WG14 N2259
Meeting notes

C Floating Point Study Group Teleconference

2018-05-22
9 AM PDT / 12 PM EDT

 Attendees: Rajan, Jim, David H,

 New agenda items:
   None

 Carry over action items:
   Ian: See if there is an incompatibility between C and C++ for constants being evaluated to a wider format (Ex. FLT_EVAL_METHOD affects constants in C++, and wider return values) - Keep open (Hubert: Not defined and left up to C)
   Jim: Update the binding table in parts 1 and 2 to handle the new IEEE-754:2018 functions when published. - Keep open.
   Jim: Update activities list. - Done.
   Fred: See where we are for inconsistent spec for infinities

 Last meeting action items:
   Jim: Look at what is said in exception handling and make sure remainder underflow is addressed as per Jim's/Fred/David's email regarding 18661-1 and 754 (2018/04/09). - Done.
   Jim: 754 compatibility: roundeven: Put in the parenthetical (conclusion) into part 1 as per Jim's response to David on the 2018/04/09 email. - Done.
   David: Check the min/max C specification to ensure it matches what IEEE has. - Not done.
   David: Check the augmented* C function specifications to ensure they match what IEEE has. - Not done.
   David: Evaluate the 18661-4 tanpi and ensure it is not a bad idea. Also ask 754 what we (CFP) should do with it. - Done. 754 will incorporate the C specification.
   All: Look at Fred's 2018/02/19 email titled "18661-2 and 754". - Done.
   Jim: Integrate the 2018/04/05 DR13 change into N2213 and get a new N document so we can talk to that in WG14. - Done.
   Jim: Part 4: Change the exp10m1 description to allow underflow range errors. - Done.

 New action items:
   Rajan: Give a valid version of C17 to Jim for posting on CFP.
   Jim: Ask Blaine about missing references to DECIMAL_DIG (only one found was the example).
   Jim: Make the quantize and general canonical results changes as editorial changes for part 2 as per Jim's 2018/05/12 note.
   Jim: Create a CR for llquantexp with the fix in Jim's 2018/05/12 note.
   Jim: Review specification for raising the inexact exception in the TS's.
   Jim: Put CR21 on the agenda for next time.
   Jim: Get N documents for the features mentioned
in http://wiki.edg.com/pub/CFP/WebHome/C_support_for_754-201x-20180518.pdfand use this as new document for Pittsburgh.
   Rajan: Reply to Joseph's note and ask for any particular concerns.

 Next Meeting(s):
   Wednesday, June 20th 2018, 11:00 EDT, 8:00 PDT

***Note**:* New time and day: 1h earlier, Wednesday.

Same teleconference number.

Discussion:
WG14:
  *Rajan: Give a valid version of C17 to Jim for posting on CFP.
  Meeting summary:
    Jim: Ask Blaine about missing references to DECIMAL_DIG (only one found was the example).

  IEEE 754 revision:
   tanpi is cloned from C to 754.
   Dealing with minor issues.
    Ex. Wording issues.
   Likely to get a draft this year, but likely to be published in 2019.
   Meeting at the ARITH conference in June.
   Need to know when it is going to be an international standard.

  C++ liaison:
   Nothing.

  Action item details:
   Exception Handling and remainder underflow (Jim's May 8th email: AI about remainder underflow):
     David: Without alternate exception handling, you wouldn't even know about it.

   Editorial change for roundeven in part 1 (http://wiki.edg.com/pub/CFP/WebHome/cfp1x-20180509.pdf):
     Looks good.

   Min/max C specification matches IEEE? (http://wiki.edg.com/pub/CFP/WebHome/min-max_spec20180310.pdf):
     Leave for next meeting.

   Augmented* C function specifications match IEEE? (http://wiki.edg.com/pub/CFP/WebHome/augop_spec-20180311.pdf):
     Leave for next meeting.

  754 input about whether to keep tanpi
   Jim: In the binding table. Need to add in the acospi, etc. into the Part 4 binding table.
   David: Not in 2018 draft.
   Jim: They should to into the 202X draft.

