

WG14 N3168

Meeting notes

C Floating Point Study Group Teleconference

2023-08-30

8 AM PDT / 11 PM EDT / 3 PM UTC

Attendees: Rajan, Jim, Fred, Joshua Cranmer (US - Intel), Chris Bazley (UK - Arm), David H., Damian

New agenda items (https://wiki.edg.com/pub/CFP/WebHome/CFP_meeting_agenda-20230830-update.pdf):

None.

Previous meeting notes: See CFP2810 (<http://mailman.oakapple.net/pipermail/cfp-interest/2023-August/002824.html>)

Next Meeting(s):

October 4, 2023, 3 PM UTC

ISO Zoom teleconference

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

New action items:

Jim: Make the slide deck C names in a different typeface (fixed width font).

Jim: Part 4: Typo fix: Change for page 2 line 6: clause 2 -> clause 4.

Jim: Part 4: For the change to page 3, line 13 and page 10 line 28: Say the fN and fNx suffixes are there only when the TYPES macro is defined.

Jim: Part 4: Page 10, line 27: Change "As for other IEC 60559 operations" to "As with other ..."

Jim: Part 5: Typo fix: Change for page 2 line 9: clause 2 -> clause 4.

Jim: Part 5: Page 20, line 14 fix should be for Page 20 line 18.

Rajan: Validate the scaled reduction example compiles.

Result: Augmented arithmetic example: Typo in the w assignment: v,t -> v.t

Jim: Scaled reduction example: Put "int i;" into the for loop clause 1 in the code instead of a separate declaration.

David: Augmented arithmetic example: Get the values for a* and b* in the initialization.

Jim: Augmented arithmetic example: Put the last (sh/st) assignment into to lines.

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.

C23/WG14:

C2X working draft N3149 (for CFP only)

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

Next WG14 meeting: October 16-20, 2023.

Carry-over action items results:

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. - Done.

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. - Done.

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

See CFP2849, CFP2860-3, CFP2872-3 and follow ups.

David H: Get an example for the augmented arithmetic functions (perhaps by asking Jason or Jim or looking into the IEEE references) by July. - Done.

See CFP2850-6, CFP2867, CFP2872-6 and follow ups.

Action items results (from previous meeting):

All: Hold CFP meeting at the same time and together with WG14 meeting?

Rajan: Whoever wants to attend can attend.

Jim: Look into why the pdf has funny characters in the initial copyright section for TS Part 4 and Part 5.

Jim: Be consistent with the rest of the standard for section 5.3 in the TS (the "if and only if" part).

See CFP2812-3.

Leave "if and only if".

All: Consider weakening "if and only if" to "if" to allow more implementation latitude. Comes with the cost of being less consistent with the rest of the standard.

Jim: Create a slide deck for TS part 4 and part 5 as was done previously to help in understanding during the WG14 meeting.

Chris: Any use of _Generic? Perhaps for lower precision versions?

Jim: The example of reduction functions crosses with the annex with the extended types. There is a version with _Float16 for example. It does not present an interface for other shorter types.

Chris: I was thinking of float, but I get your point.

Joshua: At the beginning talking about 754 operations, make them different from C identifiers. Use typographical differences to keep IEEE vs C names separate. Ex. Slide 10, not clear they are not C identifiers.

Jim: Yes, I can do that to make the C names in fixed with font.

^Jim: Make the slide deck C names in a different typeface (fixed width font).

Chris: Using #pragma's for compiler extensions and the use of #pragma once implies we should not use pragmas here.

Jim: C already has #pragma's so this just builds on those. It has a STDC prefix and have the same scoping rules.

All: Everyone look through both TS part documents, pick sections you want to review and let Jim know when they are done. Should be done a week before our next meeting.

See CFP2814 for links to the documents.

Other issues:

TS part 4 and part 5 revisions:

See CFP2814, CFP2823, CFP2848 and follow ups.

Part 4:

Rajan: For page 2 line 6, shouldn't clause 2 be clause 4?

^Jim: Part 4: Typo fix: Change for page 2 line 6: clause 2 -> clause 4.

Joshua: You'd only declare the fN and fNx when the types macro is defined.

^Jim: Part 4: For the change to page 3, line 13 and page 10 line 28: Say the fN and fNx suffixes are there only when the TYPES macro is defined.

David: "As for other IEC 60559 operations" can be changed to make it grammatically better. Say "As with" instead.

^Jim: Part 4: Page 10, line 27: Change "As for other IEC 60559 operations" to "As with other ..."

Part 5:

Chris: I've never seen `_t` used in the struct type namespace before. It's only been used in the typedef namespace.

Jim: It is a typedef. Oh no it's not.

Chris: Could be an anonymous struct with a typedef. Don't want to continually write "struct".

Rajan: I think C used struct in other things like timespec and tm, and that's why WG14 chose that name.

Jim: We can bring this up again in WG14's discussion if anyone wants to.

^Jim: Part 5: Typo fix: Change for page 2 line 9: clause 2 -> clause 4.

^Jim: Part 5: Page 20 line 14 fix should be for Page 20 line 18.

David: Other sub-exceptions: You may want to trap just SNANs and not other ones, it would be useful. Same with unordered compares or exact underflows.

Jim: There is a sub-exception for signaling nans. Also for invalid unordered. We don't have subnormal in/exact though. But if you do a catch (instead of delayed catch) for subnormal underflow, it has to catch the signal and not the flag. And if you want to raise the flag, you can and then continue.

Scaled reduction example:

David: In reality, the factorials would be pre-computed or dynamically calculated. But what we have is OK.

Jim: The goal is to show a use of the functions. This example shows the elimination of intermediate overflows and so does that.

^Jim: Scaled reduction example: Consider changing the n1, n2, n3 values to the values in David's long paper instead.

^Rajan: Validate the scaled reduction example compiles.

Chris: There are a lot of pre-C99 code here like the "int i;" instead of in the "for" loop, as well as uninitialized variables.

Jim: Rajan can bring up the point if WG14 wants to change it.

^Jim: Scaled reduction example: Put "int i;" into the for loop clause 1 in the code instead of a separate declaration.

Augmented arithmetic example:

^David: Augmented arithmetic example: Get the values for a* and b* in the initialization.

^Jim: Augmented arithmetic example: Put the last (sh/st) assignment into to lines.

Rajan: Augmented arithmetic example: Typo in the w assignment: v,t -> v.t

Issues for C2Y

For next meeting.

Cfp-interest mailing list

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<http://mailman.oakapple.net/mailman/listinfo/cfp-interest>