

C++ Club UK Meeting 114

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2020-10-15

September 2020 mailing

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Select papers

- P2216R0 `std::format` improvements
- P2218R0 More flexible `optional::value_or()`
- P2219R0 Executors Issues Needing Resolution

Bjarne Stroustrup on “dead bodies of type theorists”

Reddit

I can't produce a link off the top of my head, but I remember Bjarne Stroustrup saying (on a few occasions, in a talk or a panel) that “non-type template parameters were introduced in C++ over the dead bodies of some type theorists” (quote from memory). This surprises me since types depending on values is a fundamental concept in Martin-Löf type theory which is older than C++. Does anyone have any knowledge on what feedback Bjarne Stroustrup received from type theorists?

Clang 11 released

- [Release Notes](#)
- [Reddit](#)

New C++ features in GCC 10

RedHat :: [Reddit](#)

- Concepts
- Coroutines
- Unevaluated inline-assembly in `constexpr` functions
- Warning on deprecated comma expression in array subscript expressions
- Static structured bindings
- `constexpr`
- Deprecated `volatile`
- Conversions to arrays of unknown bound
- `constexpr` new and `dynamic_cast`
- The `[[nodiscard]]` attribute now supports an optional argument
- CTAD extensions
- Parenthesized initialization of aggregates
- **Modules are not yet supported, aiming for C++11**

Do you enforce Core Guidelines and/or use the Guidelines Support Library (GSL)?

Reddit

- C++ Core Guidelines
- Microsoft GSL
- GSL-Lite
- How to use the Core Guidelines checker in Visual Studio
- Reddit comment on VS2019 checker usage
- Thoughts on applying static analysis to a large code base (Reddit)
 - Thread on `[]` vs. `at()`, started by STL himself

- Videos
- Presentation materials (GitHub)

The Little Things: Speeding up C++ compilation

Article by Martin Hořeňovský

- [Reddit](#)
- [HackerNews](#)

Techniques

- Include less
- Forward declarations (*hmmm – GD*)
- Explicit outlining
- Hidden friends
- Link less
- Extern template
- **Modules** (*not mentioned... – GD*)

Tools

- [Include What You Use \(IWYU\)](#)
- [Ninja](#)
- [LLD](#)

`std::list::sort()` vs. `std::sort()`

Reddit

- Answer

Scott Meyers, **Effective STL**:

Item 44: Prefer member functions to algorithms with the same name.

The Defold game engine code style

Article

Code style

- C-like C++
- No classes (*huh? – GD*)
- No exceptions
- No STL
 - Custom containers
- Data ownership tracking
- C++98

(It's the end of 2020, by the way. – GD)

Should I use C++ exceptions?

Reddit

C++17 Zero allocation Coroutine/[Resumable function] library

GitHub

This does not use C++20 coroutines. It is a managed state machine style coroutine library, a modern take on **Duff's device**.

Reddit

I do not buy any of these anti-coroutine arguments (maybe except for the fact that HALO can fail in some situations – but that is an engineering problem in the compiler). ➡

Later, same author on Reddit: **C++20 coroutines, opinions?** And yes, **Rust gets mentioned**.

A Buffers Library for C++20

Colby Pike

Unpopular opinion: It's ok to derive from STL types/classes

Reddit

6 Efficient Things You Can Do to Refactor a C++ Project

B. Filipek

- 1 Update the Compiler and Set Correct C++ Standard Conformance
 - 2 Fix Code With Deprecated or Removed C++ Features
 - 3 Start Adding Unit Tests
 - 4 Decouple or Extract Classes
 - 5 Extract Non-member Functions
 - 6 Reduce the Global State
- [GitHub](#)
 - [Reddit](#)

Why do all guides use `#using namespace std` if it's supposedly really bad practice?

