

OS版本:

```
sein@Sein:~$ uname -a
Linux Sein 6.2.0-32-generic #32~22.04.1-Ubuntu SMP PREEMPT_DYNAMIC Fri Aug 18 10:40:13 UTC 2 x86_64 x86_64 x86_64 GNU/Linux
```

gcc版本:

```
gcc version 11.4.0 (Ubuntu 11.4.0-1ubuntu1~22.04)
```

CPU:

```
架构: x86_64
CPU 运行模式: 32-bit, 64-bit
Address sizes: 39 bits physical, 48 bits virtual
字节序: Little Endian
CPU: 20
在线 CPU 列表: 0-19
厂商 ID: GenuineIntel
型号名称: 12th Gen Intel(R) Core(TM) i7-12700H
CPU 系列: 6
型号: 154
每个核的线程数: 2
每个座的核数: 14
座: 1
步进: 3
CPU 最大 MHz: 4700.0000
CPU 最小 MHz: 400.0000
BogoMIPS: 5376.00
```

内存:

```
sein@Sein:~$ free -m
```

	total	used	free	shared	buff/cache	available
内存:	31751	2669	23343	929	5738	27718
交换:	15647	0	15647			

$$M = N = K = 2048$$

```
sein@Sein:~/hpc/lab2$ time ./a.out

real    1m0.131s
user    0m59.873s
sys     0m0.149s
sein@Sein:~/hpc/lab2$ time ./test_cblas_open

real    0m2.162s
user    0m3.595s
sys     0m3.652s
```

$$M = N = K = 1024$$

```
h@Sein:~/hpc/lab2$ time ./a.out

      0m3.229s
      0m3.151s
      0m0.052s
h@Sein:~/hpc/lab2$ time ./test_cblas_open

      0m0.599s
      0m1.524s
      0m3.251s
```

$$M = N = K = 256$$

```
@Sein:~/hpc/lab2$ time ./test_cblas_open

      0m0.060s
      0m0.267s
      0m0.784s
@Sein:~/hpc/lab2$ gcc dgemm_naive.c
@Sein:~/hpc/lab2$ time ./a.out

      0m0.071s
      0m0.067s
      0m0.005s
```

$$M = N = K = 64$$

```
h@Sein:~/hpc/lab2$ time ./a.out
0m0.007s
0m0.003s
0m0.004s
h@Sein:~/hpc/lab2$ time ./test_cblas_open
0m0.011s
0m0.036s
0m0.058s
```

$$M = N = K = 16$$

```
h@Sein:~/hpc/lab2$ time ./test_cblas_open
0m0.008s
0m0.017s
0m0.024s
h@Sein:~/hpc/lab2$ gcc dgemm_naive.c
h@Sein:~/hpc/lab2$ time ./a.out
0m0.003s
0m0.002s
0m0.000s
```