WG14 N2568
Meeting notes

C Floating Point Study Group Teleconference

2020-08-19
8 AM PDT / 11 AM EDT / 3 PM UTC

Attendees: Rajan, Jim, Damian, Ian, David O., Fred, Mike, David H.

New agenda items:
None.

Carry over action items:
None.

Last meeting action items:
Jim: Create a proposal based on CFP 1709 updates to Annex B with the addition of N and M parameter descriptions. - Done.
Jim: For cfp3x-annex-20200706.pdf, Annex X, new example (page 33), change the magic number 40 (which needs to be verified) to be a macro and add in a descriptive definition of that macro. - Done.
Jim: For cfp3x-annex-20200706.pdf, Annex X, strtoencdecd* function declarations (page 35), make the pointers into arrays to allow giving a size for the array. - Done.
Fred: Submit the paper in CFP 1703 to WG14 as a CFP paper. - Done.
Jim: Submit CFP 1653's changes (appropriately colorized or changed to highlight the changes) to WG14. - Done.
Jim: Put CFP 1634 (with the correction: 'prototype is extended' -> 'prototype is expanded') into TS3 as an annex. - Done.
Fred: Submit CFP 1704 to WG14 as a proposal from CFP. - Done.
Jim: Prepare a suggested change to C2X proposal based on CFP 1687 option 3. - Done.
Fred: Submit CFP 1702 to WG14 as a CFP paper. - Done.
David H: Come up with a sentence to add to footnote 295 (as per CFP 1697) to point out the possible numerical differences in output. - Done.

New action items:
Jim: Submit the Annex B update (CFP 1743) to WG14.
Jim/Rajan: Create a slide deck for WG14 showing the substantial changes for Annex X (TS part 3) based on CFP 1754.
Jim: Submit CFP 1737's paper to WG14.
Jim/David H: Submit a proposal based on CFP 1732 to WG14.
David H: Check that the IEEE references in CFP 1749's paper are in an acceptable form.
Fred: Make CFP 1675 into a paper without the addition of 'triple' to the index.
Jim: Create a WG14 proposal for the discussion in CFP 1736 (footnote 296).
Fred: Rewrite the paper based on CFP 1754 including changes to paragraph 4.

Next Meeting(s):
Wednesday, September 23rd, 2020, 8 AM PDT / 11 AM EDT / 3 PM UTC
ISO Zoom teleconference
Please notify the group if this time slot does not work.

C++ liaison:

Nothing new.

WG14 meeting (see CFP 1745):
intmax_t paper is N2548.
No discussion about Annex B.

C2X Integration:
Latest C2X draft: http://www.open-std.org/jtc1/sc22/wg14/www/docs/n2478.pdf
Part 1
Part 2
Part 3
Part 4ab
Part 5abcd
IEEE 754-2019 support
- We have approval to move up to the next IEEE standard.

Action item details
Jim: Create a proposal based on CFP 1709 updates to Annex B with the addition of N and M parameter descriptions. (See CFP 1743)
Fred: Does this version have the intmax_t or long long?
Jim: No intmax_t (see pown)
Still need to add in the complex, float, and stdlib header functions.
AI: Jim: Submit the Annex B update (CFP 1743) to WG14.

Jim: For cfp3x-annex-20200706.pdf, Annex X, new example (page 33), change the magic number 40 (which needs to be verified) to be a macro and add in a descriptive definition of that macro. (See CFP 1731)
Jim: For cfp3x-annex-20200706.pdf, Annex X, strtoencdecd* function declarations (page 35), make the pointers into arrays to allow giving a size for the array.
Jim: Put CFP 1634 (with the correction: 'prototype is extended' -> 'prototype is expanded') into TS3 as an annex. (See CFP 1740)
Changelist in CFP 1754. We should present this to WG14. Some changes are substantial like making _Float16 optional.
AI: Jim/Rajan: Create a slide deck for WG14 showing the substantial changes for Annex X (TS part 3) based on CFP 1754.

Fred: Submit the paper in CFP 1703 to WG14 as a CFP paper.
See N2547, Missing 'const' in decimal getpayload functions
The editor put in our changes wrong. This paper fixes it.

Jim: Submit CFP 1653's changes (appropriately colorized or changed to highlight the changes) to WG14. (See CFP 1738)
N2552 should be talked about next WG14 meeting.

Fred: Submit CFP 1704 to WG14 as a proposal from CFP.
See N2546, Missing DEC_EVAL_METHOD
Should be seen next WG14 meeting.

Jim: Prepare a suggested change to C2X proposal based on CFP 1687 option 3. (See CFP 1737)
Fred: There have been discussions in the WG14 reflector on moving the DFP functions to a separate header.
AI: Jim: Submit CFP 1737's paper to WG14.

Fred: Submit CFP 1702 to WG14 as a CFP paper.
See N2548, intmax_t and math functions

Should be seen next WG14 meeting.

David H: Come up with a sentence to add to footnote 295 (as per CFP 1697) to point out the possible numerical differences in output. (See CFP 1732)

AI: Jim/David H: Submit a proposal based on CFP 1732 to WG14.

Other issues

Updating C2X to IEC 60559:2020 (See CFP 1749)

https://wiki.edg.com/pub/CFP/WebHome/C2x_proposal_-_update_to_IEC_60559_2020-20200816.pdf

AI: David H: Check that the IEEE references in CFP 1749's paper are in an acceptable form.

Jim: ISO and IEC seem to have different forms and words so it would be good to check this.

Change 5: No clean break between recommended and required for us in C, since the latest IEEE standard update had to add recommended vs required due to their mandate.

Triple (1,0,0) (See CFP 1675)

Rajan: Prefer not to have the term 'triple' being added to the index due to the overloading of the term.

AI: Fred: Make CFP 1675 into a paper without the addition of 'triple' to the index.

Footnote about sufficient %a formatting precision (See CFP 1736)

AI: Jim: Create a proposal for the discussion in CFP 1736 (footnote 296).

Still need ideas on how to convert Word to good PDF with links.

Link to the site currently in use (from Microsoft) will be sent out by Jim.

Underflow range errors (See CFP 1752)

Mike: Should not be an issue for Decimal as it's fully specified in IEEE.

Fred: Exact sub-normal issues. The general Range error description (not a range error for exact subnormal) whereas for underflow, it is listed regardless of exactness. fdim can give underflow for exact while a normal subtract can not. I can add words for exact sub-normal to be implementation defined for underflow.

Jim: You may signal underflow/set errno or may not, not required for sub-normals. It is implementation defined for both. It can be different between different functions. It doesn't say in the C standard.

Jim: There are underflows that are not range errors given the definitions in the C standard. Since C only has the default error handling, there are implementations with extensions just like our TS for exception handling. Those would need exact underflows to trigger that exception handling.

See CFP 1748 change to 7.12.1 #4 to expand #4 (range) to include #6 (underflow).

Fred: For the fdim function, should we change it from 'shall occur' to 'may occur' for exact subnormal results? It is effectively the case due to the leeway for exception handling.

Jim: It is a range error and an underflow, but what the implementation does about it is up in the air.

AI: Fred: I will rewrite the paper including changes to paragraph 4.

Rajan Bhakta
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