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SG5: Software Transactional Memory (TM) Meeting Minutes

1. SG5 Meeting Minutes: 2012/08/21
2. SG5 Meeting Minutes: 2012/09/04
3. SG5 Meeting Minutes: 2012/09/18

1. SG5 Meeting Minutes: 2012/08/21

Agenda:

1. Opening and introductions

1.1 Roll call

Justin Gottschlich, Michael Wong, Maged Michael, Hans Boehm, Soumitra (sp?), Nevin Liber, Tatiana Shpeisman, Victor Luchangco, Mark Moir

1.2 Adopt agenda – approved.

1.3 Approve minutes from previous meeting – N/A.

1.4 Review action items from previous meeting – N/A.

2. Main issues

2.1 Selection of minutes taker – Justin is taking minutes for the first meeting.

Michael suggested rotation system for minutes taker based on people who are “willing and able.” Some of the discussion will be highly technical, so we want to ensure whoever is taking minutes is able to follow the technical discussion.

2.2 Review of agenda and action items from last meeting

N/A

2.3 Welcome to / overview of SG5

- Role of chair and vice-chair, editor, secretary

Michael: Justin has been nominated as vice-chair of SG5.

Role of editor for ISO document. One person who takes over the draft, updates and edits it as the proposal. Michael proposes that Justin and Michael are nominated for editors of document.

Secretary will be a rotating position per meeting, consisting initially of those people who were part of the C++ TM Specification group (prior to the formation of SG5). If you are willing and able to be secretary for a meeting, please make a posting to the SG5 reflector.

The current secretary rota list is:

Maged, Hans, Mark, Torvald, Tatiana, Michael, Victor, Justin

Reminder: We use the Secretary Rota to determine who is responsible for minutes at any given meeting. The first name on the list that is present at the meeting will be responsible for them. Upon completing the minutes, they should move their name to the end of the rota. In face-to-face meetings, minutes duties will be assigned for a morning session or an afternoon session or an evening session (if applicable) so as to distribute the load fairly (but not too fine grained; consider it a transaction)

- Purpose of SG5 and teleconference calls

Two key documents: (1) the proposal document that we will eventually submit as a technical specification for C++ and (2) the accumulation of minutes documents.

2.4 Open items related to SG5

- Legal issues relate to specification

There are some complications with the feedback license of the specification.

Tatiana: we have met with our lawyers and they think it might be good for the three companies (IBM, Intel, and Oracle) to remove the feedback license from the specification. That would remove the restriction we have currently in releasing the document to ISO.

Victor: If I recall the issue correctly, we only need one company to release the license then they can move forward without the other companies support.

Tatiana: Yes, that's true. Although Intel does not necessarily require support from IBM and Oracle, we would like to have the support of both other companies.

Action item: Representatives from IBM and Oracle to meet with lawyers to see if they can get their lawyers to agree to remove the feedback license of the specification.

Hans: I think there is a legal meaning to release something to the public domain.

Tatiana: I suggested submitting the current specification as a technical paper without the current license, as a way to avoid putting an alternative license to it. I believe WG21 technical papers are published without a specific license. Of course, we would still need to get appropriate permissions from Intel, Oracle and/or IBM for this.

Hans: It's not entirely clear that creating a technical specification will be the problem that is currently at hand and I'm unsure how ISO would be able to move forward with such a document given that the current specification is copyrighted.

Action item: Michael to contact ISO lawyer about the removing the licensing restriction so we can release the specification to ISO.

- How we plan to proceed with SG5 until legal issues are resolved

Michael: Mostly comfortable moving forward.

- Discussion of what to present at October meeting? Should we postpone this discussion until more progress is made in SG5?

Michael: Our current intention / inclination is to present an initial draft of the specification. Up until now we have presented position papers / talks about why TM is good. For the upcoming October meeting should we present

Justin: Perhaps we keep a high-level outline of things to discuss about the specification.

Michael: Mailing deadline is September 21.

Hans: Summary of discussion would be good, especially because some of that discussion pre-dates the formation of SG5.

- Continue SG5 discussion of atomic and relaxed transactions

Michael: Should there be two kinds of transactions? Atomic and relaxed transactions. Atomic transactions can be rolled-back, while relaxed transactions cannot.