Reddit

C/C++: 70x faster file embeds using string literals

Article

- [GitHub](#)
- [Reddit](#)

Why I like C++ attributes

Marius Bancila

C++ STL-Like Algorithm Libraries

Conor Hoekstra

Library: Libcu++ - the NVIDIA Standard Library

GitHub

- [Reddit](#)

Recursive lambdas in C++

Philip Trettner

id Tech – Game engines written in C++

Engines and games

- [Reddit](#)

Fabien Sanglard's game engine code reviews

- [Quake](#)
- [Quake 2](#)
- [Quake 3](#)
- [Doom 3](#)

See also

[Doom Eternal study](#)

Named Parameters in C++20

Peter Dimov

- [Reddit](#)

C++ in Visual Studio Code reaches version 1.0

Julia Reid

- [Reddit](#)

Book: C++ Best Practices by Jason Turner

LeanPub (min. \$9.99)

C++ Talk Index

Website

- [Reddit](#)

vcpkg: Accelerate your team development environment with binary caching and manifests

Microsoft

- [Reddit](#)

Related

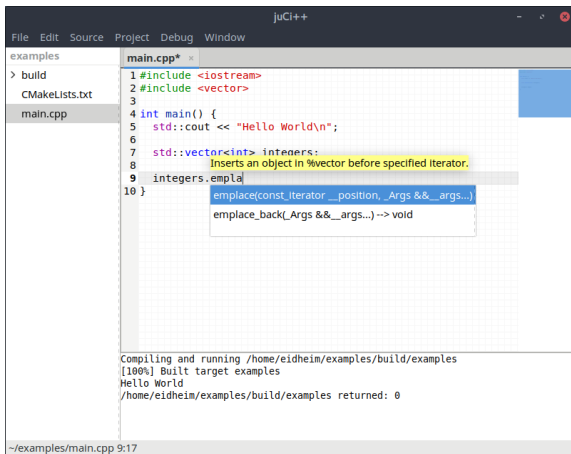
Why is it such an abysmal pain to use libraries in C++ compared to pretty much anything else?

The terrible **size_t**

Reddit

juCi++: a lightweight, cross-platform IDE

- GitLab
- Installation guide



The screenshot displays the juCi++ IDE window. The title bar reads 'juCi++'. The menu bar includes 'File', 'Edit', 'Source', 'Project', 'Debug', and 'Window'. On the left, a project explorer shows a tree structure with 'examples' as the root, containing 'build', 'CMakeLists.txt', and 'main.cpp'. The 'main.cpp' file is open in the editor, showing the following code:

```
1 #include <iostream>
2 #include <vector>
3
4 int main() {
5     std::cout << "Hello World\n";
6
7     std::vector<int> integers;
8     // Inserts an object in %vector before specified iterator.
9     integers.emplace
10 }
```

A tooltip is visible over the `emplace` call, showing the signature: `emplace(const_iterator __position, _Args &&__args...)` and `emplace_back(_Args &&__args...) -> void`. Below the editor, the output console shows the compilation and execution results:

```
Compiling and running /home/eidheim/examples/build/examples
[100%] Built target examples
Hello World
/home/eidheim/examples/build/examples returned: 0
```

The status bar at the bottom indicates the current file and line: `~/examples/main.cpp 9:17`.

Figure 1: Screenshot

Library: cpp-lazy

GitHub

Cpp-lazy is a fast and easy lazy evaluation library for C++14/17/20.

Lazy evaluation is an evaluation strategy which holds the evaluation of an expression until its value is needed. In this library, all the iterators are lazy evaluated.

This library is not a replacement for `ranges::v3` but rather a (smaller) alternative.

Library: Crypto3

- Home page
- Boost mailing list announcement
- GitHub
- Reddit

Library: AAA - Auxiliary Arithmetic Algorithms

- [GitHub](#) (MIT)
- [Docs](#)

C#-like events in C++

Reddit

(Unrelated: Variable name prefixes)

- Code on Pastebin
- Signal-Slot library benchmarks
- Boost.Signals2

Uses of immediately invoked function expressions (IIFE) in C++

- Erik Rigtorp
- Jonathan Müller

Overloading by Return Type in C++

Philip Trettner

- Reddit

```
1 struct to_string_t
2 {
3     std::string_view s;
4
5     // int from_string(std::string_view s);
6     operator int() const;
7     // bool from_string(std::string_view s);
8     operator bool() const;
9 };
10
11 int i = to_string_t{"7"};
12 bool b = to_string_t{"true"};
```

COVID-19 Public Service Announcement



MIT CSAIL 

@MIT_CSAIL

Stay at 127.0.0.1
Wear a 255.0.0.0

8:52 PM · Oct 2, 2020 · TweetDeck

160 Retweets **17** Quote Tweets **432** Likes