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Home work 2

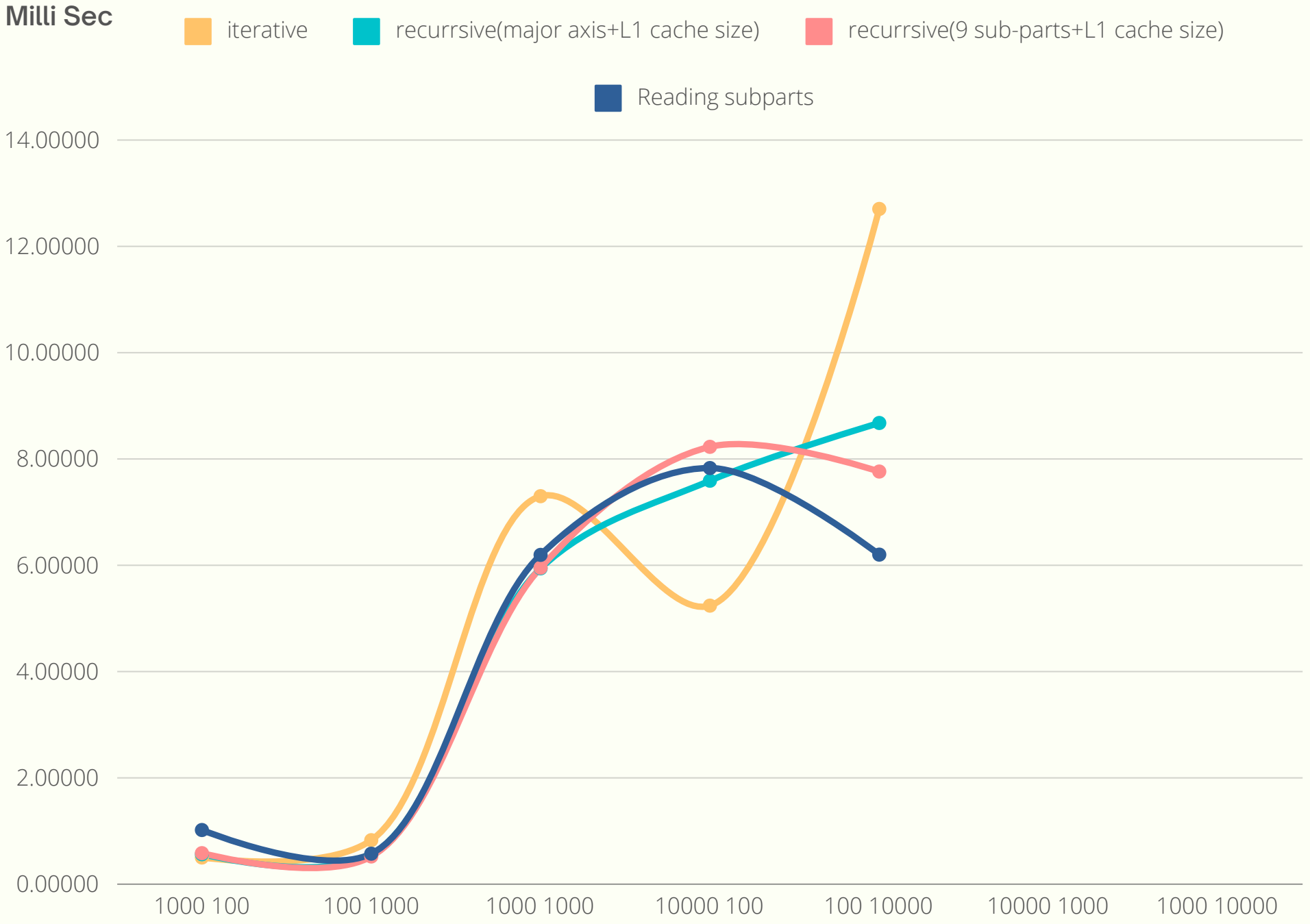
2.Write a program to transpose a large matrix (not necessarily square) using