  Fred's 2018/02/19 email "18661-2 and 754" (Email thread 4/10-5/16)
   Jim's 5-12-2018 note:
    The general statement for canonical results unless otherwise specified seems good.
    quantize: We should add it.
    *Jim: Make the quantize and general canonical results changes as editorial changes for part 2
    llquantexp: Is it an editorial change? Not in 754 2008.
     Jim: Need to add it to the binding table too.
     Jim: Not a binding issue.
    The bit operations can give non-canonical results. No discussion of the sign bit. IEEE will look at that.
     The sign-bit operations can propagate non-canonical results.

For Part 1, list the exceptions to the canonical expectation.

List copy as propagate non-canonical results. Other functions like that might return non-canonical results given non-canonical inputs.

We should just list the most you can say as to the result and let the implementations deal with it.

Jim: Who would we hurt if we asked for it to be canonicalized?

David: For sign-magnitude encodings.

Jim: We can say it is intended to allow bit operations for interchange types and extended types if the encodings permit.

See what 754 says.

For C, where do we list the exceptions to canonical results? Do we say it for each of the operations?

Similar question for the inexact exception.

Jim: Suggestion: For parts 1, 2: Say they raise inexact iff the result is inexact. For part 4 say they should raise inexact iff the result is inexact. For augmented, say raise underflow/overflow but not otherwise.

*Jim: Review specification for raising the inexact exception in the TS's

2018/04/05 C R13 change and N2213 (http://wiki.edg.com/pub/CFP/WebHome/n2252.pdf)
Missing final parenthesis at the end of the document.
Looks good.

Change for exp10m1 to allow underflow range errors (http://wiki.edg.com/pub/CFP/WebHome/cfp4x-20180516.pdf):
Looks good.

Consistency for infinities
Leave for next meeting.

Other issues:
From WG14: CFP to come back with: a new suggested C11-only change based on CFP DR20 for C DR501; and TS-only changes in CFP DR20
http://wiki.edg.com/pub/CFP/WebHome/n2253.pdf
C changes.
Jim: Only saw one DECIMAL_DIG that was missed (at end of page 1).

http://wiki.edg.com/pub/CFP/WebHome/n2254.pdf
Part 1 changes.

http://wiki.edg.com/pub/CFP/WebHome/n2255.pdf
Part 3 changes.

Note there are cleanup changes as well, not just DECIMAL_DIG removals.

CR21: Seems OK. Not sure why the change was made to the exponents.
*AI: Jim: Put CR21 on the agenda for next time.
Jim: Not sure why we say odd numbers instead of significand as odd.

WG14 process for CFP CR's:
Create a new N document for each new CR with a suggested TC.
For updating an existing CR, submit a new N document with the suggested TC.
Each CR should update one part of the TS or for C. If it affects multiple parts, they should be separate CR's.
Send Blaine HTML for each new or updated CR.
Blaine creates the compendium.
WG14 votes on moving the CR's forward.

Binding for IEEE 754-2018:
WG14 paper about updating to IEEE 754:2018
(http://wiki.edg.com/pub/CFP/WebHome/C_support_for_754-201x-20180518.pdf):
Rajan: 9.7: What is the CR needed?
Jim: The functions are not in the binding table.
Most references to IEC 60559 2011 do not show up in C, so updating the TS's for the new 60559 publish year will need to be made.
*Jim: Get N documents for the features mentioned in http://wiki.edg.com/pub/CFP/WebHome/C_support_for_754-201x-20180518.pdfand use this as new document for Pittsburgh

Functions for augmented arithmetic

Min/max functions

Payload functions

Total order functions

C2X integration:
Joseph Myers sent an email (15205) saying to listen to implementation experience when adding the TS's to C2X.
*AI: Rajan: Reply to Joseph's note and ask for any particular concerns.
Can use that to update our proposal implementation experience sections.

Activities (http://wiki.edg.com/pub/CFP/WebHome/in_flight-20180521.pdf):
http://wiki.edg.com/pub/CFP/WebHome/Defect_reports_-_TS_18661-20180519.pdf

Deferred issues:
C standard use of "floating" vs "floating-point":
Delay until later.