

WG14 N3158

Meeting notes

C Floating Point Study Group Teleconference

2023-07-05

8 AM PDT / 11 PM EDT / 3 PM UTC

Attendees: Rajan, Jim, Fred, Damian, Henry Kleynhans (Bloomberg), Mike, David, Ian

New agenda items (https://wiki.edg.com/pub/CFP/WebHome/CFP_meeting_agenda-20230705-update.pdf):

None.

Next Meeting(s):

August 2, 2023, 4PM UTC

ISO Zoom teleconference

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

New action items:

Fred: Send any issues found with incorrect CD2 comment applications (Ex. DECIMAL_DIG has two entries in the suffix) to JeanHeyd and cc WG14 before the July 10th.

Rajan: Submit CFP2741 as part of the US national body as an editorial comment for the DIS ballot.

Jim: Let the editor know of the page 675 "floating point" -> "floating-point" change

Jim: Update TS part 5 as per CFP2790's final suggestion.

Jim: Follow up with Hubert to see when he wants input on CFP2799.

C++ liaison:

None.

C23:

C2X working draft N3149 (for CFP only)

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

Review of post-CD2 drafts

[Cfp-interest 2791] new C2X working draft, review

Jim: I had reviewed the changes and the corrections made by the editor after the initial set of comments. Converged very well.

Fred: I found a misapplied CD2 change.

Jim: Hold onto it. We don't want to miss it.

Jim: Can do DIS comments, C2Y list, or no action for any future issues.

Fred: They are editorial. Ex. DECIMAL_DIG has two entries in the suffix.

Jim: Send a message to JeanHeyd and cc WG14 with anything found before the 10th.

^Fred: Send any issues found with incorrect CD2 comment applications (Ex. DECIMAL_DIG has two entries in the suffix) to JeanHeyd and cc WG14 before the July 10th.

Carry-over action items results:

Damian: Rework the carg description to say phase instead of phase angle using the spreadsheet form.

See [Cfp-interest 2734] and follow ups.

Damian: I don't know of any Australian NB for WG14. Hence can't submit the comment.

Damian: Calling it phase vs phase angle matches closer to NIST.

Rajan: Expressed in radians is also there.

David: May not be editorial due to radians.

^Rajan: Submit CFP2741 as part of the US national body as an editorial comment for the DIS ballot.

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

All: TS part 5: Consider what to do for issue 3 (which headers contain which pragmas) as per the spreadsheet (current vs alternative 1).

[Cfp-interest 2755] pragma spreadsheet Jim Thomas

[Cfp-interest 2790] action item about TS-5, pragma prefixes Jim Thomas

Action items results (from previous meeting):

Jim: Add in an agenda item for Mike's Arith 2023 report after their September meeting.

Mike: Cannot go anymore.

Rajan: Drop this item.

Jim: Update CFP recommendations for CD2 ballot comments with:

See [Cfp-interest 2780] CFP response to NB comments for CD2

GB-005: Mike: Perhaps say "make" instead of "return" (alternative is "provide").

WG14 made it "produce".

CA-022: Make a note of the difference - Need a hyphen.

US-087: Clarify that there should not be any replacement (original text is fine), just adding the new recommended practice words.

US-117: CFP recommendation: "If a floating result overflows and default rounding is in effect and the integer expression `math_errhandling & MATH_ERRNO` is nonzero, then the integer expression `errno` acquires the value `ERANGE`."

GB-188: Change "infinite" to "isinfinte" in the proposed change.

US-201: Annex G does *NOT* specify the behavior of SNANs (typo, need to fix)

All accepted.

Fred: Validate the list of functions for GB-181's proposed response.

[Cfp-interest 2776] GB 181: Missing from B.30 Fred J. Tydeman

Fred: `wcstol->wcstold`.

Accepted by WG14 with the typo correction.

Rajan: For US-117, at the WG14 meeting say an alternative is having comma's after the "and"s.

Fred: Add CFP2745 to the list of issues for C2Y.

- Still open.

Jim: We will talk about this later. May result in dropping or a new action item.

