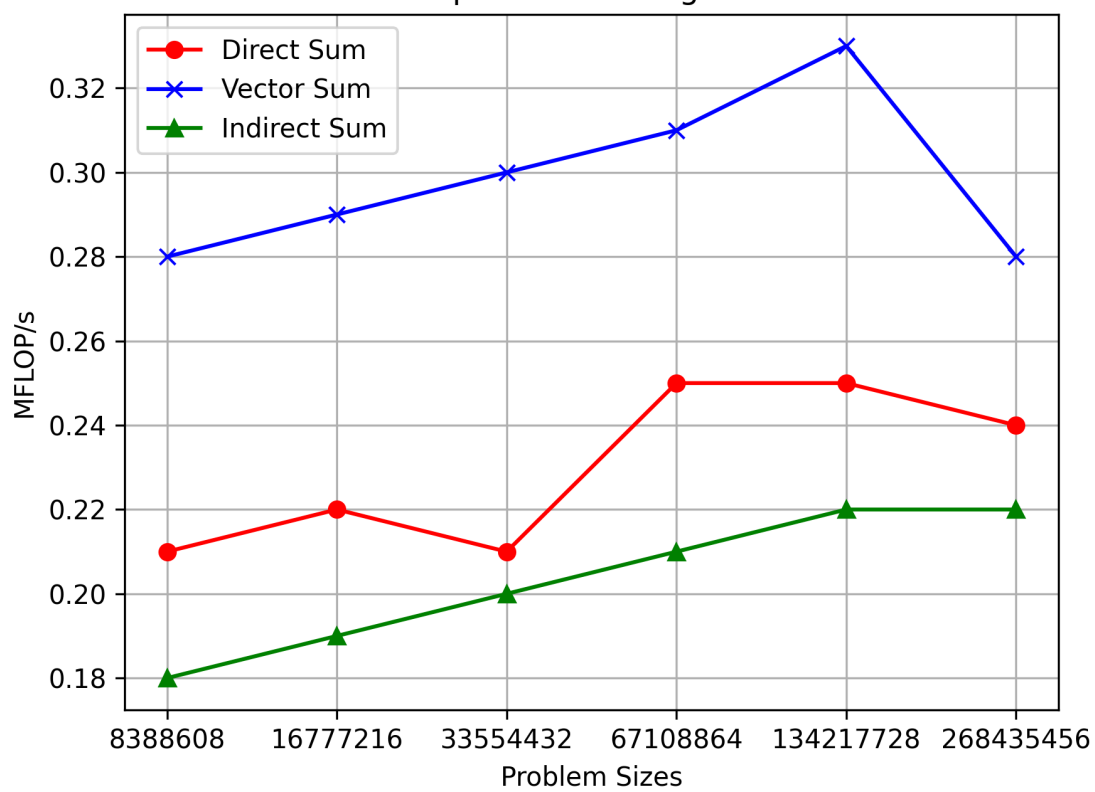
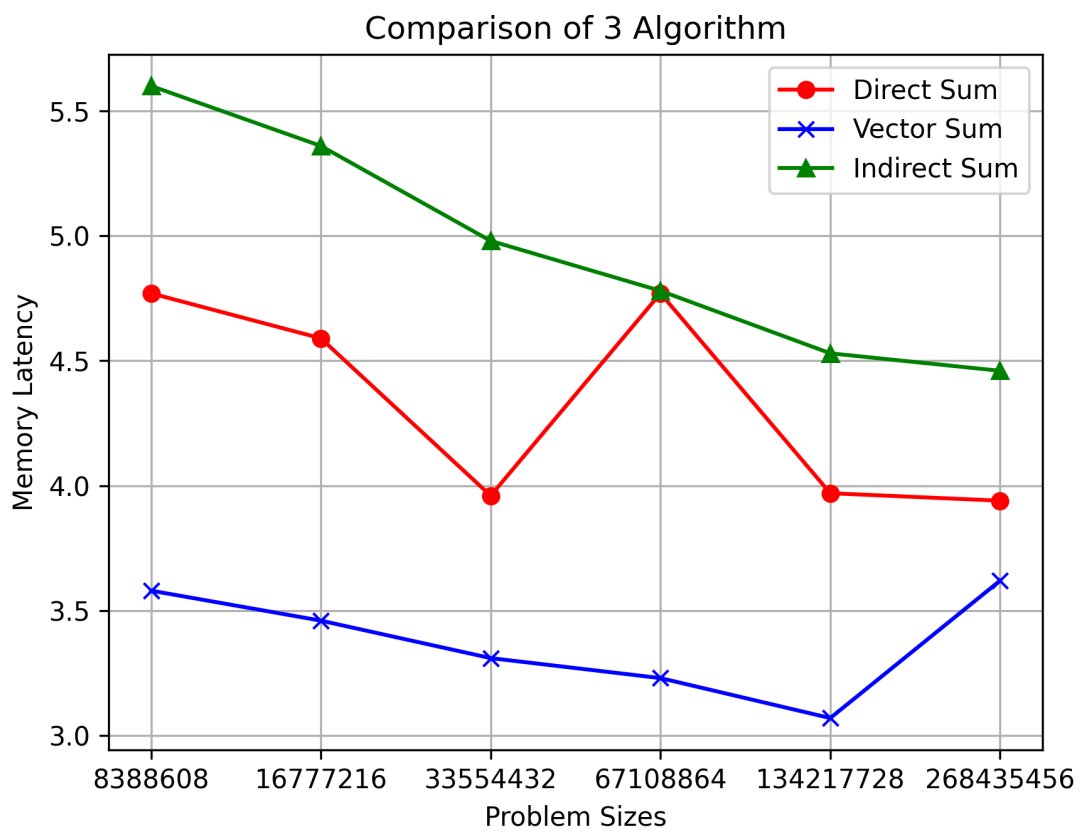
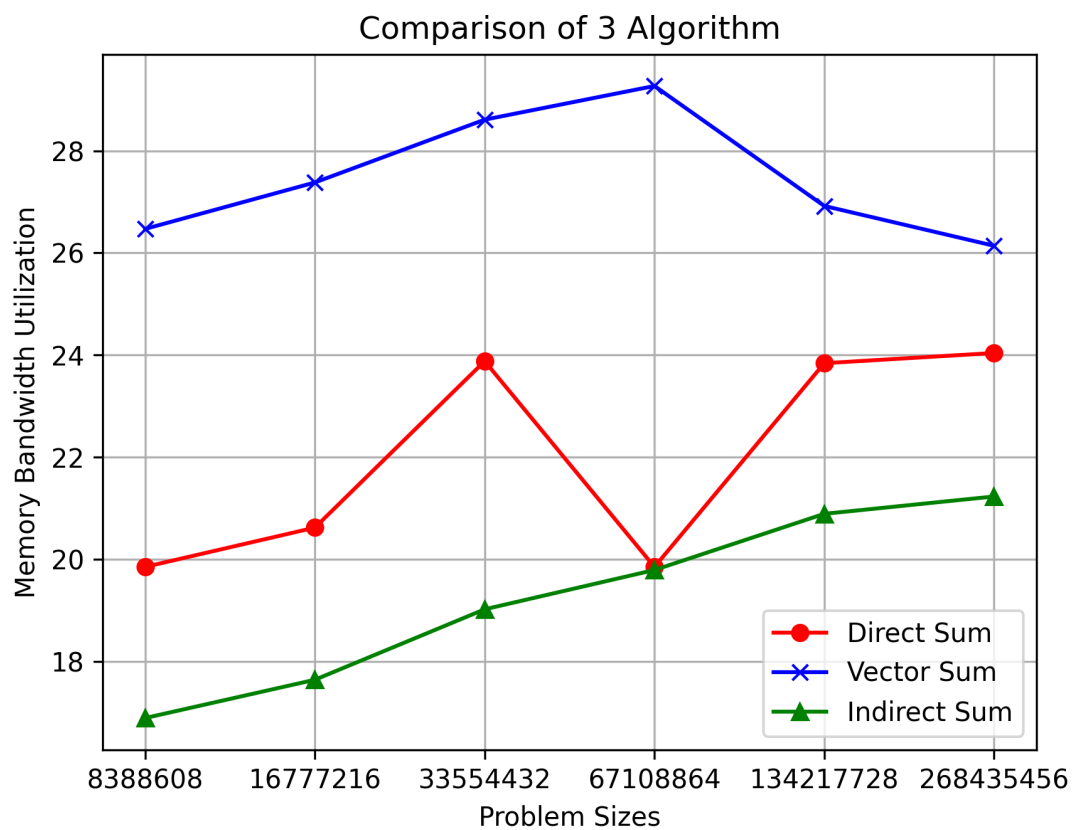


Comparison of 3 Algorithm





Data such as running time, number of operations, number of memory accesses, etc. for each algorithm. Generally speaking, MFLOP/s is an indicator to measure the calculation rate of an algorithm, and memory bandwidth utilization and memory latency are also important performance indicators. According to different algorithms and hardware environments, the performance of these indicators will also vary.

Generally speaking, the vector summation algorithm has the best calculation rate because it can use vector instructions to accelerate calculations, and it can also achieve data parallelism and improve CPU utilization. However, the direct summation algorithm and indirect summation algorithm needs to access the elements in the array one by one for calculation. There is no way to use vector instructions and data parallelism, and the efficiency is relatively low.

In the vector summation algorithm, since need to access the elements in the array, they memory bandwidth utilization is relatively high. In contrast, the memory access pattern of the indirect sum algorithm is more random, resulting in lower memory bandwidth utilization.

In the vector sum algorithm and the direct sum algorithm, due to the certain data locality, their memory latency is relatively low. However, the memory access pattern of the indirect sum algorithm is relatively random, which can easily lead to cache misses and high memory latency.