

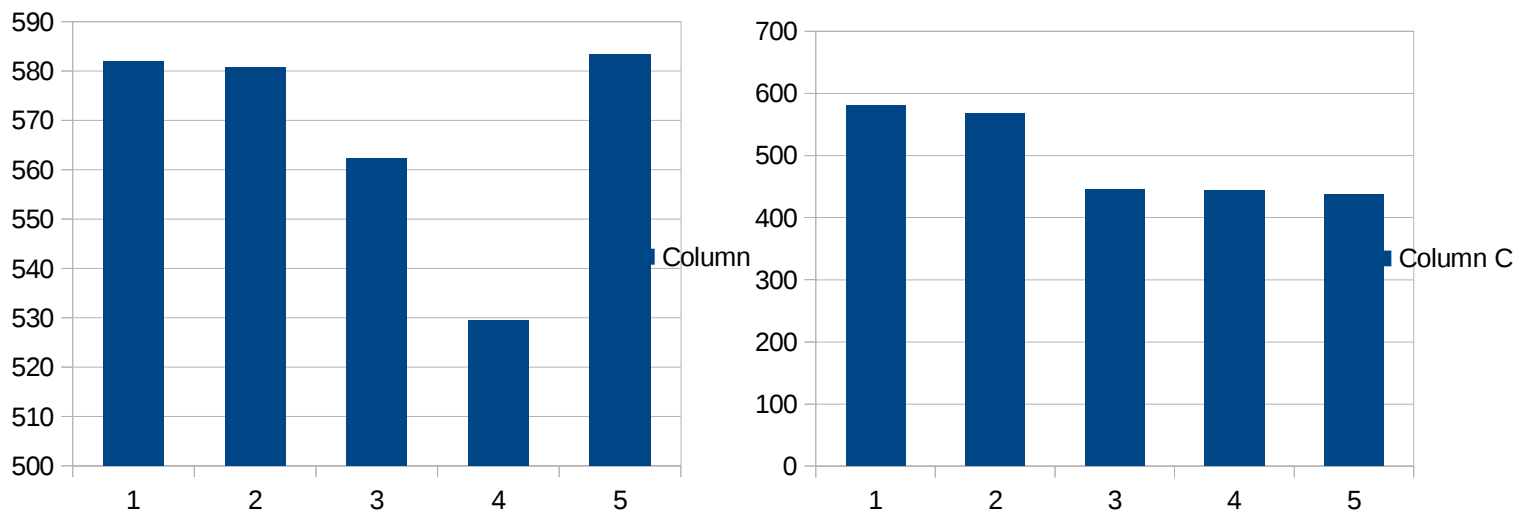
Περιγραφή του προγράμματος

Αρχικά δεσμεύω συνεχόμενες θέσεις μνήμης σε έναν υποθετικό δύο διαστάσεων πίνακα α όπου στην συνέχεια τον αρχικοποιώ σε 3.0 . Στην συνέχεια καλώ την συναρτηση `get_walltime()` για να υπολογισώ στην συνέχεια τον χρόνο υπολογισμού. Εδώ χωρίζω το πρόγραμμα σε δύο για να κάνω υπολογισμούς ανα στήλη και ανα γραμμή χόρια. Τέλος κάνω έναν έλεγχο για να δώ ότι πραγματοποιήθηκαν οι πράξεις στο συμ χωρίς πρόβλημα και κάνω `print` τον χρόνο υπολογισμού.

Εξίγιση

Το πρόγραμμα που κάνει προσπελάσεις ανά στήλη θα είναι πιο γρήγορο λόγω του τρόπου που ο υπολογιστής μεταφέρει data στην κρυφή μνήμη. Ανα στήλη επεξεργάζεται μεγαλύτερα blocks στην μνήμη.

Διαγράμματα



RAW DATA

```
sum+= a[i*NCOL + j];
```

rows 100 col 100

```
0.000034 Megaccs 586.615944 sum = 30000
0.000035 Megaccs 574.562192 sum = 30000
0.000034 Megaccs 586.615944 sum = 30000
0.000035 Megaccs 570.653605 sum = 30000
0.000035 Megaccs 570.653605 sum = 30000
0.000034 Megaccs 590.747042 sum = 30000
```

Mean: 581.8834476
Median: 586.615944
Range: 20.093437
Mode: 570.653605, 590.747042, each appeared 2 times
Largest: 590.747042
Smallest: 570.653605
Sum: 2909.417238
Count: 5

1000 100

```
0.000344 Megaccs 581.331116 sum = 300000
0.000345 Megaccs 579.724119 sum = 300000
0.000344 Megaccs 581.331116 sum = 300000
0.000344 Megaccs 581.331116 sum = 300000
0.000345 Megaccs 579.724119 sum = 300000
```

Mean: 580.6883172
Median: 581.331116
Range: 1.606997
Mode: 581.331116, appeared 3 times
Largest: 581.331116