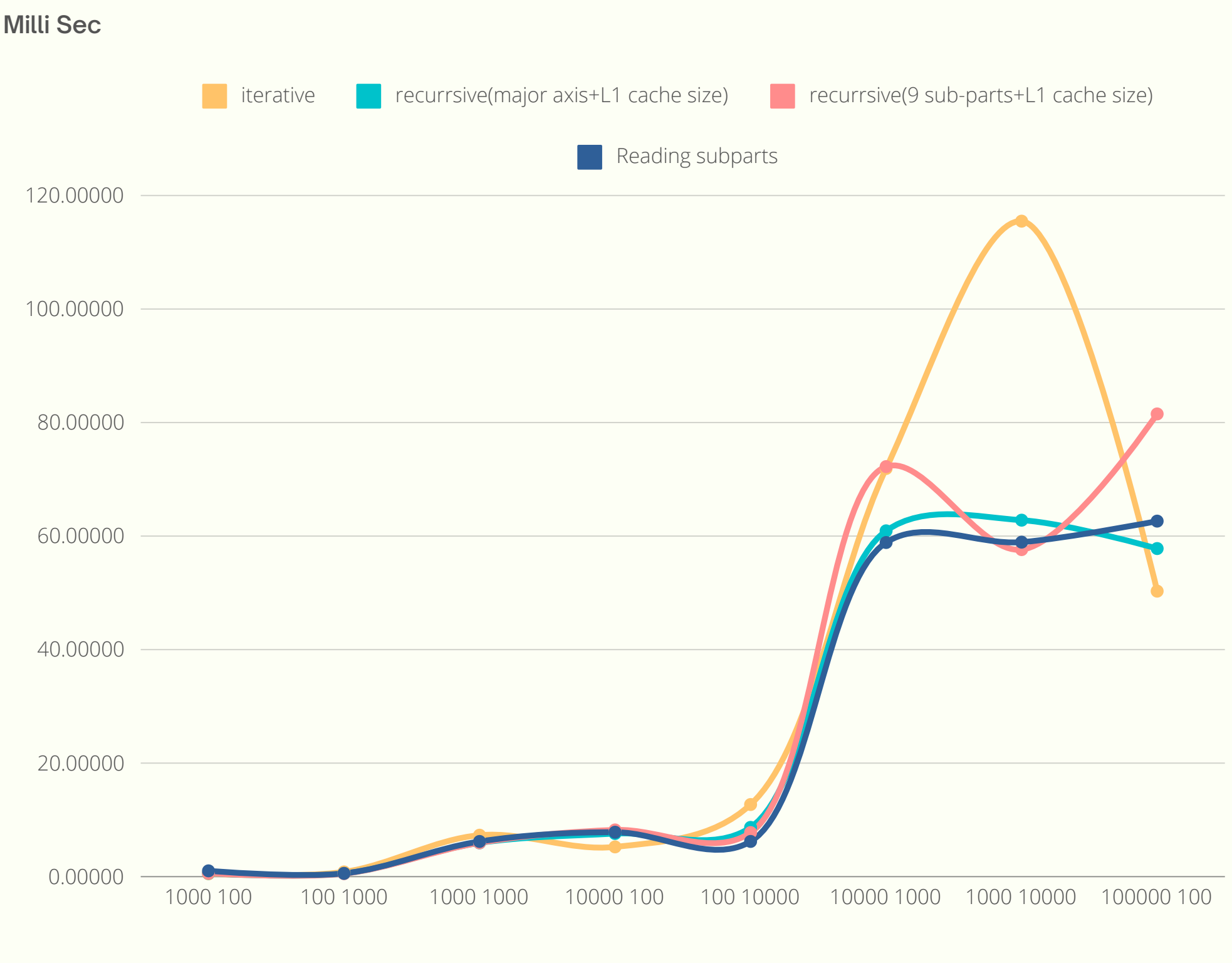
a. A naïve nested loop approach (a.cpp)

