**WG14 N2276**
**Meeting notes**

## C Floating Point Study Group Teleconference

2018-06-21
8 AM PDT / 11 PM EDT

**Attendees**: Rajan, Jim, Ian, Fred, 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.
  Fred: See where we are for inconsistent spec for infinities - Done.

**Last meeting action items:**
  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.

  Rajan: Give a valid version of C17 to Jim for posting on CFP. - Done.
  Jim: Ask Blaine about missing references to DECIMAL_DIG (only one found was the example). - Done.
  Jim: Make the quantize and general canonical results changes as editorial changes for part 2 as per Jim's 2018/05/12 note. - Done.
  Jim: Create a CR for llquantexp with the fix in Jim's 2018/05/12 note. - Done.
  Jim: Review specification for raising the inexact exception in the TS's. - Done.
  Jim: Put CR21 on the agenda for next time. - Done.
  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. - Done.
  Rajan: Reply to Joseph's note and ask for any particular concerns. - Done.

**New action items:**
  Jim: Remove screen-share information from the agenda.
  Jim: Missing line numbers for part 2 (cfp2x-20180612.pdf)
  Jim: Specification for inexact: Make the editorial change as given in the modified agenda with links.
  Fred: Fix the wording for CR21 to specify odd significand.
  Jim: C support for 754-201x: Say as per current IEEE draft and add in the N document numbers for 9.5 and 9.6 additions.
  Jim: Submit the augmented arithmetic and min/max spec for 754:201x binding proposals to WG14 after removing change marks.
  Jim: Create a CR for changing "not infinite" to "finite" as per the description for remainder (18661-1, F.10.7.2).
  Jim: Create a paper/proposal for the loosening of the totalorder* specifications to match 754-

201x.
   Fred: Recheck 'Functions and infinity' issues with 754 draft 238.
   Jim: Create a CR to change CFP to say for Annex F of C that pow(+/-0,-inf) has no exception (i.e. Remove the latitude to raise div-by-zero).
   Jim: Create a CR to change the reduction operations description from should->shall

 **Next Meeting(s):**
   Wednesday, July 25th 2018, 11:00 EDT, 8:00 PDT

   Same teleconference number.

 **Discussion:**
   IEEE 754 revision:
    David: Finding more things that are incorrect or inconsistent.
     Various contributions from the C FP group (this group).

   C++ liaison:
    Nothing.
    Ian: Looking into getting a connection with the C++ committee.

   Action item details (http://wiki.edg.com/pub/CFP/WebHome/CFP_meeting_agenda_20180621-links.pdf):
    quantize and canonical results changes for part 2 (and part 1):
     Fred: Since these are changes to the main body of the standard other than an annex it is not good.
     Jim: Since Decimal can only be 754 it doesn't need to be in Annex F.
     Fred: It should mention domain error as well as invalid.
      Jim: It does.

   llquantexp:
     Since it is not a 754 function, we need a CR. It has been submitted. Blaine should assign a CR number for this.
     Missing line numbers in part 2.

   Specification for inexact:
    Fred: Should overflow and underflow be in quotes as well?
     Jim: Considering them as conditions.
     David: underflow could be exact so don't need to raise the inexact exception.
    Consider this as an editorial change.

   CR21:
    Jim: It is for the significand being odd. We should say that.
     David: Perhaps say when both the significands are odd?
     Jim: Yes, a little strange though since significands are usually expressed as fractions.
     Jim: both choices are odd -> both choices have an odd least significand digit, and similar for the end of the last line.

   N docs for 754-201x support:
    Jim: Got the N numbers.
    Added tanpi to the list.
    Need to say as per current IEEE draft.
    Need to add in the N document numbers for 9.5 and 9.6 additions.

   Augmented arithmetic:
    Jim: Added in the invalid exception for augadd, augsub

min/max spec:
  Jim: Added in part 3 changes.
    This is a proposal for changes for TS's 1-3, not a CR. It is at the same time as support for the next version of the 754 standard.

  Consistency for infinities (note chain titled Functions and infinity):
    Changing not infinite to finite as per the description for remainder.
    totalorder*: Now up to the implementation on how to order them done on purpose by 754. Should make this a paper for a new feature/change, not a CR.
    Although we wish we had originally had NaN refer to both quiet and signalling, it is too much of a change now (with the potential of missing areas or having errors) so we will not do it.
    rootn(1, 0): To match pow, rootn(1, 0) should give 1.
      David: In 754:2008, n = 0 is invalid for rootn so changing that would be a substantive change.
        If something changes, it would have to be in 754.
    rootn(inf, n) missing in 754:
      David: Added in the latest 754 draft 238.
    pow(0,-inf):
      Change CFP to match 754. New CR.
    powr:
      David: The whole idea of these functions was to simplify exception processing.
        Problematic for which sub-exceptions should be signalled.
      David: CFP shouldn't change since the same problem for both 754 and CFP.
    reduction operations need should -> shall.

  Other issues:
    None.