

One

just stdio

Two

referenced equation for side length and doubling

Three

Just used n^2 approach ran good enough

Four

Had some difficulty making compiler not optimize away the operations, but matches expectations

Five

As the size grows the column major approach has more and more cache misses and slows down, but there was little real difference in static vs dynamic speed

Six

Ugly but finds the end and flips characters, used the function pointer

output

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TERMINAL
● PS C:\Users\Asher\Desktop\c-mini-challenges-AMR1234567891011> ./one.exe Asher
Name Asher
● PS C:\Users\Asher\Desktop\c-mini-challenges-AMR1234567891011> .\two.exe
estimate 4: 2.828427
estimate 8: 3.061467
estimate 16: 3.121445
estimate 32: 3.136548
estimate 64: 3.140331
estimate 128: 3.141277
Elapsed time: 0.001696 seconds
● PS C:\Users\Asher\Desktop\c-mini-challenges-AMR1234567891011> .\three.exe
Elapsed time: 0.000000 seconds
Result vector:
18817
18431
5967
16686
25429
25429
18817
16835
17175
25000
● 14060
PS C:\Users\Asher\Desktop\c-mini-challenges-AMR1234567891011> ./four.exe
avg time mult: 0.001686 / 10^6 avg s val: 15364802543419083266
avg time div: 0.004881 / 10^6 avg s val: 0.000000
avg time sqrt: 0.026860 / 10^6 avg s val: 1.000000
avg time sin: 0.043018 / 10^6 avg s val: 0.001732
● PS C:\Users\Asher\Desktop\c-mini-challenges-AMR1234567891011> .\five.exe
Static Row-Major n=128 sum=8250.244453 time=0.000000 s
Static Column-Major n=128 sum=8250.244453 time=0.000000 s
Dynamic Row-Major n=128 sum=8247.618732 time=0.000000 s
Dynamic Column-Major n=128 sum=8247.618732 time=0.000000 s

Static Row-Major n=256 sum=32797.224006 time=0.000000 s
Static Column-Major n=256 sum=32797.224006 time=0.000000 s
Dynamic Row-Major n=256 sum=32712.221412 time=0.000000 s
Dynamic Column-Major n=256 sum=32712.221412 time=0.000000 s

Static Row-Major n=512 sum=131126.894131 time=0.000000 s
Static Column-Major n=512 sum=131126.894131 time=0.000000 s
Dynamic Row-Major n=512 sum=130934.888272 time=0.000000 s
Dynamic Column-Major n=512 sum=130934.888272 time=0.000000 s

Static Row-Major n=1024 sum=524807.585681 time=0.003000 s
Static Column-Major n=1024 sum=524807.585681 time=0.002000 s
Dynamic Row-Major n=1024 sum=524328.571062 time=0.003000 s
Dynamic Column-Major n=1024 sum=524328.571062 time=0.005000 s

● PS C:\Users\Asher\Desktop\c-mini-challenges-AMR1234567891011> ./six.exe
Input: Testing Testing Testing 123!!!
Old:   Testing Testing Testing 123!!!
New:   !!!321 gnitseT gnitseT gnitseT
```