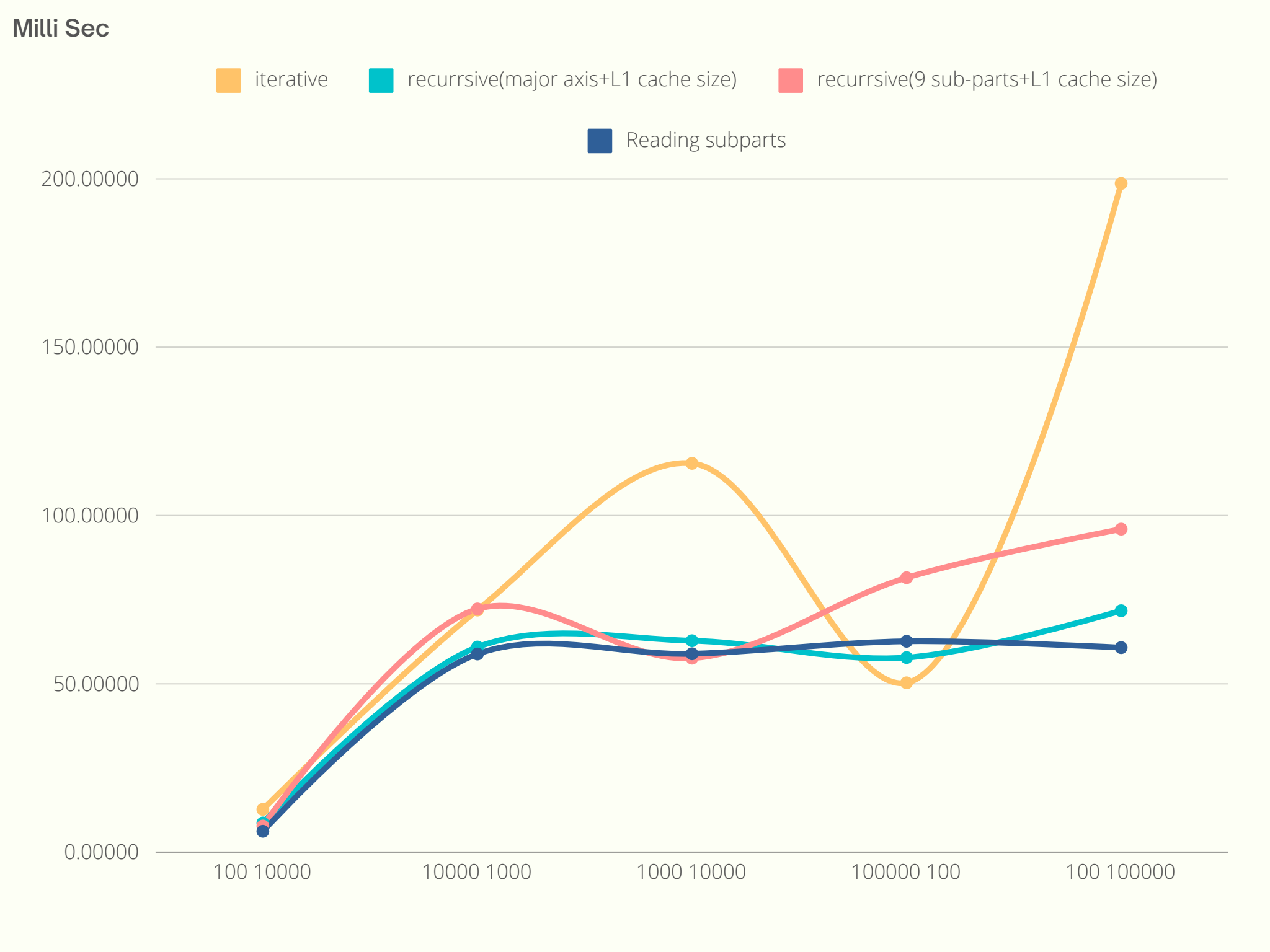
b. A recursive approach (b1.cpp b2.cpp)

