WG14 N3840
Meeting notes

C Floating Point Study Group Teleconference

2026/02/18: 10:00 AM PST/6:00 PM UTC
[Please submit proposed changes to these minutes to Jerome or to the group. Revision changes appear at the bottom.]

Attendees
   Jim Thomas, Rajan Bhakta, Jerome Coonen, Damian McGuckin, Joshua Cranmer, Fred Tydeman, David Hough

Updated agenda plus new items
   https://cfp-wiki.esi.com.au/pub/CFP/WebHome/CFP%20meeting%20agenda-20260218-update.pdf?_t=1771391603 – These minutes should be read alongside the agenda, with its many reference links.

Previous meeting notes
   https://mailman.oakapple.net/pipermail/cfp-interest/2026-January/003775.html 2025/11/12 Meeting notes

Study group logistics
   Next meeting: 18 March 2026, 8:00 AM PDT/3:00 PM UTC -- note return to the usual time and the change to Daylight Saving.
   ISO Zoom teleconference
   Please notify the group if this time slot does not work.
  Jim: We have a new wiki and password. Damian stepped in when EDG had to drop our old wiki.
   Damian: The wiki runs on a VM in my company's world with a company domain. Some wikis have gone to ISO.
   Rajan: Other groups have gone to non-ISO sites, which they find easier to deal with.
   Jim: Several people did yeoman service to reconstitute the CFP wiki.
   Damian my colleague Peter Harding did most of the work. Peter and I occasionally work on similar internal projects. The internal framework is in Perl, part of the challenge. Wyatt Childers was helpful from EDG.
   Group: Started sweepstakes of who wrote Perl least recently. David won with a 1990s showing. Joshua admitted to Perl work in 2026. (Is *that* the secret sauce in C++?)
   Rajan: Asked about wikis at the WG14 meeting. There is a push to start a C foundation to support hosting, email, etc. Looking for companies to commit to the foundation. Currently, different study groups use different hosts. The long term goal is to unify under one umbrella.

C documents
   The latest C2Y draft is N3783 Jan. 2026 https://www.open-std.org/jtc1/sc22/wg14/www/docs/n3783.pdf
   C23 has been published ISO/IEC 9899, available for purchase. https://www.iso.org/standard/82075.html

IEEE 754 liaison

   Damian: 80-bit floating point, a cornerstone of the Intel 8087 and 754-1985, is likely to disappear into an annex. Lots of work on language of rounding, of interest to Damian for CFP angle. A new rounding mode, round-to-odd, is still under discussion.

   David: Certainly a lot of work happening.

   Jerome: Lots of discussion of NaN propagation.

   Rajan: Does CFP have any members among the 754 renewal committee hierarchy?

   Group: No, but several members keep tabs on the effort.

C++ liaison

   Joshua: Next meeting is the week of 23 March. No schedule of papers yet.

WG14 update

   Rajan: Sent email with update. All of the CFP papers were enthusiastically accepted. Some committee members would prefer editorial matters go straight to the editor. [CFP errs on the side of putting all interesting changes out for discussion.] Issue 1014 with change to headers and error handling in TS-4 are "accepted" but in limbo because there is no plan to update TS-4.

   Jim: Is it possible to bring TS-4 into C2Y?

   Rajan:The issue is lack of implementation experience, as noted by Joseph et al.

   Group: No knowledge of TS-4 implementation experience.

   Rajan: Robert says will bring up schedule for C2Y at "next meeting", which is not fully defined. Relevant to CFP: there is no deadline for new papers yet.

TS-4 and TS-5 revisions

   None.

News

   Jim: Paul Zimmermann sent an update about the correctly rounded function effort.

Carryover action items from last meeting

   Jim & Jerome: Investigate Joseph Meyers's issue of the conflicting requirements for double_t to be either double or long double.

      Done

   Damian & Jerome: Look at +/-0 in fromfp, and also the case of a value rounding to zero.

      Done

   Group: Think about where CFP is headed.

      Carry over

Action items from last meeting

   Jim: In the proposal for Annex F floating-point environment updates (re rounding precision, etc.), change all instances of "to nearest, ties …" to "to nearest with ties …". Send the doc to CFP with a timeline for comments allowing submission for the March WG14 meeting.

