

The test machine:

```
yxie@stegosaurus:~$ lscpu
Architecture:          x86_64
CPU op-mode(s):      32-bit, 64-bit
Byte Order:           Little Endian
CPU(s):               16
On-line CPU(s) list: 0-15
Thread(s) per core:  2
Core(s) per socket:  4
CPU socket(s):        2
NUMA node(s):         2
Vendor ID:            GenuineIntel
CPU family:           6
Model:                44
Stepping:             2
CPU MHz:              1600.000
BogoMIPS:             4799.88
Virtualization:       VT-x
L1d cache:            32K
L1i cache:            32K
L2 cache:             256K
L3 cache:             12288K
NUMA node0 CPU(s):   0-3,8-11
NUMA node1 CPU(s):   4-7,12-15
```

The output is like:

```
perf stat -e cycles -e cache-misses ./copymatrix1
```

```
Performance counter stats for './copymatrix1':
```

```
565,655,914 cycles          # 0.000 GHz
 2,192,589 cache-misses
0.212747304 seconds time elapsed
```

A summary of the results for different gcc optimization levels:

	gcc opt	Cycles	Cache-misses	Time (sec)
copymatrix1		565,655,914	2,192,589	0.213
copymatrix 2		1,489,088,354	4,103,286	0.559
copymatrix1_O2	-O2	235,762,970	2,279,340	0.089
copymatrix 2_O2	-O2	1,335,904,093	4,120,732	0.502
copymatrix 1_O3	-O3	195,818,844	2,863,565	0.074
copymatrix 2_O3	-O3	1,312,940,812	4,118,239	0.493

	gcc opt	Cycles	Cache-misses	Time (sec)
lower1		168,977,836,367	739,016	63.437
lower2		21,505,373	17,736	0.00841
lower1_O2	-O2	6,384,155	16,071	0.00270
lower2_O2	-O2	7,254,307	3,789	0.00305
lower1_O3	-O3	4,252,891	6,052	0.00189
lower2_O3	-O3	5,135,302	2,116	0.00224