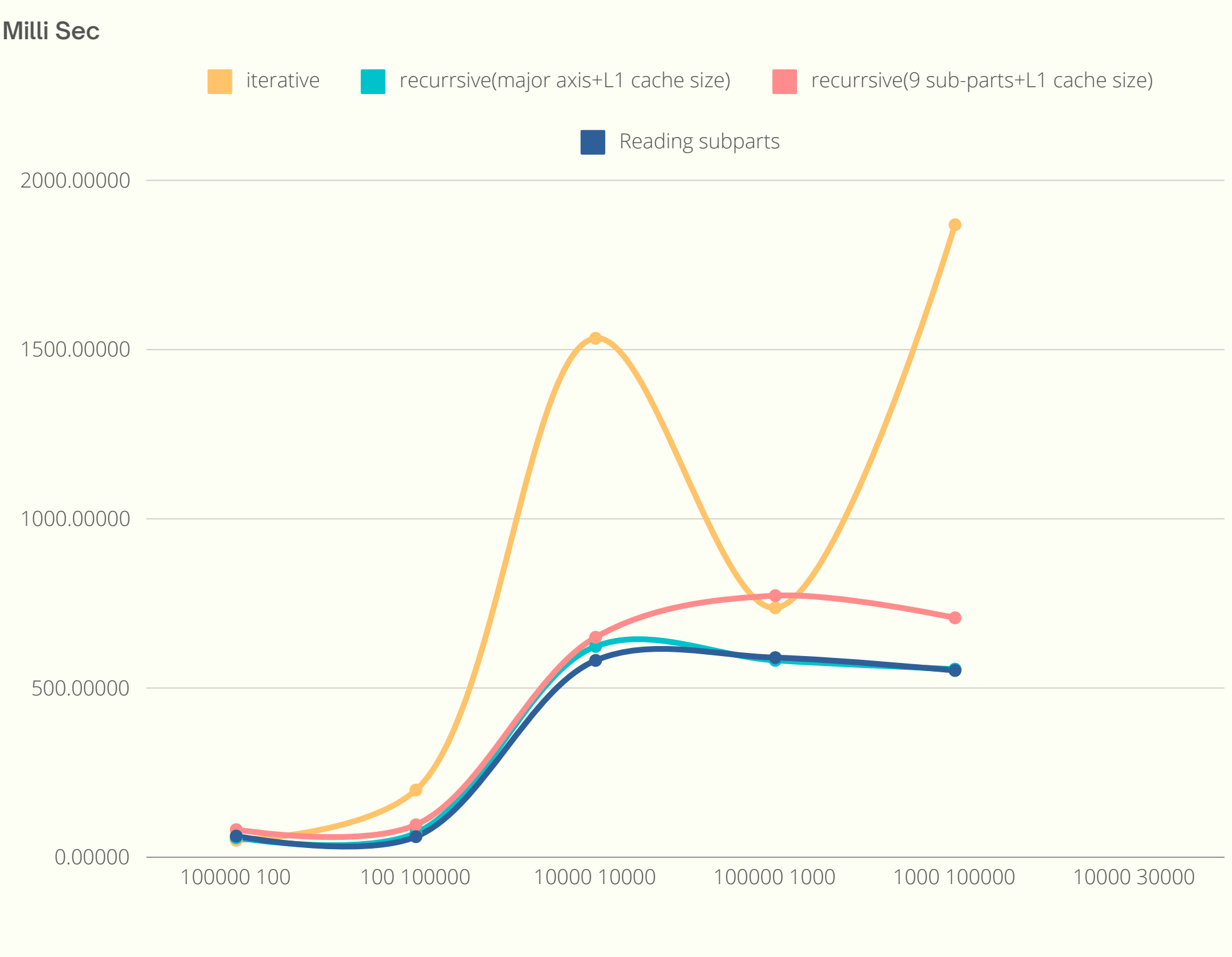
c. Reading an appropriate sized submatrix, transpose the submatrix, and write the submatrix back. (c.cpp)

