reword CFP 3074 change to 7.1.2#7 to avoid an implication you cannot signal if the replacement is part of a larger expression.
Jim: C26 Issue 19: Add to the changes for 7.24.1.6 the terms "decimal form" and "hexadecimal form" to paragraph 3's bullets 1 and 2 respectively to make it clear what the changes in paragraph 4 refer to. Also do the changes for issue 19 problems 1 and 2.
Jim: Submit CFP 3058's document to WG14.

Action items to be carried over:
None.

IEEE 754 liaison:
David: Moving to have a working group and moving to the next level in IEEE for approval to create it. Gave "Scope" and "Policies and Procedures draft" for IEEE approval. The MSC will

appoint a temporary chair where the working group elects its own real chair and other things like that. Will be looking at the long list of errata and maybe more.

Jerome: A lot of work to get new issues on the table.

Damian: A lot of discussion.

David: Good chance of substantial revisions. Some not upwards compatible. The arithmetic specialists have come back as well (since dropping off after 1985) with specific proposals.

Jerome: Expecting a lot of correctly rounded elementary functions.

Jim: I heard there was some discussion about small formats. Is that serious or going elsewhere?

Damian: I know 16-bits are going to make an appearance. Whether 8-bit does, I don't know.

C++ liaison:

None.

C23 integration

Next WG14 meeting:

June 10-14, Virtual. Mailing deadline is one month before the meeting.

C23 drafts:

C23 working draft n3219 - July 2, 2023 - For CFP review only. Do not distribute.

DIS ballot draft review:

See [CFP3038].

Carry over action items

None

Action items from previous meeting (Done unless stated otherwise)

Rajan: Send the WG14 editorial comments from CFP to CFP.

See [CFP 3038].

Rajan: For C2Y issue 5, reword H.3.6 and 5.2.5.3.2#28 to "If a signaling NaN macro (optionally preceded by the unary + or - operator) is used for initializing an object of the same type that has static or thread storage duration, the object is initialized with a signaling NaN value."

See [CFP 3042,3045].

Jim: Fix the suggested changes section in CFP3020's paper to point to N3219 (instead of the incorrect N3619 as it currently is) and send it out to WG14.

See [N3233].

Jim: Submit the paper resolving C2Y Issue 17 (CFP3022) to WG14.

See [N3232].

^Jim/Jerome/Damian: Follow up on C26 issue 1. - Not complete (carry over).

See [CFP 3092].

Fred: Add CFP3003 to the issues list.

See [CFP 3062].

Fred: Add CFP3007 to the C26 issues list.

See [CFP 3062].

Jim: Draft up changes to incorporate CFP3006.

See [CFP 3058].

^Damian: Get a list of editorial issues in Annex G and send them out for future submission to WG14. - Not done (carry over).

Damian: Jim and Jerome have looked over some of the questions. Will send it to Jim before sending it to the wider group. Made Annex G match the style of Annex F.

TS-4 and TS-5 revisions

See [CFP 3015].

Rajan: Ballot is out.

C26 issues

Issues list

See https://wiki.edg.com/pub/CFP/WebHome/c26d.htm

Rajan: Need to fix the text after issue 4 that is outside any issue box.

Fred: Will fix it.

^AI: Fred: Put the text after issue 4 in c26d into issue 5. - Done.

Issue 1 (terms and definitions for math errors): See [CFP 2994,3016,3043,3064,3092 and follow ups].

Jerome: Instead of pole error, say divide-by-zero error.

Fred: Why not have gamma of negative zero be a domain error.

Jerome: "May occur" is the language in other places in the standard. But in this case it is a domain error and hence should be there.

Fred: We should not have "may" there.

Jerome: The language of the standard does not use "occurs" as an imparative. I will fix it.

^AI: Jerome: C26: Issue 1: Revamp to remove the "may" for negative errors.

Rajan: Issue with SIGFPE. We'd have to disambiguate it somehow.

Jerome: Exception and error seems to have differences.

Jim: 7.12.1#1 says SIGFPE is not allowed.

Rajan: But the "except to reflect ..." part can be read to allow SIGFPE.

Jim: Yes, agreed. This is another separate issue that also applies to overflow.

^AI: Fred: Create a C26 issue to clear up 7.12.1#1 to ensure SIGFPE is not interpreted as being allowed for any clause 7 functions.

Damian: For proposal 3, and 4 should be clause 7 not clause 1.

Jim: For proposal 3, you are adding in domain error.

Jerome: For systems that can only show it that way.

Jerome: For the definition at the start, the language was changed to the library function vs the original mathematical function base.

Fred: The "implementation defined value" is still there.

Jim: Yes, that should not be there given the new definition.

Fred: The first line has to be "mathematical" function.

Rajan: Right, otherwise it can break anyone that did emit a pole error but does not have infinities.

Jim: Yes, this is a technical change that could break implementations.

Rajan: IBM HEX gives -HUGE_VAL and ERANGE as the error. This change would break us. For the arithmetic case, we get a floating-point divide exception.

Issue 5,20 (macro exceptions): See [CFP 3045,3074].
Rajan's changes: Looks good.
CFP 3074: Rajan: The current wording for the 7.1.2#7 may have the "evaluation" part imply (in a hostile reading) that you cannot signal for a case like 5.0 + SNAN since the evaluation of the SNAN is a sub-evaluation of the expression.
^AI: Rajan,Jim: Look to reword CFP 3074 change to 7.1.2#7 to avoid an implication you cannot signal if the replacement is part of a larger expression.
Jim: Break up issue 5 like what was done for issue 19, as per [CFP 3074].

Issue 18 (stdc_want_iec_60559_ext in math.h): See [CFP 3080].
OK.

Issue 19 (strto* and wcsto* wording): See [CFP 3058,3078 and follow ups].
1) OK.
2) Jim: For ceil, as given by Joseph, the last part of the returns (after the comma) is unnecessary and should be removed.
3,4) Rajan: Add the "Decimal form" and "Hexadecimal form" to the bullets in paragraph 3 as well to make it unambiguous as to the forms.
^AI: Jim: C26 Issue 19: Add to the changes for 7.24.1.6 the terms "decimal form" and "hexadecimal form" to paragraph 3's bullets 1 and 2 respectively to make it clear what the changes in paragraph 4 refer to. Also do the changes for issue 19 problems 1 and 2.
5,6) ^AI: Jim: Submit CFP 3058's document to WG14.
^--- Ran out of time ---

Issue 21 (parenthesis): See [CFP 3091].

Imaginary types
See [N3206, CFP 2979,2997,3018,3019,3032,3053,3055,3083 and follow ups].

Meaning of 0 < x < infinity
See [CFP 3046 and follow ups].

Wording
See [CFP 3056,3059 and follow ups]

Others?

Other issues
Mathematical functions
See [CFP 3076 and follow ups].