1.

Function	mmul1	mmul2	mmul3
Duration time	341.411	308.037	8330.81

The single line of code that increments Cij that I used is: sum = sum + k. Compare mmul1 with mmul2, where changing the sequence of k doesn't affect duration time so much. By contrast, when comparing mmul2 and mmul3, when changing the sequence of i and j, the duration time is quite different. This may be because the matrices can't fit in cache over that size. The speed of extracting intermediate results in the first level cache is much faster than in the lower-level cache.

2.

Function	mmul1	mmul4
Duration time	341.411	1474.69

In mmul4, I used vector, which relies on dynamic allocation and release of memory, which is quite time-consuming. In mmul1, I used arrays, whose memory size is fixed and who rely on stack or static storage area memory that can be directly allocated during compilation.