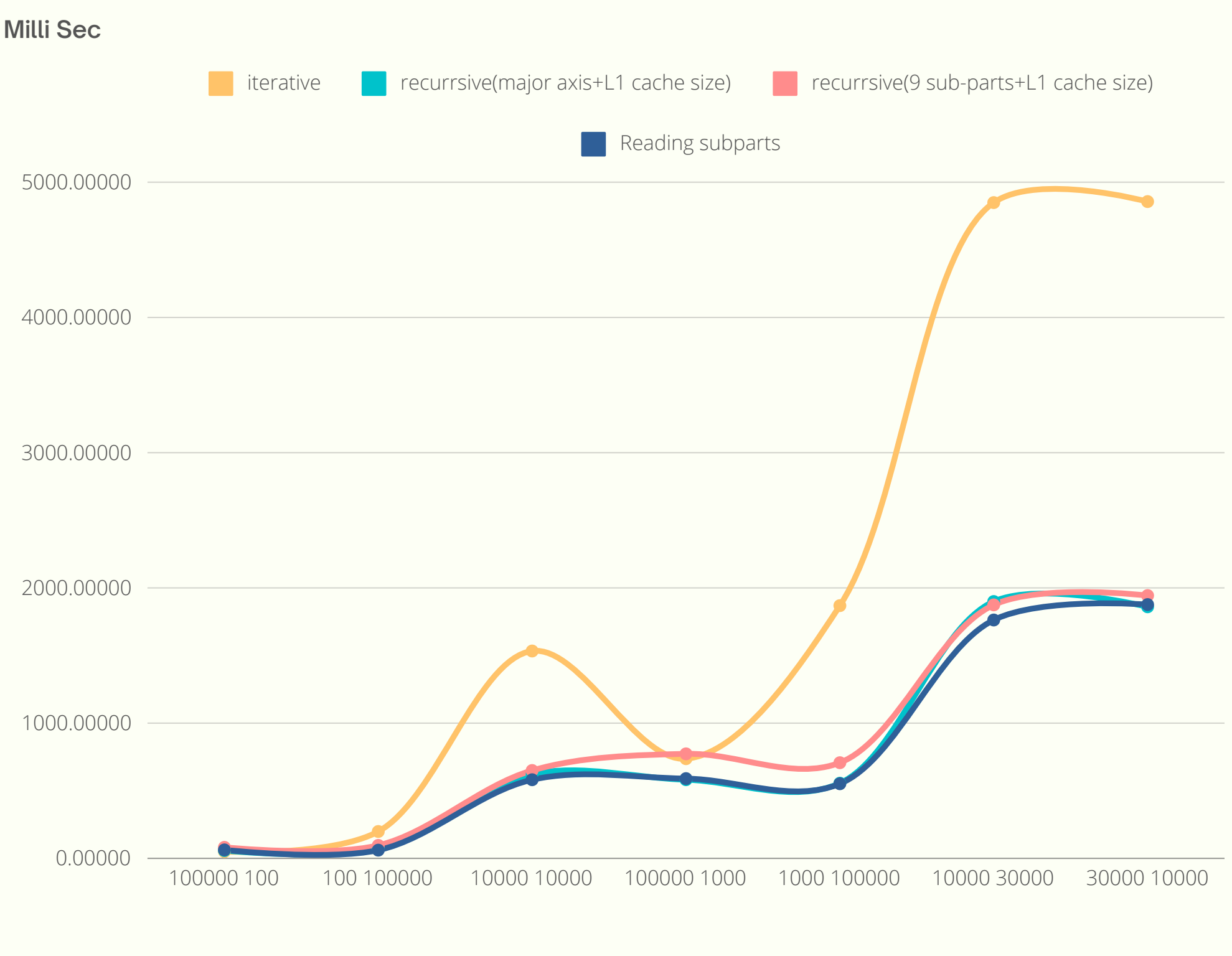
Milli Sec
iterative
recurrsive(major axis+L1 cache size)
recurrsive(9 sub-parts+L1 cache size)
Reading subparts
1.20000
1.00000
0.80000
0.60000
0.40000
0.20000
0.00000
10*10
100*100
1000 10
10 1000
1000 100
100 1000
1000 1000
10000 100
100 10000
10000 1000
1000 10000

