WG14 N2250
Meeting notes

C Floating Point Study Group Teleconference

2018-04-10
9 AM PDT / 12 PM EDT

 Attendees: Rajan, Jim, Mike, David H., Ian

 New agenda items:
  exp10m1 range error

 Last meeting 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.
  David: Look into the IEEE binding differences to see if they are real issues (from Fred's email on 2018/02/18). - Done.

  Jim: Create a DR against part 1 for updating C footnote 232 as per emails on 2018/02/22. - Done.
  Jim: Obsolescing DECIMAL_DIG (http://wiki.edg.com/pub/CFP/WebHome/changes_for_obsolescing_DECIMAL_DIG-20180306.pdf): Change 1: Change "decimal" to "decimal character sequence" throughout the document to avoid confusion with DFP. Also need to qualify it with the rounding mode. - Done.
  Jim: Obsolescing DECIMAL_DIG (http://wiki.edg.com/pub/CFP/WebHome/changes_for_obsolescing_DECIMAL_DIG-20180306.pdf): Change TS 18661-1 10.1: Needs the round to nearest rounding mode text as per the previous action item. - Done.
  Jim: Obsolescing DECIMAL_DIG (http://wiki.edg.com/pub/CFP/WebHome/changes_for_obsolescing_DECIMAL_DIG-20180306.pdf): Change TS 18661-1 10.1: Typo: IEC 60669 -> IEC 60559 - Done.
  Jim: Obsolescing DECIMAL_DIG (http://wiki.edg.com/pub/CFP/WebHome/changes_for_obsolescing_DECIMAL_DIG-20180306.pdf): Get a document number and submit in time for the mailing if possible. - Done.
  Jim: TS DR16: Remove the cbrt examples in parts 2 and 3 for cbrt as part of DR16 as a note for an editorial change. - Done.
  Jim: TS DR13: http://wiki.edg.com/pub/CFP/WebHome/Re-revised_suggested_TC_for_CFP_DR_13-20180223.pdf:Send it out (with fixes to the font/alignment). - Done.
  Jim: Reword http://wiki.edg.com/pub/CFP/WebHome/NaN_payload_functions_for_C-20180311.pdfF.10.13 description to say something along the lines of "a floating point number with an unsigned integer value" and for the function descriptions as well. - Done.
  Fred: http://wiki.edg.com/pub/CFP/WebHome/in_flight-20180313.pdf See where we are for inconsistent spec for infinities. - Not Done.
  Fred: http://wiki.edg.com/pub/CFP/WebHome/in_flight-20180313.pdf See where we are for missing Annex F spec for new functions. - Done.
  Jim: Working drafts: Try red strike-through for parts 2-5 and red caret for part 1. - Done.

New 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).
   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.
   David: Check the min/max C specification to ensure it matches what IEEE has.
   David: Check the augmented* C function specifications to ensure they match what IEEE has.
   David: Evaluate the 18661-4 tanpi and ensure it is not a bad idea. Also ask 754 what we (CFP) should do with it.
   All: Look at Fred's 2018/02/19 email titled "18661-2 and 754".
   Jim: Integrate the 2018/04/05 DR13 change into N2213 and get a new N document so we can talk to that in WG14.
   Jim: Part 4: Change the exp10m1 description to allow underflow range errors.

Next Meeting(s):
   Tuesday May 22nd 2018, 12:00 EDT, 9:00 PDT
   Same teleconference number.

Discussion:
   IEEE 754 revision:
   Nearing the end, but some things still coming up.
   Mostly delaying larger items until the next revision (2028?).
   Telecon every 3 weeks.
   Differences list is up to date (http://754r.ucbtest.org/changes.html).
      We will use it as a reference to communicate it to WG14.

   C++ liaison:
   Nothing.

   Action item details:
   DR for updating underflow definition (http://wiki.edg.com/pub/CFP/WebHome/n2210.pdf):
      Looks OK.

   Changes for obsolescing DECIMAL_DIG (http://wiki.edg.com/pub/CFP/WebHome/n2211.pdf):
      Jim: Some cleanup of wording in the C standard to help clear up confusion.
      The changes in the library are not as big as they look since this shows the context.
      Some changes are not needed if Part 1 is accepted into C22 (C11 F.5 heading for example).

   Revised suggested TC for CFP DR 16 (http://wiki.edg.com/pub/CFP/WebHome/n2212.pdf):
      Note that parts 2 and 3 examples will be removed as listed.

   Re-revised suggested TC for CFP DR 13
(http://wiki.edg.com/pub/CFP/WebHome/n2213.pdf):
      Will discuss later.

   Update to payload functions
(http://wiki.edg.com/pub/CFP/WebHome/NaN_payload_functions_for_C-20180328.pdf):
      Looks good.

   IEEE binding differences (from Fred's email on 2018/02/18):
   See Jim's response email on 2018/04/09.

   Underflow issues (Jim/Fred/David's emails for 754 compatibility):
      Part 5 alternate exception handling may handle this.
         Some underflow exceptions that were not detectable before can now be detectable.

*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).

*Jim: roundeven: Put in the parenthetical (conclusion) into part 1.

canonicalize: Looks good.

fesetexcept: Jim: The other interfaces don't return the set of flags so we shouldn't change this one. Also to match C, need to leave it as is.

fetestexceptflag: Seems right as it is. Order of arguments is to match C.

Inconsistent spec for infinities:
  Pending.

Missing annex F spec for new functions (Fred 3/17/18 email "[Cfp-interest] IEEE 754 vs Annex F":
  See Jim's response on 2018/04/10 as well.

  Re point 2: cospi(0): The new IEEE spec does specify this even though it is not necessary.
  tanpi: IEEE didn't do it due to cases of 0 having the right sign. David to look at it.
   Not sure which properties are the most important nor if it matters.
  pown: David: Obvious, but will add it to the 754 agenda to discuss adding it.

  Still need to look at Fred's 2018/02/19 email titled "18661-2 and 754".

Change marks for working drafts:
  Looks OK.

Other issues:
  Joseph Myers 3/19 email (SC22WG14.14928) Floating-point DR#13 and integer arguments to type-generic macros
  See Jim's 2018/04/05 response to CFP.
  Will need to show this as part of 7.4.1 in the WG14 meeting. Can make it harder to argue to add part 3 into the standard.
  *Jim: Integrate this change into N2213 and get a new N document so we can talk to that in WG14.

  exp10m1 range error (Fred's email on 2018/02/20):
  Jim: Change this to allow underflow range errors for this case.

Binding for IEEE 754-2018:
  WG14 paper about updating to IEEE 754:2018
  Rajan can mention we are ready to go based on David's change list and our updated proposals for min/max and augmented.

  Functions for augmented arithmetic

  Min/max functions

  Payload functions

  Total order functions

C2X integration:
  Jim looking at tutorials about LaTeX.

Activities (http://wiki.edg.com/pub/CFP/WebHome/in_flight-20180313.pdf):

No update.

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

CFP Report for WG14 meeting:
  Continuing to work on DR's to the TS.
  Continuing to work on IEEE 754:2018 binding.
  Looking for other possible issues when comparing binding to 754:2008 to validate we are binding correctly.