

WG14 N3208

Meeting notes

C Floating Point Study Group Teleconference

2023-11-08

8 AM PST / 11 PM EST / 4 PM UTC

Attendees: Rajan, Jim, Mike, Fred, Jerome Coonen, Joshua, Damian, David

New agenda items (https://wiki.edg.com/pub/CFP/WebHome/CFP_meeting_agenda-20231108-update.pdf):

None.

Previous meeting notes:

See CFP2903 (<http://mailman.oakapple.net/pipermail/cfp-interest/2023-October/002917.html>).

Next Meeting(s):

December 6, 2023, 4PM UTC

ISO Zoom teleconference

Please notify the group if this time slot does not work.

New action items:

Jim: Part 4: Add a footnote anchored on something that says "For an example of emulating augmented arithmetic, see <paper on augmented arithmetic emulation from CFP2949>" and add it to the bibliography in part 4.

Fred: Fix Issue 2 in C26B "reported by" text to be in the correct column.

Fred: Add CFP2904 as a reference for C26B issue 12.

Fred: Add CFP2905 as a reference for C26B issue 14.

Fred: Add CFP2913 and CFP2918 to the C26B list.

Fred: Add CFP2947 as a new issue to the C26B list.

Fred: Add CFP2888 and follow ons to the C26B list.

Jim: Add a footnote to Part 4, Clause 6 when it describes dN for $N \neq 32, 64, 128$ to say $N = 32, 64, 128$ are covered due to them being 60559 types and covered in Annex F.

Fred: Review the bibliography in part 4.

Fred: Review the bibliography in part 5.

Jim: Part 4: Add a subclause to 5 (perhaps 5.4) for reserving prefixes, possibly referring to C 7.33.

Rajan: Send a note to JeanHeyd and cc Aaron to give CFP's recommendation for fixing the typo in H.2.1: Use "binary digits (bits)" for the first table second row, and "decimal digits" for the second table, second row.

Action items to be carried over:

Fred: C26B Issue 1, nowhere else in the C standard are pole errors listed as a "shall", just as "may". This could be a problem for the proposed change.

Fred: C26B Issue 2, the problem may not be an issue as it seems to be clear what is the expected result.

Fred: C26B Issue 6, consider explicit definitions instead of implicit references.

Fred: C26B Issue 8, hyphenate floating-point.

Fred: C26B Issue 13, mention "long double" in the issue text. Ex. "Annex F and long double including double-double needs to be clarified."

C23/WG14:

WG14 meeting summary:

See CFP2919, CFP2922

C2X working draft N3149 (for CFP only)

<https://wiki.edg.com/pub/CFP/WebHome/N3149.pdf>

Next WG14 meeting: January 22-26, 2024.

Status of C23 integration:

See CFP2939, CFP2940

C++ liaison:

[Cfp-interest 2799] Attn WG 14, question about `atomic_fetch_*` and floating point re: [isocpp-lib-ext] P0493 Atomic max/min

- No update/responses yet. Will drop from agenda unless something comes up.

Carry-over action items results:

None.

Action items results (from previous meeting):

All: Notify Rajan before the October 16th of any known implementations of the proposed TS part 4 or 5.

Done late. See CFP2949.

Jim: The paper in the email seems to be useful for this.

Rajan: Can add this as a footnote anchored on something that says "For an example of emulating augmented arithmetic, see <paper>" and add it to the bibliography in part 4.

^Jim: Part 4: Add a footnote anchored on something that says "For an example of emulating augmented arithmetic, see <paper on augmented arithmetic emulation from CFP2949>" and add it to the bibliography in part 4.

Jim: Update slide deck with typo (Ex. slide 17 should TS-5 instead of TS-4) and formatting fixes (Ex. subscript for the pi, qi's in the sumProduct operation descriptions)

Done. See CFP2908

Jim: Change TS-4 page 12, line 1, "As for other" -> "Like other".

Done. See review of TS-4 below.

<https://wiki.edg.com/pub/CFP/WebHome/C26B.HTM>

Fred: C26B Issue 1, nowhere else in the C standard are pole errors listed as a "shall", just as "may". This could be a problem for the proposed change.

