

## **WG14 N3823**

### **Meeting notes**

## **C Floating Point Study Group Teleconference**

2026/01/07: 8:00 AM PST/4:00 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, Tue Ly, David Hough

### **Updated agenda plus new items**

[https://wiki.edg.com/pub/CFP/WebHome/CFP\\_meeting\\_agenda-20260107.pdf](https://wiki.edg.com/pub/CFP/WebHome/CFP_meeting_agenda-20260107.pdf) – These minutes should be read alongside the agenda, with its many reference links.

### **Previous meeting notes**

<https://wiki.edg.com/pub/CFP/WebHome/n3774.pdf> 2025/11/12 Meeting notes

### **Study group logistics**

Next meeting: 18 February 2026, 8:00 AM PST/4:00 PM UTC

ISO Zoom teleconference

Please notify the group if this time slot does not work.

Group: Will work to avoid the new Wed. 754 meetings.

### **C documents**

The latest C2Y draft is N3685 Sept. 2025 <https://www.open-std.org/jtc1/sc22/wg14/www/docs/n3685.pdf>

C23 has been published ISO/IEC 9899, available for purchase. <https://www.iso.org/standard/82075.html>

### **IEEE 754 liaison**

Damian: Still working on formats. Nothing to report on complex, but hoping to get that conversation going.

### **C++ liaison**

None

### **WG14 update**

Rajan: Next meetings 2-6 Feb 2026, and then 9-13 March 2026. Nominal email deadline is 1 month in advance of a meeting.

Jim: Requests email from Rajan with any needs for these meetings.

### **TS-4 and TS-5 revisions**

None.

**News**

None

**Carryover action items from last meeting**

None

**Action items from last meeting**

Group: Review Jim's latest doc (to be released) on rounding precision mode and be prepared to review.

Discussion

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

Carryover

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

Carryover

Jim & Rajan: Send email to JeanHeyd about the editorial change of "function value to "result". Include mention of the move of the SNAN macro, which was not recorded in Annex M. Third, recommend the wording in cfp3688 wording with "...of the return type..."

Done, forwarded to CFP

Fred: Send Rajan wording for the previous action, re. the moving of the SNAN macros.

Done

Damian: Remember to update the date in new drafts of the working documents. (Public reminder in the holiday spirit.)

Damian: Left the dates as they were. Some need more input, so holding off on update.

Jim: Need to be able to reference specific versions of docs, notably the big Annex F discussion.

Discussion

Jim & group: Review trunc and canonicalize in Damian's Annex F update to come.

Discussion

Group: Review the rounding direction language, with Jim to provide an email to kick things off.

Discussion

Group: Think about where CFP is headed.

Discussion & carryover

**Discussion of issues**

References to rounding precision mode, etc.

Jim: Reviews mail mentioning obsolete modes -- precision and trapping. Decimal is not accounted for. Describes changes to repair the issues.

Rajan: Does anyone use the decimal default nearest with ties away from zero? Takes action to ask Mike Cowlishaw.

Jim: Will change usage to "with ties away from zero" vs. "<comma> ties away from zero".

Damian: Can we have a few weeks for review?

Jim: Will send update with a short timeline for review. Action.

## Conflicting requirements for double\_t

Deferred

## Sign of zero from fromfp functions

Deferred

## Annex F proposal update

Jim: Suggest changing the date (and version) with each revision.

Damian: On p. 2, confirms that the hyphen/minus is correct. Reviews the tricky cases of finite y, all numeric y, and when NaN is included.

Jim: The proposal is going to be big. Will have to consider how to present this proposal in a what that WG14 can deal with it.

## Annex F trunc

Group: Need to rework the language of "toward zero".

Jim: Proposes unifying the language of ceil, floor, trunc, round, roundeven.

Damian: Will pursue that angle.

## Annex F canonicalize

Jim: Text needs to refer to "the" canonical NaN, using the definite article. Suggests using the 60559 terminology "quieted NaN", with quotes to call out the rare mention of signaling NaN.

## Minus signs and hyphens

Jim: Reviews his explanatory email.

## More Annex F special cases

Jim: We have a stream of emails about special cases.

Jerome: Suggests the example of pow(2.0, 3.0), which one would expect to be 8.0, but may not arise from the "obvious" formulation exp(log(2.0) \* 3.0).

Damian: Action to contact Fred about cases he knows.

## Editorial issues F.2.2

Damian: Requests feedback on this and subsequent two items.

Jim: There is an issue of whether to send feedback to all CFP or the just the most interested folks. In this case, Jim and Jerome request to be included.

## Editorial issues F.3, etc.

See above.

## Editorial issues F.10.1

See above.

## Rounding direction language

Jim: Reviews his email to kick off the discussion.

Group: Revisit in February with an eye to an action to fix some or all of the cases needing attention.

## CFP future

Jim: Carrover

## Incorrect change to symbols in F.9.4

Jim: Points out numerous cases where C expressions were changed to mathematical expressions during a revision of the draft, but with no apparent call for the change.

Jim & Rajan: There is precedent to backing out the mistaken changes in GitHub. Rajan may be the only active CFP member qualified to make such changes, but permission is another matter and the extent of the changes suggests that a clean fix might be better.

Group: This involves "just" sections F.9.3 and F.9.4, but the changes are numerous and they are subtle. (See the mention of hyphens and minus signs above for a taste of the issue.) There are C expressions that ought to be in code face. And there are C-like expressions but with mathematical

placeholders, in which case the operators are C operators in code face and the placeholders are mathematical.

Jim: Action to draft suggestion for dealing with this.

#### **Other issues**

None

#### **Adjournment**

10:00 AM PDT

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#### **Action items to be carried over**

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

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

Group: Think about where CFP is headed.

#### **New action items**

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.

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

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

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

#### **Discussion issues to be carried over**

"library function" in F.10.1

Complex and signaling NaNs

`INFINITY` and `_Float16`

#### **Updates for rev. 1**

Fix meeting time.

Apply updated agenda.

Upgrade an action item from Done to Discussion (which implies Done).

Add Jim to request list for discussion items sent to a subgroup, not all CFP (reducing traffic).

Improve wording of 2 action items.

#### **Signoff**

Respectfully submitted, with wishes for a peaceful, productive, not-too-compliant 2026!

-Jerome Coonen

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