Singleton

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Design Patterns 15 Years Later

> “When discussing which patterns to drop, we found that we still love them all. (Not really—I'm in favor of dropping Singleton. Its use is almost always a design smell.)”
>
> — Erich Gamma

Module Overview

Motivation

Naïve Implementation

Laziness and Thread Safety

Monostate

Testability Issues

Singleton Lifetime

Motivation

- For some components it only makes sense to have one in the system
  - Database repository
  - Object factory
- E.g., the constructor call is expensive
  - We only do it once
  - We provide everyone with the same instance
- Want to prevent anyone creating additional copies
- Need to take care of lazy instantiation and multithreading

Singleton

A component which is instantiated only once.

Summary

A safe singleton is easy: just make a static variable and return a reference to it

Singetons are difficult to test

Consider defining singleton lifetime with a DI container