valueless_by_exception

Document number: P0239R0
Date: 2015-11-12
Audience: LEWG
Reply-to: Tony Van Eerd. first initial + last name at gmail dot com

Summary ("tl;dr")

variant's corrupted_by_exception() should be called valueless_by_exception(). It's been
discussed by the committee (a lot) and polled
(https://docs.google.com/forms/d/1DE3ebnyeDKA2KUp0tRdZBYtkFotpgviq6VJAVeheKfg/viewanalytics?usp=form_confirm) and there is consensus (as of writing!) for valueless_by_exception.

Motivation

std::experimental:variant's function corrupted_by_exception() is poorly named. In particular:

1. Regulated Industries - it has been suggested that "corrupted" may scare away usage in tightly
regulated industries with stringent code reviews
2. "corrupted" isn't correct - the variant object is not "corrupted" in the way memory, for example,
gets corrupted by UB such as out-of-bounds writes

However, there are good aspects to the name:

1. it is long and hard to type. This is typically not good, but in this case, similar to "reinterpret_cast",
some things should be hard to type,
2. A hard-to-type name is part of the "the Kona Kompromise". Those who compromised on a
rarely-invalid variant (instead of a never-invalid variant) really want a don't-type-this name
3. it is easy to grep for. If you don't want something overused, make it easily found and "policed"
4. "by_exception" correctly explains what happened, why it should rarely happen, and why it is
most likely handled when the exception is thrown (and not needed in "normal" code)

Design Decisions

1. 1-4 as above. It should be an ugly name.
2. "valueless" is correct - the variant has no value. "corrupted" is not quite correct.
3. A shorter name, such as just valueless(), seems carelessly inconsistent with names like
   has_value() (suggested for optional/any in P0032R0), whereas valueless_by_exception() looks
   purposely inconsistent, not carelessly inconsistent.
4. purposely inconsistent can be a good thing, when you want developers to question and
   understand why/how the underlying behaviour is inconsistent

Technical Specifications

:%s/corrupted_by_exception/valueless_by_exception/g

Acknowledgements

Thanks to Axel Naumann, Nevin ":-)" Liber, Ville Voutilainen, and everyone else involved.