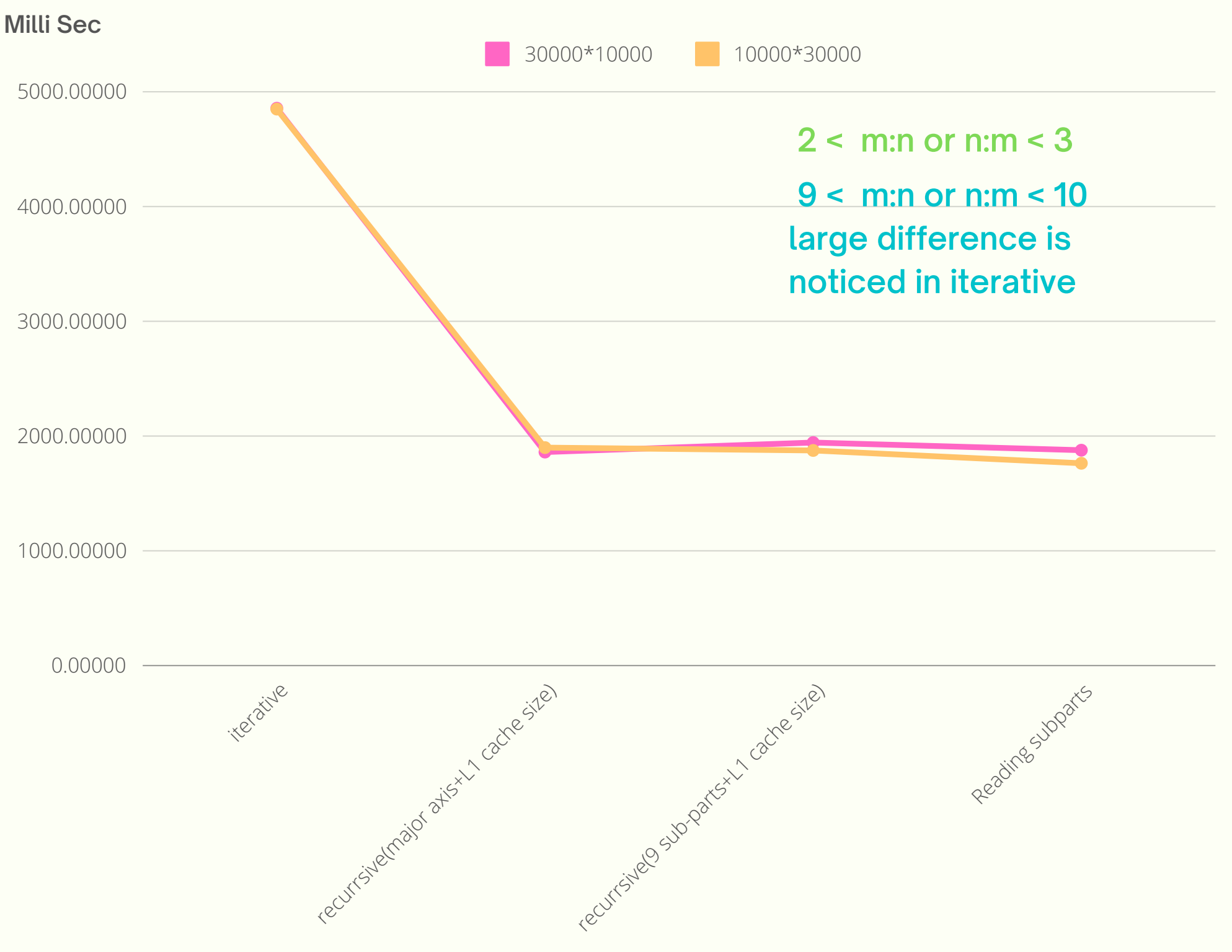

Milli Sec
iterative
recurrsive(major axis+L1 cache size)
recurrsive(9 sub-parts+L1 cache size)
Reading subparts
14.00000
12.00000
10.00000
8.00000
6.00000
4.00000
2.00000
0.00000
1000 100
100 1000
1000 1000
10000 100
100 10000
10000 1000
1000 10000

