

# C++ Club UK Meeting 114

Gleb Dolgich

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# 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](#)
- [LLVM 11.0.0 Released - Here are some highlights for C/C++ developers](#)

# 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 GCC 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

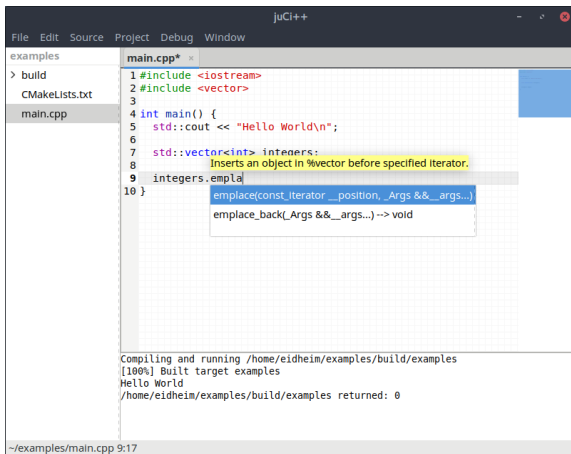
Why is it such an abysmal pain to use libraries in C++ compared to pretty much anything else?

## The terrible **size\_t**

Reddit

# juCi++: a lightweight, cross-platform IDE

- GitLab
- Installation guide



The screenshot displays the juCi++ IDE interface. 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 function signature: `emplace(const_iterator __position, _Args && __args...)` and `emplace_back(_Args && __args...) -> void`.

At the bottom of the IDE, a terminal window shows the output of a compilation and execution command:

```
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

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