Tatiana: Two properties people want transactions to have: (1) any operation a transaction can rollback its operations, (2) any kind of operation can be executed within a transaction. Unfortunately, people want transactions to have both properties. To deal with this, we have two kinds of transactions: atomic transactions, which can be rolled back (cancelled), and relaxed transactions, can execute any kind of operations within it.

- Differences: guarantees and linguistic costs

Michael: what is the additional cost of adding atomic transactions to the language compared to relaxed transactions?

Victor: It is important to note that the semantics of atomic and relaxed transactions would be different if we extended what types of operations are possible to be executed within atomic transactions.

Tatiana: The way that we ensure atomic transactions only contain operations that can be rolled back (cancelled) is to restrict them to only revocable (or safe) operations. Given the current specification, any atomic transaction that successfully compiles will have the same semantics if it is replaced by a relaxed transaction.

Hans: Maybe it makes sense for the next meeting to have a detailed discussion about if locks can be used within atomic transactions.

Action item: Hans to make post about why locks should not (cannot?) be used within atomic transactions.

Action item: Justin, Victor, and Mark to make post about and come prepared to discuss in next meeting about why locks can be used within atomic transactions.

Action item: Mark to revise his and Torvald's proposal about simplifying the use of atomic transactions.

3. Any other business

4. Review

4.1 Review and approve resolutions and issues [e.g., changes to SG's working draft]

None yet.

4.2 Review action items

Action item: Representatives from IBM and Oracle to meet with lawyers to see if they can get their lawyers to agree to remove the feedback license of the specification.

Action item: Michael to contact ISO lawyer about the removing the licensing restriction so we can release the specification to ISO.

Action item: Hans to make post about why locks should not (cannot?) be used within atomic transactions.

Action item: Justin, Victor, and Mark to make post about and come prepared to discuss in next meeting about why locks can be used within atomic transactions.

Action item: Mark to revise his and Torvald's proposal about simplifying the use of atomic transactions.

5. Closing process

5.1 Establish next agenda

5.2 Future meetings

Next meeting, Tuesday, September 4.

5.3 Adjourn

2. SG5 Meeting Minutes: 2012-09-04

Agenda:

1. Opening and introductions
- 1.1 Roll call of participants

Maged Michael, Michael Wong, Michael Spear, Hans Boehm, Justin Gottschlich, Mark Moir, Nevin Liber, Tatiana Shpeisman, Victor Luchangco

- 1.2 Adopt agenda - approved
- 1.3 Approve minutes from previous meeting - approved
- 1.4 Review action items from previous meeting

2. Main issues

2.1 Review of agenda and action items from last meeting

Action item: Representatives from IBM and Oracle to meet with lawyers to see if they can get their lawyers to agree to remove the feedback license of the specification.

CARRIED OVER

Mark: What exactly are we asking the lawyers to do.

Justin: Removing the feedback clause is sufficient to release the draft spec.

Hans: It would be helpful to explicitly granting license of the draft spec to ISO

Michael Wong: Awaiting response from ISO lawyer

Action item: Michael to contact ISO lawyer about the removing the licensing restriction so we can release the specification to ISO.

DONE

Action item: Hans to make post about why locks should not (cannot?) be used within atomic transactions.

DONE

Action item: Justin, Victor, and Mark to make post about and come prepared to discuss in next meeting about why locks can be used within atomic transactions.

DONE

Action item: Mark to revise his and Torvald's proposal about simplifying the use of atomic transactions.

DONE

New action item: Everyone give feedback

2.2 - Organizational: Vice Chair, Editor position closing (Justin has been nominated as Vice-chair, Michael/Justin/Tatiana nominated as Editor)

Vice Chair: Justin Gottschlich

Editors: Tatiana Shpeisman, Justin Gottschlich, Michael Wong

2.3 - Continue SG5 discussion of atomic and relaxed transactions

2.3.1 - a detailed discussion about if locks can be used within atomic transactions.

Discuss Hans's post on mutexes within atomic transactions

Michael Spear: Consider the case where the lock acquire and lock release are themselves implemented as atomic transactions.

Justin: This topic was raised to highlight the differences between atomic and relaxed transactions. This discussion is good but is not something that needs to be fleshed out before October.

Mark: It would be good to get into more detail by October

Michael W: This discussion and explanation by Mark was good to understand atomic transactions more, in particular that cancel is not necessary to differentiate atomic transactions from relaxed transactions.

