Quplexity-Intel Assembly Tests

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Jul 2024

Summing Elements In An Array:

The Qrack project can find substantial benefit in using x86 Assembly for summing elements in an array: When comparing the time it taks C++ and Assembly to do this operation I noticed Assembly was around 5.20 times faster than C++.

Assembly: Sum: 1784293664, Time taken: 587 ms.
C++: Sum: 1784293664, Time taken: 3055 ms.

Sum Of Square Roots:

The second function that I found to have significant performace benefits when being written in Assembly rather than C++ was: The Sum of Square Roots.

C++ time: 10.1214 ms
Assembly time: 0.953463 ms
Sum of square roots (C++): 6.66969e+08
Sum of square roots (Assembly): 6.66969e+08

Inverse Square Root:

A basic inverse square root wtitten in Assembly provides a small amount of performance benefits:

Inverse square root (C++): 0.22201
C++ floating square root time: 3e-05 ms

Inverse square root (Assembly): 0.22201
Assembly floating square root time: 2.9e-05 ms

Multiplying two, 2x2 Matrix:

This is the performace difference fo multiplying two 2x2 Matrix: The program is multiplying Matrix A with Matrix B and producing an output:

Matrix A:

$$A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$$

Matrix B:

$$B = \begin{bmatrix} b_{11} & b_{12} \\ b_{21} & b_{22} \end{bmatrix}$$

Results:

C++ Result: 19 22 43 50
Assembly Result: 19 22 43 50
C++ Duration: 0.531 ms
Assembly Duration: 0.108 ms