1.1

The efficiency can be calculated as:

Then the iso-efficiency function can be achieved by:

For ideal-scalable system, T(W,P)=0. However, it doesn’t mean that there’s no regulation to iso-efficiency function. When the number of threads p exceed W, some threads will be idle. Thus, the lower bound of iso-efficiency function is W=f(p).

1.2

The standard speedup is always 1.

As we see below, although the communication cost is much higher than calculation cost, parallel algorithm still increases the efficiency with large problem size. The reason is that communication cost is overlapped among all threads for each merge-iteration.

