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Audience: LWG

P2396R1: Concurrency TS 2 fixes

Background

In LWG pre-review of P1202, Jens Maurer caught a number of issues regarding feature-detection macros and header names. Subsequent LEWG discussion noticed that other papers targeting the TS had the same issue. The in-flight papers have all been fixed (per LEWG guidance, via the R0 version of this paper), but some have already been voted into the TS. This fixes the TS.

Relative to the R0 version of this paper, this version strips out the references to papers that have already been fixed (P0561, P1202 and P1478) and mentions where LEWG adopted suggestions.

Thanks to Jonathan Wakely, who wrote the Proposed Wording section.

Header names

No forwarded proposal placed itself under the experimental folder. The LEWG mailing list discussion was uniformly in favor of the experimental/ folder. There was some discussion of whether or not the headers should be fine-grained (roughly: per-proposal) or not. I suggest fine-grained headers, for two reasons:

- This allows different vendors to implement different parts of the TS more easily (e.g. some companies have expressed support for “donating” partial implementations of some proposals).
- This is existing TS practice.

LEWG adopted this direction.

Feature detection macros

Existing TSs have a section something like the following (exact format varies):

An implementation that provides support for this document shall define the feature test macro(s) in Table X:

Title	Subclause	Macro name	Value	Header
Foo	X	__cpp_lib_experimental_foo	2021XX	<experimental/foo>
Bar	Y	__cpp_lib_experimental_bar	2021YY	<experimental/bar>

I suggest following this convention for the Concurrency TS.

The TS currently defines a single macro, `__cpp_lib_concurrency_v2`, inserted into `<experimental/concurrency_v2>`. This does not follow existing conventions, and I propose removing it.

Proposed Wording

This wording is relative to N4895.

1. Add a new table to the end of 4.2 [general.namespaces]:

Table 1: - C++ library headers

<code><experimental/rcu></code>	<code><experimental/hazard_pointer></code>
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2. Replace the table in 4.3 [general.feature.test] with:

Title	Subclause	Macro name	Value	Header
Hazard pointer s	5.2	__cpp_lib_experimental_hazard_pointer	202106	<experimental/hazard_pointer>
Read-copy update (RCU)	5.3	__cpp_lib_experimental_rcu	202106	<experimental/rcu>

3. Change the heading of 5.2.2 to `<experimental/hazard_pointer>`

4. Change the heading of 5.3.2 to `<experimental/rcu>`