Policy Discussion for WG14
WG14 N2947

Title:	Issue Tracking for C
Author, affiliation:	Aaron Ballman, Intel
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Proposal category:	Committee Policies
Target audience:	WG14 members, external liaisons

Abstract: WG14 previously tracked issues against the C standard but stopped doing so in 2017 with the start of work on C2x. Implementers, related committee members, and users need a facility to report issues against the C standard to WG14. The overhead involved in writing a paper is considerable for this purpose and there is no appropriate tracking mechanism for issues once they've been reported.

Issue Tracking for C

Reply-to: Aaron Ballman (aaron@aaronballman.com)
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Summary of Changes

N2947

- Original proposal

Introduction and Rationale

During C17 and earlier revisions of the standard, WG14 tracked issues against the C standard as ISO defect reports [ISO DRs]. At the end of the C17 release cycle, we were alerted by ISO that WG14 was providing a low-quality standard and was in jeopardy as a result. As part of those discussions, we learned that there was a substantial difference between an ISO defect report and what WG14 considered a defect report. Of the ISO defect reports WG14 had filed, only one was correctly classified (we neglected to set the macro value for the `__STDC_VERSION__` macro in C11). As a result, WG14 stopped using the ISO defect report process.

We expected to get back to tracking issues as part of the new document numbering system, but such a system has not materialized. Unfortunately, in the intervening 4-5 years, WG14 has not replaced the old issue tracking practices. As a result, WG14 has not been tracking issues against the C standard. Instead, reporters are encouraged to write a paper [Contributing] and the committee will address the paper as part of its regular meeting operations.

The current approach taken by WG14 is insufficient and unsuitable.

It is insufficient because there is no record of what WG14 considers to be a defect in the standard. Regardless of the ISO practice of newer standards fully replacing older standards, implementers and users need to know what the behavior of C is in each language mode because most production C compilers provide users with the ability to target a specific revision of C. Implementers previously were able to use the defect report lists as a way to determine what the committee's intended reading of the standard was, or what adjustments were made to clarify the standard. For C2x, this information is now scattered across the entirety of the WG14 document log, which makes it significantly harder to support C in a way users expect. For reference, as of the day this paper was drafted, there were over 675 papers in the WG14 document log specific to C2x.

It is unsuitable because the effect is that WG14 has no practical way to measure the quality of our standard; we've stopped tracking issues in any meaningful sense. More worryingly, the current approach of requiring a paper is an inappropriate request of people outside of WG14 who nevertheless have a reason to interact with our committee. As concrete examples, working group chairs of WG21 or members of the C and C++ Compatibility study group are not necessarily members of WG14. However, both groups have identified significant issues with the C standard that WG14 should consider addressing. Additionally, implementers also discover issues while attempting to implement the C standard. The current policy of requiring a paper is far too high of a burden (it requires significant investment of time and effort to follow our processes) and is a high barrier of entry that results WG14 not being told about

potentially valid problems with our standard. This causes the quality of the standard to decrease over time.

WG14 has partially attempted to address the lack of an issues list by inventing the notion of a page to track documents accepted by WG14 which should apply to older language standards. However, we've yet to add any papers to that list, and that list is necessarily incomplete and insufficient. It only tracks the papers accepted by WG14 but knowing why a bug report has been rejected is valuable information to implementers. It also does not provide clarifying information when no changes are needed to the standard, but an interpretation is nonetheless required. Committee members, including the author, have requested previously adopted papers be considered for inclusion on this list but have been declined. This means that most papers written for C2x will never be allowed onto the list, nor will questions raised by implementers once a paper has been adopted.

Proposal

We need an easier process for people to report potential issues against the C standard to WG14. We cannot continue to wait for a new document numbering system to appear to make it happen. The list of documents to apply to an older standard is unsuitable for the needs implementers have. At a minimum, we should be able to return to our prior practices of tracking defect reports, without the problematic parts that concerned ISO. Effectively, we could bring back our old process and call them "Issue Reports" and not file anything with ISO about them being defects, and we'd be doing at least as well as we previously were doing. No matter what we choose, we need something rather than the nothing we have today.

Prior Art

We've tracked our own bugs [ISO DRs], but we're not the only ISO programming language committee tracking bugs.

WG21 allows people to report Core Issues (issues pertaining to the core language wording rather than the standard template library wording) via GitHub [CWG]. Additionally, both the Core and the Library groups allow people to submit bug reports via email [WG21]. Once a report comes in from the "public" interface, the chair (or their delegate) removes any obviously incorrect reports or reaches out for incomplete reports to get them completed, and eventually moves the issues onto the committee's official issue trackers [CWG Issue Tracker, LWG Issue Tracker]. This process has struck a good balance between the needs of implementers, users, and the committee without being an overwhelming amount of work to track.

Acknowledgements

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References

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