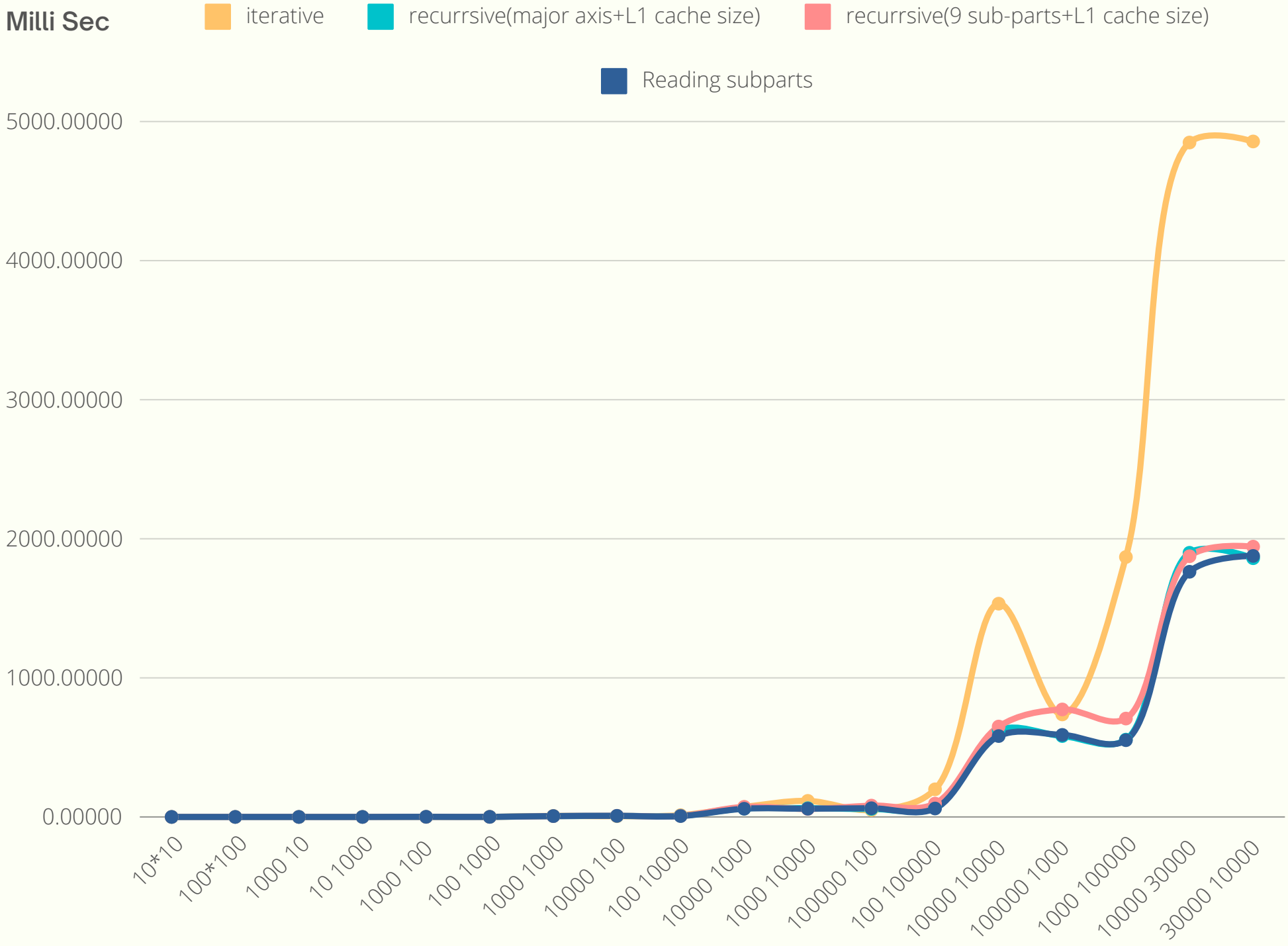

Milli Sec
iterative
recurrsive(major axis+L1 cache size)
recurrsive(9 sub-parts+L1 cache size)
Reading subparts
120.00000
100.00000
80.00000
60.00000
40.00000
20.00000
0.00000
1000 100
100 1000
1000 1000
10000 100
100 10000
10000 1000
1000 10000
100000 100


Milli Sec
iterative
recurrsive(major axis+L1 cache size)
recurrsive(9 sub-parts+L1 cache size)
Reading subparts
200.00000
150.00000
100.00000
50.00000
0.00000
100 10000
10000 1000
1000 10000
100000 100
100 100000


Milli Sec
iterative
recurrsive(major axis+L1 cache size)
recurrsive(9 sub-parts+L1 cache size)
Reading subparts
2000.00000
1500.00000
1000.00000
500.00000
0.00000
100000 100
100 100000
10000 10000
100000 1000
1000 100000
10000 30000


Milli Sec
iterative
recurrsive(major axis+L1 cache size)
recurrsive(9 sub-parts+L1 cache size)
Reading subparts
5000.00000
4000.00000
3000.00000
2000.00000
1000.00000
0.00000
100000 100
100 100000
10000 10000
100000 1000
1000 100000
10000 30000
30000 10000


Milli Sec
30000*10000
10000*30000
5000.00000
4000.00000
3000.00000
2000.00000
1000.00000
0.00000
2 < m:n or n:m < 3
9 < m:n or n:m < 10
large difference is noticed in iterative
iterative
recurrsive(major axis+L1 cache size)
recurrsive(9 sub-parts+L1 cache size)
Reading subparts


Milli Sec
iterative
recurrsive(major axis+L1 cache size)
recurrsive(9 sub-parts+L1 cache size)
Reading subparts
5000.00000
4000.00000
3000.00000
2000.00000
1000.00000
0.00000
10*10
100*100
1000 10
10 1000
1000 100
100 1000
1000 1000
10000 100
100 10000
10000 1000
1000 10000
100000 100
100 100000
10000 10000
100000 1000
1000 100000
10000 30000
30000 10000