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 Lab 4 – Optimization in ARM Assembly
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matadd-Pi	O1	O2	O3	O4
Average CPI	1.2686	1.2974	1.286	1.2815
Instructions	1069024042	1069189029	1069055262	1069179945
Branch-misses	6702911	6721253	6725884	6798363
Runtime (measured)	1.792	1.8066	1.7867	1.77
Runtime (calculated)	1.2562	1.27	1.2514	1.2299

Table 1: Optimization Results using O1-O4

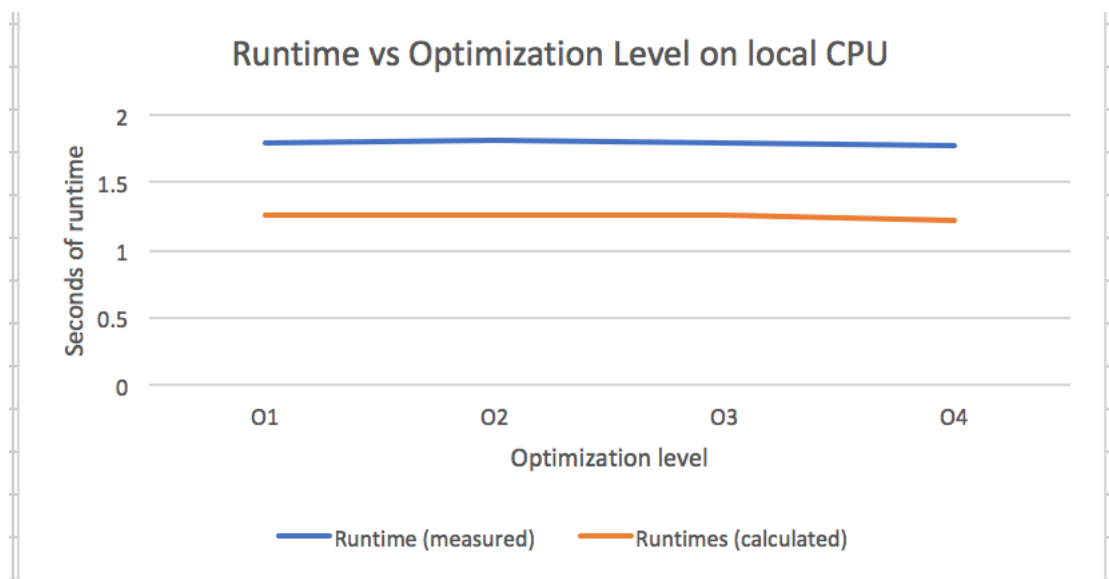


Figure 1: A graph of runtime vs optimization levels

Fraction of time spent running Matadd:

87.88% on main loop (Width_inner_loop)
 6.06% on AllocateMatrix function call
 6.06% on PrintMat function call

Notes:

As for the different optimization levels on the compiler level, it seems to have had a minimal effect on the runtime performance of my algorithm. I was unable to perform the unrolling portion of this lab in time; however, I assume that the optimization would have had a major effect in that area. As was expected, most of the CPU time was spent on the inner loop which had the largest amount of iterations per function call.