



**Techniques for Optimization**

1. Identifying work that can be removed

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Use a profile trace to identify sections of code that don't need to be run

• **Reducing the number of men by allocating resources by**

- You may need to think of an alternative approach in order to remove a chunk of code

• Evaluate lazily



• Evaluate asynchronously



# Techniques for Optimisation

## 1. Identifying work that can be removed

- The simplest form of optimisation is not doing some work
- Use a profile trace to identify sections of code that don't need to be run
  - E.g. reducing the number of memory allocations by reserving
- You may need to think of an alternative approach in order to remove a chunk of code
  - Evaluate lazily
  - Evaluate asynchronously

```

1  #include <vector>
2
3  static void Standard(benchmark::State& state)
4  {
5      for (auto _ : state)
6      {
7          std::vector<double> vec;
8
9          for (int i = 0; i < 1'000; ++i)
10             vec.push_back (0.0);
11     }
12 }
13 BENCHMARK(Standard);
14
15 static void Reserve(benchmark::State& state)
16 {
17     for (auto _ : state)
18     {
19         std::vector<double> vec;
20         vec.reserve (1'000);
21
22         for (int i = 0; i < 1'000; ++i)
23             vec.push_back (0.0);
24     }
25 }
26 BENCHMARK(Reserve);
27
28 static void Init(benchmark::State& state)
29 {
30     for (auto _ : state)
31     {
32         std::vector<double> vec (1'000, 0.0);
33         benchmark::DoNotOptimize (vec);
34     }
35 }
36 BENCHMARK(Init);

```