C++ Club Meeting Notes

Gleb Dolgich

2018-03-08

PDF

Visual Studio 2017 version 15.6 released

- ▶ Release notes
- ▶ C++ improvements

Chrome switches to Clang on Windows, ditches MSVC

- ▶ Ars Technica
- ▶ LLVM Blog

  Building Chrome locally with Clang is about 15% slower than with MSVC.

Accio Dependency Manager, by Corentin

▶ Post

See also:

▶ Guy Davidson: Batteries not included: what should go in the C++ standard library?
▶ Corentin: A cake for your cherry: what should go in the C++ standard library?
▶ Titus Winters: What Should Go Into the C++ Standard Library

East const

- Jon Kalb
- Reddit

  const modifies what is on its left. Unless there is nothing on its left, in which case it modifies what's on its right.

- CppCoreGuidelines NL.26: Use conventional const notation. Reason: Conventional notation is more familiar to more programmers. Consistency in large code bases.

C++: Thoughts on Dealing with Signed/Unsigned Mismatch

- ▶ IT Hare
- ▶ Reddit
- ▶ Previously on Reddit

  Matters discussed here are related to mitigation of certain decisions which were made 50+ years ago and which are pretty much carved in stone now.

  Developers, while trying to get rid exactly of signed/unsigned warning, turned a perfectly-working-program-with-warnings, into a program-without-warnings-but-which-fails-once-a-day-or-so.

Stealth features responsible for half of F-35 defects

- ▶ Defence News (2018)
- ▶ JSF C++ Coding Standard (2005)
- ▶ HackerNews (1), HackerNews (2)
- ▶ F-35 Joint Strike Fighter benefits from modern software testing, quality assurance (2013)
- ▶ F-35 Software Reliability, Reddit

  <...> so-called quality escapes – errors made by Lockheed's workforce that could include drilling holes that are too big or installing a dinged part

C++ Metaprogramming

- ▶ Reddit question
- ▶ Book: C++ Templates: The Complete Guide, 2nd ed, by Vandervoorde, Josuttis, Gregor
- ▶ Video: Introduction to C++ Template Metaprogramming - Sasha Goldshtein
- ▶ Video: CppCon 2014: Walter E. Brown "Modern Template Metaprogramming: A Compendium Part 1, Part 2
- ▶ Video: CppCon 2016: Arthur O'Dwyer "Template Normal Programming Part 1, Part 2

  The main "rule" when doing template metaprogramming is, "if the value yield by such an expression is non-sensical, this function / class / etc... is skipped"

C++ Metaprogramming (cont.)

C++:

```cpp
template <
    typename T
  , std::enable_if_t<
      std::negation_v<
        std::conjunction<
            std::is_arithmetic<T>::type
          , std::is_same<T, QStringList>::type
        >
      >
    >* = nullptr>
QDataStream& operator>>(QDataStream& stream, T& obj);
```

C++ Metaprogramming (cont.)

Lisp:

```
1 (enable_if
2    (not
3     (and
4      (is_arithmetic T)
5      (is_same T QStringList)
6     )
7    )
8   )
```

Non-virtual destructors

▶ Post

```cpp
 1 struct B {
 2   B() { std::cout << 'b'; }
 3   ~B() { std::cout << 'B'; }
 4 };
 5 struct D : B {
 6   D() { std::cout << 'd'; }
 7   ~D() { std::cout << 'D'; }
 8 };
 9 int main() {
10   B* p = new D;
11   delete p;
12 }
```

▶ Herb Sutter's GotW #5 – "base's destructor should be virtual or protected."

shared_ptr reference count for nullptr

```
1 shared_ptr<int> sptr2(nullptr);
2 cout << "sptr2 use_count: " << sptr2.use_count() << endl;
3
4 shared_ptr<int> sptr6(nullptr, default_delete<int>());
5 cout << "sptr6 use_count: " << sptr6.use_count() << endl;
```

Output:

```
1 sptr2 use_count: 0
2 sptr6 use_count: 1
```

Twitter

Stephan T. Lavavej:

> *Unintentional Zen-like saying in the C++17 Standard: "If the path is empty, stop."*