

`std` Containers

All **`const`** member functions can be called concurrently by different threads on the same container.



Avoiding ABI Breaks



Sutter's Mill

Herb Sutter on software development

My little New Year's Week project (and maybe one for you?)

Herb Sutter 2025-01-02 7 Minutes

[Updates: Clarified that an intrusive discriminator would be far beyond what most people mean by "C++ ABI break." Mentioned unique addresses and common initial sequences. Added "unknown" state for passing to opaque functions.]

Here is my little New Year's Week project: Trying to write a small library to enable compiler support for automatic raw `union` member access checking.

The problem, and what's needed

During 2024, I started thinking: **What would it take to make C/C++ `union` accesses type-checked?** Obviously, the ideal is to change naked `union` types to something safe.(*) But because it will take time and effort for the world to adopt any solution that requires making source code changes, I wondered how much of the safety we might be able to get, at what overhead cost, just by recompiling existing code in a way that instruments ordinary `union` objects?

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I'm an author and speaker, and a programming language nerd whose focus is on enabling our program code to be both clean and fast. I've been writing about programming since 1993, usually about C++ or about concurrency and parallelism. I'm the designer