Case Studies

A short introduction to some pertinent case studies used in this course to apply the theory portions.

WE'LL COVER THE FOLLOWING

- Calculating the Sum of a Vector
- Thread-Safe Initialization of a Singleton
- Ongoing Optimization with CppMem

After presenting the theory of the memory model and the multithreading interface, I will apply the theory in a few case studies.

- Calculating the Sum of a Vector #

Calculating the sum of a vector can be done in various ways. You can do it sequentially, or concurrently with maximum and minimum sharing of data. The performance numbers differ drastically.

- Thread-Safe Initialization of a Singleton #

Thread-safe initialization of a singleton is the classical use-case for thread-safe initialization of a shared variable. There are many ways to do it, with varying performance characteristics.

- Ongoing Optimization with CppMem #

I will start with a small program and successively improve it, and verify each step of my process of ongoing optimization with CppMem. CppMem is an interactive tool for exploring the behavior of small code snippets using the

C++ memory model.