      Done

   Rajan: Send email to Mike Cowlishaw asking whether anyone uses the ties away from zero as the default in decimal. Share with group.

Rajan: In reply to my question, Mike doesn't know why the option to use the new rounding mode as the default was added. He doesn't know of any systems that default to it, but would expect bankers to use it.

Jim: CFP has them because 754 has them.

Damian: There has been discussion in the committee about decimal rounding. Action to research.

Damian: Contact Fred about extending the list of exact special cases in Annex F. Assemble a list for CFP to consider.

Done

Jim: Draft a suggestion for approaching the fixes to symbols.

Done

Discussion of issues
CFP IT

David: Our email reflector is running on 25 year old hardware on 10 year old OS. I'm upgrading to 5 year old hardware able to run current OS. Might be good to look at a new host for email.

Jim: Some fragility there.

David: Can host the archive of mail indefinitely. Current system is Solaris and target is Ubuntu.

Damian: We can host email alongside the wiki but i would prefer to take a version migrated from the current system. Action to take the archive now for safekeeping, alongside the new wiki.

Rajan: Yes, the proposed C foundation is intended to host email, too.

Damian: Yes , we do back up the wiki. Action to document the backup.

- Conflicting requirements for double_t

Jim: The email trail details the change from TS-3 to incorporation into Annex H in C23. One solution is to return to the TS-3 spec. The other two options work with Annex H as is, but with some tweaks that add complications. All options imply possible changes for current implementations. Option 1 has arguably largest impact, though also arguably most sensible.

Rajan: The change to Option 1 will bring up issue of why the change was made in the first place, which should accompany any proposal. Also, it's a good idea to write to Joseph about the intention here to avoid surprises.

Action

Sign of zero from fromfp functions

Jerome: Referring to the emails, it's best to look at the fromfp family of functions from their appearance in Table F.2 , which gives bindings for a multitude of operations in 60559. There are ten operations converting floating values to integer types, with 5 modes of rounding and the choice to signal Inexact or not. The better representation in the the table would add the language "cast of" in order to get the integer value into an integer format. The beauty of this C23 mechanism is that the fromfp family handles the rounding while keeping inf or nan results in floating form; then the cast delivers the value in integer type, with the conventions for inf and nan. The original question was about the sign of a zero result from fromfp. Given the clear connection between fromfp and current 2's complement systems, it's natural to propose positive or unsigned zero as the result. This may break some systems implemented since C23.

Rajan: The committee has more appetite for breaking things, if we are moving in the right direction. Adding an example of the problem will help. Some incompatibility is probably OK.

More Annex F special cases

Damian: Fred noticed compound(0, n) = 1.0 in 60559 but not in Annex F. It's apparently the only such special case not in F.Also, pow(x, 1.0) is not a special case in 60559, so it shouldn't be among the special cases in Annex F. I've added the compound(0,n) change to F.

Jim: This could mean a change to some implementations -- but it does follow 754.

Rajan: Should not be a problem.

Annex F proposal update

Jim & Damian: The language of rounding between C2Y and what is evolving in 60559 is a challenge. Action to pursue.

Damian: We are getting close to making a proposal.

Other issues

None

Adjournment

12:05 PM PST

Action items to be carried over

Group: Think about where CFP is headed.

New action items

Damian: Investigate the current state of default rounding(s) in 60559 and whatever is being discussed in the committee about changes, especially in decimal.

Damian: Arrange to take the email archive from David. Discuss the status going forward.

Damian: Document the wiki backup protocol.

Jim & Jerome: Draft proposal re. double_t semantics and send a note to Joseph about the proposed solution.

Jerome & Damian: Write a proposal to repair fromfp and enhance Table F.2.

Jim & Damian: Look at the language around rounding direction in Damian's Annex F paper and make a proposal to CFP about how to go forward.

Carryover discussion items

Minus signs and hyphens, etc.
Editorial issues F.2.2
Editorial issues F.10.1

Editorial issues F.3, etc
Rounding direction language
CFP future
Complex and signaling NaNs

INFINITY and _Float16

Signoff
  Respectfully submitted.

-Jerome Coonen