Not done.

Fred: C26B Issue 2, the problem may not be an issue as it seems to be clear what is the expected result.

Not done.

^Fred: Fix Issue 2 in C26B "reported by" text to be in the correct column.

Fred: C26B Issue 6, consider explicit definitions instead of implicit references.

Not done.

Fred: C26B Issue 8, hyphenate floating-point.

Not done.

Fred: C26B Issue 13, mention "long double" in the issue text. Ex. "Annex F and long double including double-double needs to be clarified."

Not done.

Rajan: C26B Issues 12, 14, need CFP messages. Write some up and send them to the list.

Done. See CFP2904, CFP2905.

Rajan: Vincent's responses were very useful. We can't talk about it here though right now.

^Fred: Add CFP2904 as a reference for C26B issue 12.

^Fred: Add CFP2905 as a reference for C26B issue 14.

Mike: Ask Michel about CFP2899.

Done. See CFP2913.

^Fred: Add CFP2913 and CFP2918 to the C26B list.

Jim/David: Check IEEE-754 if there is a similar issue to CFP2899.

Done. See CFP2947.

Jim: This is not a problem in 754 since it says use round to nearest. However C 5.2.4.2.2 has <type>_DIG doesn't say round to nearest which needs to be fixed.

^Fred: Add CFP2947 as a new issue to the C26B list.

From previous meeting minutes:

%a/%A formatting. See CFP2888 and follow ons. OK with adding this to the future issues list.

^Fred: Add CFP2888 and follow ons to the C26B list.

Fred: Does this also cover rounding bumping the leading digit above a one?

Jim: Yes.

Review of TS-4 and TS-5 revisions

See CFP29{17,20,21,24,25,30,32,41,43,44} and follow ons.

Part 4 (without the header changes):

OK with all the changes except for:

Rajan: For the section 6 changes, _Decimal{32,64,128} does not seem to be covered.

Jim: They are specified in Annex F since they have to be IEC 60559 types.

Rajan: Perhaps have a footnote there to make it clear.

^Jim: Add a footnote to Part 4, Clause 6 when it describes dN for N != 32, 64, 128 to say N = 32, 64, 128 are covered due to them being 60559 types and covered in Annex F.

^Fred: Review the bibliography in part 4.

Part 5:

OK with all the changes.

^Fred: Review the bibliography in part 5.

Part 4 (with the header changes):

See CFP2946 along with the document.

Joshua: Perhaps say the headers here are standard headers in 7.1.2.

Rajan: That's in the CFP message.

Joshua: OK, was looking at the wrong text.

Rajan: No reserved name changes?

Jim: Can add a 5.4 for this referring to 7.33.

^Jim: Part 4: Add a subclause to 5 (perhaps 5.4) for reserving prefixes, possibly referring to C 7.33.

Otherwise OK with the changes.

Rajan: Suggest only one part 4 with everything in it (not one without the headers as well).

General agreement.

Damian: For CFP2945, it is for 754. Not for C.

Jim: You may want to send it to 754.

Other issues

Editorial fix for H.2.1

See CFP2939 and CFP2940.

Jim: For decimal, it should be precision in "digits" rather than bits.

Damian: Even in binary it should be "digits". Ex. "p, precision in binary digits"

Joshua: It was right in the TS. Just wrongly transferred to the C standard.

Mike: Binary digits sounds wrong, should keep it.

Rajan: But the C standard in 5.2.4.2.2 says digits so we should do the same for it in binary. It has a direct link to that section in the standard that says digits.

Mike: Use "binary digits (bits)" for the first table.

^Rajan: Send a note to JeanHeyd and cc Aaron to give CFP's recommendation for fixing the typo in H.2.1: Use "binary digits (bits)" for the first table second row, and "decimal digits" for the second table, second row.

Forum for discussion about implementation

See CFP2942.

Damian: Got an email from David on this already. (Rajan: See CFP2952)

IEEE-754 2029

See CFP2948.

David: Not planning on taking an active role for 2029 since I don't expect to live that long! Planning to participate in the first few study group meetings at least though.

Jim: First few meetings may be interesting to see the scope of things that will be covered.