B.3 — Introduction to C++17

ALEX DECEMBER 1, 2023

What is C++17?

In September of 2017, the ISO (International Organization for Standardization) (https://www.iso.org/home.html) approved a new version of C++, called C++17. C++17 contains a fair amount of new content

New improvements in C++17

For your interest, here's a list of the major changes that C++17 adds. Note that this list is not comprehensive, but rather intended to highlight some of the key changes of interest.

- __has_include preprocessor identifier to check if optional header files are available (no tutorial yet)
- if statements that resolve at compile time (8.4 -- Constexpr if statements)
- Initializers in if statements and switch statements (no tutorial yet)
- inline variables (7.9 -- Sharing global constants across multiple files (using inline variables))
- Fold expressions (no tutorial yet)
- Mandatory copy elision for some cases (mentioned in 14.15 -- Class initialization and copy elision)
- Nested namespaces can now be defined as namespace X::Y (7.2 -- User-defined namespaces and the scope resolution operator)
- Removal of std::auto_ptr and some other deprecated types
- static_assert no longer requires a diagnostic text message parameter (9.6 -- Assert and static_assert)
- std::any (no tutorial yet)
- std::byte (no tutorial yet)
- std::filesystem (no tutorial yet)
- std::optional (no tutorial yet)
- std::shared_ptr can now manage C-style arrays (but std::make_shared can't create them yet) (22.6 -- std::shared_ptr)
- std::size (11.2 -- Arrays (Part II))
- std::string_view (5.10 -- Introduction to std::string_view)
- Structured binding declarations (no tutorial yet)
- Template deduction for constructors (no tutorial yet)
- Trigraphs have been removed
- typename can now be used (instead of class) in a template template parameter
- UTF-8 (u8) character literals (no tutorial yet)

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