Michael W and Justin: Atomic transactions provide strong isolation while relaxed transactions do not.

Michael S: Locks if allowed inside atomic transactions can never deadlock while locks inside relaxed transactions may deadlock.

Mark: It is not a goal to have uninstrumented code to be included in atomic transactions.

Mark: It is unreasonable to expect support of locks inside atomic transactions without expecting some performance impact on lock performance

Victor joins the call.

Michael W: In another discussion of the cost of atomic transactions. The language cost of atomic transaction is somewhat similar to that of introducing const.

Multiple: Discussion if transaction safe and const are or aren't similar

Justin: Observation that transaction unsafe is not viral

2.3.2 - Viktor's and Justin's proposal on mutexes within atomic transactions

2.3.3 - Mark's/Torvald proposal for making it easier to use atomic transactions

2.3.4 - Differences: guarantees and linguistic costs

2.4 - legal issues discussion

2.5 - time of telecon, extending it, changing it

3. Any other business

4. Review

4.1 Review and approve resolutions and issues [e.g., changes to SG's working draft]

4.2 Review action items

New action item: Everyone give feedback on Mark's revision of his and Torvald's proposal about simplifying the use of atomic transactions.

New action item: Mark to come with an example on issue with try locks inside atomic transactions

New action item: Michael Spear to send discussion of supporting locks inside atomic transactions

New action item: Michael Wong and Justin to work on paper summary to submit by September 21 before the October meeting

5. Closing process

5.1 Establish next agenda

5.2 Future meetings

3. Tuesday September 18, 2012

5.3 Adjourn

Attendees:

Hans Boehm
Lawrence Crowl
Justin Gottschlich
Victor Luchangco
Paul McKenney
Maged Michael
Mark Moir
Torvald Riegel
Michael Scott
Michael Spear
Michael Wong

Agenda amended to accommodate Lawrence

Minutes approved

New action item: Everyone give feedback on Mark's revision of his and Torvald's proposal about simplifying the use of atomic transactions.
This meeting.

New action item: Mark to come with an example on issue with try locks inside atomic transactions
Done.

New action item: Michael Spear to send discussion of supporting locks inside atomic transactions
Done.

New action item: Michael Wong and Justin to work on paper summary to submit by September 21 for the October meeting
In progress; will be done.

New action item: Justin, Mark, and Maged to work on legal issues to "release" the specification to ISO.
This meeting (2.2); waiting for attorney response.

2. Main issues

Lawrence: Differences between atomic and relaxed transactions not clear; needs more of an overview. Papers should have more explanation, even if standard doesn't.

Justin: Should this go into the non-specification document?

Lawrence: Make sure that they're findable from each other.

Lawrence: Please call out ABI issues! Compatible extension OK, but clarify.

Lawrence: Outer attribute not ignorable. Should be keywords?

MW: Initial position was that they should be ignorable, but controversial.

MW: Add these as agenda items.

2.1.1 Mark/Torvald proposal

Mark: Summary of previously mailed proposal.

Mark: Things can be safe by default, even if not actually safe. Will fail at runtime.

Michael Scott: `__forbidden_in_atomic` is really an assertion?

Torvald, Mark: Assertions don't tell the compiler what code block is really affected, due to break statements and the like.

Victor: Alternatives are definitely different, not completely clear which is better.

Justin: Consider `__forbidden_in_atomic` and safe-by-default separately?

Mark: Considering them together allows interactions to be considered.

Michael Scott: Can compiler provide indications of constructs that are not statically safe instead of enforcing safety?

Hans: The standard doesn't talk about warnings; the spec would just specify dynamic checking.

Paul McK.: Use cases for atomic transactions?

Mark M: Was discussed already.

All: We should discuss this on the reflector.

Michael Scott: Atomicity is at the core of transactions.

Michael Scott: Propose alternate lock-like syntax for relaxed transactions?

Justin: How important is it to have safe-by-default in the proposal immediately?

Mark: Let's not delay the rest of the effort for it.

Adjourn

Action Items:

Michael Scott to submit proposal.

Continue work on legal issues.

Justin to develop argument online for supporting atomics in addition to relaxed transaction. (As some of us are not fully convinced)

Next meeting: Oct 2

What do we need to do for Portland meeting?

Future agenda:

Reconsider use of attributes.