Other issues:

No common real type

[Cfp-interest 2745] Re: double-double OP float128_t

Rajan: One implementation defines extended rules for a fixed point OP floating point and has this as an extension to the standard..

Jim: If long double is float-128, while double is double-double in some cases, in this situation, an implementation can do similar to what Rajan said and give rules to handle it however they want.

Fred: I can capture this.

Which IEC 60559 formats

[Cfp-interest 2746] {FLT, DBL, LDBL}_IS_IEC_60559 macros: clarification needed

Rajan: I think Fred asked for these.

Fred: This is supposed to exclude abrupt underflow.

Jim: The definition got changed to be just about the format, not operations.

Consider the issue for C2Y.

Minimum positive subnormals

[Cfp-interest 2747] about FLT_TRUE_MIN and DBL_TRUE_MIN in 5.2.4.2.p29 example

Jim: Assuming default rounding and no wide evaluation, converting the decimal values to binary would work. Presumably they could be 1 and 5.

Fred: But implementations are allowed to use wide precision.

Jim: But then it wouldn't be right anyways.

Jim: Anyone want to consider shortening these for C2Y?

No consensus. Keep as is.

FP_CONTRACT pragma for freestanding

[Cfp-interest 2793] FP_CONTRACT pragma and <math.h>

Jim: I said for Annex F conforming implementations, FP_CONTRACT is available.

Fred: We should just disassociate pragma's from headers.

Jim: We could consider this for C2Y. This means everyone has to support the pragmas.

Floating vs floating-point

[Cfp-interest 2794] "floating" vs "floating-point", and hyphens

Mike: We brought this up 3 years ago but decided not to press it then.

Mike: I checked most of them and it looks good.

Jim: Good candidate for C2Y.

Mike: The other comment about floating-point in CD2. This could be an extension of that.

Jim: The last one can be done since it is another instance of what was proposed. The rest go beyond it.

Mike: For results is one set. The other set is leaving out the hyphen.

Jim: Yes, that last set was the what the comment was about. The rest is wider. Floating types are a C defined term. The comment is about how floating is used in other cases. It is not comprehensive and we need to clarify what they should be applied to.

Mike: I agree. We can go through the list and do the "floating point" -> "floating-point" ones only and leave the rest.

Jim: Mike, can you go through those and get that list?

Mike: Hard to tell with page numbers. Can Vincent do this? Get the list of things that don't change the meaning of "floating".

^Jim: Let the editor know of the page 675 "floating point" -> "floating-point" change

Jim: Look through the list of items in CFP-2794 items and let the editor know of any "floating point" -> "floating-point" changes needed.

Seems like the page 675 one is the only one.

Non-IEC 60559 long double with Annex F

[Cfp-interest 2795] operations on long double when not an IEC 60559 format

Fred: Perhaps add one sentence to say it is implementation defined.

Jim: It takes more than that since need to know which values are covered.

Damian: Saying it is implementation defined is too broad a brush.

C2Y issue.

TS part 4 revision:

See CFP2710.

Jim: Added slots for the examples.

TS part 5 revision:

See CFP2753.

Jim: Big issue was the evaluation macros.

No issues with the changes.

Issue 1: We wanted to bring this up for CD2 but dropped it somehow. Should this be DIS or C2Y?

David: I don't see how this justifies another whole draft.

C2Y issue.

Issue 3: Pragmas and headers and prefixes

See CFP2755, CFP2790

Fred: float.h seems better for stand-alone pragmas controlling floating-point expressions.

Jim: Issue with requirements for freestanding. We rejected it last time.

David: I don't see any issue with the changes proposed.

^Jim: Update TS part 5 as per CFP2790's final suggestion.

Atomic fetch add

See CFP2799 Hubert Tong's email.

Damian: Requires two operands since min/max.

David: If it is atomic, you can't get an and b atomically and has to be handled at a higher level.

Jim: I'm assuming they're integer equivalents of this?

Rajan: No, integers only have add/sub/or/xor/and. Not a min/max thing.

^Jim: Follow up with Hubert to see when he wants input on CFP2799.

David: If atomic floating points were an issue for applications, this would have come up a long time ago. For integers it makes sense. Seems not to be a problem that needs to be solved.