Smallest: 579.724119
Sum: 2903.441586
Count: 5

10000 100

0.003544 Megaccs 564.319408 sum = 3000000
0.003611 Megaccs 553.886299 sum = 3000000
0.003511 Megaccs 569.646068 sum = 3000000
0.003598 Megaccs 555.868266 sum = 3000000
0.003520 Megaccs 568.179897 sum = 3000000

Mean: 562.3799876
Median: 564.319408
Range: 15.759769
Mode: All values appeared just once.
Largest: 569.646068
Smallest: 553.886299
Sum: 2811.899938
Count: 5

100000 100

0.034386 Megaccs 581.633420
0.036780 Megaccs 543.775557
0.035191 Megaccs 568.326174
0.035305 Megaccs 566.491626
0.051579 Megaccs 387.754717

Mean: 529.5962988
Median: 566.491626
Range: 193.878703
Mode: All values appeared just once.
Largest: 581.633420
Smallest: 387.754717
Sum: 2647.981494
Count: 5

1000000 100

0.035337 Megaccs 565.979462 sum = 30000000
0.034219 Megaccs 584.474234 sum = 30000000
0.033998 Megaccs 588.269681 sum = 30000000
0.033843 Megaccs 590.963451 sum = 30000000

0.034076 Megacces 586.923771 sum = 30000000

Mean: 583.3221198

Median: 586.923771

Range: 24.983989

Mode: All values appeared just once.

Largest: 590.963451

Smallest: 565.979462

Sum: 2916.610599

Count: 5

```
sum+= a[j*NROWS + i];
```

rows 100 col 100

0.000035 Megacces 570.653605 sum = 30000

0.000034 Megacces 586.615944 sum = 30000

0.000034 Megacces 590.747042 sum = 30000

0.000034 Megacces 586.615944 sum = 30000

0.000035 Megacces 570.653605 sum = 30000

Mean: 581.057228

Median: 586.615944

Range: 20.093437

Mode: 570.653605, 586.615944, each appeared 2 times

Largest: 590.747042

Smallest: 570.653605

Sum: 2905.28614

Count: 5

1000 100

0.000354 Megacces 565.270081 sum = 300000

0.000353 Megacces 566.415125 sum = 300000

0.000350 Megacces 571.431063 sum = 300000

0.000353 Megacces 566.797838 sum = 300000

0.000351 Megacces 569.491378 sum = 300000

Mean: 567.881097

Median: 566.797838

Range: 6.160982

Mode: All values appeared just once.
Largest: 571.431063
Smallest: 565.270081
Sum: 2839.405485
Count: 5

10000 100

0.004550 Megaccs 439.562356 sum = 3000000
0.004485 Megaccs 445.941630 sum = 3000000
0.004383 Megaccs 456.299391 sum = 3000000
0.004546 Megaccs 439.954267 sum = 3000000
0.004503 Megaccs 444.147191 sum = 3000000

Mean: 445.180967
Median: 444.147191
Range: 16.737035
Mode: All values appeared just once.
Largest: 456.299391
Smallest: 439.562356
Sum: 2225.904835
Count: 5

100000 100

0.046170 Megaccs 433.181755 sum = 30000000
0.045024 Megaccs 444.208341 sum = 30000000
0.045048 Megaccs 443.970891 sum = 30000000
0.044544 Megaccs 448.994439 sum = 30000000
0.044616 Megaccs 448.269840 sum = 30000000

Mean: 443.7250532
Median: 444.208341
Range: 15.812684
Mode: All values appeared just once.
Largest: 448.994439
Smallest: 433.181755
Sum: 2218.625266
Count: 5

1000000 100

0.468905 Megaccs 426.525654 sum = 300000000
0.448100 Megaccs 446.328855 sum = 300000000
0.459990 Megaccs 434.792037 sum = 300000000

0.459308 Megacces 435.437745 sum = 300000000
0.453171 Megacces 441.334493 sum = 300000000

Mean: 436.8837568
Median: 435.437745
Range: 19.803201
Mode: All values appeared just once.
Largest: 446.328855
Smallest: 426.525654
Sum: 2184.418784
Count: 5

Sigrisi mean

rows 100 col 100
sum+= a[i*NCOL + j];> sum+= a[j*NROWS + i];
Megacces : 581.8834476 > 581.057228

rows 1000 col 100
sum+= a[i*NCOL + j];> sum+= a[j*NROWS + i];
Megacces : 580.6883172 > 567.881097

rows 10000 col 100
sum+= a[i*NCOL + j];> sum+= a[j*NROWS + i];
Megacces : 562.3799876 > 445.180967

rows 100000 col 100
sum+= a[i*NCOL + j];> sum+= a[j*NROWS + i];
Megacces : 529.5962988 > 443.7250532

rows 1000000 col 100
sum+= a[i*NCOL + j];> sum+= a[j*NROWS + i];
Megacces : 583.3221198 > 436.8837568

